

Continuous support for women during childbirth (Review)

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ABSTRACT

Background

Historically, women have been attended and supported by other women during labour. However, in recent decades in hospitals worldwide, continuous support during labour has become the exception rather than the routine. Concerns about the consequent dehumanization of women's birth experiences have led to calls for a return to continuous support by women for women during labour.

Objectives

Primary: to assess the effects, on mothers and their babies, 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 in the birth environment that may affect a woman's autonomy, freedom of movement and ability to cope with labour; (2) whether the caregiver is a member of the staff of the institution; and (3) whether the continuous support begins early or later in labour.

Search strategy

We searched the Cochrane Pregnancy and Childbirth Group's Trials Register (February 2007).

Selection criteria

All published and unpublished randomized controlled trials comparing continuous support during labour with usual care.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. All authors participated in evaluation of methodological quality. One author and a research assistant independently extracted the data. We sought additional information from the trial authors. We used relative risk for categorical data and weighted mean difference for continuous data to present the results.

Main results

Sixteen trials involving 13,391 women met inclusion criteria and provided usable outcome data. Primary comparison: women who had continuous intrapartum support were likely to have a slightly shorter labour, were more likely to have a spontaneous vaginal birth and less likely to have intrapartum analgesia or to report dissatisfaction with their childbirth experiences. Subgroup analyses: in general, continuous intrapartum support was associated with greater benefits when the provider was not a member of the hospital staff, when it began early in labour and in settings in which epidural analgesia was not routinely available.

Authors' conclusions

All women should have support throughout labour and birth.

PLAIN LANGUAGE SUMMARY

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

Historically women have been attended and supported by other women during labour and birth. However in many countries these days, as more women are giving birth in hospital rather than at home, continuous support during labour has become the exception

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rather than the norm. This has raised concerns about the consequent dehumanization 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 normal 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 16 trials, from 11 countries, involving over 13,000 women in a wide range of settings and circumstances. 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. In general, labour support appeared to be more effective when it was provided by women who were not part of the hospital staff. It also appeared to be more effective when commenced early in labour. No adverse effects were identified.

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 never published. The Review author, Ellen Hodnett, had completed a trial of labour support (Hodnett 2002a) 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 then developed into the present Review.

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 (in both high-income and low- and middle-income 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 the consequent dehumanization of women's birth experiences 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 (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 hypothesize 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. This process may to some extent be buffered by the provision of support and companionship during labour.

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.

Recently continuous support has been viewed 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 on labour progress (Anim-Somuah 2005). 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 catheterization, 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 2002).

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 organizations offer doula training, certification and professional support; according to one estimate over 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 recently been established in the UK (McGinnis 2001). Efforts to make doula services available are also occurring in countries such as Australia, Bermuda, Brazil, China, the Czech Republic, Israel and South Africa.

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. 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:

- (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:
 - (a) policies about the presence of support people of the woman's own choosing;
 - (b) epidural analgesia; and
 - (c) continuous electronic fetal monitoring;
- (2) whether the caregiver is a member of the staff of the institution (and thus has additional loyalties or responsibilities, or both); and
- (3) whether the continuous support begins early or later in labour.

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 intervention

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, friend or stranger with 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 large number of outcomes were considered. The outcomes fall into the following categories: labour events, birth events, neonatal events, immediate maternal psychological outcomes and longer-term maternal outcomes. The outcomes included:

(A) Labour events

- (1) Amniotomy (artificial rupture of membranes);
- (2) synthetic oxytocin;
- (3) use of electronic fetal monitoring;
- (4) epidural analgesia;
- (5) any analgesia/anaesthesia (pain medication);
- (6) severe pain;
- (7) labour length.

(B) Birth events

- (8) Caesarean birth;
- (9) operative vaginal birth (vacuum extraction or forceps);
- (10) spontaneous vaginal birth;
- (11) episiotomy;
- (12) perineal trauma (defined as episiotomy or laceration requiring suturing).

(C) Newborn events

- (13) Low five-minute Apgar score (as defined by trial authors);
- (14) low cord pH (as defined by trial authors);
- (15) admission to special care nursery;
- (16) prolonged newborn hospital stay.

(D) Immediate maternal psychological outcomes

- (17) Feeling tense, anxious during labour;
- (18) negative rating of/negative feeling about the experience;
- (19) perceived difficulty in coping with labour;
- (20) perceived low control during labour.

(E) Longer-term maternal outcomes

- (21) Postpartum depression;
- (22) low self-esteem in the postpartum period;
- (23) anxiety in the postpartum period;
- (24) difficulty mothering;
- (25) less than full breastfeeding;
- (26) prolonged perineal pain;
- (27) pain during sexual intercourse;
- (28) urinary incontinence;
- (29) faecal incontinence;
- (30) poor relationship with partner.

SEARCH METHODS FOR IDENTIFICATION OF STUDIES

See: methods used in reviews.

We searched the Cochrane Pregnancy and Childbirth Group's Trials Register by contacting the Trials Search Co-ordinator (February 2007).

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

- (1) quarterly searches of the Cochrane Central Register of Controlled Trials (CENTRAL);
- (2) monthly searches of MEDLINE;
- (3) handsearches of 30 journals and the proceedings of major conferences;
- (4) weekly current awareness search of a further 36 journals plus monthly BioMed Central email alerts.

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

Trials identified through the searching activities described above are given a code (or codes) depending on the topic. The codes are linked to review topics. The Trials Search Co-ordinator searches the register for each review using these codes rather than keywords.

We did not apply any language restrictions.

METHODS OF THE REVIEW

We evaluated trials under consideration for methodological quality and appropriateness for inclusion, without consideration of their results. We processed included trial data as described in Higgins 2005. Quality scores for allocation concealment were assigned to each trial, where A = adequate, B = unclear, C = clearly inadequate. Studies rated as a C were eliminated. Wherever necessary, we requested unpublished data from the trial authors. For all data analyses in this Review, we entered data based on the principle of intention to treat. To be included in a given comparison, outcome data had to be available for at least 80% of those who were randomized.

In trials in which some participants had interventions such as analgesia and synthetic oxytocin prior to enrolment, only those interventions which occurred after randomization were included in the data tables.

Where several measures of dissatisfaction were included in a single trial, we selected the measure of the outcome that was most serious and was most congruent with the particular concept. Six trials reported on aspects of women's views about their childbirth experiences. We combined 'low perceived control during labour' with other indicators of negative ratings of the birth experience,

such as difficulty in coping with labour, for a combined outcome, 'dissatisfaction with/negative rating of the childbirth experience'.

We double-entered the data and compared the results until we achieved 100% agreement.

We planned and completed five a priori subgroup analyses. The five subgroup analyses were as follows.

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

- (1) Trials in settings in which women were permitted to be accompanied by one or more support persons of their own choosing versus trials in which accompaniment was not permitted;
- (2) trials conducted in settings in which epidural analgesia was available versus trials in settings in which it was unavailable;
- (3) trials in which there was a policy of routine electronic fetal heart rate monitoring versus 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

- (4) Trials in which the caregivers were employees of the institution, compared to trials in which the caregivers were not staff members.

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

- (5) Trials in which continuous labour support began prior to the onset of active labour, trials in which women were enrolled after the onset of active labour and trials in which women were enrolled at both early and active labour.

Because few of the trial reports contained all of the information needed for the above subgroup analyses, the trial authors were contacted 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. Some studies included in the primary comparisons were excluded from the subgroup analyses concerning the use of EFM because their status regarding EFM use was unknown. For tests of differences between these subgroups, the overall analysis was recalculated by including only the studies in which EFM use was known.

The prespecified subgroup analyses were restricted to the following outcomes:

- (1) analgesia/anaesthesia;
- (2) ways of giving birth (caesarean, operative vaginal and spontaneous);
- (3) low five-minute Apgar score (as defined by trial authors);
- (4) dissatisfaction with or negative views of the childbirth experience; and
- (5) postpartum depression.

We combined studies using relative risks as the measure of effect size for binary outcomes. Weighted mean differences were used for most continuous outcome measures. Where trials used different

ways of measuring the same outcome, we used standardised mean differences. We analyzed scores from rating scales either as continuous variables, if the scale was sufficiently long for this to be reasonable, or converted to dichotomous variables. We used fixed-effect meta-analysis for combination of studies if the trials were sufficiently similar in their design and interventions that a fixed-effect summary would be meaningful. When there were differences between the trials that were likely to lead to differences in their treatment effects, we used random-effects meta-analysis. We performed tests for heterogeneity, and when heterogeneity was identified, either by a significant result ($P < 0.1$) or obvious inconsistency of the effect sizes of the trials in the analysis, random-effects analysis was preferred.

When significant heterogeneity was present within one subgroup analysis in a comparison, we used the random-effects model for both subgroups. We investigated causes of heterogeneity by the prespecified subgroup analyses. We investigated biases in the studies included in the analyses by means of funnel plots. We used chi-squared tests for differences between subgroups, using the method suggested by Deeks 2001, to determine if the subgroup analyses explained any variation among trials.

Additional information from secondary reports and correspondence with the principal investigator about one trial (Dickinson 2002) led to uncertainties about whether the two study groups differed in the provision of continuous support. Therefore we decided to perform sensitivity analyses, in which we compared study results with and without including the trial.

DESCRIPTION OF STUDIES

Please see 'Characteristics of included studies' table. While 17 trials met inclusion criteria, one trial (Thomassen 2003) provided no usable outcome data and will not be described here, but details are provided in the 'Characteristics of included studies' table.

All 16 trials that provided usable outcome data were conducted in hospitals. The trials were conducted in Australia, Belgium, Botswana, Canada, Finland, France, Greece, Guatemala, Mexico, South Africa 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. Fourteen of the 16 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 10 trials (Breart - Belgium; Breart - France; Campbell 2006; Cogan 1988; Dickinson 2002; Gagnon 1997; Hemminki 1990a; Hemminki 1990b; Hodnett 1989; Hodnett 2002a), hospital policy permitted women to be accompanied by their husbands/partners or other family members during labour, while in the other six

trials, no additional support people were allowed. Epidural analgesia was routinely available in all but four trials (Breart - Greece; Hofmeyr 1991; Klaus 1986; Madi 1999). Electronic fetal heart rate monitoring was not routine in four trials (Hofmeyr 1991; Klaus 1986; Langer 1998; Madi 1999). In nine trials (Campbell 2006; Cogan 1988; Dickinson 2002; Gagnon 1997; Hemminki 1990a; Hemminki 1990b; Hodnett 1989; Hodnett 2002a; Kennell 1991) electronic fetal monitoring was used routinely. We were unsuccessful in obtaining information about the use of electronic fetal monitoring for three trials (Breart - Belgium; Breart - France; Breart - Greece).

While the form of care that was evaluated was always described as continuous one-to-one support, the timing of onset of support varied. In five trials (Cogan 1988; Dickinson 2002; Hodnett 1989; Klaus 1986; Madi 1999) the support began prior to the onset of active labour; in six trials (Gagnon 1997; Hemminki 1990a; Hemminki 1990b; Hofmeyr 1991; Kennell 1991; Langer 1998) the support began in active labour; and in five trials (Breart - Belgium; Breart - France; Breart - Greece; Campbell 2006; Hodnett 2002a) the support could begin in either early or active labour.

In addition, the persons providing the support intervention varied in their experience, qualifications and relationship to the labouring women. In eight trials (Breart - Belgium; Breart - France; Breart - Greece; Dickinson 2002; Gagnon 1997; Hemminki 1990a; Hemminki 1990b; Hodnett 2002a) the support was provided by a member of the hospital staff, for example, a midwife, student midwife or nurse. In the remaining eight trials the providers were not members of the hospital staff; they were women with or without special training (Hodnett 1989; Hofmeyr 1991; Kennell 1991; Klaus 1986): a childbirth educator (Cogan 1988), retired nurses (Langer 1998) or a female relative or friend (Campbell 2006; Madi 1999). With the exception of the latter two trials (Campbell 2006; Madi 1999) all studies evaluated support by a woman who was not part of the childbearing woman's existing social network. One of the two trials of support by a female relative or friend (Campbell 2006) provided two, two-hour training sessions about labour support to the support person. We found no controlled trials that have evaluated effects of husbands or partners as providers of labour support.

METHODOLOGICAL QUALITY

Allocation concealment: Hodnett 2002a used a central, computerized randomization service accessed by telephone. In 13 trials (Breart - Belgium; Breart - France; Breart - Greece; Campbell 2006; Dickinson 2002; Gagnon 1997; Hemminki 1990a; Hemminki 1990b; Hofmeyr 1991; Kennell 1991; Klaus 1986; Langer 1998; Madi 1999) randomization was by sealed, opaque envelopes. Two trials used methods that were centrally controlled but not concealed (Cogan 1988; Hodnett 1989). One trial (Thomassen 2003) did not describe the method of random assignment.

Performance bias: neither those providing nor receiving care could be blinded to the presence/absence of a person providing continuous support. Hodnett 2002a provided evidence to discount contamination and co-intervention as serious threats to validity. Attrition bias: outcome data were not included in a meta-analysis if there was more than 20% loss to follow up; based on this criterion, one trial (Thomassen 2003) provided no usable outcome data. In the trials which sought participants' evaluations of their birth experiences (Breart - Belgium; Breart - France; Hofmeyr 1991; Hodnett 2002a; Kennell 1991), efforts were made to reduce response bias, through use of an interviewer blinded to the woman's group allocation or self-administered questionnaires.

RESULTS

Sixteen trials involving 13,391 women met the criteria for inclusion in this Review and provided usable outcome data. The relative risks (RR) and confidence intervals (CI) reported below reflect our a priori decisions regarding use of random-effects versus fixed-effect analyses.

Main comparison: continuous support versus usual care - all trials

Thirty outcomes were considered. Between 1 and 16 trials contributed to the analyses of each outcome. Because of the large number of outcomes, the following summary of results is restricted to data collected and reported in at least four trials involving at least 1000 women. Please refer to the meta-analyses graphs for the full results.

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

- (1) have regional analgesia/anaesthesia (seven trials, $n = 10,648$; RR 0.92, 95% CI 0.85 to 0.99);
- (2) have any analgesia/anaesthesia (12 trials, $n = 11,651$; RR 0.89, 95% CI 0.82 to 0.96);
- (3) have an instrumental vaginal birth (15 trials, $n = 13,357$; RR 0.89, 95% CI 0.82 to 0.96);
- (4) have a caesarean birth (16 trials, $n = 13,391$; RR 0.91, 95% CI 0.83 to 0.99);
- (5) report dissatisfaction with or negative rating of the childbirth experience (six trials, $n = 9824$; RR 0.73, 95% CI 0.65 to 0.83); and
- (6) they were more likely to have a spontaneous vaginal birth (15 trials, $n = 13,357$; RR 1.07, 95% CI 1.04 to 1.12).

Continuous support was also associated with a slightly shorter labour length (10 trials, $n = 10,922$; weighted mean difference -0.43 hours, 95% CI -0.83 to -0.04).

Using the same criteria as above, i.e. at least four trials involving at least 1000 women, continuous support was not associated with decreased likelihood of:

- (1) synthetic oxytocin during labour (ten trials, n = 11,2566; RR 0.94, 95% CI 0.84 to 1.05);
- (2) low five-minute Apgar scores (eight trials, n = 11,295; RR 0.72, 95% CI 0.51 to 1.02);
- (3) admission of the newborn to a special care nursery (four trials, n = 8239; RR 0.94, 95% CI 0.82 to 1.09); or
- (4) postpartum reports of severe labour pain (four trials, n = 2497; RR 0.97, 95% CI 0.77 to 1.23).

There were two other outcomes that are noteworthy because, although reported in fewer than four trials, the data came from more than 1000 women. The meta-analysis of two trials (Hodnett 2002a; Langer 1998) indicates that continuous support was associated with a reduced likelihood that women will report feeling low levels of personal control during labour and birth (n = 7639; RR 0.79, 95% CI 0.67 to 0.94). There was a slight decrease in the use of electronic fetal monitoring (EFM) in the continuous support group in a North American trial (Hodnett 2002a; n = 6915; RR 0.95, 95% CI 0.92 to 0.97).

There remains relatively little information about the effects of continuous intrapartum support on mothers' and babies' health and well-being in the postpartum period. Perineal trauma, other neonatal outcomes, relationship with partner and urinary and faecal incontinence were assessed in one to three trials each, involving between 189 and 7639 women, and no statistically significant differences were found. No data suitable for incorporation into this Review were available for low cord pH, prolonged perineal pain, postpartum anxiety or pain during sexual intercourse. Hodnett 2002a found that continuous support was not associated with a significantly reduced likelihood of postpartum depression (n = 6915; RR 0.89, 95% CI 0.75 to 1.05). However, the South African trial (Hofmeyr 1991) achieved a remarkable 79% follow up under extremely difficult conditions, and the results (while not included in the meta-analyses because loss to follow up was more than 20%) suggest important longer-term benefits of continuous support when it is provided in a resource-poor environment, including reduced likelihood of postpartum depression and anxiety, improved self-esteem, increased confidence in mothering and greater likelihood of successful breastfeeding.

The results of the subgroup analyses are presented below. For two reasons, the number of trials in each subgroup analysis varies: (1) the number of trials that reported any given outcome was highly variable (caesarean delivery was the only outcome reported in all 16 trials); and (2) we were unable to obtain information from all trialists about the routine use of EFM.

The text below does not present the results for postpartum depression. Since only one trial (Hodnett 2002a) reported data about postpartum depression from at least 80% of those originally enrolled, subgroup analyses related to this outcome were not possible.

Please refer to the meta analysis graphs, for individual subgroup analyses related to the outcome of low five-minute Apgar scores. Only one of 11 subgroup comparisons of low five-minute Apgar scores was statistically significant: In the three trials (n = 1201) in which the support people were not members of the hospital staff, RR 0.36, 95% CI 0.14 to 0.90. For low Apgar scores, the interaction tests revealed no evidence of any difference between subgroups.

Subgroup comparisons one to three: influences of variations in institutional policies and practices

Note: in all of the comparisons reported below, there were much larger numbers of participants, in settings in which (1) women were permitted to have support people of their own choosing with them in labour, compared to settings in which other support was not permitted; (2) in which epidural analgesia was routinely available, compared to when it was not routinely available; and (3) in which EFM was routine, compared to when EFM was not routine. The differing sample sizes should be taken into account, when results are interpreted.

Outcome: analgesia/anaesthesia

(1) Policies about whether women were permitted to have support people of their own choosing with them during labour and birth: in settings in which other support people were permitted (seven trials, n = 9752; RR 0.97, 95% CI 0.96 to 0.99) in settings in which other support people were not permitted (five trials, n = 1899; RR 0.72, 95% CI 0.49 to 1.05). The difference between subgroups was not statistically significant (chi squared = 3.33, P = 0.07).

(2) Availability of epidural analgesia: in settings in which epidural analgesia was routinely available (nine trials, n = 10,888; RR 0.90, 95% CI 0.84 to 0.97). In settings in which epidural analgesia was not routinely available (three trials, n = 763; RR 0.71, 95% CI 0.54 to 0.93). The effects of continuous support appeared to be stronger in settings in which epidural analgesia was not routinely available (chi squared = 7.19, P = 0.01).

(3) Use of routine electronic fetal monitoring: in settings in which EFM was routine (six trials, n = 8580; RR 0.88, 95% CI 0.79 to 0.99). In settings in which EFM was not routine (four trials, n = 1487; RR 0.82, 95% CI 0.61 to 1.11). The difference between subgroups was not statistically significant (chi squared = 0.24, P = 0.62).

Outcome: spontaneous vaginal birth

(1) Policies about whether women were permitted to have support people of their own choosing with them during labour and birth: in settings in which other support people were permitted (eight trials, n = 10,889; RR 1.03, 95% CI 1.00 to 1.06). In settings in which other support was not permitted (six trials, n = 1468; RR 1.11, 95% CI 1.04 to 1.19). The effects of continuous support appeared to be stronger in settings in which other support was not permitted (chi squared = 9.89, P < 0.01).

(2) Availability of epidural analgesia: in settings in which epidural analgesia was routinely available (11 trials, n = 12,025; RR 1.06, 95% CI 1.02 to 1.11). In settings in which epidural analgesia was not routinely available (four trials, n = 1332; RR 1.10, 95% CI 1.01 to 1.20). The effects of continuous support appeared to be stronger in settings in which epidural analgesia was not routinely available (chi squared = 4.96, P = 0.03).

(3) Use of routine EFM: in settings in which EFM was routine (eight trials, n = 9717; RR 1.07, 95% CI 1.01 to 1.13). In settings in which EFM was not routine (four trials, n = 1487; RR 1.11, 95% CI 1.02 to 1.20). The effects of continuous support appeared to be stronger in settings in which EFM was not routine (chi squared = 6.28, P = 0.01).

Outcome: instrumental vaginal birth

(1) Policies about whether women were permitted to have support people of their own choosing with them during labour and birth: in the settings in which other support people were permitted (nine trials, n = 10,889; RR 0.90, 95% CI 0.84 to 0.97). In settings in which other support was not permitted (six trials, n = 2468; RR 0.68, 95% CI 0.42 to 1.10). The difference between subgroups was not statistically significant (chi squared = 1.25, P = 0.26).

(2) Availability of epidural analgesia: in the settings in which epidural analgesia was routinely available (11 trials, n = 12,025; RR 0.85, 95% CI 0.75 to 0.96). In the settings in which epidural analgesia was not routinely available (four trials, n = 1332; RR 0.77, 95% CI 0.43 to 1.38). There was no evidence of a difference in instrumental vaginal birth, based on availability of epidural analgesia (chi squared = 0.00, P = 1.00).

(3) Routine use of EFM: in the settings in which EFM was routine (eight trials, n = 9717; RR 0.84, 95% CI 0.69 to 1.01). In the settings in which EFM was not routine (four trials, n = 1487; RR 0.72, 95% CI 0.38 to 1.36). The difference between subgroups was not statistically significant (chi squared = 0.39, P = 0.53).

Outcome: caesarean birth

(1) Policies about whether women were permitted to have support people of their own choosing with them during labour and birth: in settings in which other support was permitted (10 trials, n = 10,923; RR 0.97, 95% CI 0.88 to 1.07). In settings in which other support was not permitted (six trials, n = 2468; RR 0.71, 95% CI 0.54 to 0.93). The effects of continuous support appeared to be stronger in settings which did not permit the presence of additional support people (chi squared = 4.83, P = 0.03).

(2) Availability of epidural analgesia: in settings in which epidural analgesia was routinely available (12 trials, n = 12,059; RR 0.95, 95% CI 0.86 to 1.04). In settings in which epidural analgesia was not routinely available (four trials, n = 1332; RR 0.62, 95% CI 0.41 to 0.95). The effects of continuous support appeared to be stronger in settings in which epidural analgesia was not routinely available (chi squared = 5.20, P = 0.02).

(3) Routine use of EFM: in settings in which EFM was routine (nine trials, n = 9751; RR 0.95, 95% CI 0.86 to 1.05). In settings in which EFM was not routine (four trials, n = 1487; RR 0.65, 95% CI 0.41 to 1.04). The difference between subgroups was not statistically significant (chi squared = 2.63, P = 0.10).

Outcome: dissatisfaction with/negative views of childbirth experience

(1) Policies about whether women were permitted to have support people of their own choosing with them during labour and birth: in settings in which women were permitted other support (three trials, n = 8499; RR 0.83, 95% CI 0.67 to 1.02). In settings in which other support was not permitted (three trials, n = 1325; RR 0.67, 95% CI 0.58 to 0.78). The difference between subgroups was not statistically significant (chi squared = 3.09, P = 0.08).

(2) Availability of epidural analgesia: in settings in which epidural analgesia was routine (five trials, n = 9635; RR 0.77, 95% CI 0.67 to 0.88). Only one trial (n = 189) in a setting without epidural analgesia reported data about women's views (RR 0.55, 95% CI 0.42 to 0.72). The effects of continuous support may be stronger in settings in which epidural analgesia was not routinely available (chi squared = 4.68, P = 0.03).

(3) Use of routine EFM: two trials (n = 7327) were conducted in settings with routine EFM; RR 0.75, 95% CI 0.61 to 0.92. Two trials (n = 913) were conducted in settings in which EFM was not routine; RR 0.69, 95% CI 0.58 to 0.82. The difference between subgroups was not statistically significant (chi squared = 0.52, P = 0.47).

Subgroup comparison four: impact of type of provider

Outcome: analgesia/anaesthesia

When the providers of continuous support were members of the staff of the institution (six trials, n = 9152; RR 0.97, 95% CI 0.95 to 0.99). When the providers of support were not staff members (six trials, n = 2499; RR 0.80, 95% CI 0.66 to 0.97). The effects of continuous support appear to be stronger when the provider was not a member of the staff (chi squared = 3.82, P = 0.05).

Outcome: spontaneous vaginal birth

When the providers of continuous support were members of the staff (eight trials, n = 10,713; RR 1.03, 95% CI 1.01 to 1.06). When the providers of support were not staff members (seven trials, n = 3244; RR 1.10, 95% CI 1.05 to 1.14). The effects of continuous support appeared to be stronger when the provider was not a member of the staff (chi squared = 9.14, P = 0.01).

Outcome: instrumental vaginal birth

When the providers of continuous support were members of the staff (eight trials, n = 10,713; RR 0.92, 95% CI 0.85 to 0.99). When the providers of support were not staff members (seven trials, n = 2644; RR 0.59, 95% CI 0.44 to 0.79). The effects of continuous support appeared to be stronger when the provider was not a member of the staff (chi squared = 7.21, P = 0.01).

Outcome: caesarean birth

A significant reduction in the likelihood of caesarean birth was only seen in the eight trials (n = 2678) in which the support providers were not members of the staff (RR 0.80, 95% CI 0.68 to 0.95). In the other eight trials (n = 10,713; RR 0.95, 95% CI 0.86 to 1.06). The difference between subgroups was not statistically significant (chi squared = 1.92, P = 0.17).

Outcome: dissatisfaction with/negative rating of childbirth experience

When the providers of continuous support were members of the staff (three trials, n = 8499; RR 0.83, 95% CI 0.67 to 1.02). When the providers of support were not staff members (three trials, n = 1325; RR 0.67, 95% CI 0.58 to 0.78). The difference between subgroups was not statistically significant (chi squared = 3.09, P = 0.08).

Subgroup comparison five: impact of timing of onset of continuous support**Outcome: analgesia/anaesthesia**

When continuous support began before active labour (two trials, n = 574; RR 0.61, 95% CI 0.30 to 1.26). When continuous support could begin in either early or active labour (four trials, n = 9099), RR 0.96, 95% CI 0.92 to 1.00. When continuous support began in active labour (six trials, n = 1978; RR 0.85, 95% CI 0.70 to 1.04). The effects of continuous support appeared to be stronger when support began before labour became active (chi squared = 11.20, P < 0.01).

Outcome: spontaneous vaginal birth

When continuous support began before active labour (four trials, n = 1711; RR 1.16, 95% CI 1.08 to 1.24). When continuous support could begin in either early or active labour (five trials, n = 9668; RR 1.02, 95% CI 1.00 to 1.05). When continuous support began in active labour (six trials, n = 1978; RR 1.07, 95% CI 1.02 to 1.13). The effects of continuous support appear to be stronger when support began before labour became active (chi squared = 17.09, P < 0.001).

Outcome: instrumental vaginal birth

When continuous support began before active labour (four trials, n = 1711; RR 0.76, 95% CI 0.53 to 1.07). When continuous support could begin in either early or active labour (five trials, n = 9668; RR 0.89, 95% CI 0.79 to 1.01). When continuous support began in active labour (six trials, n = 1978; RR 0.82, 95% CI 0.52 to 1.30). The differences among subgroups were not statistically significant (chi squared = 0.92, P = 0.63).

Outcome: caesarean birth

When continuous support began before active labour (five trials, n = 1745; RR 0.71, 95% CI 0.56 to 0.90). When continuous support could begin in either early or active labour (five trials, n = 9668; RR 0.99, 95% CI 0.89 to 1.11). When continuous support began in active labour (six trials, n = 1978; RR 0.81, 95% CI 0.67 to 0.99). The difference between subgroups was statistically

significant (chi squared = 6.40, P = 0.04), favouring support that began before labour became active.

Outcome: dissatisfaction with/negative rating of childbirth experience

No trials in which continuous support began in early labour reported information about women's views of their childbirth experiences. Only six trials included data suitable for incorporation in this subgroup analysis. In three trials (n = 8499) in which continuous support could begin in early or active labour (RR 0.83, 95% CI 0.67 to 1.02). In three trials (n = 1325) in which continuous support began in active labour (RR 0.67, 95% CI 0.58 to 0.78). The difference between the two subgroups was not statistically significant (chi squared = 3.09, P = 0.21).

Sensitivity analyses

The sensitivity analyses, in which Dickinson 2002 results were excluded, did not materially change the conclusions of any of the comparisons.

DISCUSSION

This Review summarizes results of 16 trials involving 13,391 women, that took place in 11 countries under a wide variety of circumstances. The methodological quality of the 16 trials was good to excellent. All trials involved continuous one-to-one support provided by women with a variety of experiences, through having given birth themselves and/or through education and practice as nurses, midwives, doulas or childbirth educators.

In the primary comparison, women who experienced continuous one-to-one support during labour were more likely to give birth without using analgesia or anesthesia, more likely to have a spontaneous vaginal birth and less likely to report dissatisfaction with their childbirth experiences; in addition their labours tended to be slightly shorter in length. The trial reports do not list any adverse effects, and none are plausible. This form of care appears to confer important benefits without attendant risks. The results of earlier versions of this Review prompted organizations in Canada, the UK and the USA to issue practice guidelines, advocating continuous support (AWHONN 2002; MIDIRS 1999; SOGC 1995). The results of the primary comparison in the current Review offer continued justification for these practice guidelines.

The subgroup analyses should be interpreted with caution, but consistent patterns suggest that the effectiveness of continuous intrapartum support may be enhanced or reduced by policies in the birth setting, type of provider and timing of onset of support.

We chose three aspects of the birth environment - routine use of electronic fetal monitoring, 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 2005) or indirect, as part of the 'cascade of interventions' described in the Background. These results raise questions about the ability of labour support to act as a buffer against adverse aspects of routine medical interventions. In contrast, 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.

A major finding of this Review is that effects of continuous labour support appear to vary by type of provider. The reduction in operative birth and the increase in spontaneous birth were lower in magnitude when women received support from women whose training, role or identity, or both, involved responsibilities that extended beyond labour support (that is, members of the staff of the institution), compared to women who were cared for by women whose training, role or identity, or both focused on labour support (that is, women who were not part of the staff and were there solely to provide support). This Review cannot answer questions about the reasons why support provided by non-staff members was generally more effective than support by institutional staff. Divided loyalties, additional duties besides labour support, self-selection and the constraints of institutional policies and routine practices may all have played a role. Childbirth environments influence the healthcare professionals who work in them as well as the women who labour and give birth in them.

This Review provides evidence of a dose-response phenomenon: a strong and prolonged 'dose' of continuous support may be most effective. 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. Continuous labour support that begins earlier in labour appears to be more effective than support that begins later in labour.

AUTHORS' CONCLUSIONS

Implications for practice

Continuous support during labour should be the norm, rather than the exception. All women should be allowed and encouraged to have support people with them continuously during labour. In general, continuous support from a caregiver during labour appears to confer the greatest benefits when the provider is not an employee of the institution, when epidural analgesia is not routinely used, and when support begins in early labour.

Policy makers and hospital administrators in high income countries who wish to effect clinically important reductions in inap-

propriately 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 organization 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.

Every effort should be made to ensure that women's birth environments are empowering, nonstressful, afford privacy, communicate respect and are not characterized by routine interventions that add risk without clear benefit.

In most areas of the world at this time, childbearing women have limited access to trained doulas. Where available, costs of doula services are frequently borne by childbearing families and may be a barrier to access. It may be possible to increase access to one-to-one continuous labour support worldwide by encouraging women to invite a family member or friend to commit to being present at the birth and assuming this role. A comprehensive guidebook for designated companions is available for those with good English literacy (Simkin 2001). 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 (including a slide presentation on evidence-based care in labour and a video presentation on childbirth companions) are available in the World Health Organization Reproductive Health Library (www.rhlibrary.com), which is distributed free of charge to health workers in resource-poor countries and for a nominal cost in resource-rich countries, in English, Spanish, French and Chinese. 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. 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.

All trials should include economic analyses of the relative costs and benefits.

Questions remain about the best approach to ensuring effective continuous support, under varying conditions. Comparisons of different models of continuous support would be helpful. All comparisons of different models of the provision of support should include cost-effective analyses.

POTENTIAL CONFLICT OF INTEREST

Ellen Hodnett was the principal investigator for two labour support trials. Justus Hofmeyr was the principal investigator for one labour support trial. Carol Sakala is Director of Programs for Childbirth Connection, a maternity care quality organization which promotes continuous labour support.

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T A B L E S

Characteristics of included studies

Study	Breart - Belgium
Methods	RCT, random allocation by sealed, opaque envelopes, prepared by the co-ordinating centre.
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.
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.

Characteristics of included studies (Continued)

Notes

Allocation concealment A – Adequate

Study Breart - France

Methods See Breart - Belgium.

Participants See Breart - Belgium.
Trial in France: n = 1320.

Interventions See Breart - Belgium. Fathers were allowed to be present.

Outcomes See Breart - Belgium.

Notes

Allocation concealment A – Adequate

Study Breart - Greece

Methods See Breart - Belgium.

Participants See Breart - Belgium. Trial in Greece: n = 569.

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

Allocation concealment A – Adequate

Study Campbell 2006

Methods RCT. Randomization involved opening consecutively-numbered, sealed opaque envelopes containing computer-generated random assignments. After obtaining consent, a research assistant opened the envelope containing the group assignment.

Participants 600 nulliparous, low-income, under-insured pregnant women between 12 and 38 weeks' gestation who were considered low risk, with no contraindications to labour, who had a female friend or relative willing to act as their lay doula, in addition to support people of their own choosing, and were booked for delivery at a hospital in New Jersey, USA.

Interventions Doula group: support people of their own choosing plus 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 doulas 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 > 6, 5-min Apgar > 6.

Notes 14 women (9 in the doula group and 5 in the control group) were lost to follow up.

Allocation concealment B – Unclear

Study Cogan 1988

Methods RCT. Admitting nurse telephoned research assistant who "randomly assigned the women" to the study groups.

Participants 34 women (primigravidas and multigravidas) at 26-37 weeks' gestation in 2 Texas hospitals. They were in early, uncomplicated preterm labour.

Characteristics of included studies (Continued)

Interventions	Support provided by a Lamaze childbirth preparation instructor compared to usual intermittent nursing care. Support included continuous presence, acting as a liaison with hospital staff, providing information, and teaching relaxation and breathing measures. Family members allowed to be present.
Outcomes	Fetal distress, caesarean birth, artificial oxytocin, labour length, Apgar scores, neonatal intensive care.
Notes	
Allocation concealment	B – Unclear

Study Dickinson 2002

Methods	RCT. Randomization on presentation in the labour and delivery unit, “by selection from a blocked group of eight sealed opaque envelopes, replenished from blocks of 12.” Prospective stratification for spontaneous or induced labour.
Participants	992 nulliparous women at term, 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 conceptualized 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. Uncertain effects of performance bias. Secondary report indicates very similar reports of satisfaction with midwifery support in the 2 groups, but trial author confirmed that the amount and nature of support did differ. Effects on breastfeeding were not analysed by treatment group and thus the results could not be included in the Review. Satisfaction data were not reported in a usable form for the meta-analyses in this Review.
Allocation concealment	A – Adequate

Study Gagnon 1997

Methods	RCT. Participants were recruited after admission to the delivery suite. Group assignments were in sequentially numbered, sealed, opaque envelopes. Nurses were hired to provide the experimental intervention; they had 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.
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 labor. All participants were nulliparous, with singleton fetuses, > 37 weeks' gestation, and in labour.
Interventions	Group 1: one-to-one nursing care from on-call nurses who had been hired and trained for the study, from randomization until 1 hour postbirth. 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.

Characteristics of included studies (Continued)

Outcomes	Caesarean birth, caesarean birth for cephalopelvic disproportion or failure to progress, postrandomization artificial oxytocin augmentation, postrandomization analgesia/anaesthesia, instrumental vaginal delivery (forceps or vacuum extraction), NICU admission, perineal trauma, mean duration of labour postrandomization, postpartum urinary catheterization.
Notes	The participants had been admitted to the unit for an average of 5 hours (SD = 4 hours) prior to randomization. 36 women in the experimental group and 41 in the control group had epidural analgesia prior to randomization. 55 women in the experimental group and 45 in the control group had intravenous oxytocin augmentation of labour prior to randomization. Mean duration of labour postrandomization was 9.2 hours (SD = 4.3).
Allocation concealment	A – Adequate

Study Hemminki 1990a

Methods	Two RCTs reported in the same publication. Random allocation in both trials was by sealed opaque envelopes.
Participants	Healthy nulliparous and parous women in labour at a hospital in Finland. 80 women were enrolled in Trial A.
Interventions	Trial A: in 1987, support by midwifery students, who were also responsible for other routine intrapartum care, compared to the usual routine care. The students were not specially trained in support. 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	
Allocation concealment	A – Adequate

Study Hemminki 1990b

Methods	See Hemminki 1990a.
Participants	See Hemminki 1990a. 161 women were enrolled in Trial B.
Interventions	Trial B: in 1988, support by a new group of midwifery students. The students were permitted to leave their participants to witness other interventions and deliveries. Slightly less than 70% of fathers were present.
Outcomes	See Hemminki 1990a.
Notes	
Allocation concealment	A – Adequate

Study Hodnett 1989

Methods	RCT. Research assistant telephoned project staff member who used computer-generated table of random numbers.
Participants	145 nulliparous women 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 to 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	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.

Characteristics of included studies (Continued)

Because of > 20% loss to follow up on most outcomes, the only usable outcomes were method of delivery.

Allocation concealment C – Inadequate

Study	Hodnett 2002
Methods	Multi-centre RCT with prognostic stratification for parity and centre. Women were randomized when staff member telephoned the computerized, centrally-controlled randomization system at the data co-ordinating centre.
Participants	6915 nulliparous and parous women in labour at 13 hospitals in the USA and Canada. 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	Continuous support from staff labour and delivery nurses who had volunteered for and received a 2-day training workshop in labour support, compared to usual intrapartum nursing care, defined as intermittent support from a nurse who had not received labour support training. 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.
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.
Notes	
Allocation concealment	A – Adequate

Study	Hofmeyr 1991
Methods	RCT, randomization by sealed, opaque envelopes.
Participants	189 nulliparous women in active labour at a community hospital serving low-income women in South Africa.
Interventions	Support by carefully trained, volunteer lay women, for at least several hours (supporters not expected to remain after dark), compared to 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.
Notes	The report by Wolman 1993 is a further report of the Hofmeyr trial.
Allocation concealment	A – Adequate

Study	Kennell 1991
Methods	RCT plus a retrospective non-random additional control group. Random assignment by sealed, opaque envelopes.
Participants	412 nulliparous women 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	Continuous support by a doula compared to routine intermittent presence of a nurse. Family members were not allowed to be present.
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	The description of the setting, the participants, and the type of care echo developing world conditions. This review is restricted to comparisons of the outcomes of the participants who were randomly assigned.

Characteristics of included studies (Continued)

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 randomized.

Allocation concealment A – Adequate

Study	Klaus 1986
Methods	RCT, randomized via sequentially numbered, sealed opaque envelopes. The pool of envelopes contained more assignments to the control group. Of the 465 women enrolled in the study, 48 were excluded, leaving 249 in the control group and 168 in the experimental group. Unpublished data on the excluded women were provided by the author, thereby permitting intention-to-treat analyses.
Participants	465 healthy nulliparous women in labour at the Social Security Hospital in Guatemala.
Interventions	Continuous emotional and physical support by a doula compared to usual hospital routines (described as no consistent support). No family members permitted to be present.
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	Mother-infant pairs were excluded when the mother developed a serious complication requiring special care, if the baby's weight was below 5.5 lbs or above 8 lbs, if there were twins or congenital malformations. Because labour length data were only available for 48.4% of the sample (225 of 465), the labour length comparison in this Review excludes the data from Klaus 1986.
Allocation concealment	A – Adequate

Study	Langer 1998
Methods	RCT. Randomization was centrally controlled, with sealed, opaque envelopes containing computer-generated random numbers. 20/361 in the intervention group and 36/363 controls were lost to follow up at the 1-month postdelivery.
Participants	724 women 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	Group 1: 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. Women in the comparison group received 'routine care'. Partners and family members were not permitted.
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.
Notes	
Allocation concealment	A – Adequate

Study	Madi 1999
Methods	RCT, randomization by opaque, numbered, sealed envelopes that were shuffled in the woman's presence. No exclusions postrandomization.
Participants	109 Black Botswana, 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	Continuous presence of female relative (usually her mother) in addition to usual hospital care was compared to 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).
Notes	
Allocation concealment	A – Adequate

Study	Thomassen 2003
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Methods	RCT, no details regarding method of random assignment. Participants were randomized during pregnancy.
Participants	144 women booked for delivery at a Swedish hospital.
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	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. Unfortunately the trial author reported that the information about randomization method and outcomes of those lost to follow up is no longer available.
Allocation concealment	B – Unclear

min: minutes

NICU: neonatal intensive care unit

RCT: randomized controlled trial

SD: standard deviation

Characteristics of excluded studies

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.
Dalal 2006	Not an RCT. 100 randomly-selected mothers who had a birth companion were compared to 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 postrandomization, 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, the trial report will be evaluated again.
Lindow 1998	Support was not continuous, and was quite brief in duration. 16 women in active labour were randomized to either 1 hour with a supportive companion or 1 hour without. The only outcome was maternal oxytocin level for 16 minutes postsupport or control period.
McGrath 1999	An abstract. 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 randomized 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

Characteristics of excluded studies (Continued)

	the effectiveness of female vs male doulas vs routine care without doulas. The doulas were medical and psychology students.
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 randomization 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 one-to-one support. On admission to the labour ward, women received instruction about normal labour, nonpharmacological 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 one-to-one.
RCT: randomised controlled trial	
vs: versus	

ANALYSES

Comparison 01. Continuous support versus usual care - all trials

Outcome title	No. of studies	No. of participants	Statistical method	Effect size
01 Amniotomy	2	298	Relative Risk (Random) 95% CI	0.78 [0.43, 1.43]
02 Synthetic oxytocin during labour	10	11256	Relative Risk (Random) 95% CI	0.94 [0.84, 1.05]
03 Regional analgesia/anaesthesia	7	10648	Relative Risk (Random) 95% CI	0.92 [0.85, 0.99]
04 Any analgesia/anaesthesia	12	11651	Relative Risk (Random) 95% CI	0.89 [0.82, 0.96]
05 Electronic fetal monitoring	1	6915	Relative Risk (Fixed) 95% CI	0.95 [0.92, 0.97]
06 Labour length	10	10922	Weighted Mean Difference (Random) 95% CI	-0.43 [-0.83, -0.04]
07 Spontaneous vaginal birth	15	13357	Relative Risk (Random) 95% CI	1.07 [1.04, 1.12]
08 Instrumental vaginal birth	15	13357	Relative Risk (Fixed) 95% CI	0.89 [0.82, 0.96]
09 Caesarean birth	16	13391	Relative Risk (Fixed) 95% CI	0.91 [0.83, 0.99]
10 Episiotomy	1	6915	Relative Risk (Fixed) 95% CI	0.97 [0.90, 1.05]
11 Perineal trauma	2	7328	Relative Risk (Fixed) 95% CI	0.99 [0.95, 1.03]
12 Low 5-minute Apgar score	8	11295	Relative Risk (Fixed) 95% CI	0.72 [0.51, 1.02]
13 Low cord pH	0	0	Relative Risk (Random) 95% CI	Not estimable
14 Admission to special care nursery	4	8239	Relative Risk (Fixed) 95% CI	0.94 [0.82, 1.09]
15 Prolonged neonatal hospital stay	1	412	Relative Risk (Fixed) 95% CI	0.61 [0.37, 1.01]
16 Postpartum report of severe labour pain	4	2497	Relative Risk (Random) 95% CI	0.97 [0.77, 1.23]
17 Postpartum report of difficulty in coping with labour	1	189	Relative Risk (Fixed) 95% CI	0.55 [0.42, 0.72]

18 Postpartum report of low control during labour	2	7639	Relative Risk (Fixed) 95% CI	0.79 [0.67, 0.94]
19 Postpartum report of high anxiety during labour	3	1773	Relative Risk (Random) 95% CI	0.88 [0.43, 1.78]
20 Dissatisfaction with/negative views of birth experience	6	9824	Relative Risk (Fixed) 95% CI	0.73 [0.65, 0.83]
21 Prolonged perineal pain	0	0	Relative Risk (Random) 95% CI	Not estimable
22 Difficulty mothering	1	6915	Relative Risk (Random) 95% CI	1.03 [0.95, 1.11]
23 Not breastfeeding at 1-2 months postpartum	2	7639	Relative Risk (Fixed) 95% CI	1.06 [0.99, 1.13]
24 Postpartum depression	1	6915	Relative Risk (Fixed) 95% CI	0.89 [0.75, 1.05]
25 Postpartum anxiety/tension	0	0	Relative Risk (Random) 95% CI	Not estimable
26 Low postpartum self-esteem	1	724	Relative Risk (Fixed) 95% CI	1.07 [0.82, 1.40]
27 Poor relationship with partner postpartum	1	6915	Relative Risk (Fixed) 95% CI	1.00 [0.80, 1.23]
28 Pain during sexual intercourse	0	0	Relative Risk (Random) 95% CI	Not estimable
29 Postpartum urinary incontinence	1	6915	Relative Risk (Fixed) 95% CI	0.93 [0.81, 1.06]
30 Postpartum faecal incontinence	1	6915	Relative Risk (Fixed) 95% CI	0.89 [0.64, 1.24]

Comparison 02. Continuous support during labour versus usual care - variations in institutional policies and practices

Outcome title	No. of studies	No. of participants	Statistical method	Effect size
01 Use of analgesia/anaesthesia			Relative Risk (Random) 95% CI	Subtotals only
02 Spontaneous vaginal birth			Relative Risk (Random) 95% CI	Subtotals only
03 Instrumental vaginal birth			Relative Risk (Random) 95% CI	Subtotals only
04 Caesarean birth			Relative Risk (Random) 95% CI	Subtotals only
05 Low 5-minute Apgar score			Relative Risk (Random) 95% CI	Subtotals only
06 Dissatisfaction with/negative views of childbirth experience			Relative Risk (Fixed) 95% CI	Subtotals only
07 Postpartum depression			Relative Risk (Fixed) 95% CI	Subtotals only

Comparison 03. Continuous support during labour versus usual care - variations in type of provider

Outcome title	No. of studies	No. of participants	Statistical method	Effect size
01 Use of analgesia/anaesthesia			Relative Risk (Random) 95% CI	Subtotals only
02 Spontaneous vaginal birth			Relative Risk (Fixed) 95% CI	Subtotals only
03 Instrumental vaginal birth			Relative Risk (Fixed) 95% CI	Subtotals only
04 Caesarean birth			Relative Risk (Fixed) 95% CI	Subtotals only
05 Low 5-minute Apgar score			Relative Risk (Fixed) 95% CI	Subtotals only
06 Dissatisfaction with/negative views of childbirth experience			Relative Risk (Fixed) 95% CI	Subtotals only
07 Postpartum depression			Relative Risk (Fixed) 95% CI	Subtotals only

Comparison 04. Continuous support during labour versus usual care - variations in timing of onset of support

Outcome title	No. of studies	No. of participants	Statistical method	Effect size
01 Use of analgesia/anaesthesia			Relative Risk (Random) 95% CI	Subtotals only
02 Spontaneous vaginal birth			Relative Risk (Fixed) 95% CI	Subtotals only
03 Instrumental vaginal birth			Relative Risk (Random) 95% CI	Subtotals only
04 Caesarean birth			Relative Risk (Fixed) 95% CI	Subtotals only
05 Low 5-minute Apgar score			Relative Risk (Fixed) 95% CI	Subtotals only
06 Dissatisfaction with/negative views of childbirth experience			Relative Risk (Fixed) 95% CI	Subtotals only
07 Postpartum depression			Relative Risk (Fixed) 95% CI	Subtotals only

INDEX TERMS

Medical Subject Headings (MeSH)

*Delivery, Obstetric [methods; nursing]; *Labor, Obstetric; Midwifery; Obstetrical Nursing; Randomized Controlled Trials

MeSH check words

Female; Humans; Pregnancy

COVER SHEET

Title	Continuous support for women during childbirth
Authors	Hodnett ED, Gates S, Hofmeyr GJ, Sakala C
Contribution of author(s)	Ellen Hodnett wrote the initial draft of the protocol and entered the data. Carol Sakala wrote the initial draft of the Discussion. Simon Gates wrote the initial draft of the statistical methods and provided statistical advice for the Protocol and 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 update of the Review.
Issue protocol first published	2002/3
Review first published	2003/3
Date of most recent amendment	04 July 2007
Date of most recent SUBSTANTIVE amendment	18 April 2007
What's New	February 2007 Search updated. 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. April 2006 Search updated. One 'awaiting assessment' trial was assessed and included (Thomassen 2003).
Date new studies sought but none found	Information not supplied by author
Date new studies found but not yet included/excluded	Information not supplied by author

Date new studies found and included/excluded 28 February 2007

Date authors' conclusions section amended Information not supplied by author

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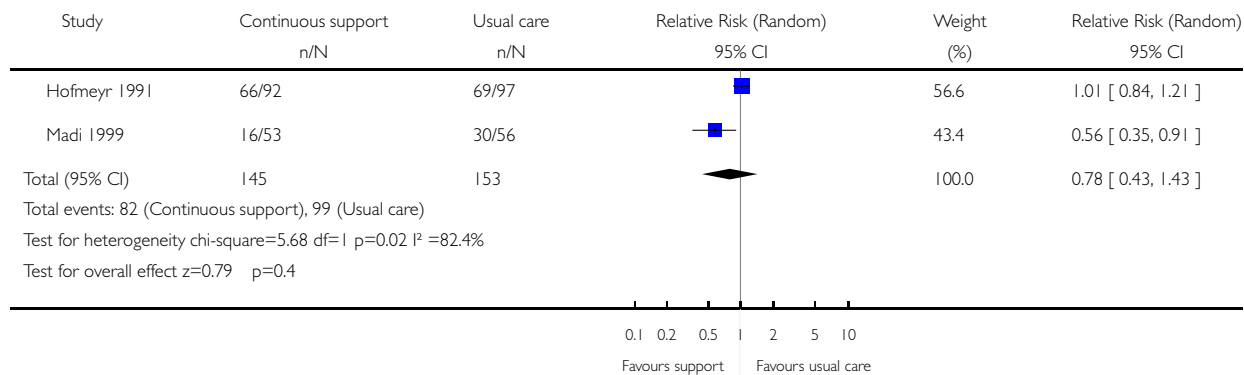
Editorial group Cochrane Pregnancy and Childbirth Group

Editorial group code HM-PREG

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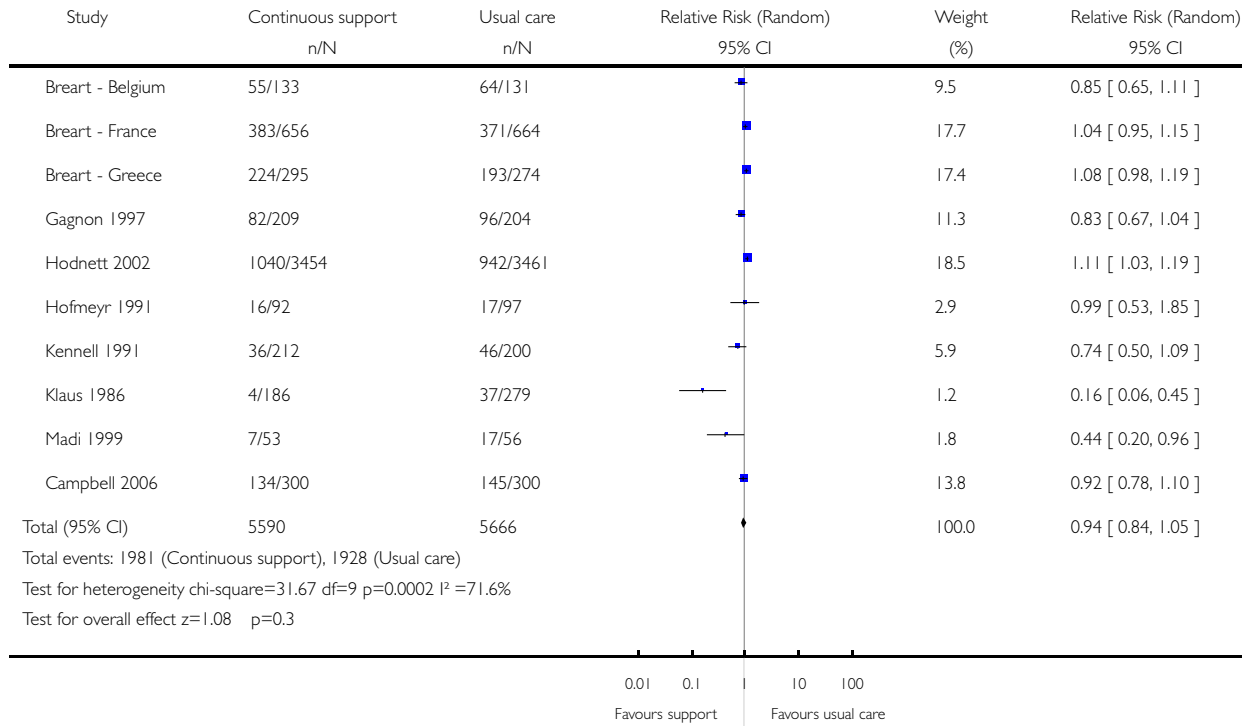


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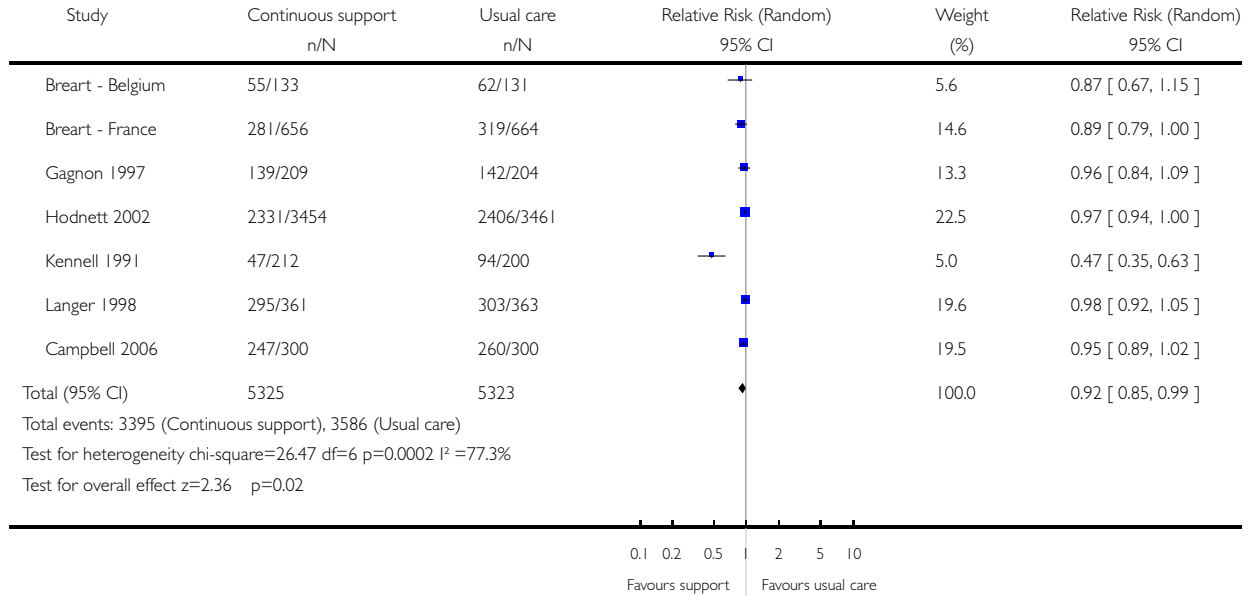


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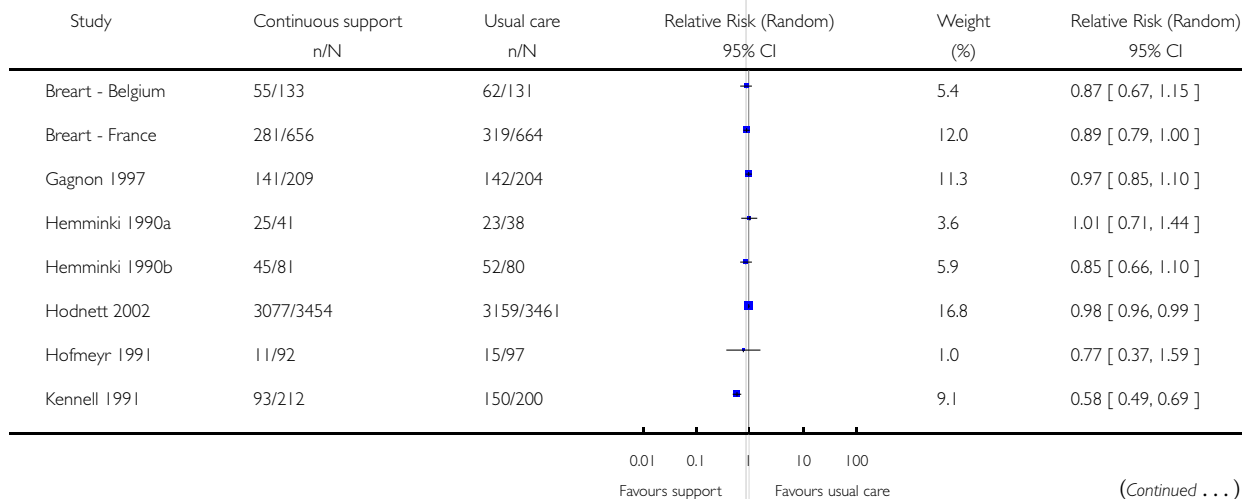


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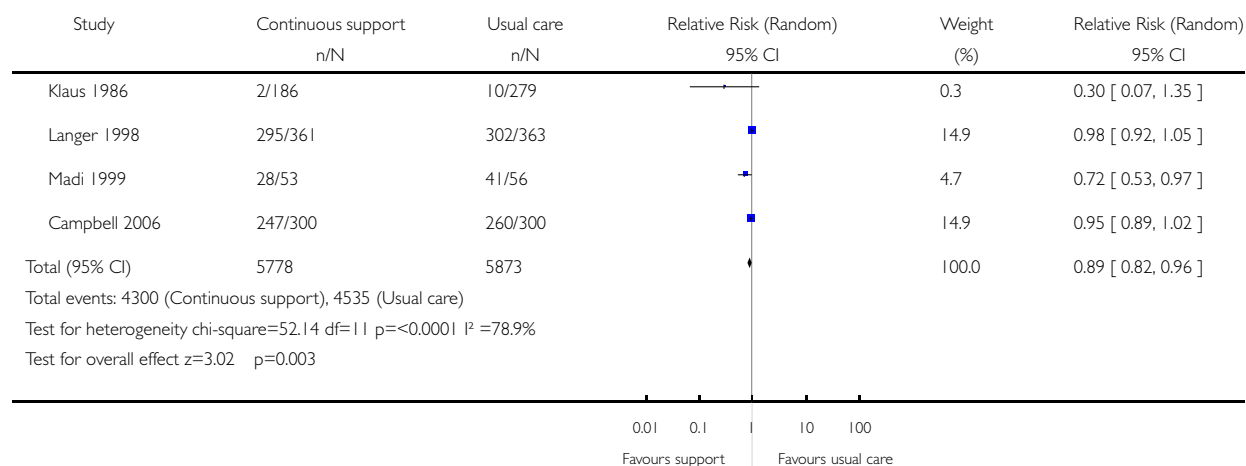
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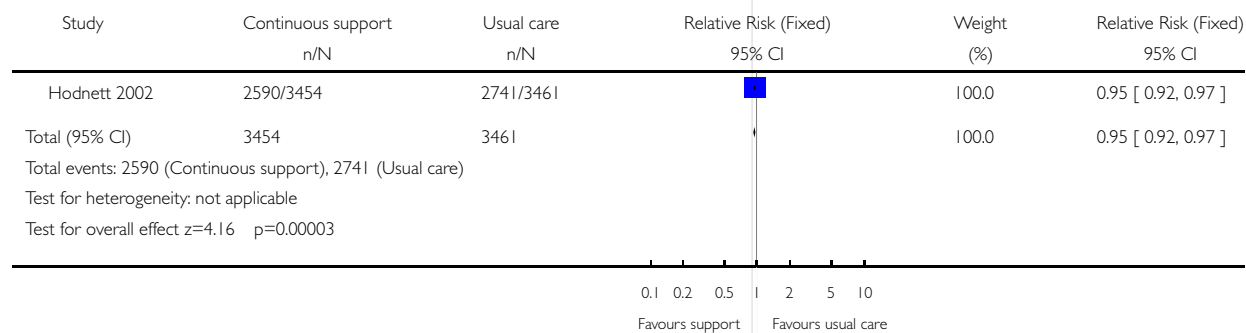


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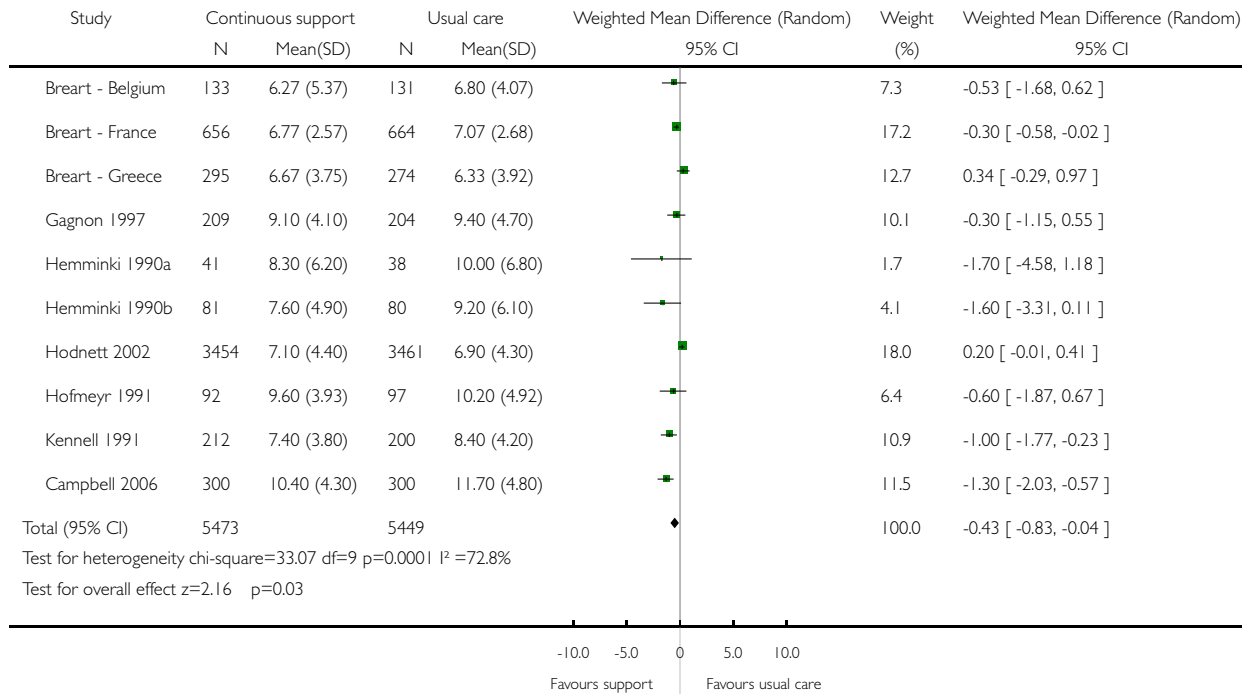


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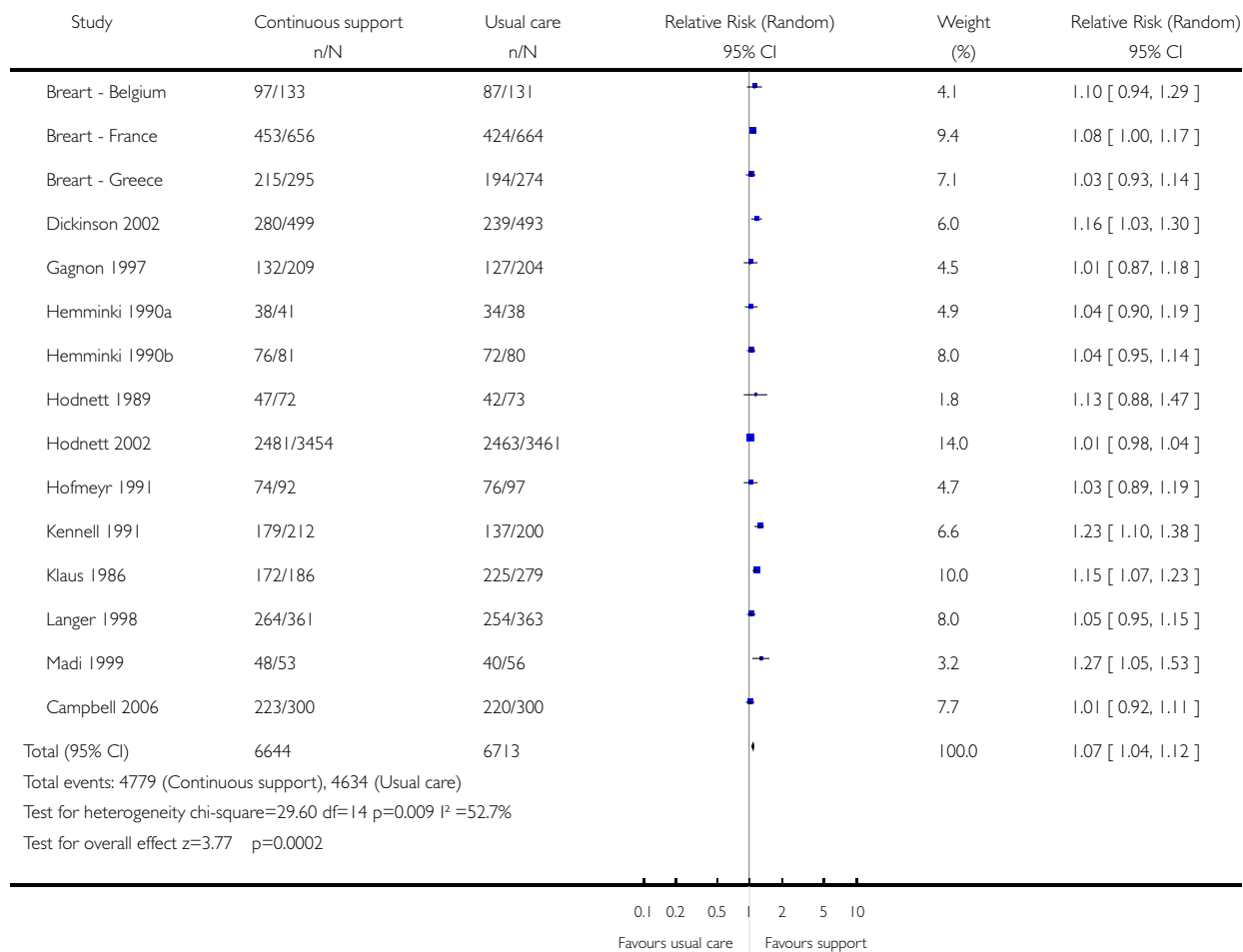


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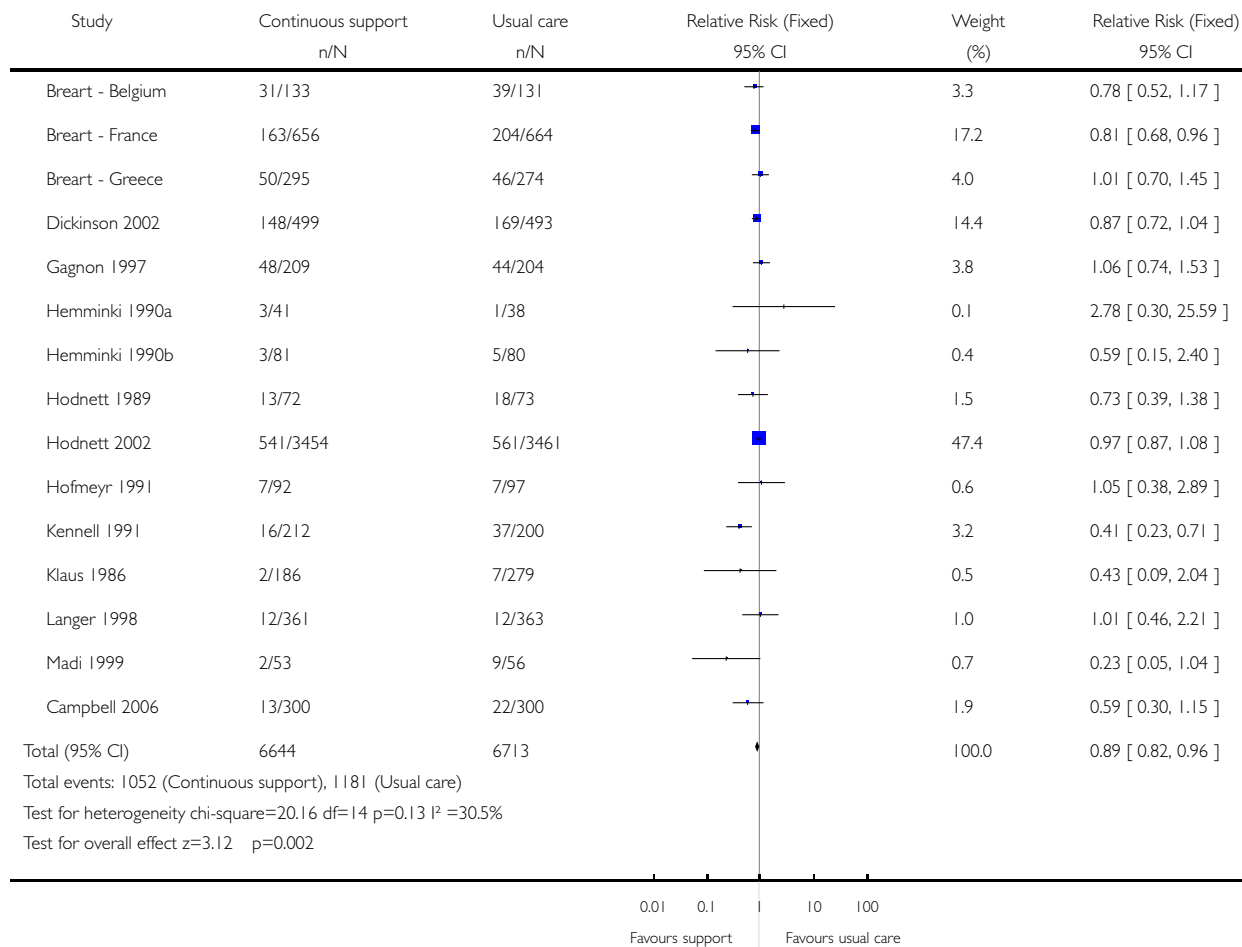


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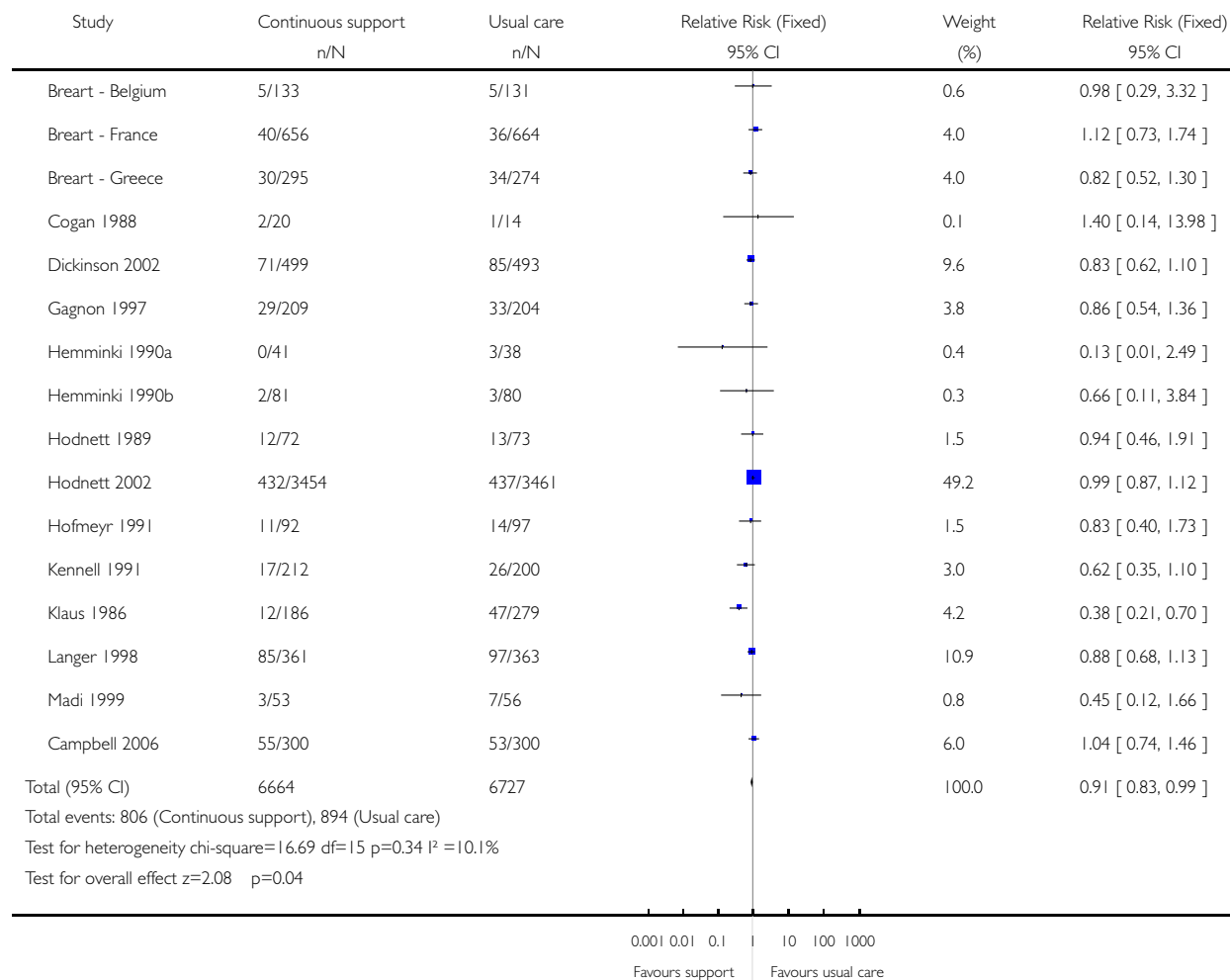


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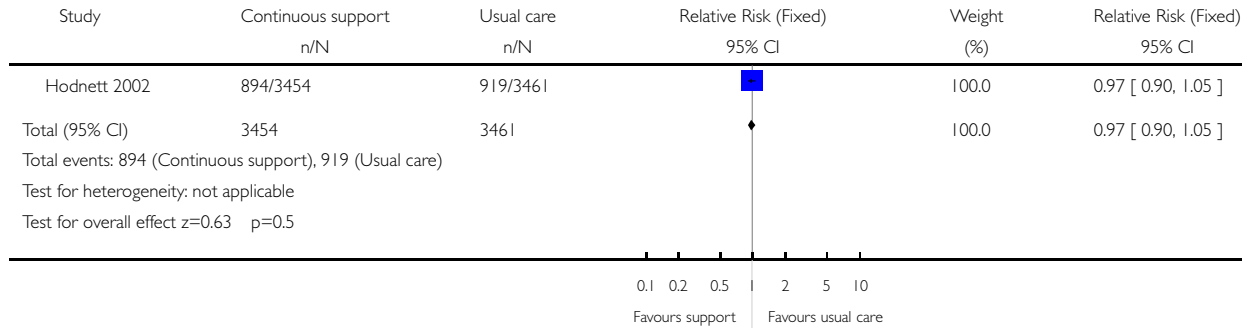


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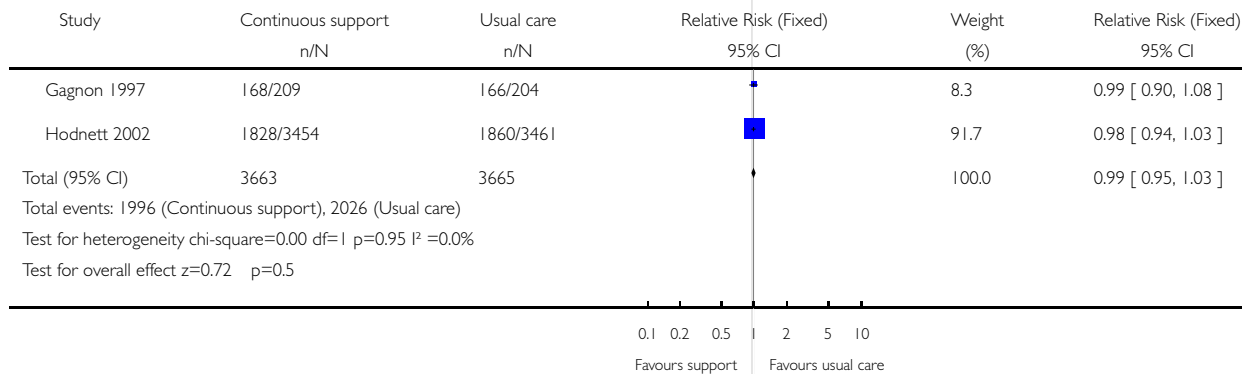


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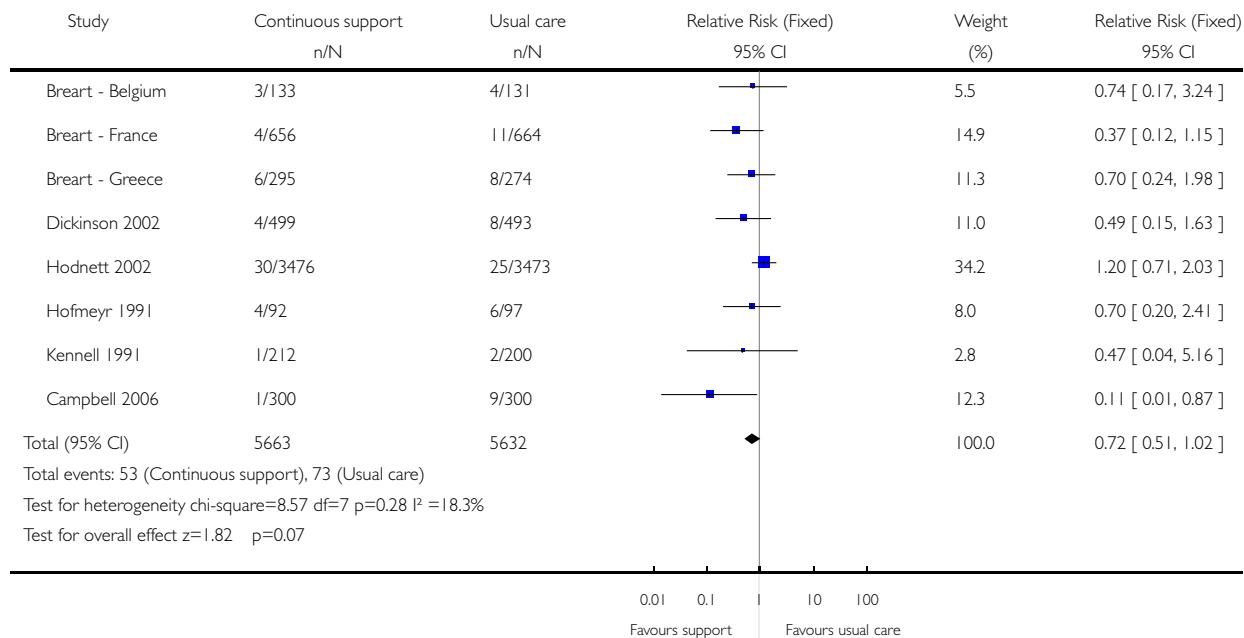


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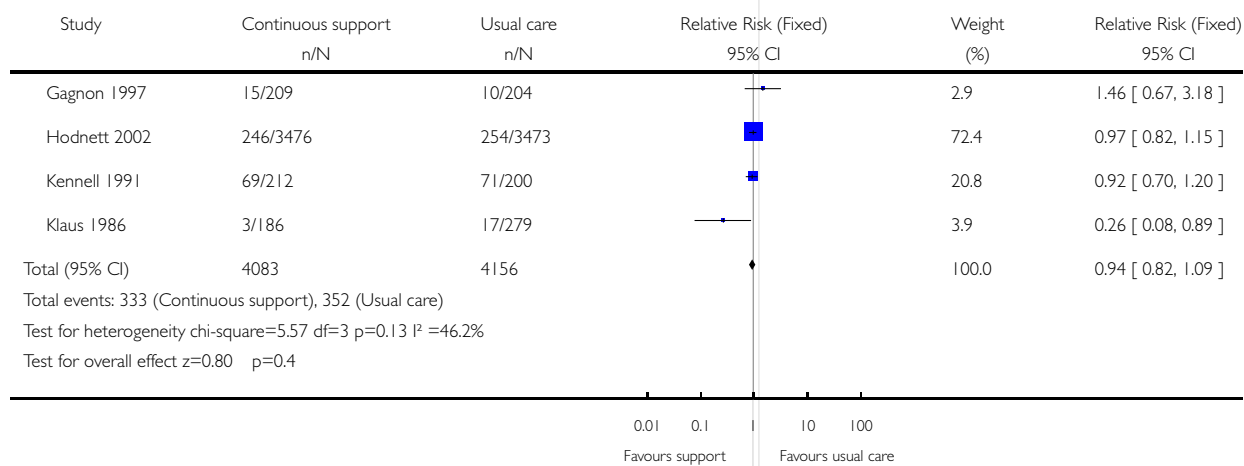


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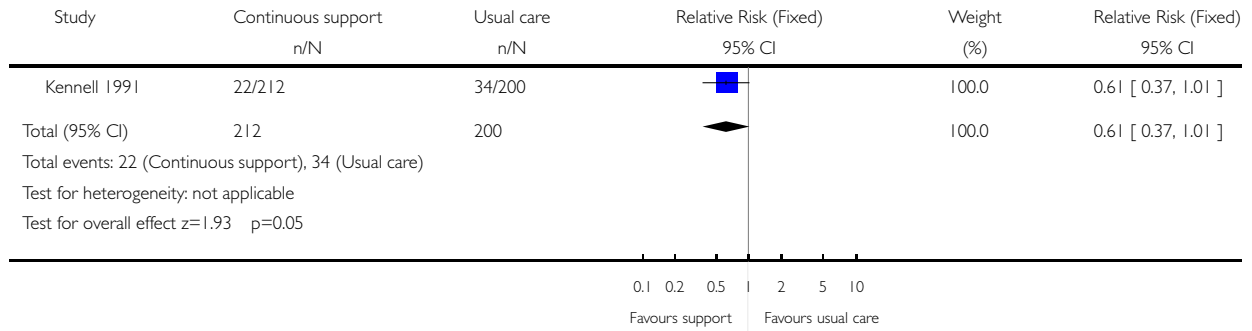
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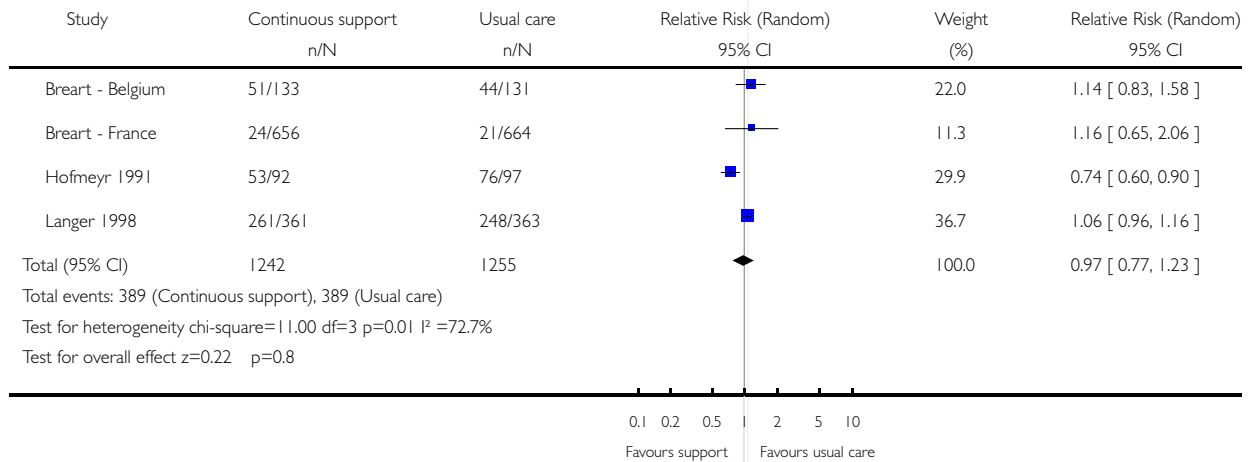
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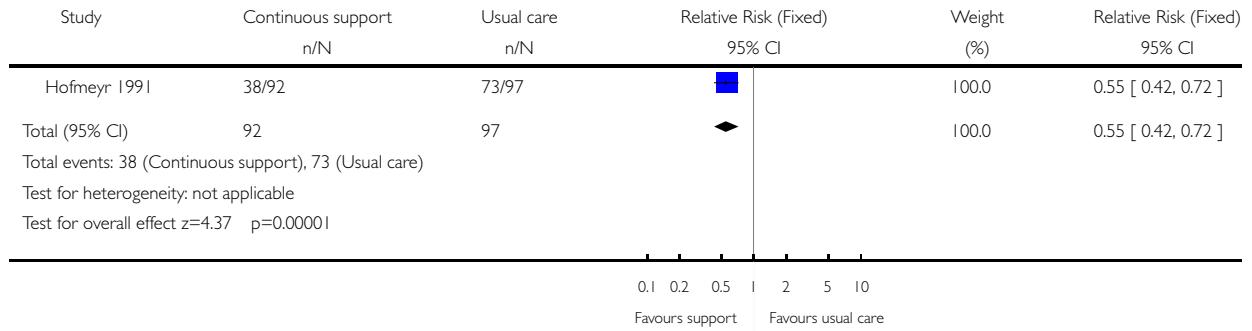
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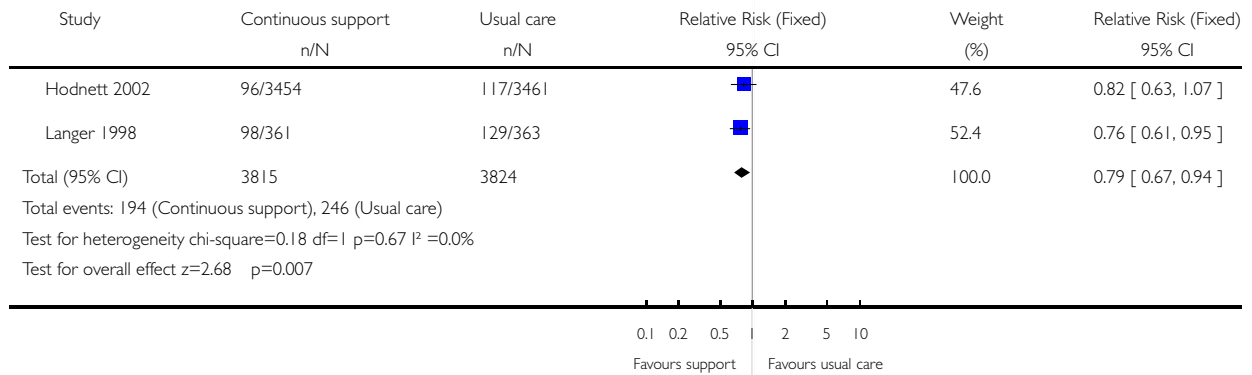
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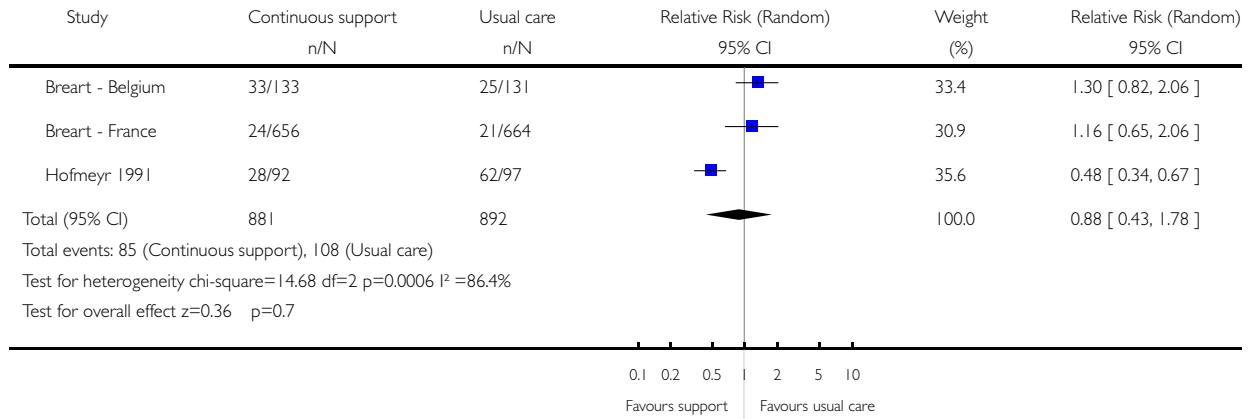
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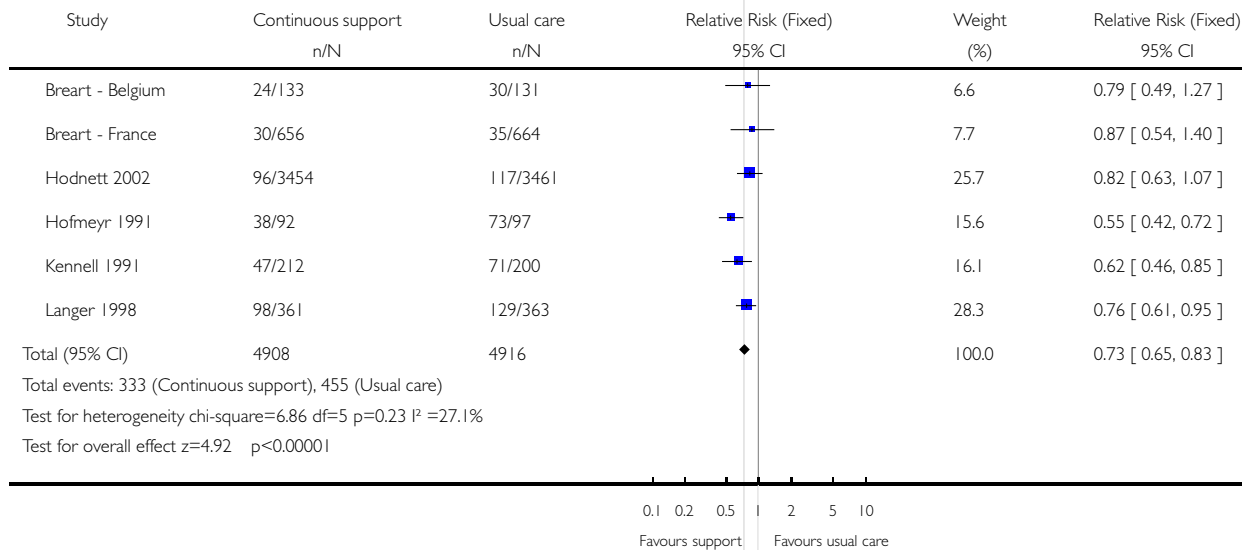
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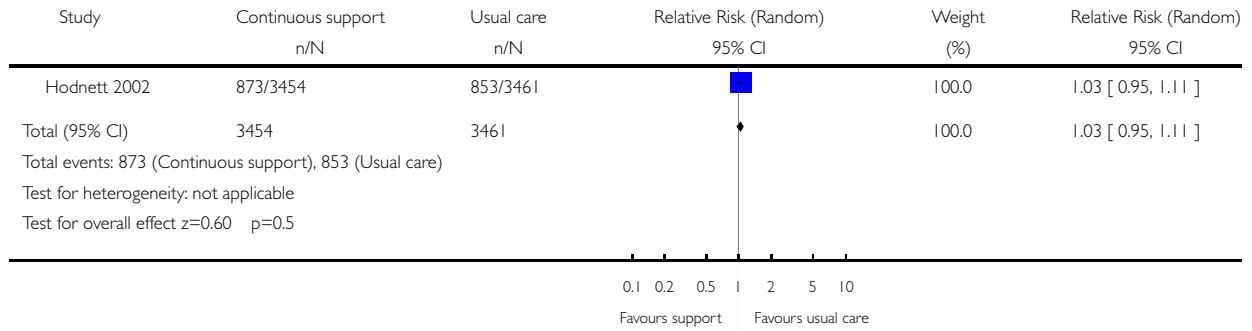
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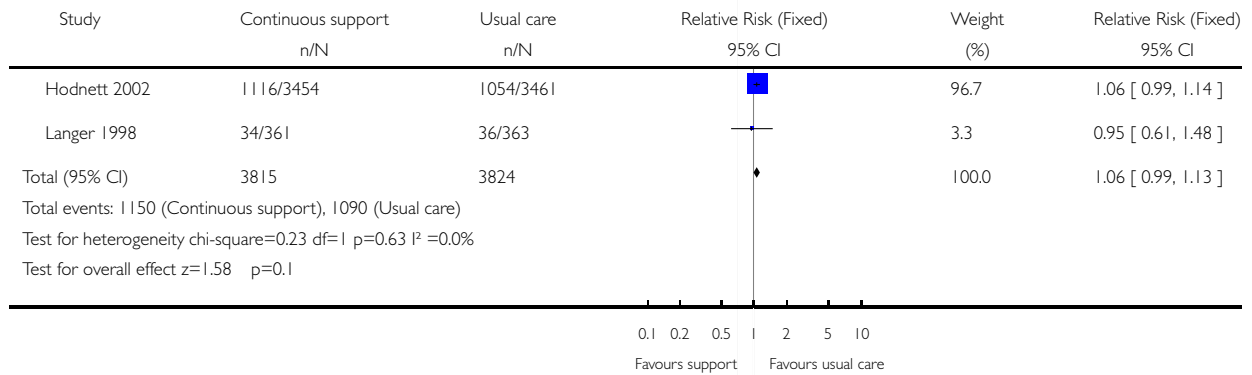
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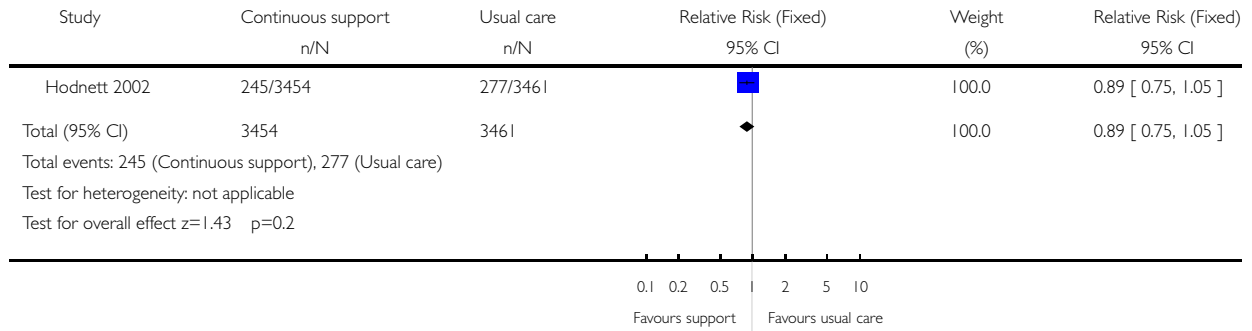
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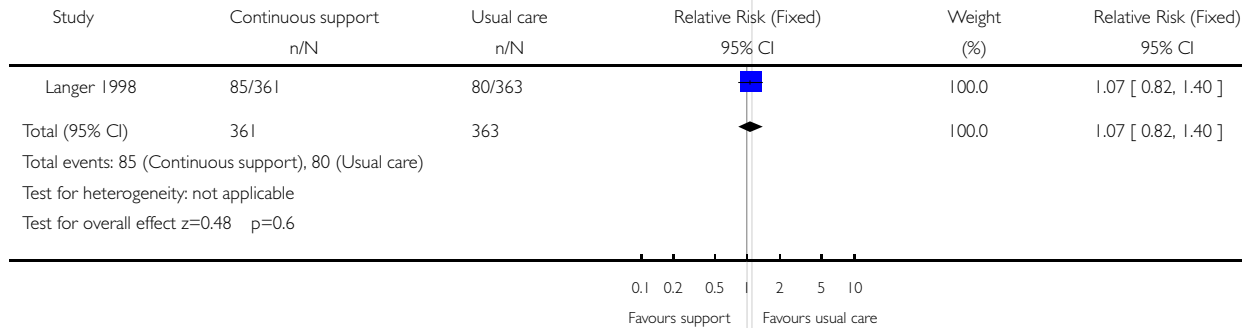
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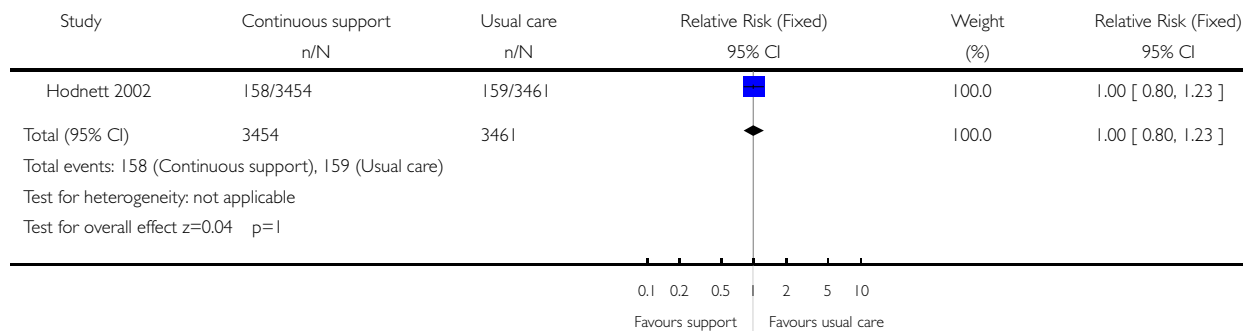


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Review: Continuous support for women during childbirth

Comparison: 01 Continuous support versus usual care - all trials

Outcome: 27 Poor relationship with partner postpartum

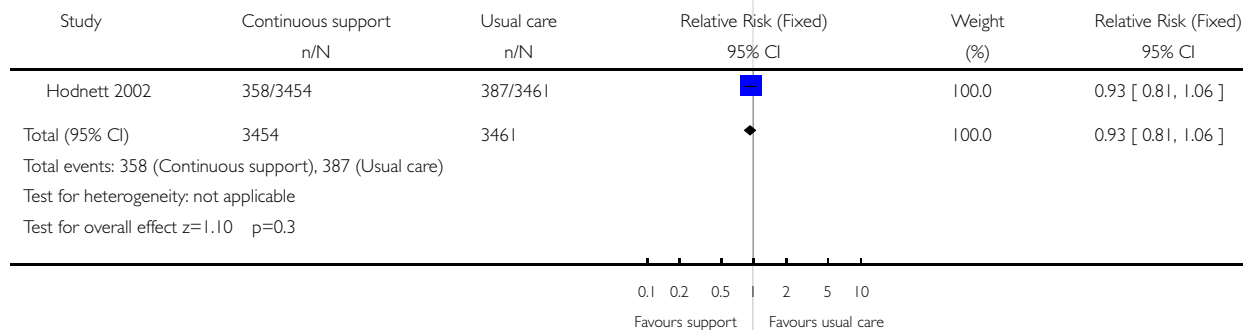


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Review: Continuous support for women during childbirth

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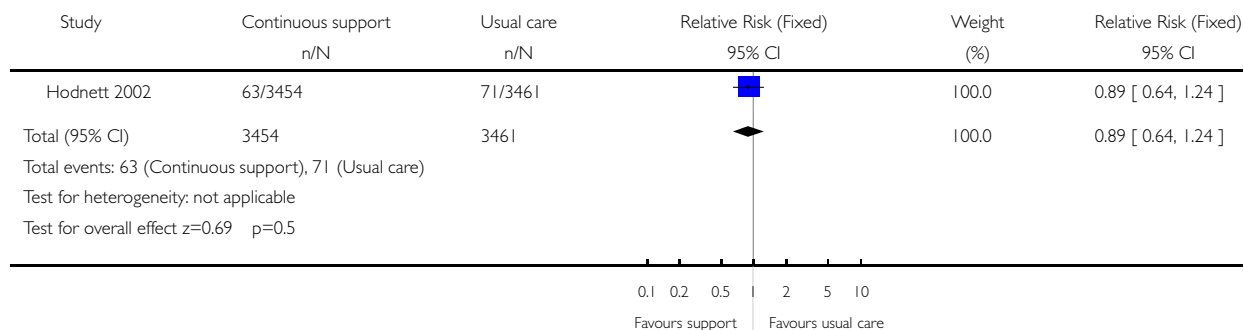


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Review: Continuous support for women during childbirth

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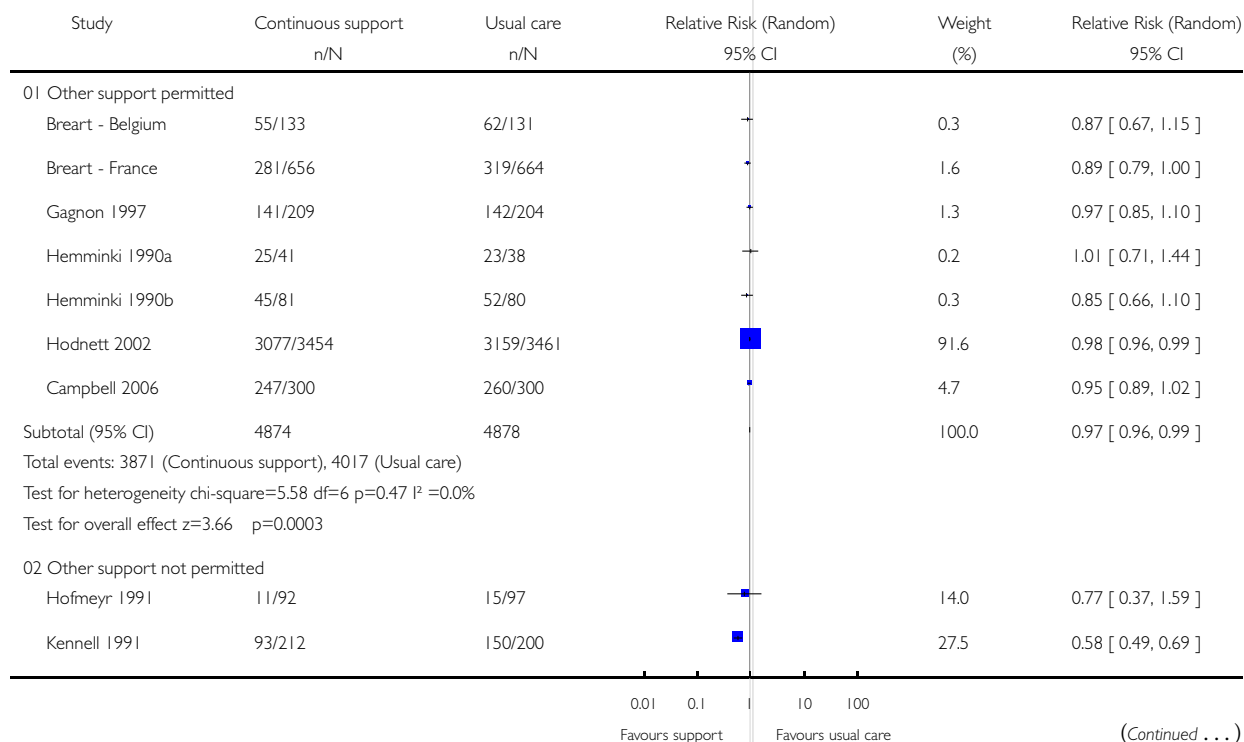


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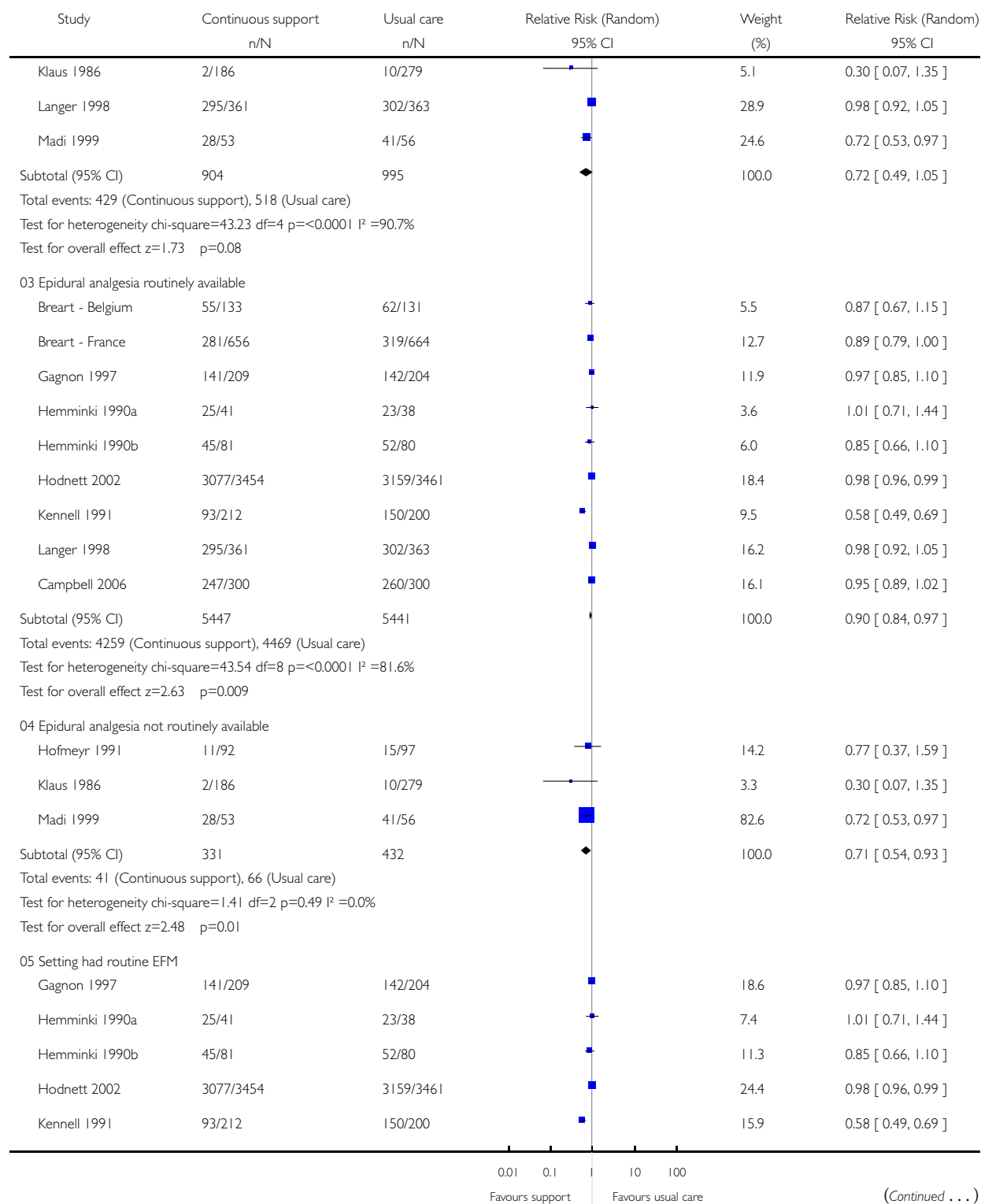
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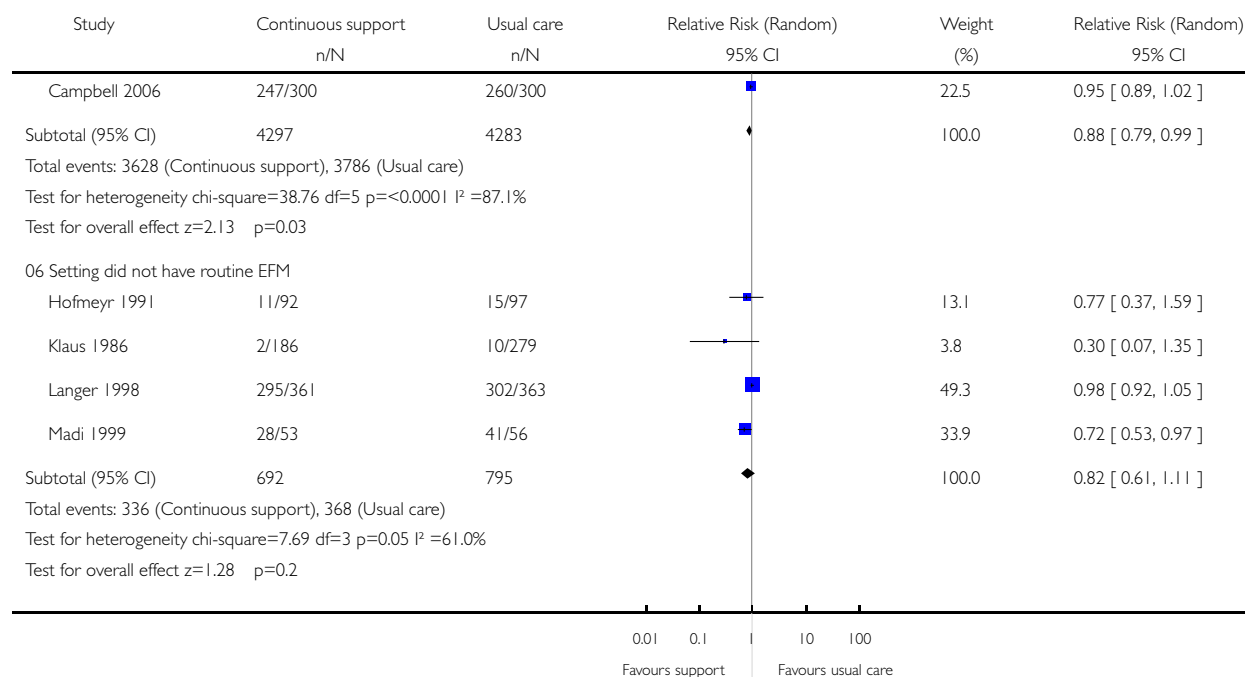


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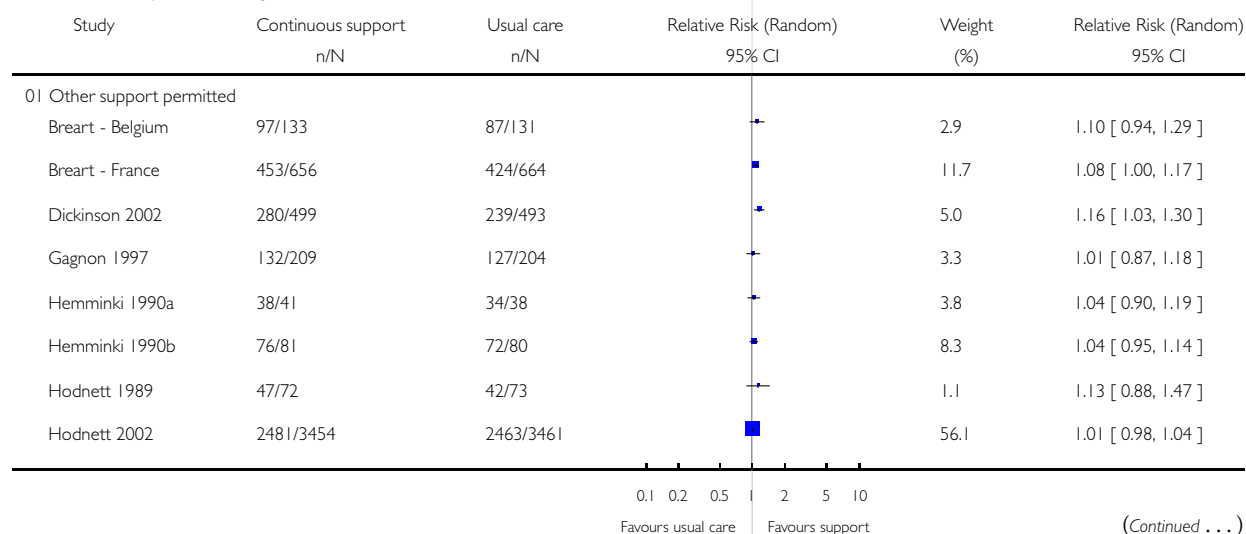


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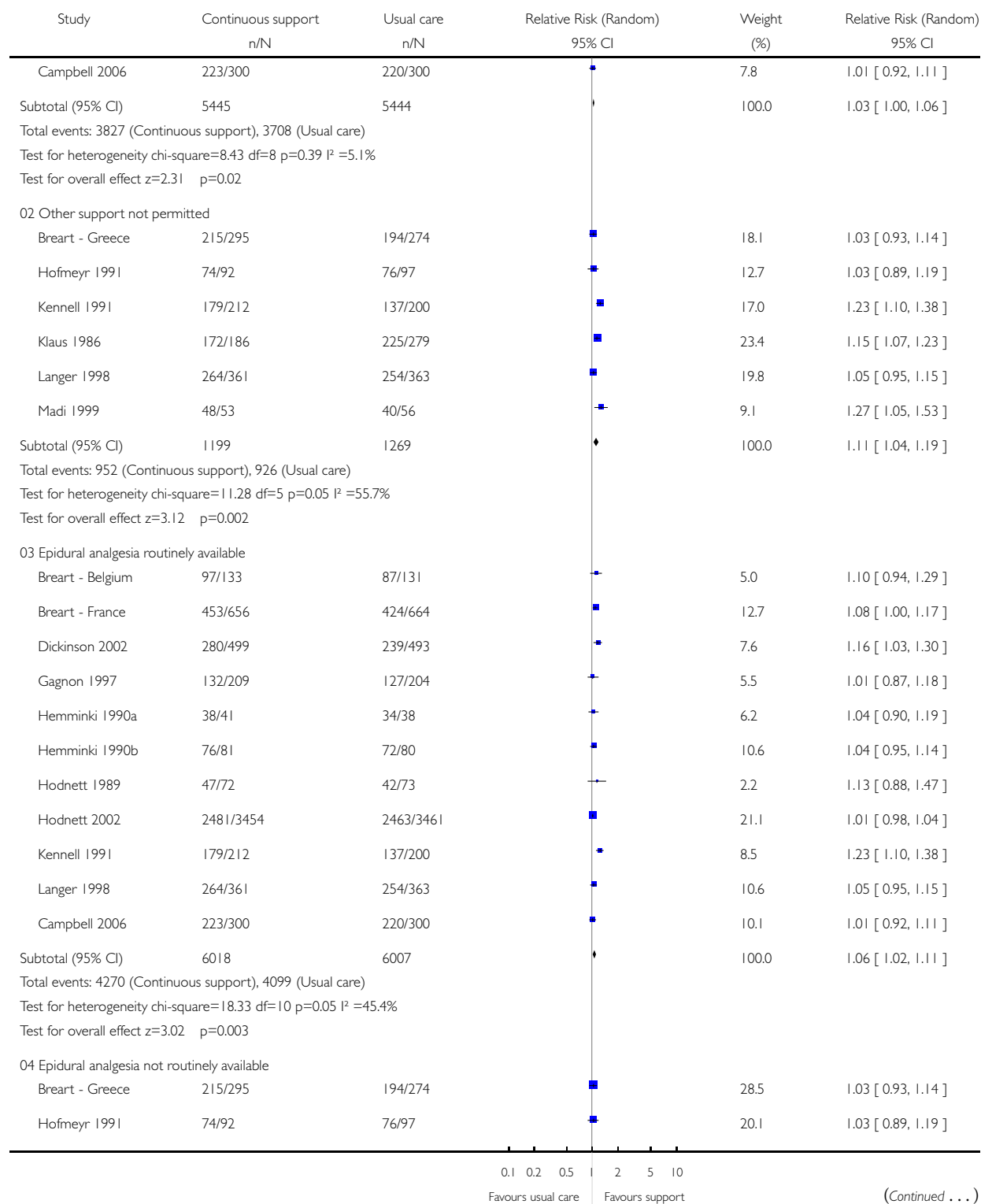
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Outcome: 02 Spontaneous vaginal birth



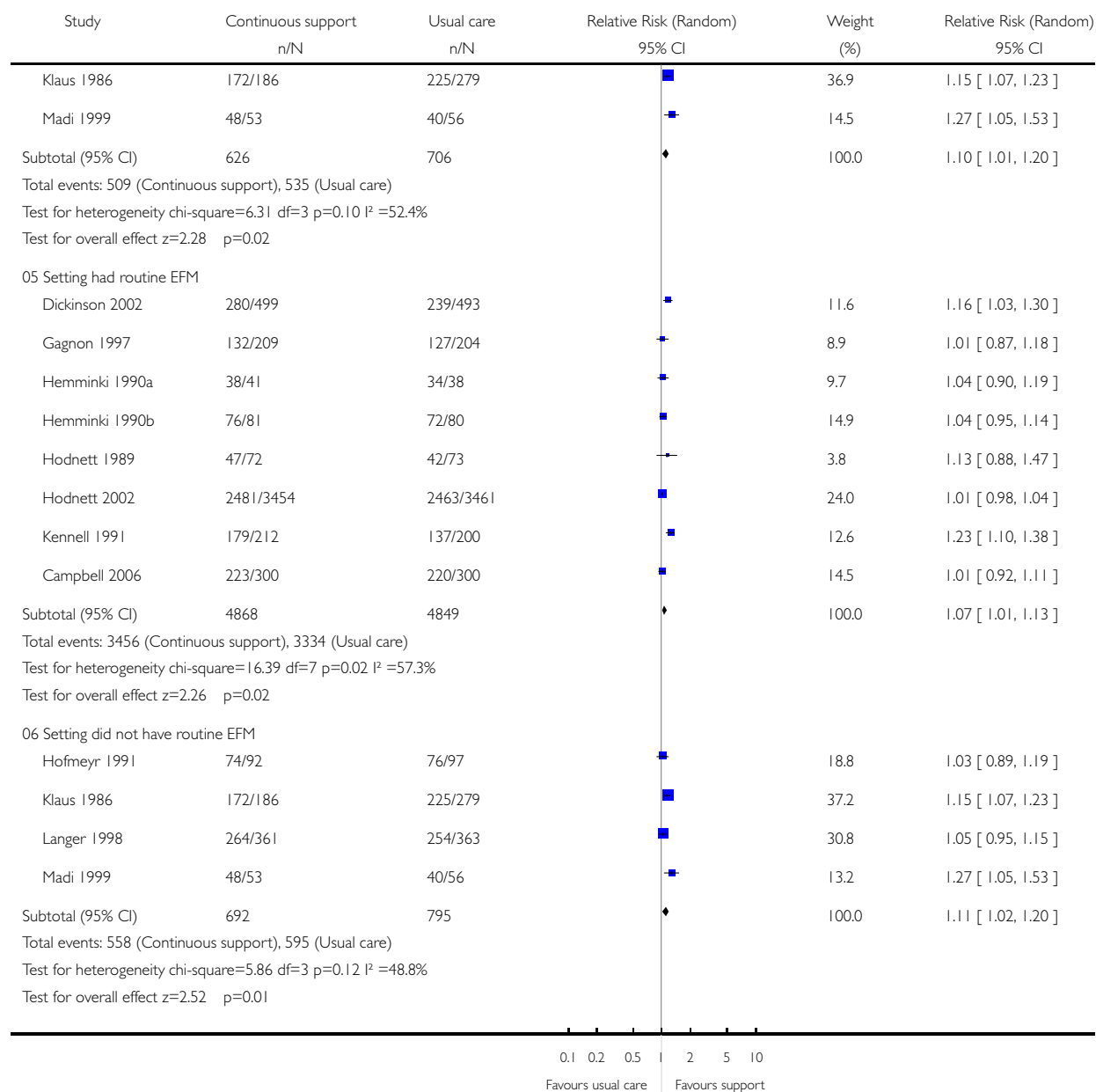
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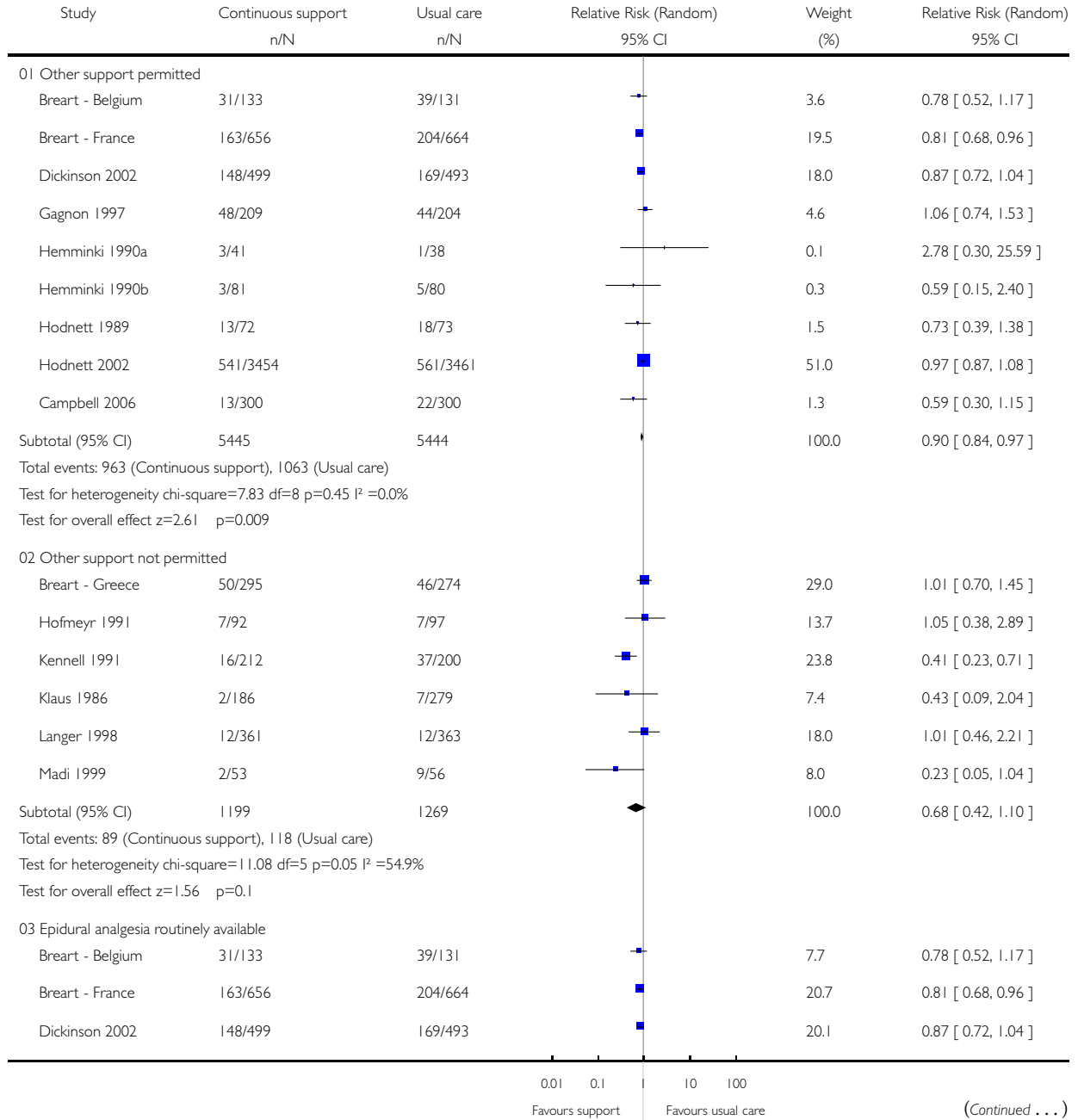


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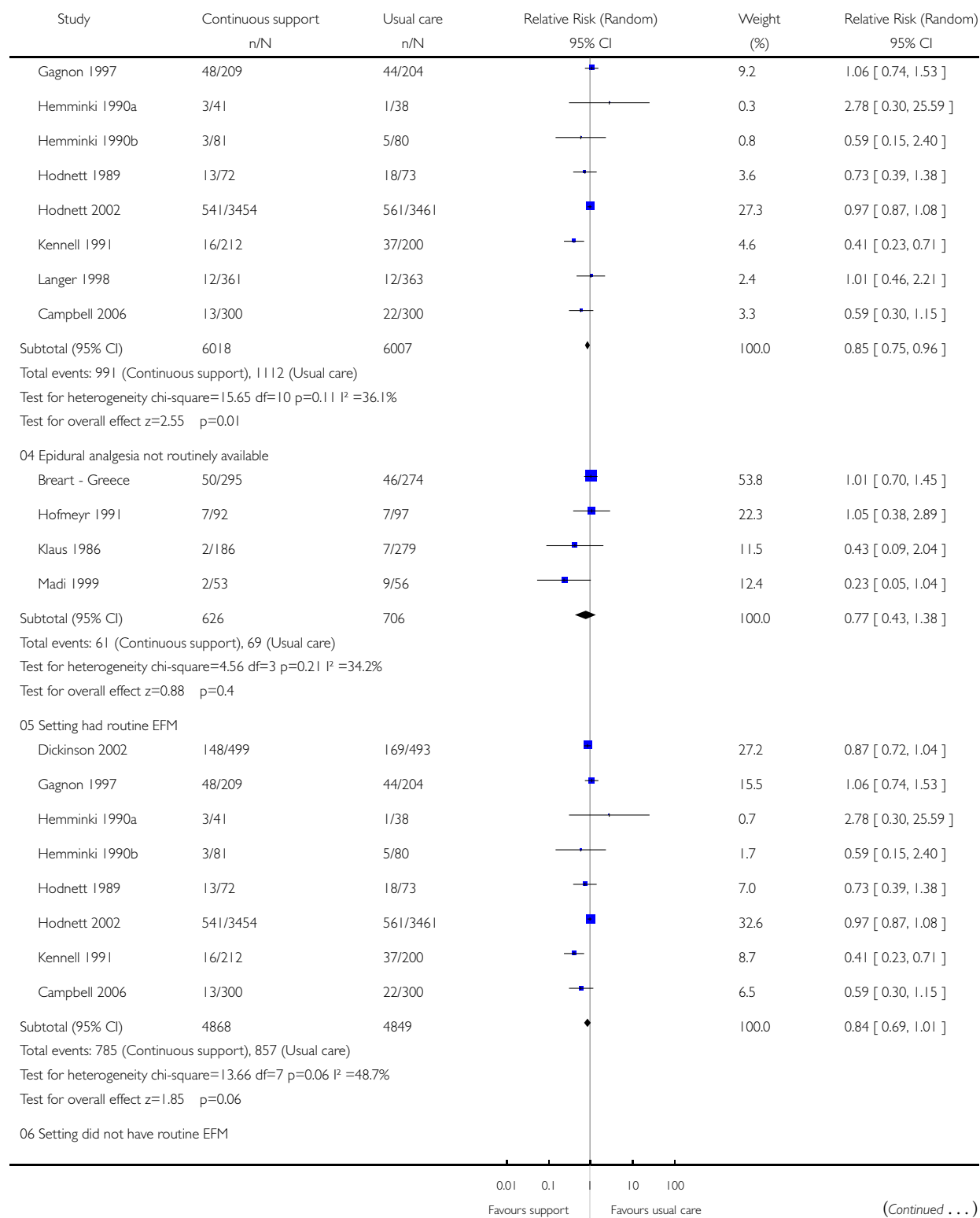
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Comparison: 02 Continuous support during labour versus usual care - variations in institutional policies and practices

Outcome: 03 Instrumental vaginal birth

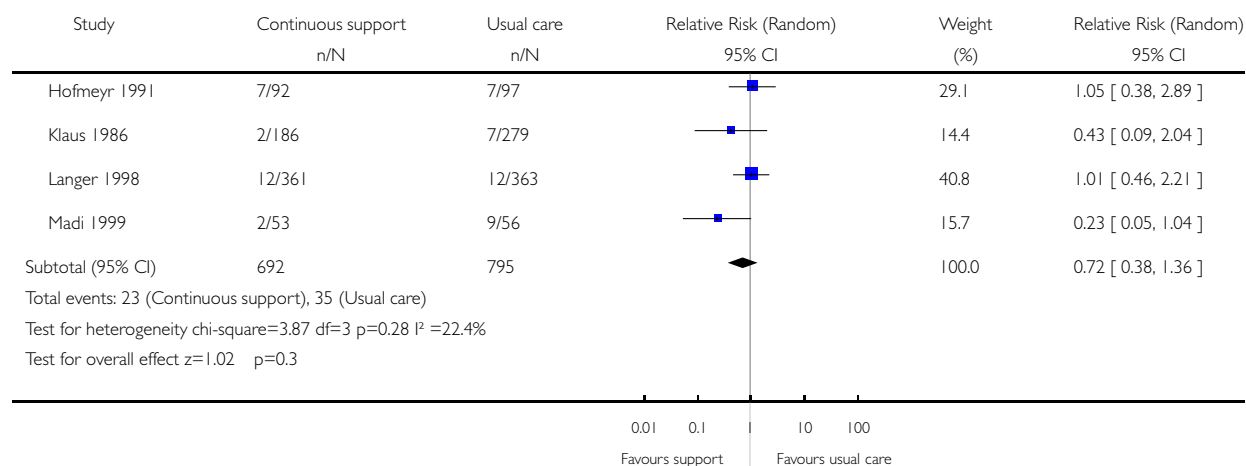


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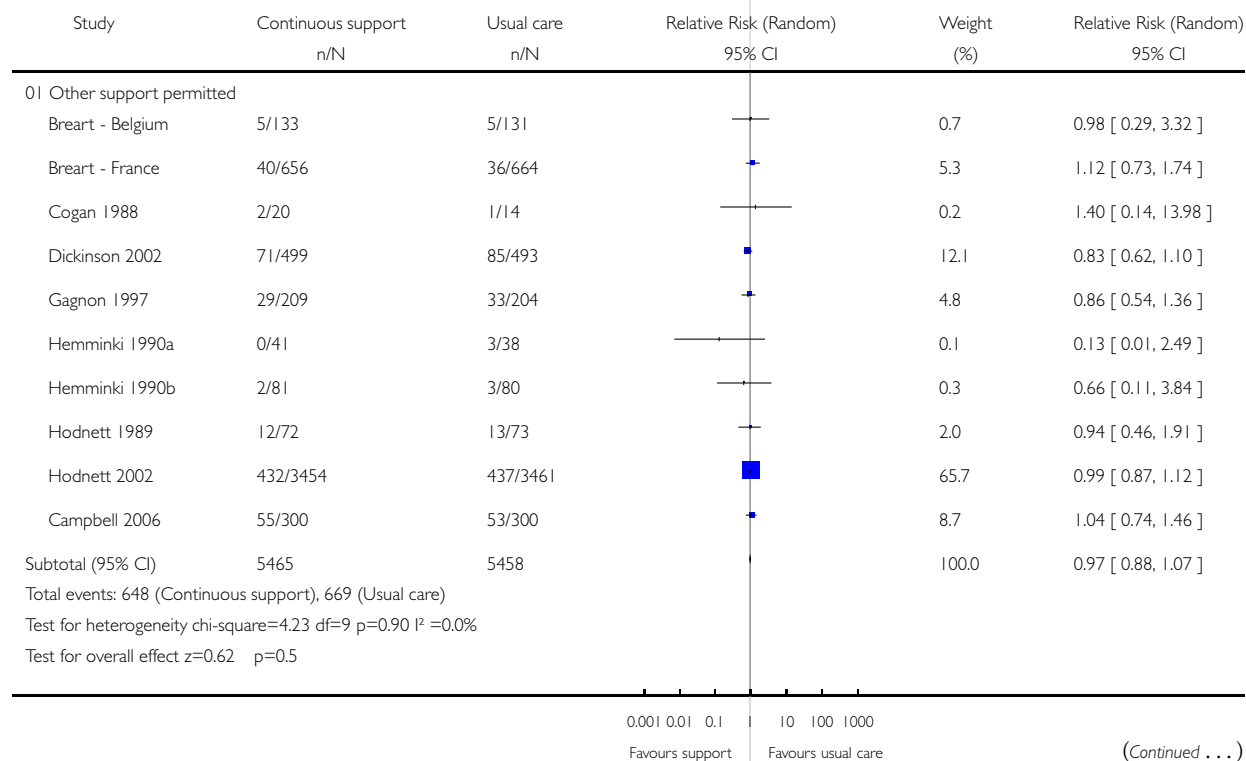


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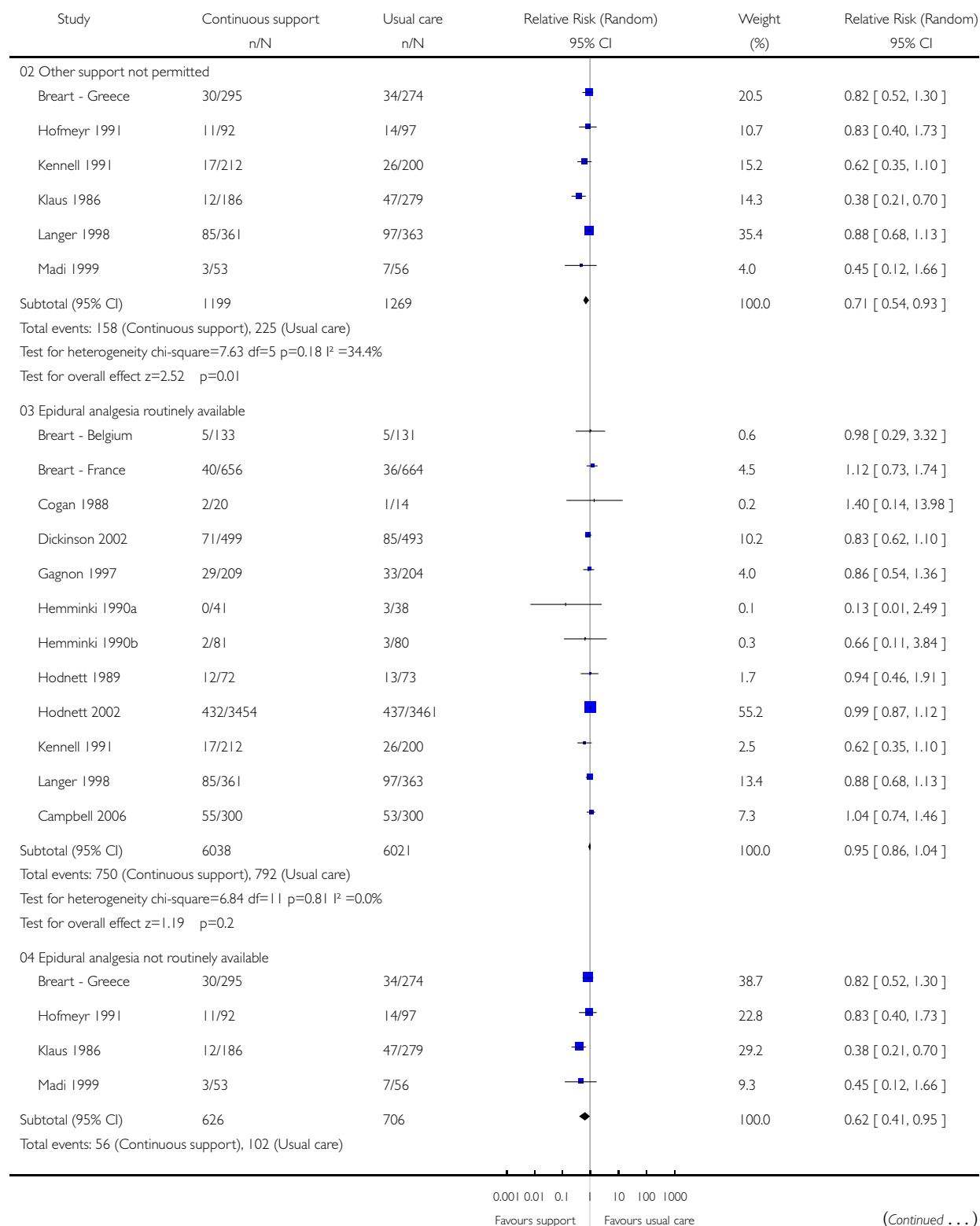
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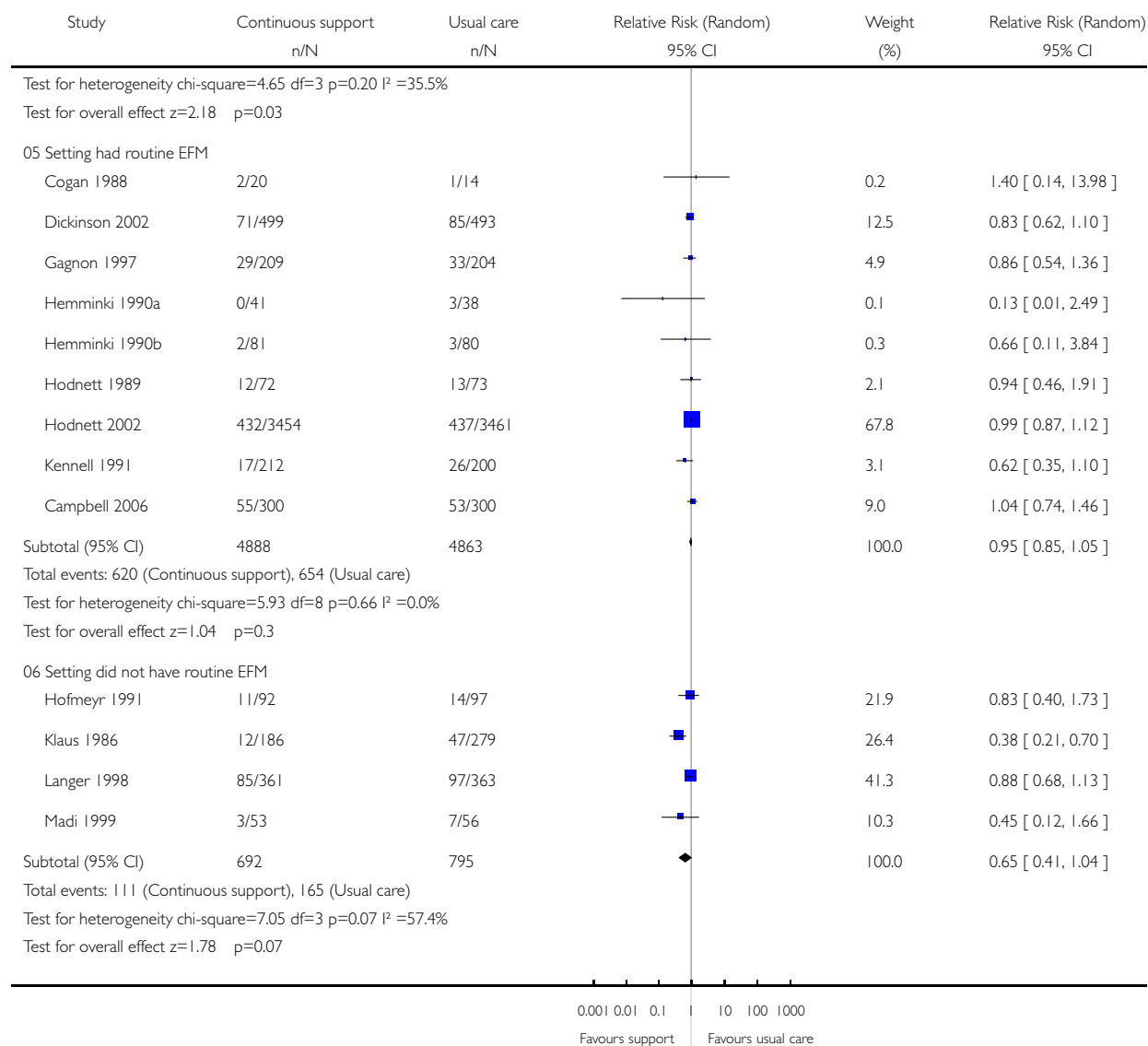
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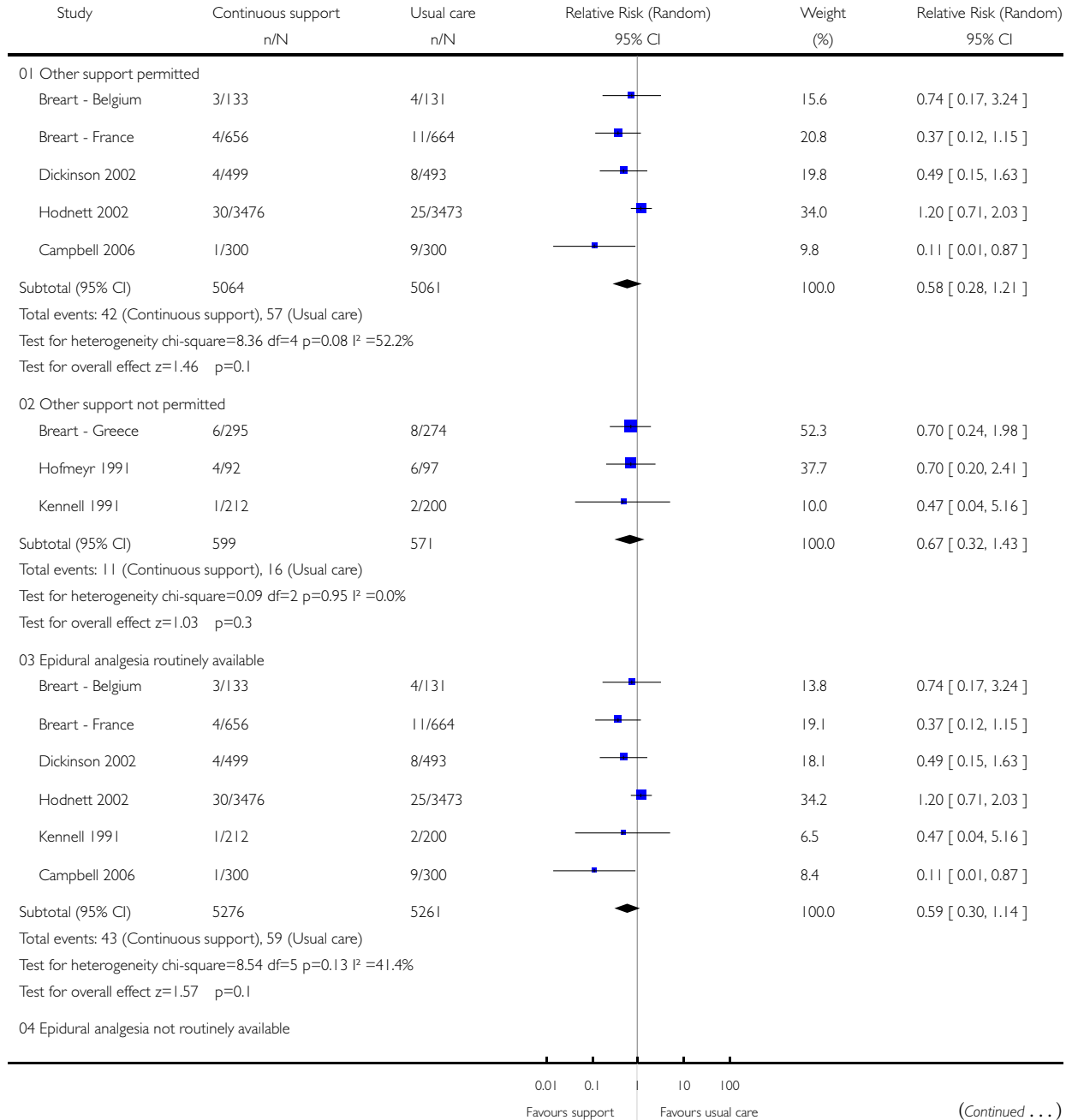


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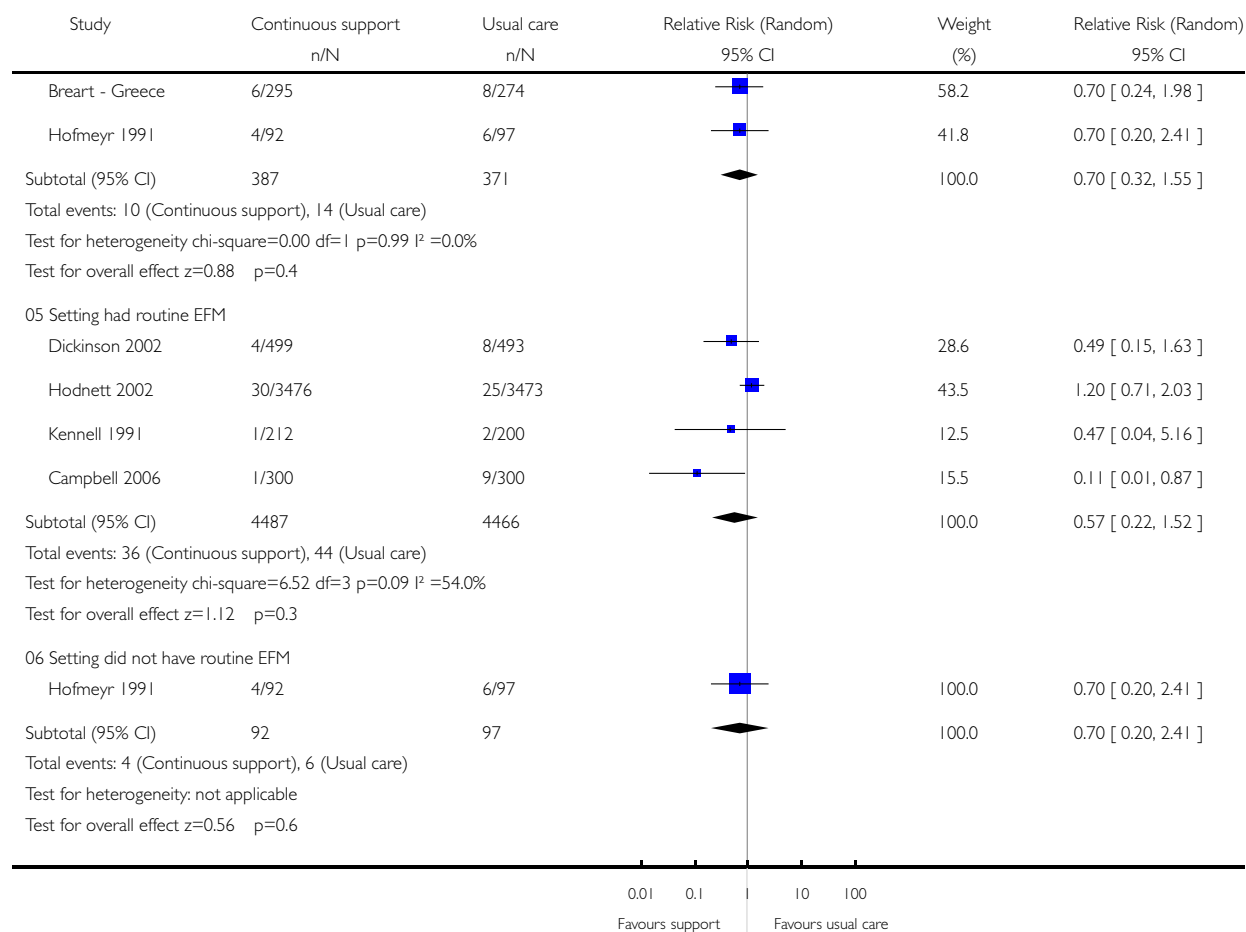
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Comparison: 02 Continuous support during labour versus usual care - variations in institutional policies and practices

Outcome: 05 Low 5-minute Apgar score



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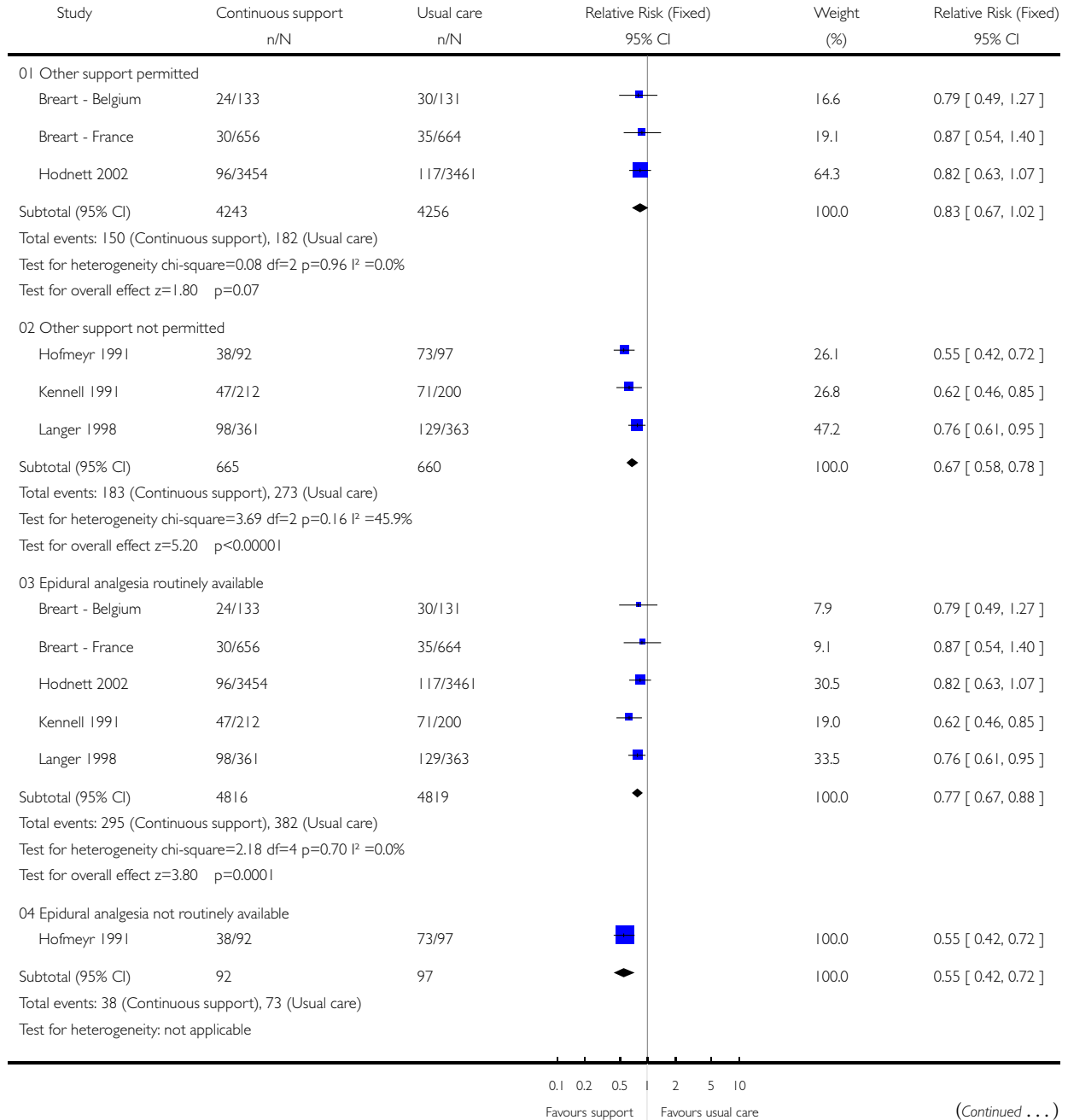


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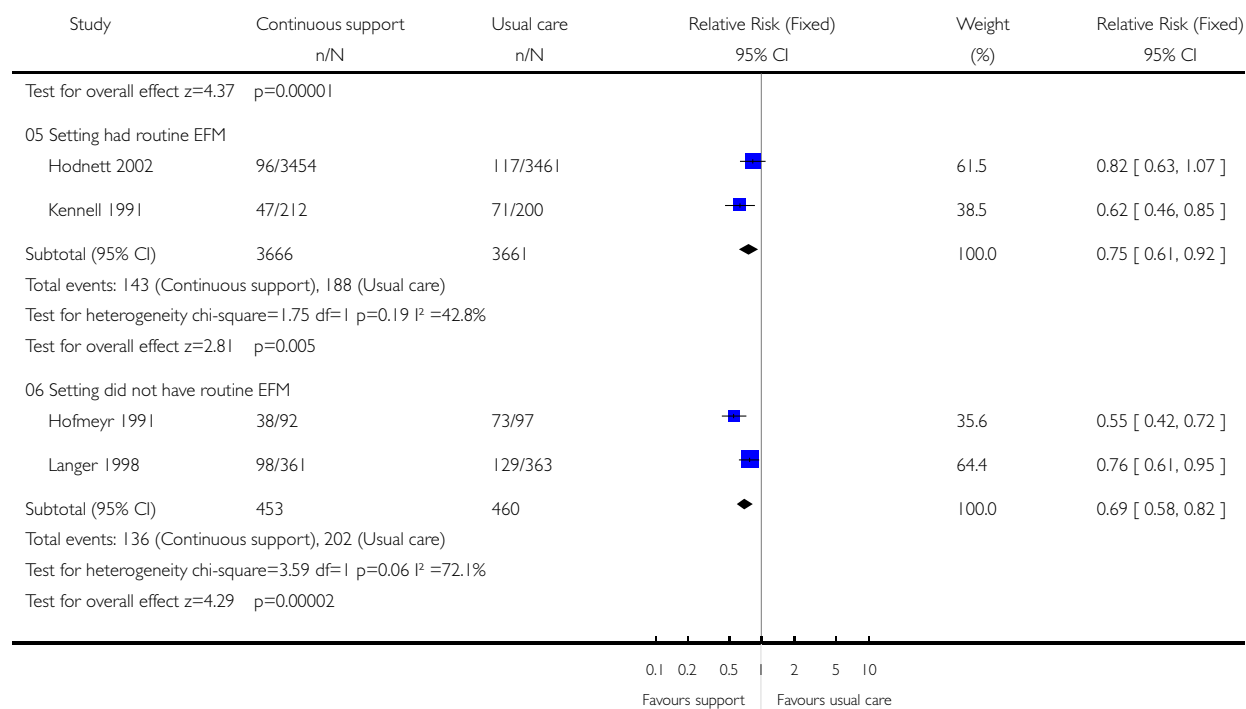
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Comparison: 02 Continuous support during labour versus usual care - variations in institutional policies and practices

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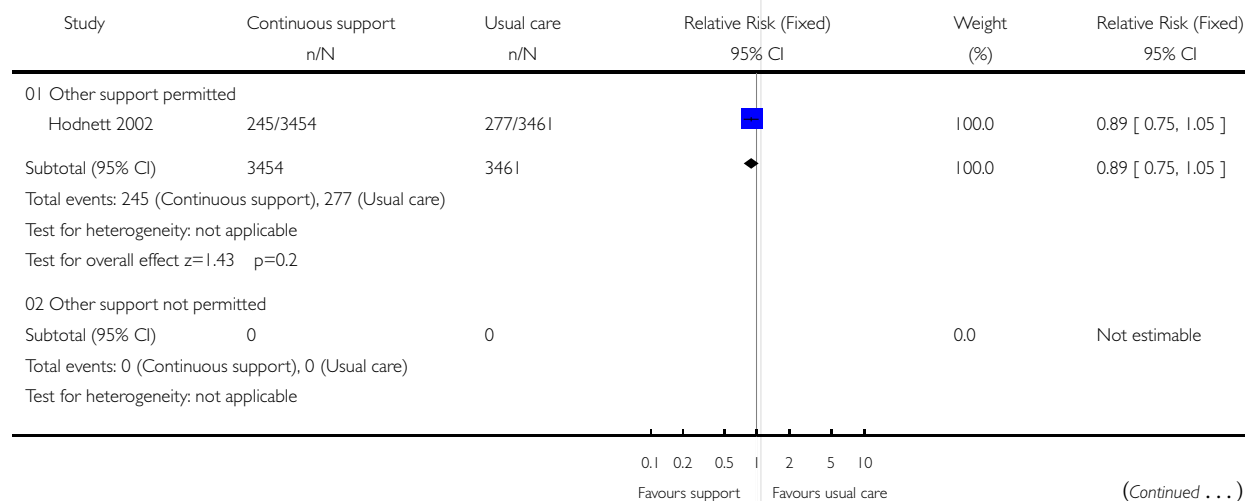


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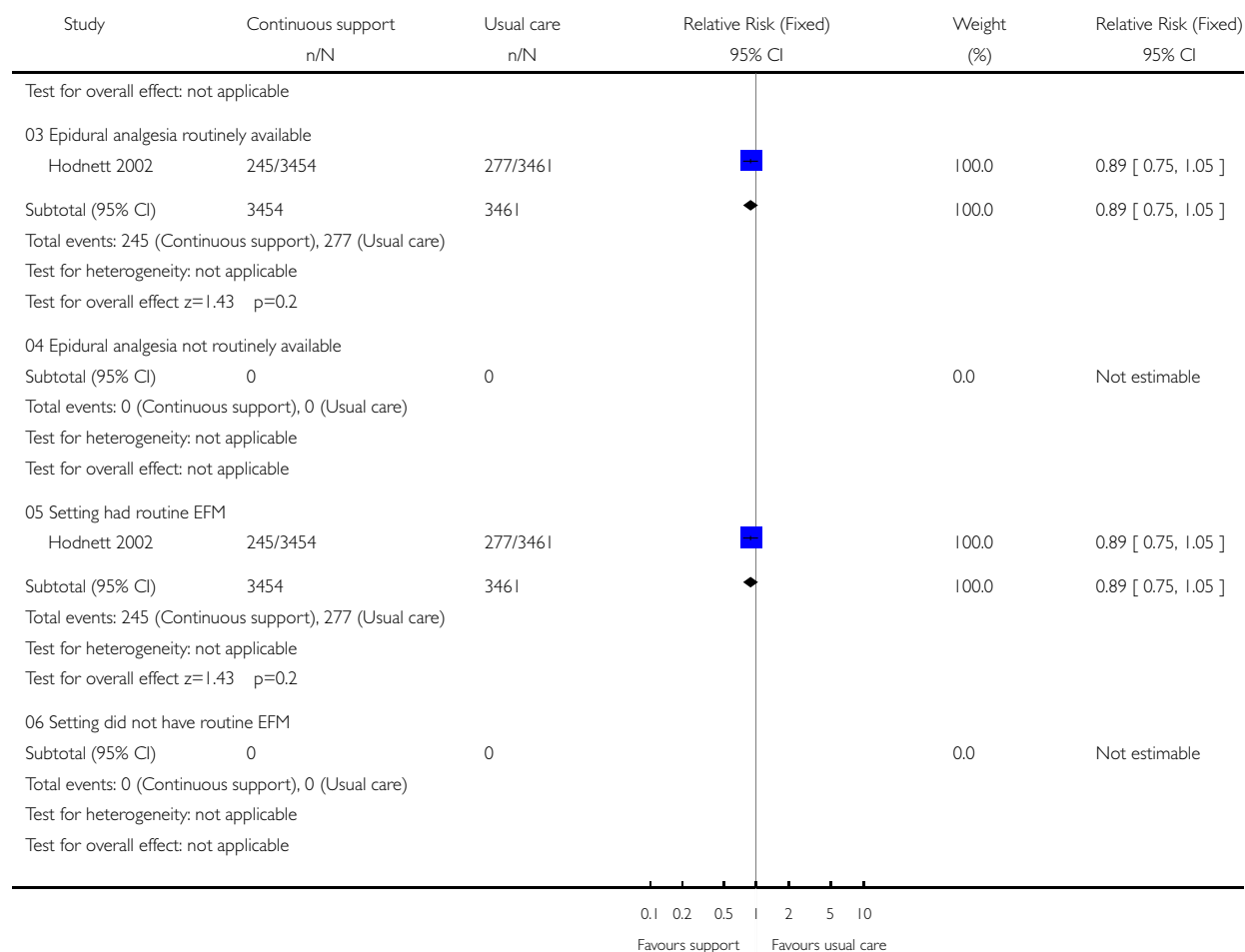
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Outcome: 07 Postpartum depression



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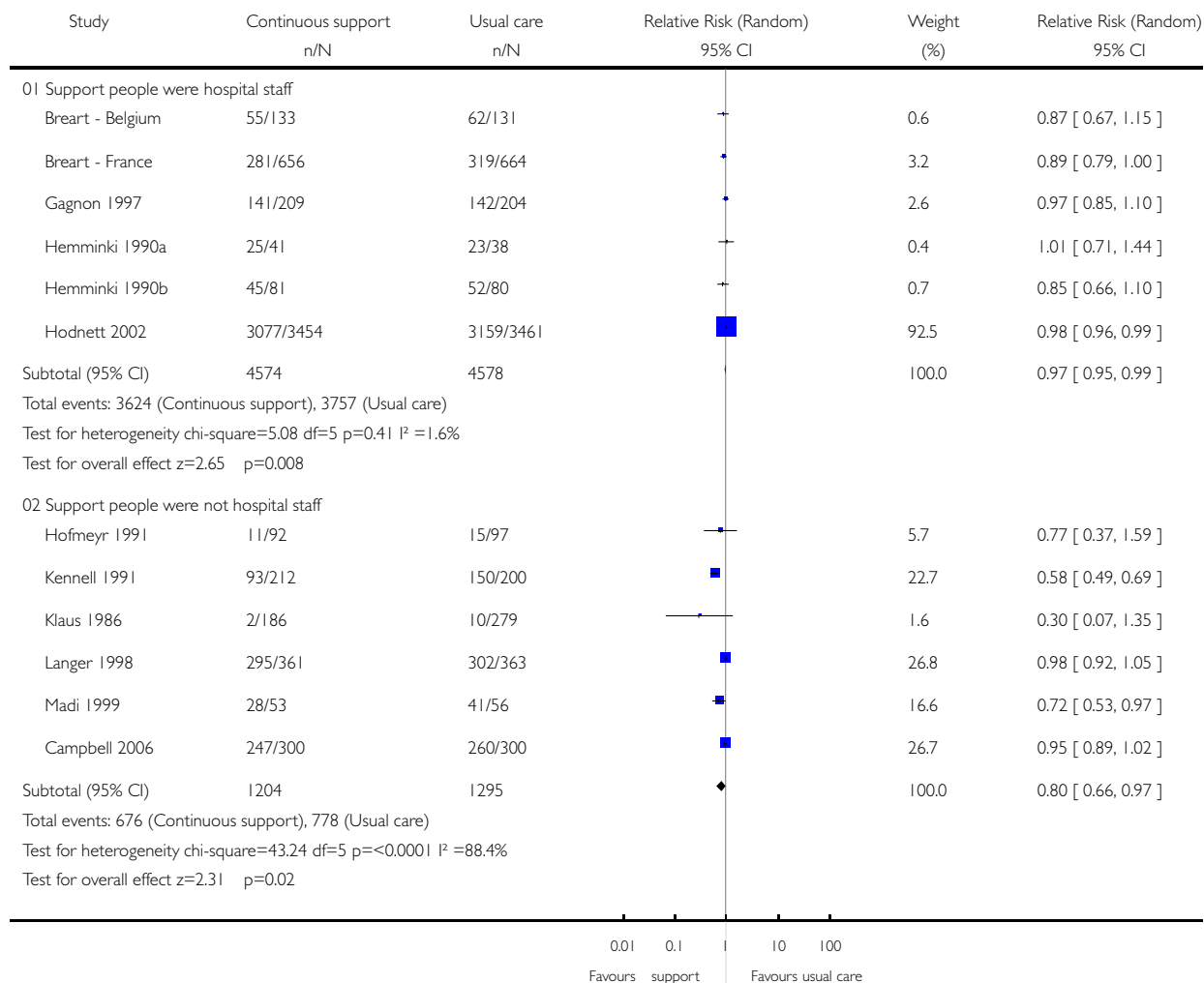


Analysis 03.01. Comparison 03 Continuous support during labour versus usual care - variations in type of provider, Outcome 01 Use of analgesia/anaesthesia

Review: Continuous support for women during childbirth

Comparison: 03 Continuous support during labour versus usual care - variations in type of provider

Outcome: 01 Use of analgesia/anaesthesia

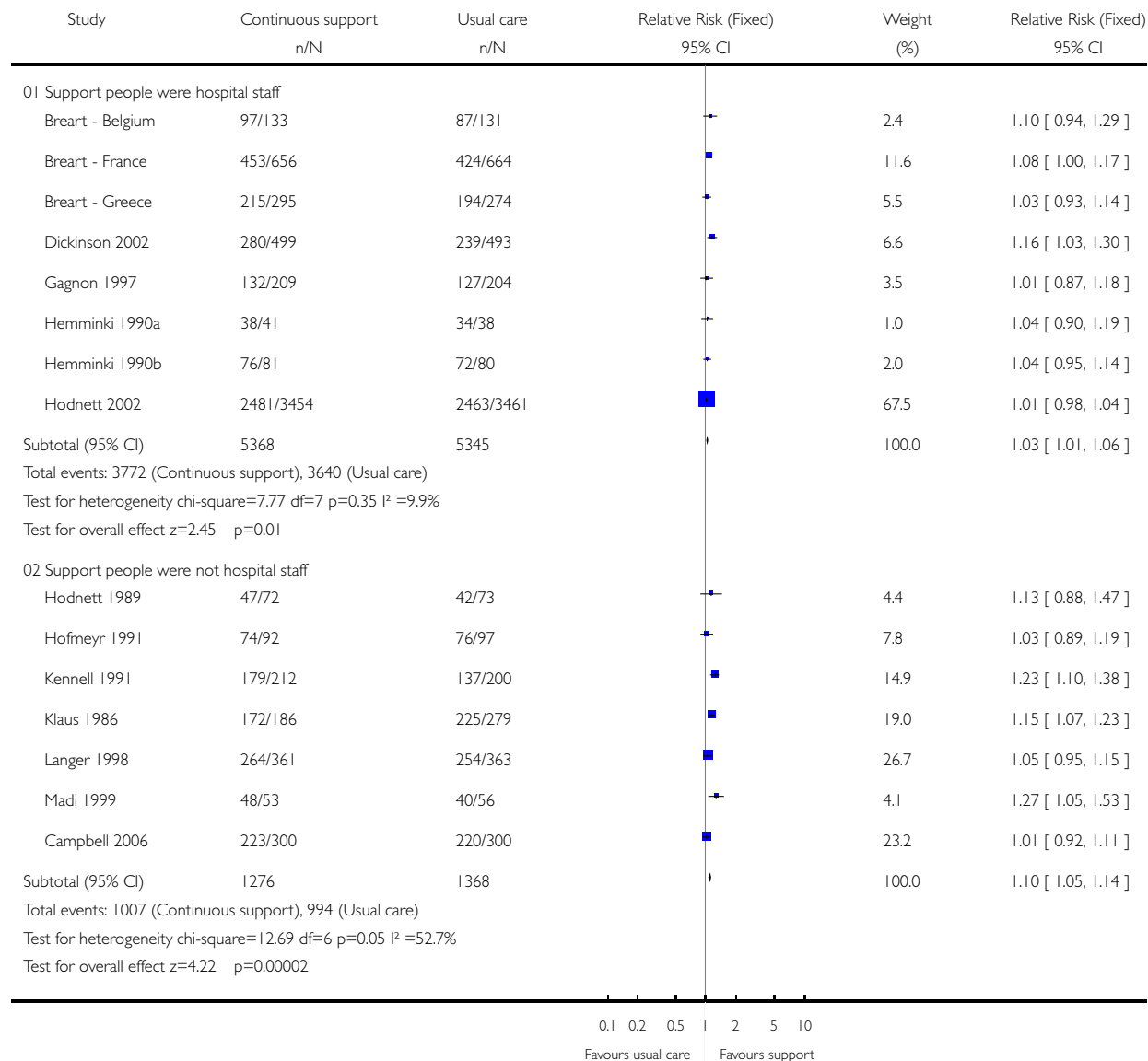


Analysis 03.02. Comparison 03 Continuous support during labour versus usual care - variations in type of provider, Outcome 02 Spontaneous vaginal birth

Review: Continuous support for women during childbirth

Comparison: 03 Continuous support during labour versus usual care - variations in type of provider

Outcome: 02 Spontaneous vaginal birth

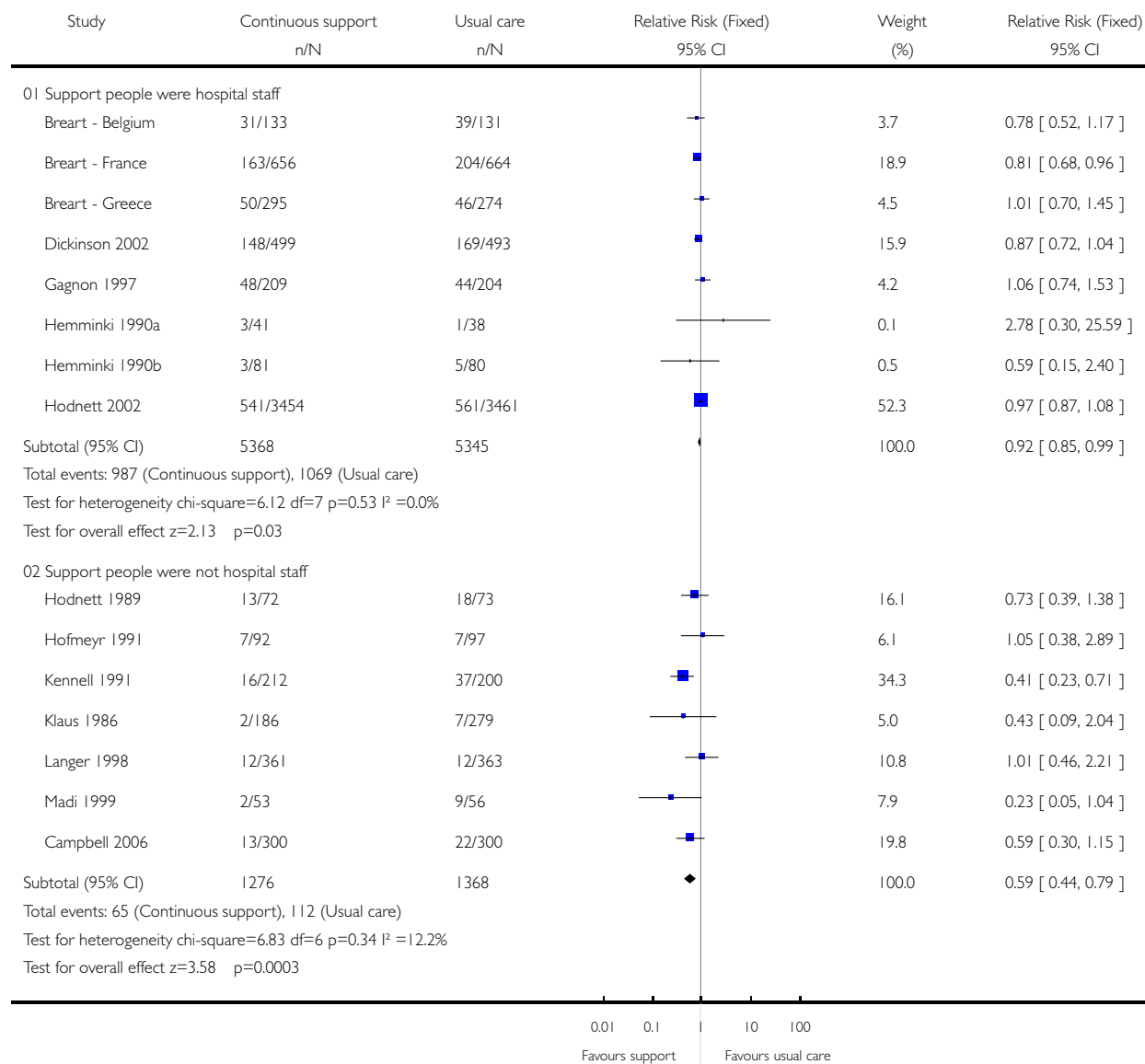


Analysis 03.03. Comparison 03 Continuous support during labour versus usual care - variations in type of provider, Outcome 03 Instrumental vaginal birth

Review: Continuous support for women during childbirth

Comparison: 03 Continuous support during labour versus usual care - variations in type of provider

Outcome: 03 Instrumental vaginal birth

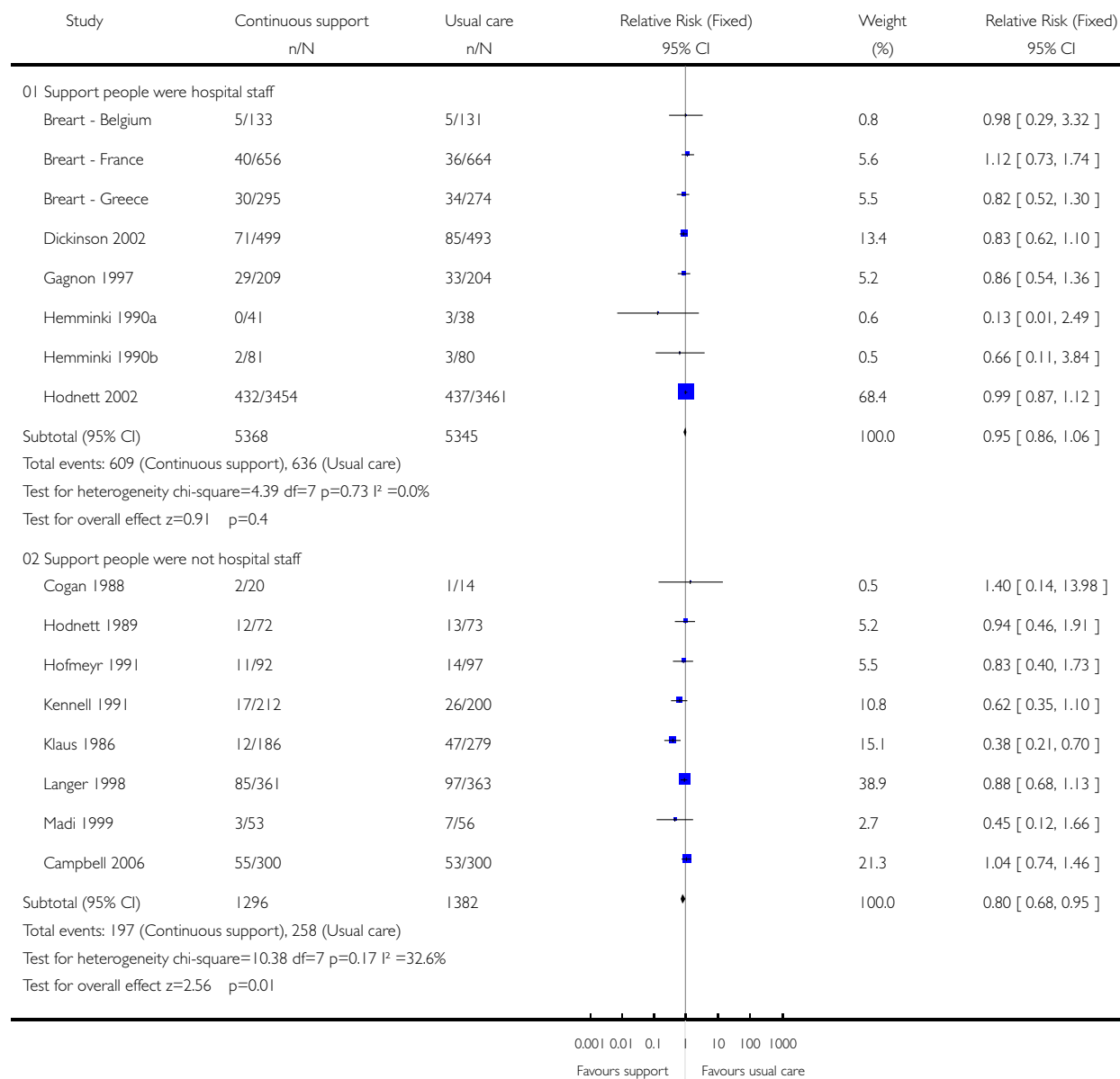


Analysis 03.04. Comparison 03 Continuous support during labour versus usual care - variations in type of provider, Outcome 04 Caesarean birth

Review: Continuous support for women during childbirth

Comparison: 03 Continuous support during labour versus usual care - variations in type of provider

Outcome: 04 Caesarean birth

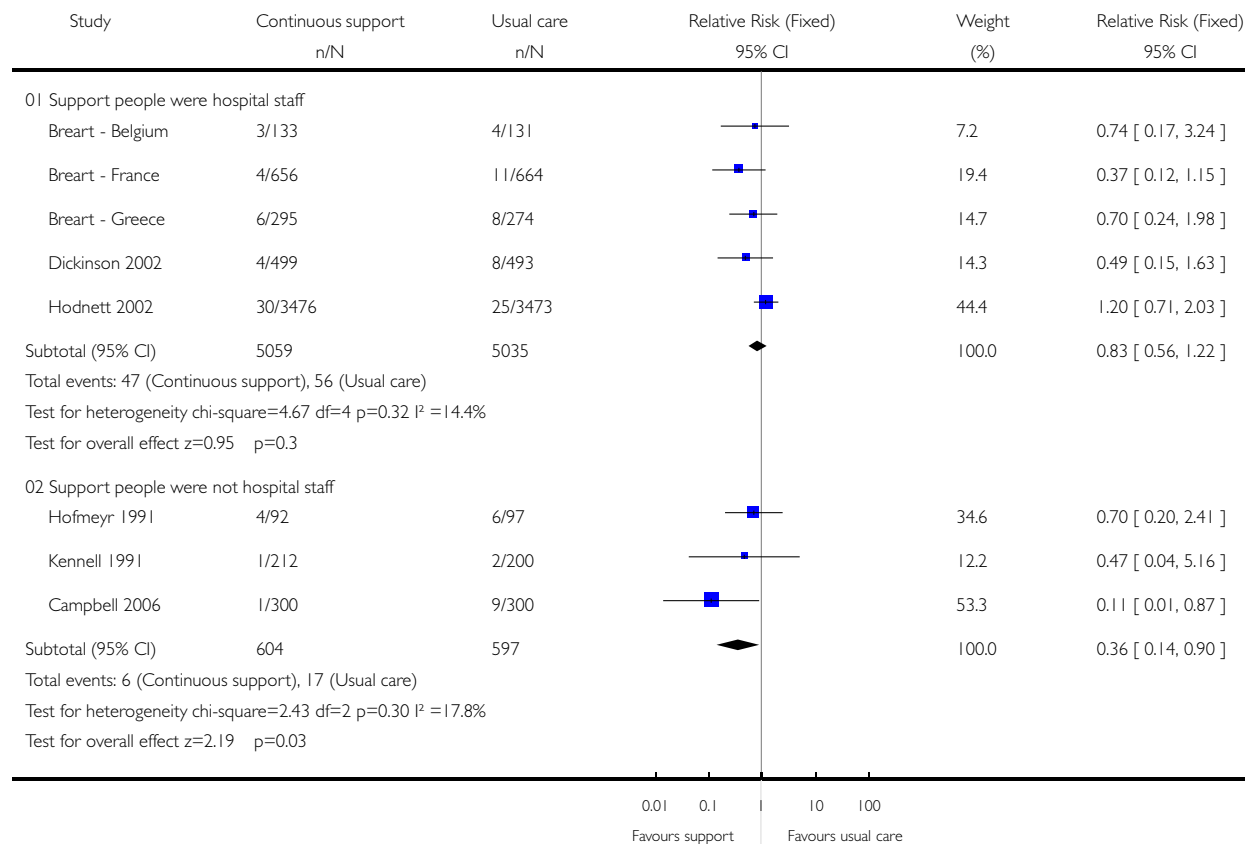


Analysis 03.05. Comparison 03 Continuous support during labour versus usual care - variations in type of provider, Outcome 05 Low 5-minute Apgar score

Review: Continuous support for women during childbirth

Comparison: 03 Continuous support during labour versus usual care - variations in type of provider

Outcome: 05 Low 5-minute Apgar score

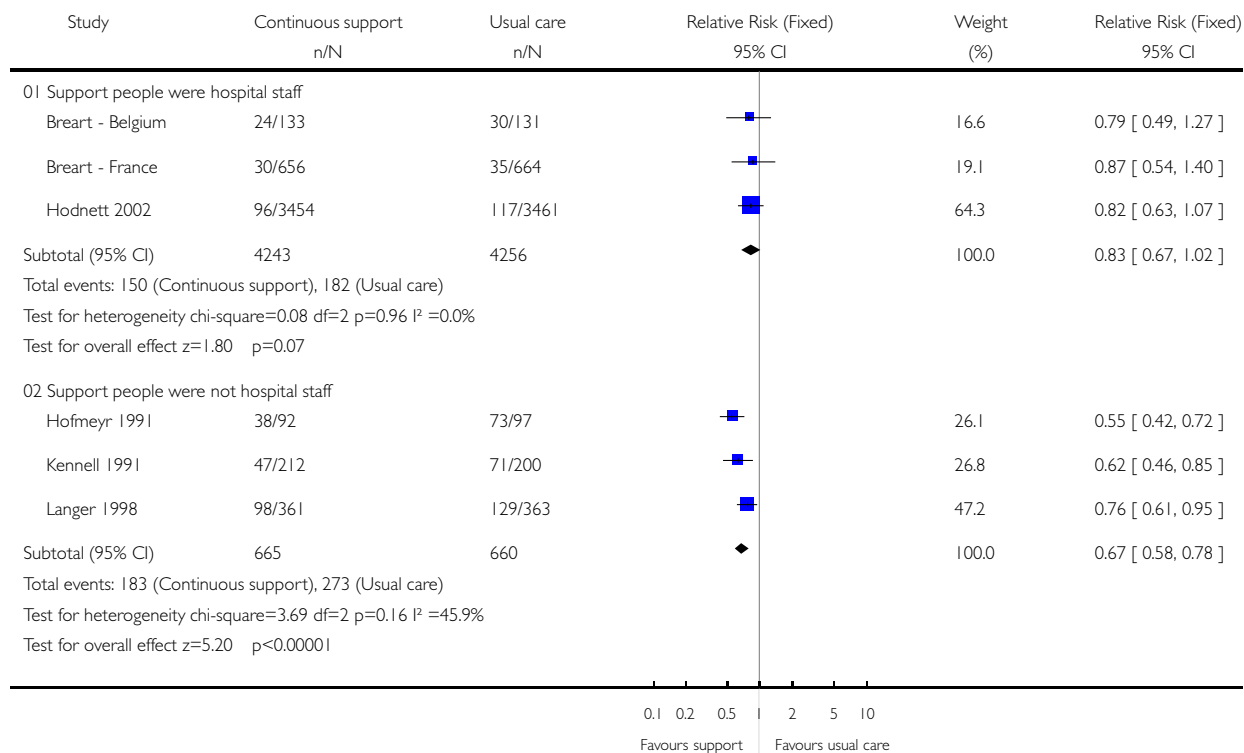


Analysis 03.06. Comparison 03 Continuous support during labour versus usual care - variations in type of provider, Outcome 06 Dissatisfaction with/negative views of childbirth experience

Review: Continuous support for women during childbirth

Comparison: 03 Continuous support during labour versus usual care - variations in type of provider

Outcome: 06 Dissatisfaction with/negative views of childbirth experience

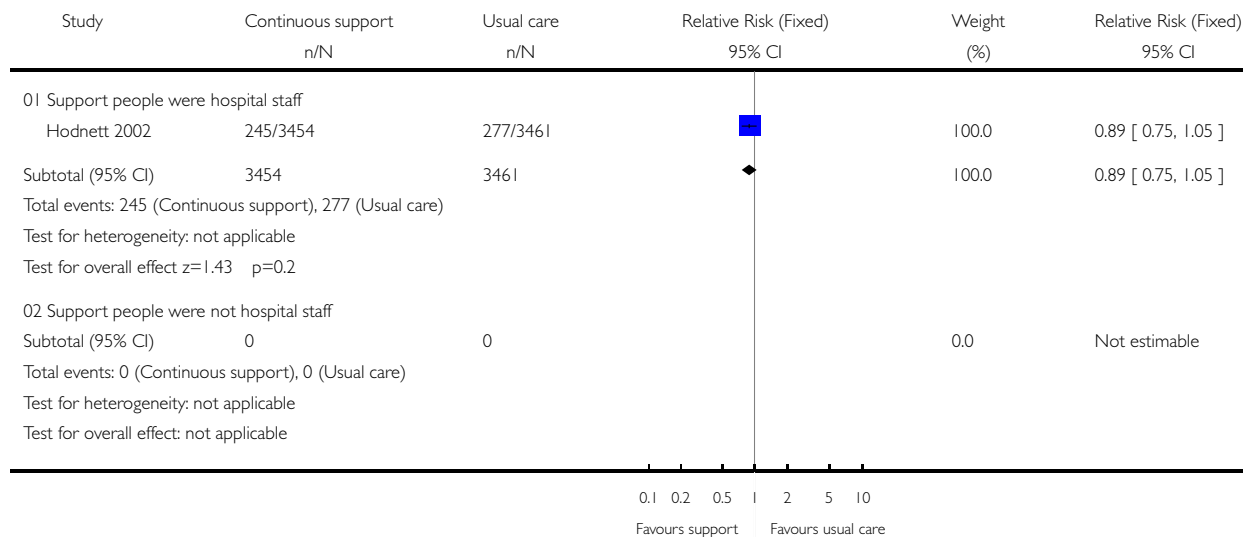


Analysis 03.07. Comparison 03 Continuous support during labour versus usual care - variations in type of provider, Outcome 07 Postpartum depression

Review: Continuous support for women during childbirth

Comparison: 03 Continuous support during labour versus usual care - variations in type of provider

Outcome: 07 Postpartum depression

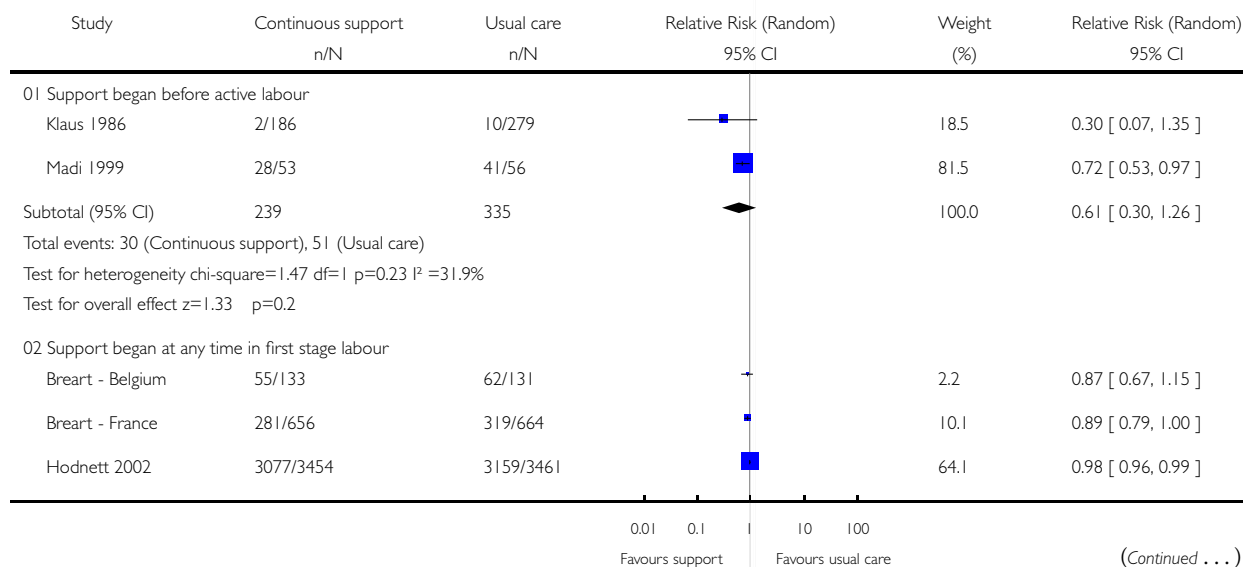


Analysis 04.01. Comparison 04 Continuous support during labour versus usual care - variations in timing of onset of support, Outcome 01 Use of analgesia/anaesthesia

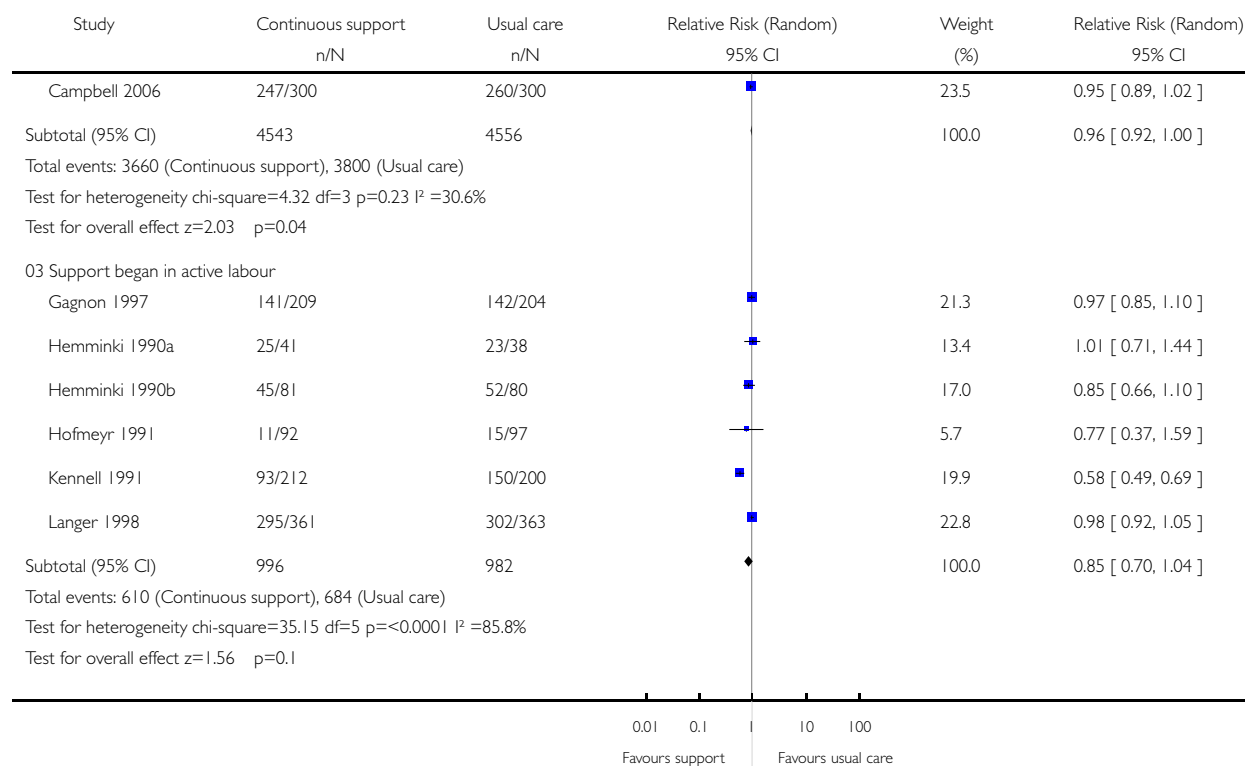
Review: Continuous support for women during childbirth

Comparison: 04 Continuous support during labour versus usual care - variations in timing of onset of support

Outcome: 01 Use of analgesia/anaesthesia



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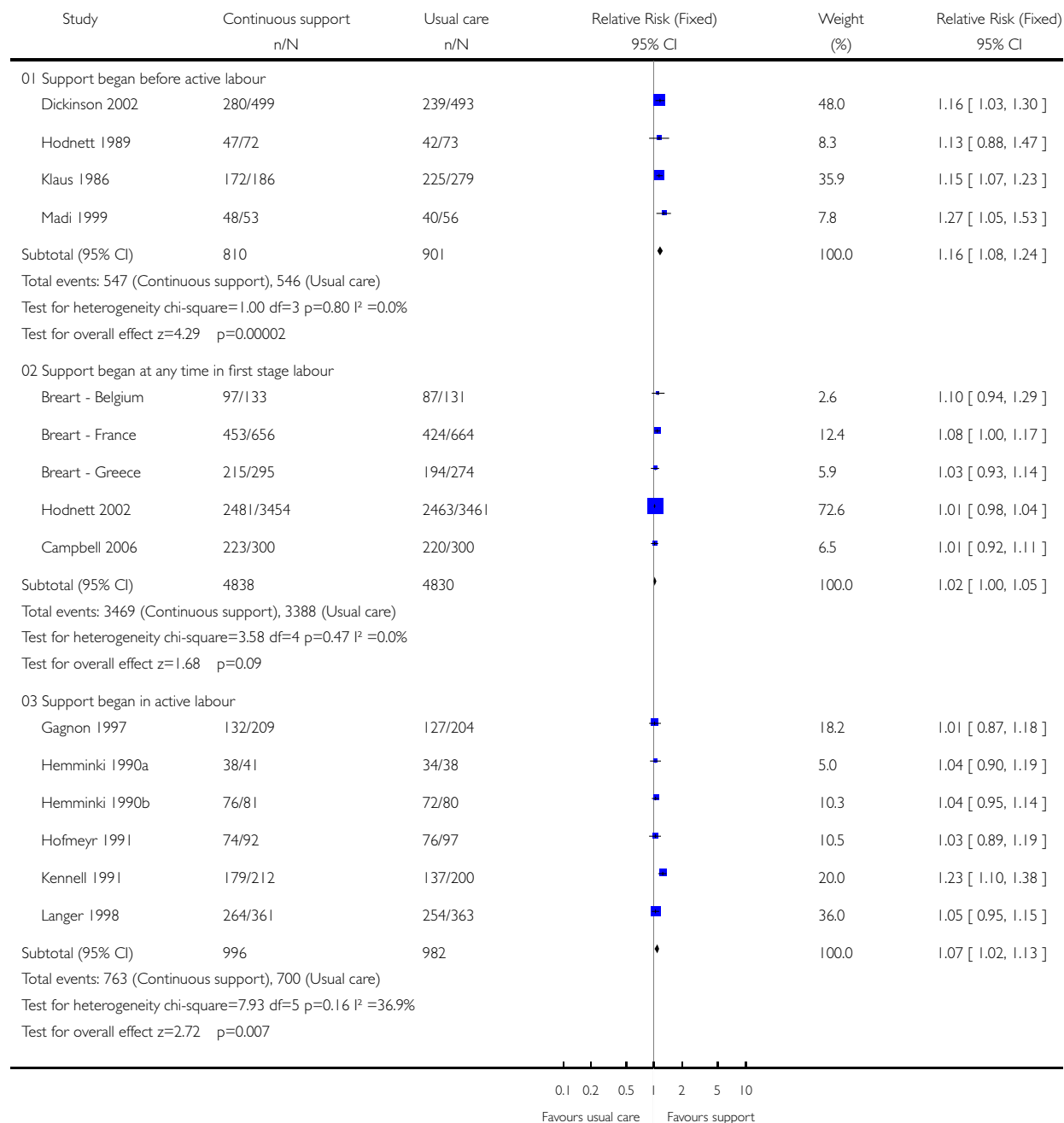


Analysis 04.02. Comparison 04 Continuous support during labour versus usual care - variations in timing of onset of support, Outcome 02 Spontaneous vaginal birth

Review: Continuous support for women during childbirth

Comparison: 04 Continuous support during labour versus usual care - variations in timing of onset of support

Outcome: 02 Spontaneous vaginal birth

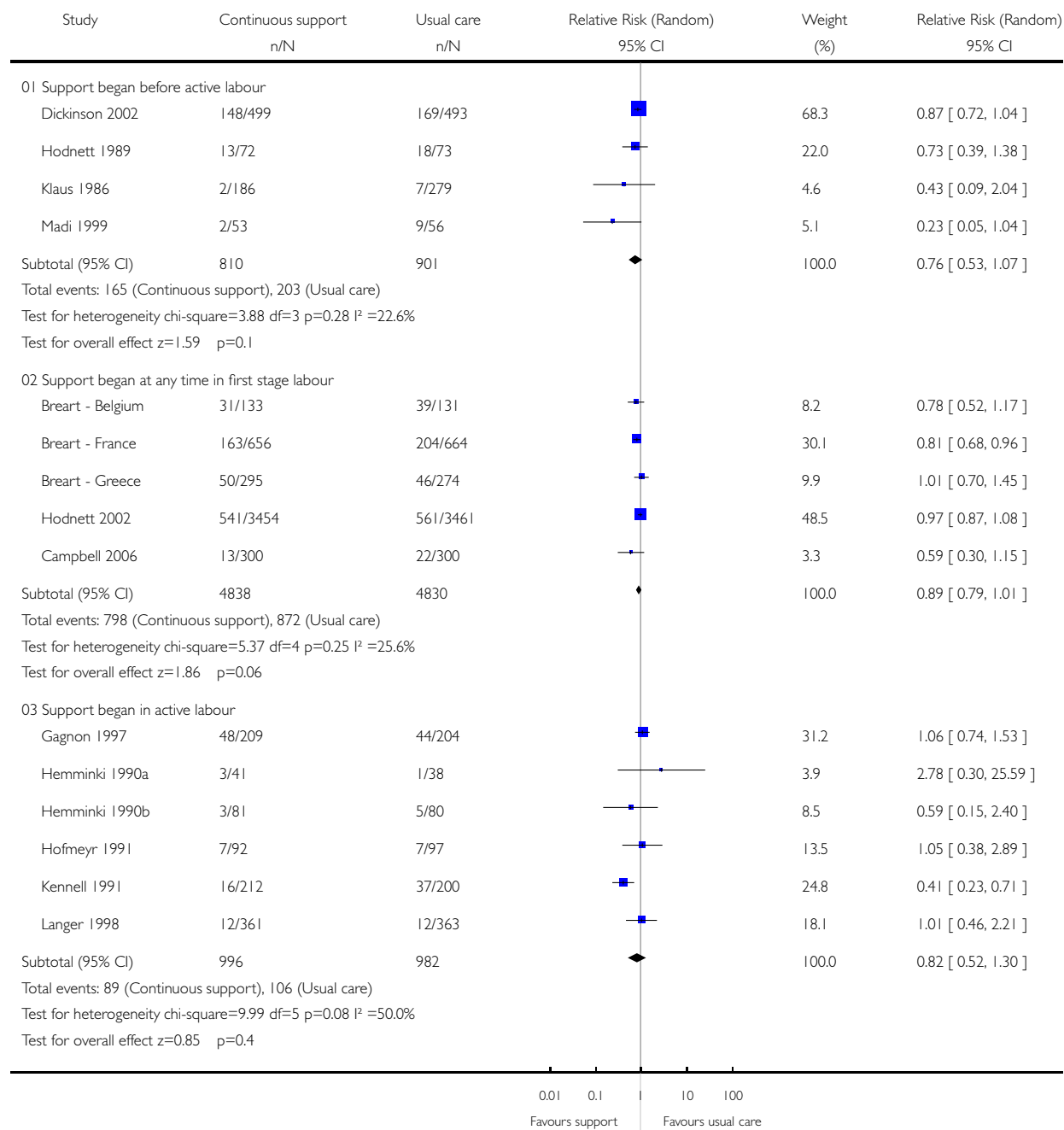


Analysis 04.03. Comparison 04 Continuous support during labour versus usual care - variations in timing of onset of support, Outcome 03 Instrumental vaginal birth

Review: Continuous support for women during childbirth

Comparison: 04 Continuous support during labour versus usual care - variations in timing of onset of support

Outcome: 03 Instrumental vaginal birth

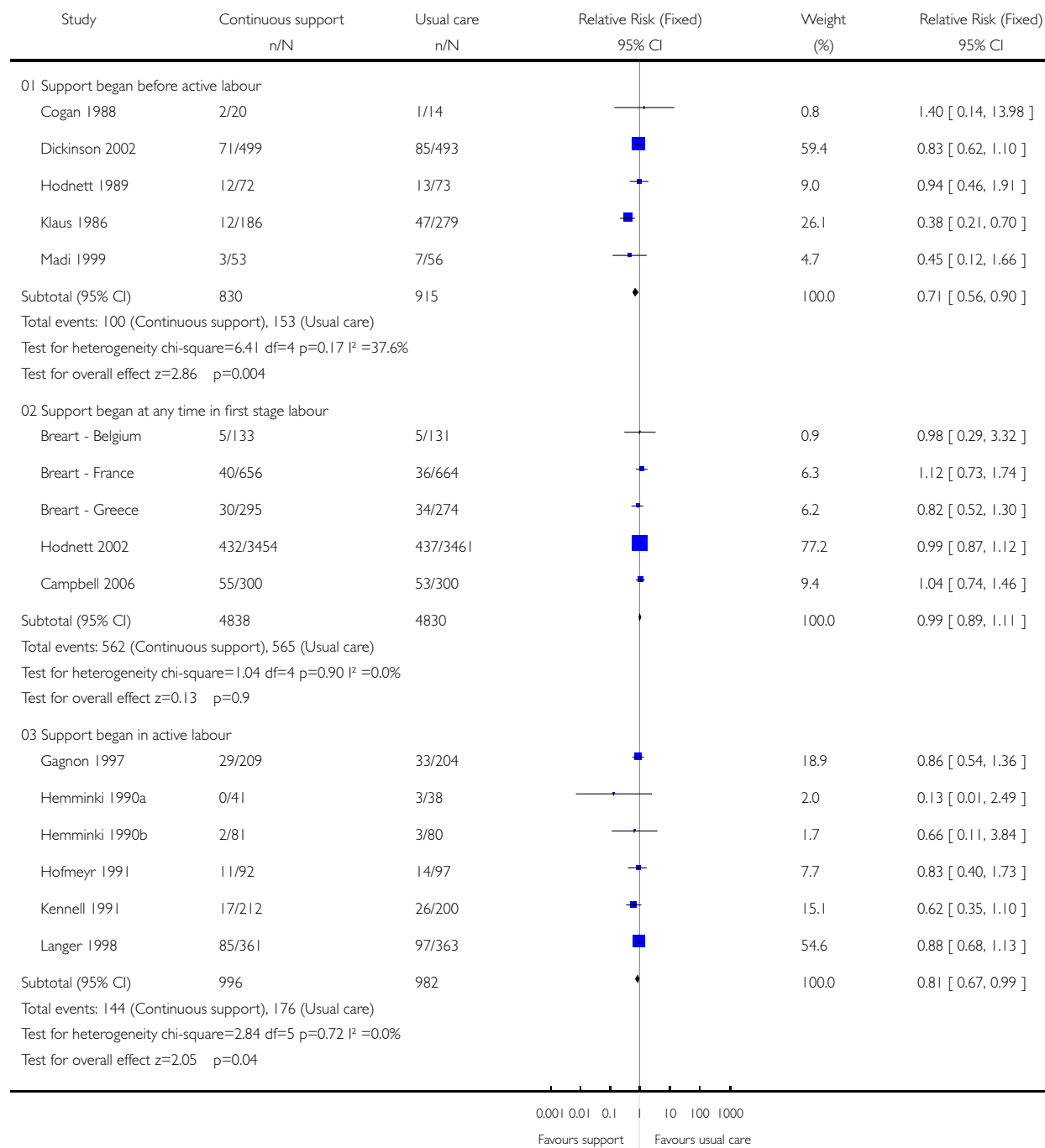


Analysis 04.04. Comparison 04 Continuous support during labour versus usual care - variations in timing of onset of support, Outcome 04 Caesarean birth

Review: Continuous support for women during childbirth

Comparison: 04 Continuous support during labour versus usual care - variations in timing of onset of support

Outcome: 04 Caesarean birth

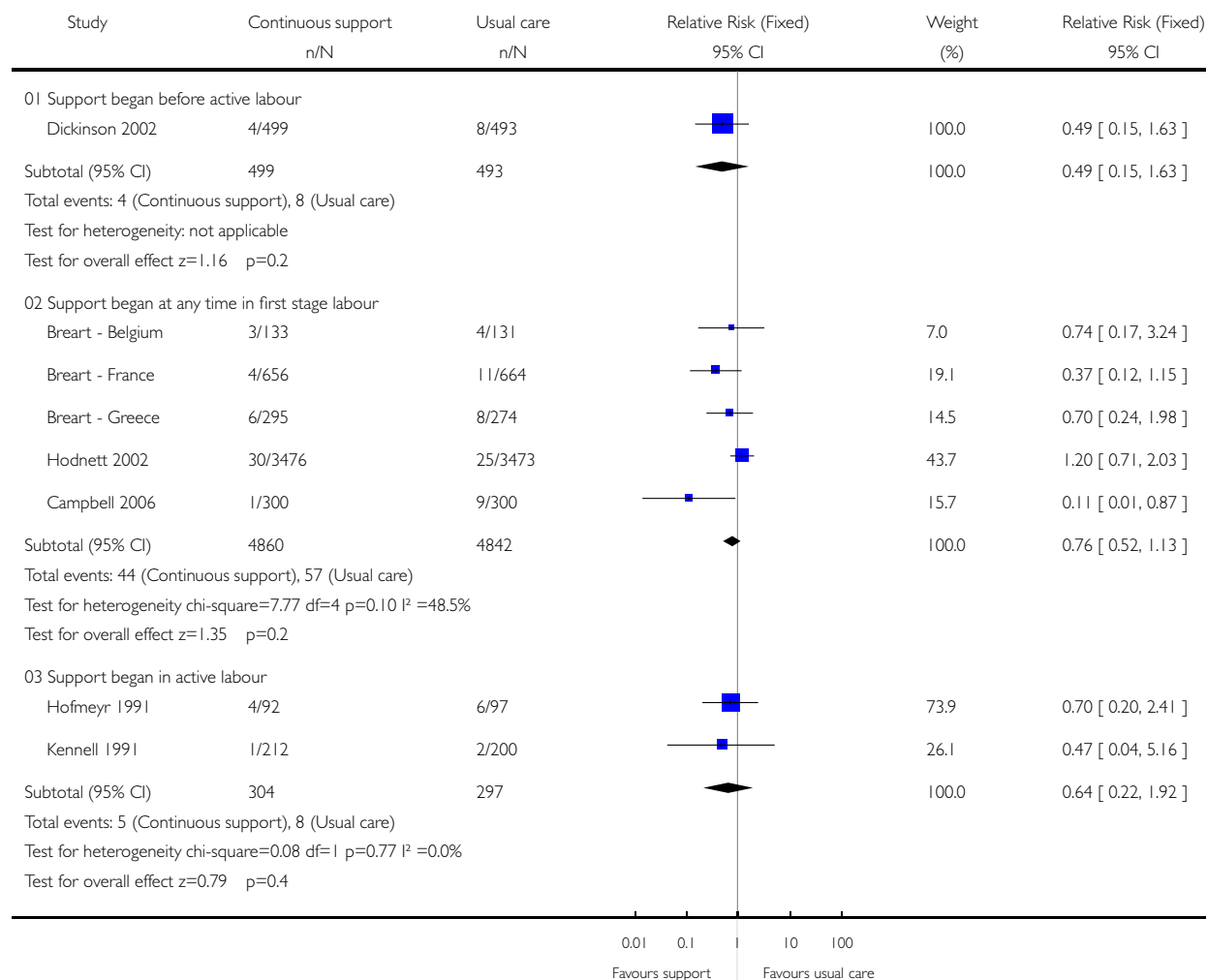


Analysis 04.05. Comparison 04 Continuous support during labour versus usual care - variations in timing of onset of support, Outcome 05 Low 5-minute Apgar score

Review: Continuous support for women during childbirth

Comparison: 04 Continuous support during labour versus usual care - variations in timing of onset of support

Outcome: 05 Low 5-minute Apgar score

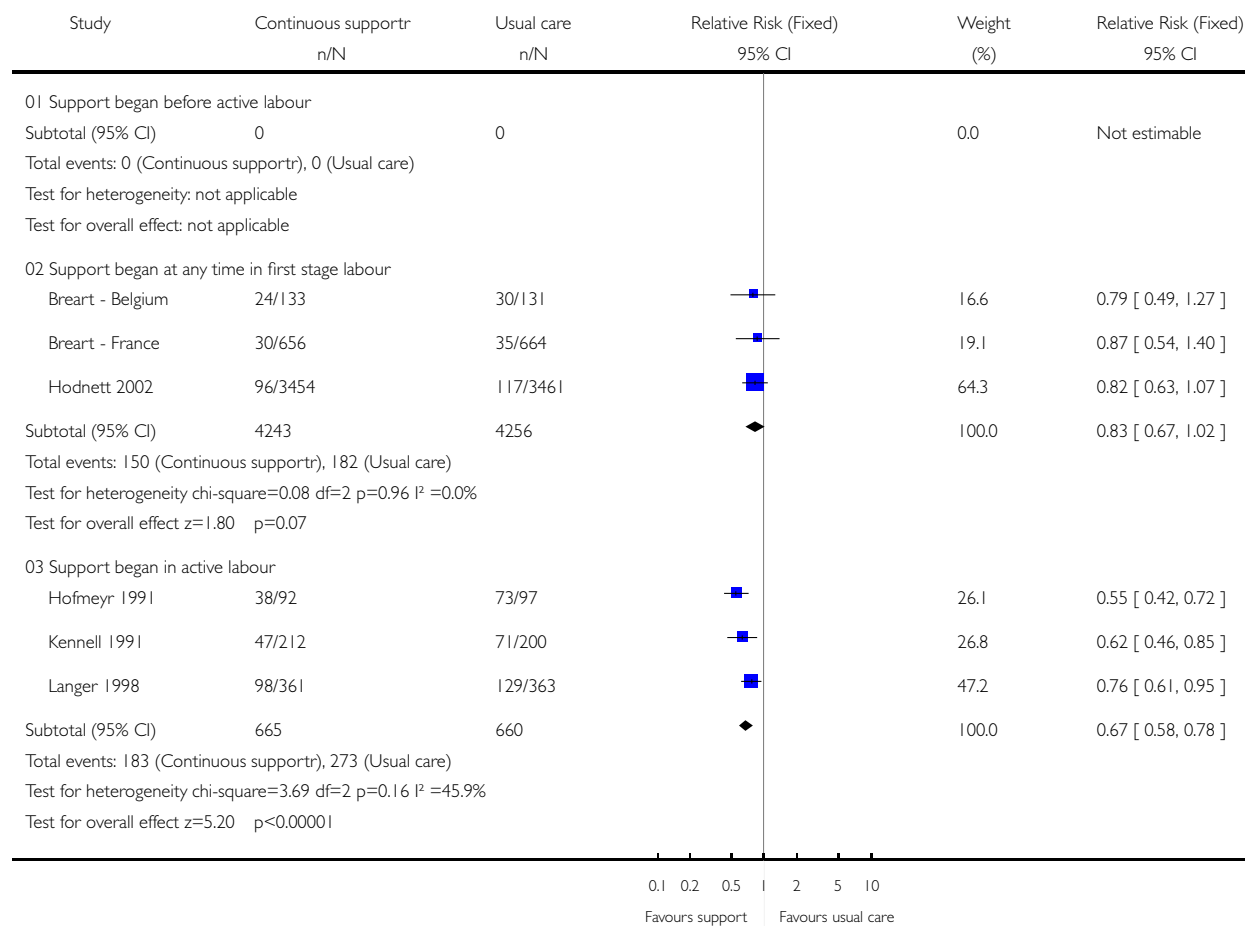


Analysis 04.06. Comparison 04 Continuous support during labour versus usual care - variations in timing of onset of support, Outcome 06 Dissatisfaction with/negative views of childbirth experience

Review: Continuous support for women during childbirth

Comparison: 04 Continuous support during labour versus usual care - variations in timing of onset of support

Outcome: 06 Dissatisfaction with/negative views of childbirth experience



Analysis 04.07. Comparison 04 Continuous support during labour versus usual care - variations in timing of onset of support, Outcome 07 Postpartum depression

Review: Continuous support for women during childbirth

Comparison: 04 Continuous support during labour versus usual care - variations in timing of onset of support

Outcome: 07 Postpartum depression

