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Restricting oral fluid and food intake during labour (Review)

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TABLE OF CONTENTS

[Intervention Review]

Restricting oral fluid and food intake during labour

Mandisa Singata[1], Joan Tranmer[2], Gillian ML Gyte[3]

[1]Effective Care Research Unit, University of the Witwatersrand/University of Fort Hare/East London Hospital complex, East London, South Africa. [2]School of Nursing, Queen's University, Kingston, Canada. [3]Cochrane Pregnancy and Childbirth Group, Department of Women's and Children's Health, The University of Liverpool, Liverpool, UK

Contact address: Mandisa Singata, Effective Care Research Unit, University of the Witwatersrand/University of Fort Hare/East London Hospital complex, East London, South Africa. mandisa.singata@gmail.com, mandisa.singata@gmail.com.

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ABSTRACT

Background

Restricting fluids and foods during labour is common practice across many birth settings with some women only being allowed sips of water or ice chips. Restriction of oral intake may be unpleasant for some women, and may adversely influence their experience of labour.

Objectives

To determine the benefits and harms of oral fluid or food restriction during labour.

Search methods

We searched the Cochrane Pregnancy and Childbirth Group's Trials Register (30 June 2013) and reference lists of retrieved studies.

Selection criteria

Randomised controlled trials (RCTs) and quasi-RCTs of restricting fluids and food for women in labour compared with women free to eat and drink.

Data collection and analysis

Two review authors independently assessed the studies for inclusion, assessed risk of bias and carried out data extraction.

Main results

We identified 19 studies of which we included five, involving 3130 women. We excluded eight studies, one awaits classification and five are ongoing studies. All the included studies looked at women in active labour and at low risk of potentially requiring a general anaesthetic. One study looked at complete restriction versus giving women the freedom to eat and drink at will; two studies looked at water only versus giving women specific fluids and foods and two studies looked at water only versus giving women carbohydrate drinks.

When comparing any restriction of fluids and food versus women given some nutrition in labour, the meta-analysis was dominated by one study undertaken in a highly medicalised environment. There were no statistically significant differences identified in: caesarean section (average risk ratio (RR) 0.89, 95% confidence interval (CI) 0.63 to 1.25, five studies, 3103 women), operative vaginal births (average RR 0.98, 95% CI 0.88 to 1.10, five studies, 3103 women) and Apgar scores less than seven at five minutes (average RR 1.43, 95% CI 0.77 to 2.68, four studies, 2902 infants), nor in any of the other outcomes assessed. Women's views were not assessed. The pooled data were insufficient to assess the incidence of Mendelson's syndrome, an extremely rare outcome. Other comparisons showed similar findings, except one study did report a significant increase in caesarean sections for women taking carbohydrate drinks in labour compared with water only, but these results should be interpreted with caution as the sample size was small.

Authors' conclusions

Since the evidence shows no benefits or harms, there is no justification for the restriction of fluids and food in labour for women at low risk of complications. No studies looked specifically at women at increased risk of complications, hence there is no evidence to support restrictions in this group of women. Conflicting evidence on carbohydrate solutions means further studies are needed and it is critical in any future studies to assess women's views.

PLAIN LANGUAGE SUMMARY

Eating and drinking in labour

In some cultures, food and drinks are consumed during labour for nourishment and comfort to help meet the demands of labour. However, in many birth settings, oral intake is restricted in response to work by Mendelson in the 1940s. Mendelson reported that during general anaesthesia, there was an increased risk of the stomach contents entering the lungs. The acid nature of the stomach liquid and the presence of food particles were particularly dangerous, and potentially could lead to severe lung disease or death. Since the 1940s, obstetrical anaesthesia has changed considerably, with better general anaesthetic techniques and a greater use of regional anaesthesia. These advances, and the reports by women that they found the restrictions unpleasant, have led to research looking at these restrictions. In addition, poor nutritional balance may be associated with longer and more painful labours, and fasting does not guarantee an empty stomach or less acidity. This review looked at any restriction of fluids and food in labour compared with women able to eat and drink. The review identified five studies involving 3130 women. Most studies had looked at specific foods being recommended, though one study let women choose what they wished to eat and drink. The review identified no benefits or harms of restricting foods and fluids during labour in women at low risk of needing anaesthesia. There were no studies identified on women at increased risk of needing anaesthesia. None of the studies looked at women's views of restricting fluids and foods during labour. Thus, given these findings, women should be free to eat and drink in labour, or not, as they wish.

BACKGROUND

Historically, in some societies, special food and drinks were offered during labour and specific foods were sometimes discouraged (Broach 1988a; McCormick 2002). In the early 1900s, Dr DeLee, an American obstetrician, recommended that women take liquids to preserve their strength during labour (Broach 1988a). However, by the 1940s views had changed, and practitioners believed that eating and drinking in labour might be dangerous. Work by Mendelson in the 1940s showed high morbidity and mortality in women under general anaesthesia for caesarean section who inhaled liquids and particles of food from the stomach (Mendelson 1946). This led to common policies of food and fluid restrictions during labour (Champion 2002). Although many women may not feel like eating in labour (McNabb 2002), some women find this restriction unpleasant and sometimes harrowing (Armstrong 2000; Johnson 1989). The importance of this aspect of a woman's autonomy, choice and control in labour should also be a consideration (Pengelley 2002).

A survey of labour ward policies in England in 1985 revealed that over a third of consultant maternity units allowed no fluids whatsoever during labour (Garcia 1985). In the United States, a survey in 1988 showed that almost half the hospitals and birth centres had a policy of 'nil by mouth' except ice chips (McKay 1988). A later survey of 351 units in England and Wales found that one-third allowed some form of food and drink and more than 90% allowed some form of oral intake, usually water (Michael 1991). More recently, in 2003, a survey in the UK showed a liberalising trend, with 47% of women having 'access' to food and drink in labour (Hart 2006).

Description of the condition

Fluid and nutrient needs during labour are not well studied (Micklewright 2002). The need for energy is increased during pregnancy and labour, and metabolic processes generally adjust to address these needs (Pipkin 2001). Many believe that elevated levels of ketone bodies, which accumulate during exercise or starvation (Williamson 1971), and at times during labour are a physiological response with little clinical significance. However, associations between ketone levels and longer labours and maternal psychological stress have been reported (Chang 1993; Foulkes 1985). It is difficult to determine whether ketone production contributes to the longer labour or whether such production is a consequence of longer labour. The presence of ketonuria should be considered a signal for metabolic imbalance, though the effect of the imbalance is not known (Johnson 1989).

Description of the intervention

People take for granted the ability to eat and drink in response to hunger and thirst. Hence, withholding all food and fluids, or withholding all food but allowing only sips of water, from women during labour is an 'intervention'. This intervention is generally used during active labour when women are in hospital, and many women in early labour will eat and drink at will at home. Some hospitals prescribe specific foods which are 'allowed' in labour, but this is also considered an intervention since it limits a women's autonomy and freedom of choice.

How the intervention might work

The rationale for withholding food and fluid during labour is to decrease the risk of maternal morbidity and mortality from Mendelson's syndrome if a general anaesthetic is required (Mendelson 1946). It was thought that fasting would ensure small gastric volumes, but recent reviews suggest that there is no evidence to support this belief (Micklewright 2002; O'Sullivan 1994). Interventions to reduce stomach contents or the acidity of the content, both by pharmacological means and by restriction of oral intake, have not proved successful (Gyte 2006; Taylor 1975). Also gastric emptying is delayed during labour, which may contribute to the problem (Davidson 1975). Irrespective of whether a woman has been starved or not during labour, anaesthetic precautions are necessary to reduce the risk of gastric content aspiration. These include using regional rather than general anaesthesia, and using rapid sequence induction with airway protection for general anaesthesia (Am Soc Anesth 1999). With modern techniques, particularly the use of regional analgesia, the risk of gastric content aspiration has become extremely small (McKay 1988).

Intravenous therapy instead of oral hydration is common practice during labour. Historically, practitioners administered high-dose glucose solutions to combat the development of ketones (Ketteringham 1939). More commonly now, intravenous fluids are isotonic or low-dose glucose, as high-dose glucose solutions are associated with increased incidence of neonatal hypoglycaemia (low blood sugar levels) (Grylack 1984; Mendiola 1982). Dextrose-only solutions cause a fall in serum osmolality and sodium concentration (hyponatraemia) (Begum 1999). Regardless of solution type, intravenous therapy predisposes women to immobilisation, stress, increased risk of fluid overload, and does not ensure a nutrient and fluid balance for the demands of labour (Simkin 1986a; Simkin 1986b). The value and safety of routine intravenous fluid therapy has been questioned (Begum 1999).

Why it is important to do this review

Restricting oral food and fluid intake of women in active labour in hospitals is a strongly held obstetric and anaesthetic tradition. Restriction of oral intake is not a common practice in home births or birth centres (Rooks 1989), nor is the practice consistent across hospital sites (Haire 1991). Few, if any, centres have policies that are reflective of women's preferences (Pengelley 1998). Most are based on historical, but important concerns, related to the risks of gastric content regurgitation and aspiration into the lungs during general anaesthesia, a risk first identified by Mendelson in the 1940s. The incidence is very rare with modern anaesthetic techniques and the use of regional anaesthesia rather then general anaesthesia. However, the syndrome is potentially fatal.

The risks of regurgitation and Mendelson's syndrome exist, although the incidence of each is very rare. The policy of routine restriction of foods and fluids in labour in many hospitals across the world generally does not reflect women's preferences or cultural expectations (Broach 1988a; Broach 1988b). It is critical that any policy should be based on evidence of overall benefit to women and babies. This systematic review may assist in resolving the clinical uncertainty, which is currently apparent.

OBJECTIVES

To determine the benefits and harms of oral fluid and food restriction during labour, with or without intravenous hydration.

METHODS

Criteria for considering studies for this review

Types of studies

We included randomised controlled clinical trials (RCTs). Quasi-RCTs were eligible for inclusion, however we did not identify any. Had we identified quasi-RCTs, we would have undertaken sensitivity analysis by study quality.

Types of participants

Women in labour.

Types of interventions

We considered studies comparing any two or more of the following regimens for inclusion.

1. Complete restriction of oral food and fluids (other than ice chips).
2. Allowing only water.
3. Allowing only oral carbohydrate-based fluids.
4. Allowing particular oral food and fluid regimens.
5. Freedom to take oral food and/or fluids at will.

We then assessed each restrictive regimen (interventions one to four above). In each case, we regarded the more restrictive regimen as the experimental intervention.

We excluded studies on intravenous feeding in labour unless being given on a clinical need within a study on oral fluids and food.

Types of outcome measures

We divided outcomes into maternal and fetal categories. For relative outcomes (e.g. ketoacidosis, dehydration, hyponatraemia, hypoglycaemia, maternal satisfaction, etc), we used the definitions chosen by the trial authors to categorise outcomes.

Primary outcomes

Maternal

1. Caesarean section.
2. Operative vaginal birth.
3. Maternal satisfaction.

Fetal

1. Five-minute Apgar score less than seven.
2. Hypoglycaemia.

Secondary outcomes

Maternal

1. Ketoacidosis.
2. Dehydration.
3. Hyponatraemia.
4. Hypoglycaemia.
5. Duration of labour.
6. Mobility in labour.
7. Nausea and vomiting.
8. Labour augmentation.
9. Narcotic pain relief.
10. Epidural analgesia.
11. Poor expulsive efforts.
12. Regurgitation during general anaesthesia.
13. Mendelson's syndrome.
14. Maternal mortality.
15. Postpartum haemorrhage.
16. Admission to intensive care.
17. Length of hospital stay; maternal comfort.
18. Feelings of pain, thirst, hunger.
19. Breastfeeding success.
20. Personal control.

Fetal

1. Fetal distress.
2. Cord blood pH less than 7.2.
3. Hyperinsulinisim.
4. Hyponatraemia.
5. Intravenous therapy.
6. Gavage feeding.
7. Admission to intensive care.
8. Length of hospital stay.

We are aware that RCTs are unlikely to be able to adequately address rare adverse outcomes, such as Mendelson's syndrome and maternal mortality in this review, and so we have chosen outcomes which we think might be impacted on, for benefit or harm, by restriction of fluids and foods in labour.

Search methods for identification of studies

Electronic searches

We searched the Cochrane Pregnancy and Childbirth Group's Trials Register by contacting the Trials Search Co-ordinator (30 June 2013).

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

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

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

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

Searching other resources

We searched the reference list for each study identified for any additional studies.

We did not apply any language restrictions.

Data collection and analysis

For the methods used when assessing the trials identified in the previous version of this review, *see* Appendix 1.

For this update we used the following methods when assessing the reports identified by the updated search.

Selection of studies

Three review authors (Mandisa Singata (MS), Joan Tranmer (JT) and Gill Gyte (GG)) independently assessed for inclusion all the potential studies we identified as a result of the search strategy. We resolved queries and any disagreement through discussion and we also consulted Therese Dowswell (TD).

Data extraction and management

We designed a form to extract data. For eligible studies, two review authors (either MS, JT, GG with help from LD and TD) extracted the data using the agreed form. We resolved discrepancies through discussion or, when required, we consulted a third person. We entered data (GG) into Review Manager software (RevMan 2011) and checked for accuracy (MS and JT).

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

Assessment of risk of bias in included studies

Two review authors (out of MS, JT and GG, assisted by LD and TD) independently assessed risk of bias for each study using the criteria outlined in the *Cochrane Handbook for Systematic Reviews of Interventions (* Higgins 2011). We resolved any disagreement by discussion or by involving a third assessor.

(1) Random sequence generation (checking for possible selection bias)

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

We assessed the method as:

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

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

We describe for each included study the method used to conceal allocation to interventions prior to assignment and assessed whether intervention allocation could have been foreseen in advance of, or during recruitment, or changed after assignment.

We assessed the methods as:

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

(3.1) Blinding of participants and personnel (checking for possible performance bias)

We describe for each included study the methods used, if any, to blind study participants and personnel from knowledge of which intervention a participant received. We considered that studies were at low risk of bias if they were blinded, or if we judged that the lack of blinding would be unlikely to affect results. We assessed blinding separately for different outcomes or classes of outcomes.

We assessed the methods as:

- low, high or unclear risk of bias for participants;
- low, high or unclear risk of bias for personnel.

(3.2) Blinding of outcome assessment (checking for possible detection bias)

We describe for each included study the methods used, if any, to blind outcome assessors from knowledge of which intervention a participant received. We assessed blinding separately for different outcomes or classes of outcomes.

We assessed methods used to blind outcome assessment as:

- low, high or unclear risk of bias.

(4) Incomplete outcome data (checking for possible attrition bias due to the amount, nature and handling of incomplete outcome data)

We describe for each included study, and for each outcome or class of outcomes, the completeness of data including attrition and exclusions from the analysis. We state whether attrition and exclusions were reported and the numbers included in the analysis at each stage (compared with the total randomised participants), reasons for attrition or exclusion where reported, and whether missing data were balanced across groups or were related to outcomes. Where sufficient information was reported, or could be supplied by the trial authors, we re-included missing data in the analyses which we undertook.

We assessed methods as:

- low risk of bias (e.g. no missing outcome data; missing outcome data balanced across groups);
- high risk of bias (e.g. numbers or reasons for missing data imbalanced across groups; 'as treated' analysis done with substantial departure of intervention received from that assigned at randomisation);

- unclear risk of bias.

(5) Selective reporting (checking for reporting bias)

We describe for each included study how we investigated the possibility of selective outcome reporting bias and what we found.

We assessed the methods as:

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

(6) Other bias (checking for bias due to problems not covered by (1) to (5) above)

We describe for each included study any important concerns we have about other possible sources of bias.

We assessed whether each study was free of other problems that could put it at risk of bias:

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

(7) Overall risk of bias

We make explicit judgements about whether studies were at high risk of bias, according to the criteria given in the *Cochrane Handbook* (Higgins 2011). With reference to (1) to (6) above, we assessed the likely magnitude and direction of the bias and whether we considered it was likely to impact on the findings. We would have explored the impact of the level of bias through undertaking sensitivity analyses - *see* Sensitivity analysis - had there been sufficient data.

Measures of treatment effect

Dichotomous data

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

Continuous data

For continuous data, we used the mean difference if outcomes were measured in the same way between trials. We planned to use the standardised mean difference to combine trials that measure the same outcome, but use different methods.

Unit of analysis issues

Cluster-randomised trials

Had we identified any cluster-randomised trials, we would have included them in the analyses along with individually-randomised trials. We would have adjusted their sample sizes using the methods described in the *Cochrane Handbook* Section 16.3.4 using an estimate of the intracluster correlation co-efficient (ICC) derived from the trial (if possible), from a similar trial or from a study of a similar population. If, in future updates, we use ICCs from other sources, we will report this and conduct sensitivity analyses to investigate the effect of variation in the ICC. If we identify both cluster-randomised trials and individually-randomised trials, we plan to synthesise the relevant information. We consider it reasonable to combine the results from both if there is little heterogeneity between the study designs and the interaction between the effect of intervention and the choice of randomisation unit is considered to be unlikely.

We will also acknowledge heterogeneity in the randomisation unit and perform a sensitivity analysis to investigate the effects of the randomisation unit.

Cross-over trials

We believe that cross-over designs will be invalid for this topic and so have excluded them.

Other unit of analysis issues

To date, we have not identified studies that involve multiple pregnancies. If we identify such studies in the future, we will use special methods to analyse these data (see the Pregnancy and Childbirth Group Methodological Guidelines and *Cochrane Handbook* sections 9.3.7 and 16.3).

To date, we have not identified studies with more than two treatment groups. If we identify such studies in the future we will use special methods to analyse outcome data - see *Cochrane Handbook* section 16.4.7.

Dealing with missing data

For included studies, we noted levels of attrition. Had it been required, we would have explored the impact of including studies with high levels of missing data in the overall assessment of treatment effect by using sensitivity analysis.

For all outcomes, we carried out analyses, as far as possible, on an intention-to-treat basis, i.e. we attempted to include all participants randomised to each group in the analyses, and all participants were analysed in the group to which they were allocated, regardless of whether or not they received the allocated intervention. The denominator for each outcome in each trial was the number randomised minus any participants whose outcomes are known to be missing.

Assessment of heterogeneity

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

Assessment of reporting biases

If there had been 10 or more studies in the meta-analysis, we would have investigated reporting biases (such as publication bias) using funnel plots. We would have assessed funnel plot asymmetry using formal tests for funnel plot asymmetry. For continuous outcomes we would have used the test proposed by Egger 1997, and for dichotomous outcomes we would have used the test proposed by

Harbord 2006. If asymmetry had been detected in any of these tests, we would have performed exploratory analyses to investigate it.

Data synthesis

We carried out statistical analysis using the Review Manager software (RevMan 2011). We used fixed-effect meta-analysis for combining data where it is reasonable to assume that studies are estimating the same underlying treatment effect: i.e. where trials are examining the same intervention, and the trials' populations and methods are judged sufficiently similar. If there was clinical heterogeneity sufficient to expect that the underlying treatment effects differ between trials, or if substantial statistical heterogeneity was detected, we used random-effects meta-analysis to produce an overall summary if an average treatment effect across trials was considered clinically meaningful. The random-effects summary was treated as the average range of possible treatment effects and we discuss the clinical implications of treatment effects differing between trials. If the average treatment effect was not clinically meaningful, we did not combine trials.

If we used random-effects analyses, the results are presented as the average treatment effect with 95% confidence intervals, and the estimates of T^2 and I^2.

Subgroup analysis and investigation of heterogeneity

If we had identified substantial heterogeneity, we planned to investigate it using subgroup analyses and sensitivity analyses. We would consider whether an overall summary is meaningful, and if it is, use random-effects analysis to produce it.

We planned to carry out the following subgroup analyses.

1. Women at low risk of potentially requiring general anaesthesia versus women at high risk of potentially requiring general anaesthesia. We looked at all outcomes for this subgroup analysis as we believed this to be such an important consideration.
2. Routine administration of intravenous (IV) fluids in the restricted group versus no routine administration of IV fluids in the restricted group. We restricted these analyses to primary outcomes only.

We were unable to undertake the subgroup analysis comparing the administration of IV fluids as the data did not exist.

We assessed differences between subgroups by interaction tests.

Sensitivity analysis

We carried out sensitivity analysis to explore the effect of trial quality for primary outcomes in the review. Where there was risk of bias associated with a particular aspect of study quality (e.g. inadequate allocation concealment), we have explored this by sensitivity analysis.

RESULTS

Description of studies

Results of the search

The search identified 30 publications covering 19 studies. Of these, we have included five studies involving 3130 women in this review (Kubli 2002; O'Sullivan 2009; Scheepers 2002; Scrutton 1999; Tranmer 2005), excluded eight studies (Ciura 2012; Goodall 1999; Kardel 2010; Laifer 2000; Scheepers 2004; Shennan 2005; Yiannouzis 1994; Zhao 1996); one study is awaiting classification (Kordi 2010) and a further five trials are ongoing (Davila-Exposito 2009; Espinosa 2011; Heidari 2012; Simonet 2012; Yarvani 2011).

Included studies

All of the included studies involved women considered at low risk of potentially requiring general anaesthesia (for example, for caesarean section). No studies looked specifically at women considered at increased risk of general anaesthesia.

Of the five included studies, only one study looked at restricting women to only ice chips or sips of water compared with giving women the freedom to eat and drink what they wished during labour. The women who were able to choose what they ate and drank in labour did have some guidance antenatally with easy-to-read guidelines on suggested nutrition and fluid intake during labour based on nutritional guidelines for individuals who participate in prolonged, moderate aerobic exercise (Tranmer 2005). Two included studies looked at restricting women to drinking water only compared with giving women specific foods during labour and encouraging them to take some food and fluids in active labour (O'Sullivan 2009; Scrutton 1999). The remaining two studies looked at giving women water only compared with carbohydrate drinks in labour (Kubli 2002; Scheepers 2002).

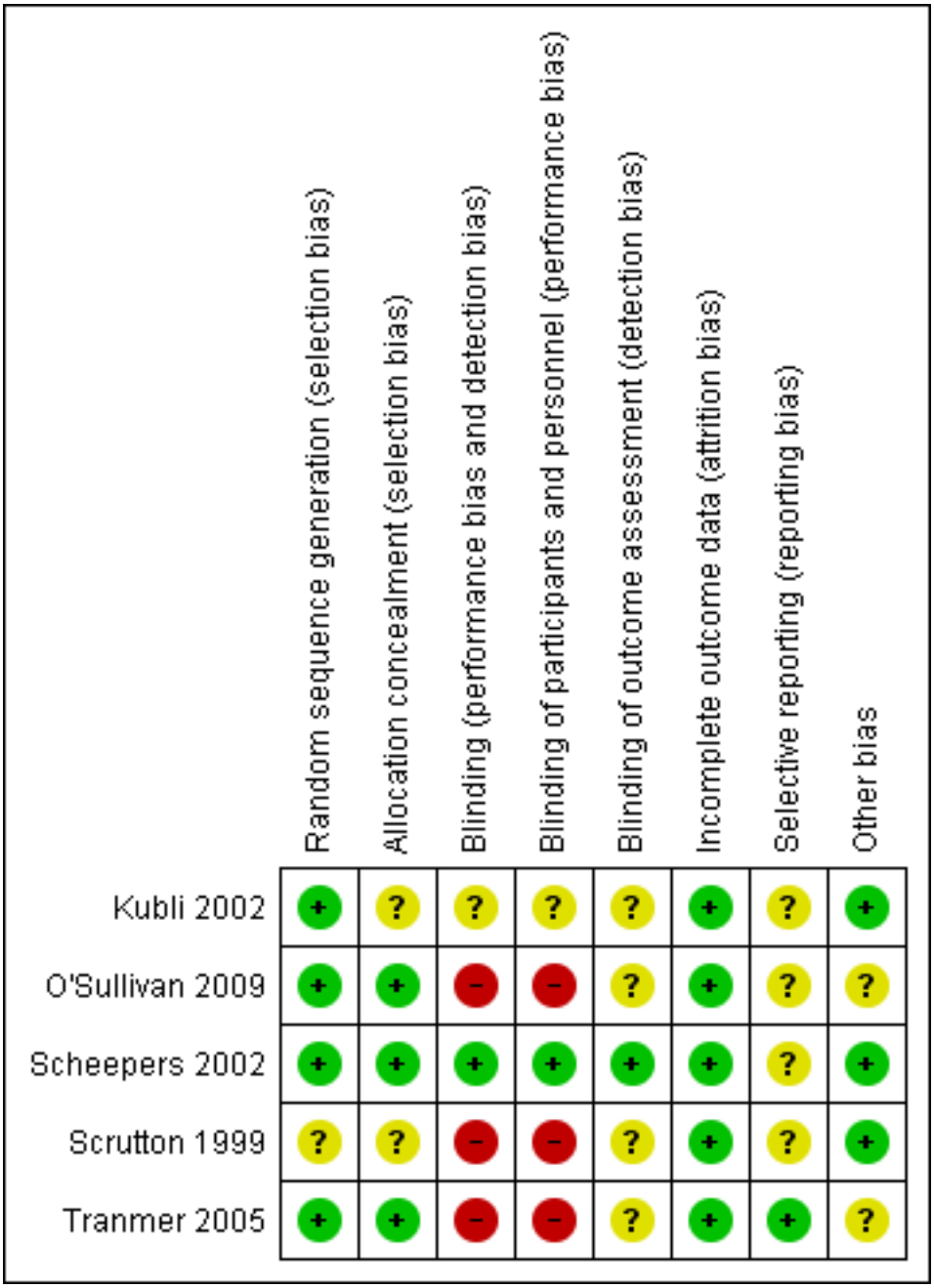
Excluded studies

We excluded eight of the 19 studies identified. We excluded one study because it was a discussion paper (Shennan 2005) and another because it looked at giving a high glucose load once women reached 8 cm to 10 cm dilatation (Scheepers 2004). Two studies looked at women given energy drinks in addition to oral food intake and there was no restriction of fluids and food (Ciura 2012; Kardel 2010). One study in Chinese had no data available despite our having the paper translated, and we were also unsure from this paper just what the intervention and comparison groups were (Zhao 1996). For two studies which fitted our inclusion criteria, sadly the data were not available (Goodall 1999; Yiannouzis 1994). See Characteristics of excluded studies.

Risk of bias in included studies

The studies were of reasonable overall quality although some aspects, such as selective reporting bias, were unclear. However, the review is dominated by one large trial of reasonable overall quality involving 2443 women (O'Sullivan 2009), while the other four studies together involve just 687 women (Kubli 2002; Scheepers 2002; Scrutton 1999; Tranmer 2005). For the Methodological quality summary, *see* Figure 1.

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



Allocation

Three studies had adequate sequence generation and allocation concealment (O'Sullivan 2009; Scheepers 2002; Tranmer 2005). One study had adequate sequence generation but allocation concealment was unclear (Kubli 2002) and one study was unclear for both adequate sequence generation but allocation concealment (Scrutton 1999).

Blinding

The only study that blinded the women and the clinicians was the study comparing carbohydrate fluids with coloured water (Scheepers 2002). Studies that looked at women in labour eating and drinking compared with women having ice chips or water only were not able to blind women or clinicians, and hence some outcomes may be subject to bias.

Incomplete outcome data

We considered all studies to have complete outcome data reported. There were a few exclusions but these were very small compared with the overall numbers of women involved (*see* Characteristics of included studies).

Selective reporting

The assessment of selective reporting bias was considered adequate for the one study where we were able to assess the trial protocol as reported in the PhD thesis (Tranmer 2005). We assessed the other studies as unclear on selective reporting bias, as we were unable to assess the trial protocols.

Other potential sources of bias

Three studies were assessed as free of other sources of bias (Kubli 2002; Scheepers 2002; Scrutton 1999). For the other studies we assessed this aspect as unclear.

Effects of interventions

1. Any restriction of oral fluid and food versus some eating and drinking (five studies, 3130 women)

Five studies assessed this comparison (Kubli 2002; O'Sullivan 2009; Scheepers 2002; Scrutton 1999; Tranmer 2005). The overall quality of the studies was reasonable with three studies having adequate randomisation sequence generation, allocation concealment and no exclusions of loss to follow-up (O'Sullivan 2009; Scheepers 2002; Tranmer 2005). The large size of the O'Sullivan 2009 study in comparison with the size of the other studies means that for any outcome that included data from the O'Sullivan 2009 study will be dominated by these data. This study was undertaken in a highly medicalised environment where women entering the study were considered to have no known obstetric or medical complication that would increase the likelihood of an operative birth, yet 30% of women in the trial had a caesarean section. Other interventions, including oxytocin augmentation, IV fluids, epidurals, and instrumental births, also showed high rates in this study (Table 1).

Since in this comparison we were pooling a range of restrictive practices and a range on comparison forms of care, we considered we had clinical heterogeneity. We, therefore, used the random-effects model of meta-analyses as we did not expect a single common (or 'fixed') effect underlying every study in the meta-analysis. Rather, we assumed that the individual studies were estimating different treatment effects and that the different effects had a distribution with some central value and some degree of variability. For those analyses where there was moderate or high statistical heterogeneity (I^2 greater than 30%), we have provided estimates of Tau^2 I^2 and the P value of the Chi^2 test for heterogeneity.

Primary outcomes

Reporting all the meta-analyses as random-effects, we identified no significant differences in:

- caesarean section (average risk ratio (RR) 0.89, 95% confidence interval (CI) 0.63 to 1.25, five studies, 3103 women, (T^2 = 0.07, Chi^2 P = 0.05, I^2 = 57%), Analysis 1.1);
- operative vaginal birth (average RR 0.98, 95% CI 0.88 to 1.10, five studies, 3103 women, Analysis 1.2);
- Apgar scores less than seven at five minutes (average RR 1.43, 95% CI 0.77 to 2.68, four studies, 2902 infants, Analysis 1.4).

None of the studies assessed maternal satisfaction or infant hypoglycaemia.

Secondary outcomes

Reporting all the meta-analyses as random-effects, we identified no significant differences in:

- maternal ketosis (average RR 0.99, 95% CI 0.66 to 1.49, one study, 328 women, Analysis 1.6);
- duration of labour (average mean difference (MD) -0.29, 95% CI -1.55 to 0.97, three studies, 476 women, (T^2 = 0.72, Chi^2 P = 0.09, I^2 = 58%), Analysis 1.10);
- maternal nausea (average RR 0.80, 95% CI 0.54 to 1.18, one study, 255 women, Analysis 1.12);
- maternal vomiting (average RR 0.90, 95% CI 0.62 to 1.31, three studies, 2574 women, (T^2 = 0.06, Chi^2 P = 0.13, I^2 = 50%), Analysis 1.13);
- augmentation of labour (average RR 1.02, 95% CI 0.95 to 1.09, five studies, 3103 women, Analysis 1.14);
- narcotic pain relief (average RR 0.94, 95% CI 0.74 to 1.21, three studies, 349 women, (T^2 = 0.04, Chi^2 P = 0.0002, I^2 = 88%), Analysis 1.15);
- epidural analgesia (average RR 0.98, 95% CI 0.91 to 1.05, five studies, 3103 women, Analysis 1.16);
- infant admission to intensive care (average RR 1.03, 95% CI 0.73 to 1.45, one study, 2426 infants, Analysis 1.34).

Regurgitation during anaesthesia and Mendelson's syndrome were not estimable (Analysis 1.18; Analysis 1.19) and other secondary outcomes were not assessed in the included studies.

Although we have chosen to use a random-effects model throughout this comparison, for some outcomes there appeared to be no statistical heterogeneity (e.g. for Analysis 1.2 Operative vaginal delivery and Analysis 1.4 Apgar score less than seven at five minutes, for both I^2 = 0% and Tau^2 = 0).

2. Complete restriction of oral fluid and food (other than ice chips) versus freedom to eat and drink (one study, 330 women)

Only one study looked at complete restrictions to fluid and food (ice chips only or sips of water only) intake compared with women having the freedom to eat and drink at will. Although there were discussions antenatally about suggested nutrient and fluid intake during labour based on nutritional guidelines for individuals who participate in exercise (prolonged, moderate, aerobic), the women were encouraged to bring to the hospital their own food and drink choices and caregivers did not actively encourage or discourage oral intake in the group able to eat and drink (Tranmer 2005).

The quality of the study was good overall, with adequate sequence generation, allocation concealment and no exclusions nor loss of data (*see* Figure 1).

Primary outcomes

There were no significant differences identified in:

- caesarean sections (RR 0.77, 95% CI 0.51 to 1.16, one study, 328 women, Analysis 2.1);
- operative vaginal births (RR 0.99, 95% CI 0.72 to 1.35, one study, 328 women, Analysis 2.2).

There were no infants with Apgar scores less than seven at five minutes, and the other primary outcomes of maternal satisfaction and neonatal hypoglycaemia were not assessed in the included study.

Secondary outcomes

There were no significant differences identified in:

- maternal ketosis (RR 0.99, 95% CI 0.66 to 1.49, one study, 328 women, Analysis 2.6);
- duration of labour (MD -0.80, 95% CI -2.13 to 0.53, one study, 328 women, Analysis 2.10);
- maternal nausea (RR 0.80, 95% CI 0.54 to 1.18, one study, 255 women, Analysis 2.12);
- augmentation of labour (RR 0.98, 95% CI 0.81 to 1.18, one study, 328 women, Analysis 2.14);
- epidural (RR 0.92, 95% Ci 0.81 to 1.04, one study, 328 women, Analysis 2.16).

Mendelson's syndrome was not estimable, and the other secondary outcomes were not assessed in this one included study.

3. Water only versus freedom to eat and drink (no studies)

There were no studies identified looking at this comparison.

4. Oral carbohydrate based fluids versus freedom to eat and drink (no studies)

There were no studies identified looking at this comparison.

5. Specific oral fluid and food versus freedom to eat and drink (no studies)

There were no studies identified looking at this comparison.

6. Complete restriction of oral fluid and food (other than ice chips versus specific oral foods and fluids (no studies)

There were no studies identified looking at this comparison.

7. Water only versus particular oral fluid and food (two studies, 2520 women)

Two studies looked at the comparison of restricting women to taking only water during active labour compared with advising and encouraging women to take low-residue foods in labour (O'Sullivan 2009; Scrutton 1999). Neither study was able to blind women or clinicians and this may have impacted on the assessment of some outcomes. The large O'Sullivan 2009 study (2426 women) had adequate randomisation sequence generation, allocation concealment and had no significant exclusions or loss of data. The other small study (94 women) was of unclear quality as there was insufficient information available to assess adequately (Scrutton 1999).

Primary outcomes

There were no significant differences identified in:

- caesarean section (RR 1.02, 95% CI 0.91 to 1.15, two studies, 2514 women, Analysis 7.1);
- operative vaginal birth (RR 0.96, 95% CI 0.84 to 1.10, two studies, 2514 women, Analysis 7.2);
- Apgar scores less than seven at five minutes (RR 1.39, 95% CI 0.73 to 2.63, two studies (although only one was estimable), 2514 infants, Analysis 7.4).

The other primary outcomes of maternal satisfaction and neonatal hypoglycaemia were not assessed in these included studies.

Secondary outcomes

There were no significant differences identified in:

- duration of labour (MD -1.10, 95% CI -2.66 to 0.46, one study, 88 women, Analysis 7.10);
- maternal vomiting (average RR 0.76, 95% CI 0.41 to 1.41, two studies, 2514 women, random-effects (T^2 = 0.15, Chi^2 P = 0.08, I^2 = 68%), Analysis 7.13);
- augmentation of labour (average RR 0.97, 95% CI 0.80 to 1.19, two studies, 2514 women, random-effects (T^2 = 0.01, Chi^2 P = 0.08, I^2 = 67%), Analysis 7.14);
- narcotic pain relief (RR 1.00, 95% CI 0.91 to 1.09, one study, 88 women, Analysis 7.15);
- epidural analgesia (RR 1.02, 95% CI 0.97 to 1.08, two studies, 2514 women, Analysis 7.16);
- infant admission to intensive care (RR 1.03, 95% CI 0.73 to 1.45, one study, 2426 infants, Analysis 7.34).

Regurgitation during anaesthesia and Mendelson's syndrome were not estimable (Analysis 7.18; Analysis 7.19) and other secondary outcomes were not assessed in the included studies.

8. Oral carbohydrate based fluids versus specific oral fluid and food (no studies)

There were no studies identified looking at this comparison.

9. Complete restriction of fluid and food (other than ice chips) versus oral carbohydrate based fluids (no studies)

There were no studies identified looking at this comparison.

10. Water only versus oral carbohydrate based fluids (two studies, 263 women)

Two studies looked at restricting women to water only compared with giving them carbohydrate drinks (Kubli 2002; Scheepers 2002). We assessed the larger study (203 women of mixed risk) to be of good quality with only the selective reporting bias being unclear (Scheepers 2002). We assessed the smaller study (60 women of low risk) as unclear for allocation concealment, blinding and selective reporting boas (Kubli 2002).

Primary outcomes

There were no significant differences identified in:

- caesarean section (average RR 0.66, 95% CI 0.17 to 2.53, two studies, 261 women, random-effects (T^2 = 0.74, Chi^2 P = 0.03, I^2 = 79%), Analysis 10.1);
- operative vaginal birth (RR 1.17, 95% CI 0.80 to 1.71, two studies, 261 women, Analysis 10.2);
- Apgar scores less than seven at five minutes (RR 3.00, 95% CI 0.13 to 70.83, one study, 60 infants, Analysis 10.4).

The other primary outcomes of maternal satisfaction and neonatal hypoglycaemia were not assessed in these studies.

Secondary outcomes

There were no significant differences identified in:

- duration of labour (MD 0.95, 95% CI -0.42 to 2.32, one study, 60 women, Analysis 10.10);
- maternal vomiting (RR 1.27, 95% CI 0.69 to 2.33, one study, 60 women, Analysis 10.13);
- augmentation of labour (RR 1.07, 95% CI 0.75 to 1.52, two studies, 261 women, Analysis 10.14);
- narcotic pain relief (average RR 0.86, 95% CI 0.36 to 2.06, two studies, 261 women, random-effects (T^2 = 0.38, Chi^2 P = 0.00001, I^2 = 95%), Analysis 10.15);
- epidural analgesia (average RR 0.80, 95% CI 0.44 to 1.43, two studies, 261 women, random-effects (T^2 = 0.14, Chi^2 P = 0.04, I^2 = 76%), Analysis 10.16).

The other secondary outcomes were not assessed in the included studies.

DISCUSSION

Summary of main results

This review includes five studies involving 3130 women. There are four comparisons with associated data and 41 meta-analyses.

For women considered at low risk of potentially needing general anaesthesia

We identified no benefits or risks of restricting oral fluids and foods in labour, in women at low risk of potentially requiring general anaesthesia in this review. In particular, in none of the primary outcomes of caesarean section, operative vaginal birth and five-minute Apgar score less than seven did we see any statistically significant difference between the groups. Maternal satisfaction and hypoglycaemia, both also primary outcomes in this review, were not reported in any of the included studies. No women included in this review suffered from regurgitation during general anaesthesia or Mendelson's syndrome, a very rare complication in modern anaesthesia. We were not able to undertake a systematic review of such adverse outcomes, but plan to do so in a future update if data become available. There were no significant differences identified in any of the outcomes assessed in the review for women at low risk of potentially needing general anaesthesia in any of the comparisons made, though this may be related to the small numbers of women involved in the assessment of some individual outcomes. However, one large study dominated the findings in this meta-analysis (O'Sullivan 2009) and this hospital had high medical intervention rates. In particular, this study (O'Sullivan 2009) included only women with no known obstetric or medical complication that would increase the likelihood of an operative birth, yet 30% of women in the study had a caesarean section. It may be that in less medicalised environments there might be differences in outcomes identified. Also, women were told that "...eating was not recommended in labour...but were actively encouraged to do so if randomised to the feeding arm". Since most women do not want conflict with their caregivers, this may have influenced their behaviour.

Only one study looked at restricting oral intake in labour with women who had freedom to eat and drink at will during labour. No benefits or risks of restricting women in this way were identified for women at low risk of needing a general anaesthetic.

Looking at restricting women to water only compared with giving them carbohydrate drinks during labour, identified different findings for the two studies (Kubli 2002; Scheepers 2002). One study, involving 203 women, showed a reduction in caesarean section for women taking water only (risk ratio (RR) 0.34, 95% confidence interval (CI) 0.15 to 0.77, 201 women) and the authors postulated that this may be due to a re-distribution of blood flow to the gastrointestinal tract from the myometrium (Scheepers 2002). However, the other study found no difference in the incidence of caesarean sections (RR 1.33, 95% CI 0.53 to 3.38, 60 women). It is unclear where this difference arises from and could merely be a result of small numbers of women included in the studies. It would be important to investigate this further as some carbohydrate drinks may increase the risk of caesarean section. It would be worth comparing the use of carbohydrate drinks compared with freedom to eat and drink at will during labour to see if this really is a problem.

For women at increased risk of potentially needing general anaesthesia

There were no studies looking at this population of women. Again, the better general anaesthetic techniques and the increased use of regional anaesthesia mean that the incidence of Mendelson's syndrome and regurgitation during general anaesthesia are very rare in this population of women as well.

Overall completeness and applicability of evidence

When considering any restriction of fluids and food during labour compared with some fluids and food available to women, the pooled data are dominated by one large study involving 2443 women at low risk of complications (O'Sullivan 2009). However, in this study there were very high intervention rates, particularly for women considered at low risk of complications (over 50% oxytocin augmentation, just under 70% getting intravenous fluids and epidurals in labour, 30% caesarean sections, 27% operative vaginal births). In addition, 20% of the women in the water-only arm ate during labour and 29% of the women in the food and fluids arm chose not to eat in labour (Table 1). This clearly reflects the wide variation in women's wishes for food and fluids during labour.

Quality of the evidence

The overall quality of the evidence was reasonable (Figure 1).

Potential biases in the review process

The possibility of introducing bias was present at every stage of reviewing process. We attempted to minimise bias in a number of ways; two review authors assessed eligibility for inclusion, carried out data extraction and assessed risk of bias. Each worked independently. Nevertheless, the process of assessing risk of bias, for example, is not an exact science and includes many personal judgements.

Agreements and disagreements with other studies or reviews

Although restricting fluids and foods during labour has been standard policy in many countries over many years (McCormick 2002; Pengelley 1998), current policies are tending to be less restrictive (NICE 2007). This possibly reflects an acknowledgement

of the lack of evidence to restrict women's access to fluids and food during labour (NICE 2007) and some women's unpleasant and harrowing experiences of such restrictions (Armstrong 2000; Johnson 1989). Although NICE suggested that women should be informed that isotonic drinks may be more beneficial than water, our evidence suggests otherwise (NICE 2007). Where NICE looked at one study (Kubli 2002) that assessed the impact of isotonic drinks on blood levels of biochemical substances, we assessed the impact on clinical outcomes and included all studies assessing carbohydrate solutions, with one study showing an increase in caesarean sections with carbohydrate solutions compared with water. There clearly needs to be more research on this aspect.

AUTHORS' CONCLUSIONS

Implications for practice

The evidence identified no benefits or harms associated with restricting women's access to fluids and foods during labour for women at low risk of potentially requiring a general anaesthetic, although the studies did not assess women's views or feelings of control. Hence, women should have the autonomy and freedom to choose whether to eat or drink in labour, or not. Women should be able to consume what they desire and in doing so experience no adverse impact on labour, maternal or fetal outcomes. Most women seem to naturally reduce their intake as labour progresses and becomes more intense. We found no evidence from randomised trials on which to base practice regarding food or fluids in labour for women at increased risk of complications.

Implications for research

Further research would be helpful to determine the impact of differing fluids and foods taken during labour, such as carbohydrate solutions. While Mendelson's syndrome is an important adverse outcome, it is very rare and not the most appropriate outcome measure for studies exploring the effectiveness of food and fluid intake during labour. A better approach to the problem of this very rare but important complication of regurgitation during general anaesthesia and Mendelson's syndrome, would be to study interventions that have been shown to be effective at reducing the acidity and volume of stomach contents for elective caesarean section (Paranjothy 2010) to see if such interventions are effective if implemented during labour once it has been decided that a general anaesthetic is required. In addition, research is needed to determine the most effective nutrient and hydration strategies for women in labour within the context of common medical and obstetrical practices, such as epidurals and oxytocin stimulation.

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* Indicates the major publication for the study

CHARACTERISTICS OF STUDIES

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

Kubli 2002

Methods	RCT of individual women.
Participants	**Inclusion**: women at low risk of complications in early labour (> 37 weeks; singleton; cephalic; < 5 cm dilatation). N = 60. **Exclusion**: obstetric or medical complication; increased likelihood OVB or CS; mothers requesting IM meperidine.
Interventions	**Intervention**: water only, as much as desired. **Comparison**: isotonic sports drink (dextrose, maltolactose, glucose, 28 kcal/dL), women encouraged to drink 500 mL in 1st hour and further 500 mL every 3-4 hours. Small quantities of water were also available if desired.
Outcomes	Vomiting; duration of labour; oxytocin augmentation; mode of birth; Apgar scores; umbilical artery and venous blood gasses. Also: plasma ß-hydroxybutryate; NEFAs; glucose measured early and at end of 1st stage of labour; residual gastric volume (assessed using real-time ultrasound).
Notes	• Review comparison 1 and 10. • The isotonic sport drinks were acceptable to most mothers in the sport drink group, with only 1 woman refusing to consume more than 200 mL for the study. • Data on metabolic gastric volume and vomiting data were analysed by parametric methods using linear regression analysis, adjusting for baseline as appropriate.

Kubli 2002 *(Continued)*

- At the end of labour, plasma ß-hydroxybutryate (principal ketone produced in starvation) and non-esterified fatty acids were significantly raised and plasma glucose significantly decreased in the water-only group.

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Computer random number generation.
Allocation concealment (selection bias)	Unclear risk	"Sealed envelopes were opened after recruitment to the study" but no mention if numbered or if opaque.
Blinding (performance bias and detection bias) All outcomes	Unclear risk	No information on blinding.
Blinding of participants and personnel (performance bias) All outcomes	Unclear risk	No information on blinding.
Blinding of outcome assessment (detection bias) All outcomes	Unclear risk	No information on blinding of assessors.
Incomplete outcome data (attrition bias) All outcomes	Low risk	No women withdrew from the study.
Selective reporting (reporting bias)	Unclear risk	Not apparent but we did not assess the protocol so cannot be sure.
Other bias	Low risk	No evidence of other bias.

O'Sullivan 2009

Methods	RCT of individual women.
Participants	**Inclusion**: women in labour at low risk of complications (no known obstetric or medical complication that would increase the likelihood of operative birth; nulliparous; singleton; cephalic; > 36 weeks; no diabetes; but included induction and augmentation); also women were < 6 cm. N = 2443 women randomised, 2426 women analysed. **Exclusion**: multiparous; women with a known obstetric or medical complication that could have increased the likelihood of an operative birth, were in severe pain, intended to use parenteral opioids for analgesia in labour; unable to understand English (and no interpreter available).
Interventions	**Intervention**: water and ice chips only. **Comparison**: specific foods and fluids encouraged (women advised to consume low fat, low-residue diet at will during labour). Foods advised were: bread, biscuits, vegetables, fruits, low fat yoghurt, soup, isotonic drinks and fruit juice.
Outcomes	Primary: spontaneous vaginal birth.

O'Sullivan 2009 *(Continued)*

	Secondary: included: duration of labour; use of IV oxytocin for augmentation; CS; OVB; food intake in 6 hours before labour (snacks/light meal/large meal); food intake in labour (no intake/water only/calorific drinks/solids).
Notes	• Review comparison 1 and 7. • 20% of women in the water-only group ate in labour and 29% of women in the food and fluid group choose not to eat during labour. • There were high intervention rates for women assessed as at low risk (women with a known obstetric or medical complication that could have increased the likelihood of an operative birth were excluded, though induction and augmentation were included) (Table 1). It is unclear how these high rates in interventions arose in the low-risk population.

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	"...computer randomisation..."
Allocation concealment (selection bias)	Low risk	“Entry of a woman’s initials, hospital number, and date of birth on to a dedicated computer on the labour ward automatically generated the allocation group together with a study number, which was then recorded on the outcomes sheet. These data could, if necessary, be verified against the computer randomisation at a later date.”
Blinding (performance bias and detection bias) All outcomes	High risk	"The attending obstetricians and midwives made all the relevant decisions about the woman’s obstetric management but obviously could not be blinded to trial allocation. The people deciding on obstetric interventions were generally unaware of the trial intervention allocation and had no vested interest in the study."
Blinding of participants and personnel (performance bias) All outcomes	High risk	"The attending obstetricians and midwives made all the relevant decisions about the woman’s obstetric management but obviously could not be blinded to trial allocation."
Blinding of outcome assessment (detection bias) All outcomes	Unclear risk	Information on this is not clear in the publication.
Incomplete outcome data (attrition bias) All outcomes	Low risk	• 2443 women were randomised but 17 were excluded from final analysis, leaving 2426. 9 were lost from the water-only group (1 withdrew, 4 were multiparous, 1 diabetic, 1 breech, 1 subarachnoid haemorrhage death and 1 had no data) and 8 from the eating group (2 withdrew, 4 multiparous, 1 diabetic and 1 had no data). • Although the authors report the study as ITT, it is not strictly so because of 17 exclusions, so ‘available data analysis’, but the loss of 17/2443 (0.6%) is unlikely to impact on outcomes.
Selective reporting (reporting bias)	Unclear risk	Paper specifies some of the outcomes to be assessed and we did not assess the protocol.
Other bias	Unclear risk	20% of women in the water-only group ate in labour. This may have caused some bias in the outcome estimations, but shows in part women's views of restricting food and fluids during labour. 29% of women chose not to eat any food during labour. This would be considered part of women's freedom of choice whether to eat or not during labour.

Scheepers 2002

Methods	RCT of individual women.
Participants	**Inclusion**: nulliparous women in early labour (singleton; cephalic; 2-4 cm dilatation). N = 203. **Exclusion**: elective CS; multiple pregnancy; diabetes, and women who were considered by the attending clinician to have a direct risk for a CS.
Interventions	**Intervention**: flavoured water (artificial aroma, aspartame, acesulfame), as much as desired. **Comparison**: carbohydrate drink (per 100 mL: 12.6 g carbohydrates: 9.8% polysach/Na: 50 mg, Osm: 280 mOsm/L), as much as desired.
Outcomes	Duration of the active labour (i.e. from randomisation to birth), pain medication; augmentation; the mode of birth, fetal presentation; birthweight, fetal arterial cord pH and Apgar scores.
Notes	• Review comparison 1 and 10. • 81.5% of women pregnancies considered at increased risk of complications (water group 83% and CHO group 80%), e.g. non-progressing labour, meconium, fetal distress, hypertension/pre-eclampsia, duration of pregnancy > 42 weeks, duration of pregnancy < 37 weeks, small-for-gestational age, maternal disease. These either arose during the study or were considered at recruitment not leading to an increased risk of requiring a CS. • In both groups, no additional food or drinks were offered, but on specific demand, women could take small standardised amounts of food or drinks. About 32% of women in each group had additional intake.

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	'Computerised list.'
Allocation concealment (selection bias)	Low risk	'Drawing consecutive envelopes, which included numbers of a computerised list corresponding to numbered bottles in identical packages.'
Blinding (performance bias and detection bias) All outcomes	Low risk	'In identical packages' 'both solutions had an identical taste and colour and were prepared by the producer of the carbohydrates.'
Blinding of participants and personnel (performance bias) All outcomes	Low risk	'In identical packages' 'both solutions had an identical taste and colour and were prepared by the producer of the carbohydrates.'
Blinding of outcome assessment (detection bias) All outcomes	Low risk	'In identical packages' 'both solutions had an identical taste and colour and were prepared by the producer of the carbohydrates.'
Incomplete outcome data (attrition bias) All outcomes	Low risk	Data were missing in 2 women and so less than 1% which should not affect outcomes.
Selective reporting (reporting bias)	Unclear risk	Not apparent, but we did not assess the protocol so cannot be sure.

Scheepers 2002 *(Continued)*

Other bias	Low risk	No evidence of other bias.

Scrutton 1999

Methods	RCT of individual women, stratified by parity and induction.
Participants	**Inclusion**: women at low risk of complications in early labour (> 37 weeks; singleton; cephalic; < 5 cm dilatation). N = 94. **Exclusion**: obstetric or medical complication increasing the likelihood of instrumental delivery or CS; requesting IM pethidine for analgesia.
Interventions	**Intervention**: water only. **Comparison**: low residue food (women were allowed to select from a low-residue diet throughout the course of labour).
Outcomes	Vomiting; duration of first and second stage of labour; oxytocin requirements; mode of birth; Apgar scores; umbilical artery and venous blood gases. Also: plasma ß-hydroxybutyrate; nonesterified fatty acids; glucose; insulin and lactate; gastric volume.
Notes	• Review comparison 1 and 7. • Groups were similar in relation to age, parity, induction, cervical dilatation at randomisation. Epidural rate was 40%. • Power calculation based on biochemical parameters. • Metabolic, gastric volume and vomiting data were analysed using linear regression analysis with dummy variables for treatment, adjusting baseline as appropriate. • ß-hydroxybutyrate (principle ketone produced in starvation) and nonesterified fatty acids were significantly increased in the water-only group.

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	No information provided.
Allocation concealment (selection bias)	Unclear risk	Sealed, pre-randomised envelopes.
Blinding (performance bias and detection bias) All outcomes	High risk	Blinding of participants and clinician was not feasible.
Blinding of participants and personnel (performance bias) All outcomes	High risk	Blinding of participants and clinician was not feasible.
Blinding of outcome assessment (detection bias) All outcomes	Unclear risk	Information on blinding of outcome assessor was not provided

Scrutton 1999 *(Continued)*

Incomplete outcome data (attrition bias) All outcomes	Low risk	2 women withdrew from the trial (1 from each group). 4 (2 from each group) were excluded because they reached the second stage of labour within 1 hour of entry to the study. Their data could not be re-included but were not considered large enough (6%) to impact differentially on outcomes.
Selective reporting (reporting bias)	Unclear risk	Not apparent, but we did not assess the protocol so cannot be sure.
Other bias	Low risk	2 groups were similar with respect to age, parity, induction and cervical dilatation at the time of randomisation.

Tranmer 2005

Methods	RCT of individual women at low risk of complications.
Participants	**Inclusion**: women at low risk of complications (> 30 weeks; singleton; no recorded maternal or fetal complication). N = 330. **Exclusion**: planned CS; maternal illness such as oral intake would be restricted during labour and IV therapy required (e.g. diabetes); fetal compromise such that there was high risk of CS (e.g. severe FGR, fetal anomalies).
Interventions	**Intervention**: ice chips and sips water (women were permitted ice chips, popsicles, or sips of fluid during active labour. Women received no specific or written instructions on oral intake during labour and were permitted). **Comparison**: unrestricted access to their choice of food and fluids during labour (women received a booklet containing easy-to-read guideline on suggested nutrient and fluid intake during labour based on nutritional guidelines for individuals who participate in prolonged, moderate, aerobic exercise. Women in the intervention group were encouraged to eat easily digestible foods or fluids in frequent and small amounts and to bring their own selection of desired food and drinks. Although the investigators suggested certain foods and fluids, women were free to consume what they desired).
Outcomes	Primary: incidence of dystocia (mean rate of dilatation of < 0.5 cm/hr during a period of at least 4 hours after 3 cm cervical dilatation). Secondary: perception of thirst, hunger, nausea, and fatigue; labour length, the incidence of medical interventions during labour, fluid and nutrient balance, and the incidence of maternal and newborn complications.
Notes	• Review comparison 1 and 2. • There is a typing error in the published paper. Where it reports (page 323) "Intravenous therapy was initiated in 85% (n = 278) of all labours, generally between 3 and 4 cm dilatation. Normal saline or Ringers lactate solutions were the most common solutions used in conjunction with epidural. When labours were augmented with oxytocin, the oxytocin was administered in a solution of 2/3 glucose and 1/3 saline". This should have read "Intravenous therapy, with isotonic solutions of either Ringer's lactate or normal saline, was used in 85% of labours (n = 278), most commonly for initiation of oxytocin therapy or fluid hydration for initiation of epidural analgesia. In 2 instances, one in the control and one in the intervention group, women received a solution of 2/3 glucose and 1/3 saline". (Tramner 2009, personal communication). • During early labour at home, most women in both groups tended to follow their normal dietary pattern with around 50% reporting carbohydrate intake. Oral intake was recorded both at home and in hospital. • Oral intake (but not inclusion in the study) was restricted when women developed intrapartum complications or had epidural analgesia.

Tranmer 2005 *(Continued)*

- Women rated their perceptions of thirst, hunger, nausea and fatigue on 7-point Linkert-type scales anchored at each end with descriptors, such as *worst nausea* to *no nausea*.
- Intervention rates: IV oxytocin 41%; epidurals 77%; CS 22%; OVB 2%.
- Of the 78% who returned the questionnaire, 56% (63/119) of women in the unrestricted access group reported they ate or drank some source of carbohydrates, in comparison to only 13% (15/120) in the ice-chips/sips of water-only group.

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	"...computer-generated group assignment designations."
Allocation concealment (selection bias)	Low risk	"..sequentially numbered opaque envelopes..."
Blinding (performance bias and detection bias) All outcomes	High risk	Participants and clinicians cannot be blinded.
Blinding of participants and personnel (performance bias) All outcomes	High risk	Participants and clinicians cannot be blinded
Blinding of outcome assessment (detection bias) All outcomes	Unclear risk	No information provided.
Incomplete outcome data (attrition bias) All outcomes	Low risk	2 women withdrew after randomisation. Primary outcomes and clinical estimates, none from restricted group and 2 women lost from freedom to E&D group. For data from questionnaires; 22% (72/330) lost - more than 20% loss so some risk of bias. Losses were 24% in ice chips group and 19% in free to E&D group. Overall for clinical outcomes, loss of data probably not significant.
Selective reporting (reporting bias)	Low risk	All pre-specified outcomes were reported and we assessed the protocol as set out in the author's thesis (Tranmer 2005).
Other bias	Unclear risk	Oral intake was restricted when women developed intrapartum complications or had epidural analgesia. Epidural analgesia was used in 120/165 (73%) of women in the water-only group and 129/163 (79%) women in the freedom to eat group. It is unclear whether this impacted on outcomes. Of the 78% who returned the questionnaire, 56% (63/119) of women in the unrestricted access group reported they ate or drank some source of carbohydrates, in comparison to only 13% (15/120) in the ice-chips/sips of water-only group

CHO: carbohydrate
CS: caesarean section
E&D: eating and drinking
FGR: fetal growth restriction
hr: hour

IM: intramuscular
ITT: intention-to-treat
IV: intravenous
NEFAs: non-esterified fatty acids
OVB: operative vaginal births
RCT: randomised controlled trial

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

Study	Reason for exclusion
Ciura 2012	The purpose of this study was to assess if additional energy drinks could improve outcomes. Both groups of women were allowed additional oral food intake and there was no restriction of fluids and food.
Goodall 1999	This was an RCT of women at low risk of complications randomised to sips of water or feeding in labour. We attempted to contact the author but without success. The publication was a trial registration form with no available data.
Kardel 2010	The purpose of this study was to assess if additional energy, above women eating and drinking at will, might improve outcomes. There was no restriction of fluid and food in this study.
Laifer 2000	This was an RCT of women at low risk of complications randomised to iced water plus IV hydration compared with women given clear oral liquids. This was a conference abstract only, and we tried to contact the authors but as yet with no success. It is unclear what 'clear liquids' meant and whether these contain sugars or not.
Scheepers 2004	The study was not looking at the same participants as the review. The participants in the study were women at 8-10 cm dilatation given high glucose load.
Shennan 2005	This is a discussion paper.
Yiannouzis 1994	This was an RCT of women at low risk of complications randomised to water only or women offered a low-fat diet during labour. Through personal communication with the author we understand the data are no longer available. The study reported the following. There was no statistical difference identified between the 2 groups in the outcomes of labour except in the occurrence of vomiting and length of labour. Women in the low-fat diet group were twice as likely to vomit as those in the control group and their labours were longer. Most women did not crave large amounts of food during labour. Some women commented that vomiting is less unpleasant if the stomach is not empty. The increased length of labour may not have been perceived as totally negative as women applauded the availability of choice and the improved social context of labour when food was offered.
Zhao 1996	This was a quasi RCT of healthy nulliparous women in labour randomised to routine diet in labour or a high-energy liquid diet in labour. The study was published in Chinese and we had it translated but no data were presented.

IV: intravenous
RCT: randomised controlled trial

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

Kordi 2010

Methods	RCT - double blind.
Participants	Nulliparous women in labour, at low-risk; singleton; vertex; spontaneous labour; > 4 cm dilation.

Kordi 2010 *(Continued)*

Interventions	Intervention: small quantities of water plus placebo. Comparison: honey-date syrup.
Outcomes	Duration of labour.
Notes	We are trying to contact the authors for information on how many women were in each group, standard deviations and information for the 'Risk of bias' assessment.

RCT: randomised controlled trial

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

Davila-Exposito 2009

Trial name or title	Davila-Exposito study.
Methods	RCT.
Participants	Incluson criteria: women in labour attending 1 of the 2 hospitals (University Hospital “Joan XXIII” in Tarragona, and University Hospital “Verge de la Cinta” in Tortosa, Spain). Women at low or medium risk (of complications during labour), women in active labour, without epidural, who want to participate in the study. Exclusion criteria: women > 5 cm dilated, women in labour using prostaglandins/oxytocins, women taking anxiolytics/antidepressants, women who want delayed cord clamping.
Interventions	**Intervention**: water. **Comparison**: isotonic drinks (Gatorade, Isostar, Aquarius).
Outcomes	Duration of labour; times vomited; maternal glycaemia – measured at beginning of labour and birth; level of maternal satisfaction; ketonuria; posture during dilation; variability; fetal wellbeing; neonatal glycaemia determined by testing the blood in the umbilical cord; Apgar score; pH of foetal blood tested in the umbilical cord.
Starting date	
Contact information	A. Dávila Expósito. Correo electrónico: kilima78@gmail.com
Notes	New. Published protocol in Spanish.

Espinosa 2011

Trial name or title	Espinosa study.
Methods	RCT - open label.
Participants	Inclusion criteria: women in labour, gestation > 37 weeks, cervical dilation < 5 cm (348 women). Exclusion criteria: maternal pathologies (diabetes, heart disease, pre-eclampsia); breech presentation or any other condition that is an indication of caesarean section; premature rupture of membranes.
Interventions	**Intervention:** fasting - no intake of fluids during labour.

Espinosa 2011 *(Continued)*

	Comparison: oral intake of fluids during labour, from admission (dose: 2 cups of 8 ounces each of clear tea with little sugar).
Outcomes	Duration of labour (measured in minutes from admission to delivery); number of caesarean sections due to prolonged second stage of labour; number of cases of broncho-aspiration.
Starting date	September 2011.
Contact information	Jorge Espinosa, Saint Thomas Hospital, Panama.
Notes	ClinicalTrials.gov: NCT01349686: http://clinicaltrials.gov/ct2/show/NCT01349686 (accessed 16 October 2012). Trial completed.

Heidari 2012

Trial name or title	Heidari study (The effect of oral honey intake on labour progress among nulliparous women).
Methods	RCT.
Participants	Inclusion criteria: women on labour: age between 35-18 years, gestation between 37 and 42 completed weeks based on the first day since last menstrual period or ultrasound, as a physiologic delivery (no intervention) and the existence of at least 5 cm dilatation. Exclusion criteria: lack of obstetric problems history (such as eclampsia, pre-eclampsia, placenta previa, placental abruption, multiple pregnancy, chorioamnionitis , meconium-stained amniotic fluid, polyhydramnios) and psychological problems (e.g. death of parents, spouse, child, separation from a spouse, serious differences with her husband, a major change in life situation, severe financial problems over the past month).
Interventions	**Intervention:** placebo and women can drink some water for thirst. **Comparison:** honey: honey syrup, solution of honey (equivalent to 70 g of carbohydrate) and 140 cc water will be given a half hour after admission. The solution of honey (equivalent to 30 g of carbohydrate) and 600 cc water will be given every half hour (100 cc per each time).
Outcomes	Labour progress.
Starting date	21 April 2011.
Contact information	Tooba Heidari, Arak University of Medical Science, Arak, Markazi, Iran. 4173503-7. heidari.m.831@gmail.com
Notes	Other: IRCT201102041845N4: http://www.irct.ir/searchresult.php?id=1845&number=4 (accessed 16 October 2012). data collection complete.

Simonet 2012

Trial name or title	SOLISO (Evaluation of the Benefits of Glucose Drinks During Childbirth.
Methods	RCT - open label.
Participants	Inclusion criteria: women in labour, 18 years or over. Exclusion criteria: more of 8 cm of dilatation; caesarean section planned; natural delivery non-indicated; pre-partum haemostasis troubles; salicylic acid or anticoagulant treatment; pre-eclampsia

Simonet 2012 *(Continued)*

	or HELLP syndrome; diabetic neuropsy with troubles in gastric emptying; lack of understanding of the information; under guardianship.
Interventions	**Intervention:** fasting. **Comparison:** glucose drink.
Outcomes	Instrumental births.
Starting date	January 2008.
Contact information	Thérèse Simonet, University Hospital, Caen.
Notes	ClinicalTrials.gov: NCT01022697: http://clinicaltrials.gov/ct2/show/NCT01022697 (accessed 16 October 2012).

Yarvani 2011

Trial name or title	Yarvani study (A randomized controlled trial to compare the effect of oral carbohydrate intake or fasting in low-risk women during labor progress).
Methods	RCT.
Participants	Inclusion criteria: women in labour at low-risk; singleton cephalic presentation; and cervical dilatation 3-4 cm. Exclusion criteria: caesarean section; fast labour; and fetal compromise.
Interventions	**Intervention:** water only. **Comparison:** carbohydrates: women were advised to consume 3 medium dates with 110 mLwater; or 3 dates with 110 mL light tea without sugar; or 110 mL orange juice drink based on their preferences. The protocol is only run once but women ate and drank gradually before second stage of labour.
Outcomes	Duration of active phase of labour: frequency and volume of vomiting; neonatal heart rate; Apgar scores; birthweight.
Starting date	4 March 2008.
Contact information	Roghayeh Rahmani, 22 Bahman Hospital, Gonabad University of Medical Sciences, Gonabad, Razavi Khorasan 96916, Iran. Email: roghaiehrahmany@yahoo.com
Notes	Other: IRCT201105155805N2: http://www.irct.ir/searchresult.php?id=5805&number=2 (accessed 16 October 2012)

RCT: randomised controlled trial
HELLP: haemolysis elevated liver enzymes and low platelet count
IMC:

DATA AND ANALYSES

Comparison 1. Any restriction of oral fluid and food versus some fluid and food

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Caesarean section (primary outcome)	5	3103	Risk Ratio (M-H, Random, 95% CI)	0.89 [0.63, 1.25]
1.1 Women at low risk of caesarean/complications	5	3103	Risk Ratio (M-H, Random, 95% CI)	0.89 [0.63, 1.25]
1.2 Women at increased risk of caesarean/complications	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
1.3 Women with no defined risk status	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
2 Operative vaginal birth (primary outcome)	5	3103	Risk Ratio (M-H, Random, 95% CI)	0.98 [0.88, 1.10]
2.1 Women at low risk of caesarean/complications	5	3103	Risk Ratio (M-H, Random, 95% CI)	0.98 [0.88, 1.10]
2.2 Women at increased risk of caesarean/complications	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
2.3 Women with no defined risk status	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
3 Maternal satisfaction (primary outcome)	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
3.1 Women at low risk of caesarean/complications	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
3.2 Women at increased risk of caesarean/complications	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
3.3 Women with no defined risk status	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
4 Apgar < 7 at 5 min (primary outcome)	4	2902	Risk Ratio (M-H, Random, 95% CI)	1.43 [0.77, 2.68]
4.1 Women at low risk of caesarean/complications	4	2902	Risk Ratio (M-H, Random, 95% CI)	1.43 [0.77, 2.68]
4.2 Women at increased risk of caesarean/complications	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
4.3 Women with no defined risk status	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
5 Neonatal hypogylcaemia (primary outcome)	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
5.1 Women at low risk of caesarean/complications	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
5.2 Women at increased risk of caesarean/complications	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
5.3 Women with no defined risk status	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
6 Maternal ketoacidosis	1	328	Risk Ratio (M-H, Random, 95% CI)	0.99 [0.66, 1.49]
6.1 Women at low risk of caesarean/complications	1	328	Risk Ratio (M-H, Random, 95% CI)	0.99 [0.66, 1.49]
6.2 Women at increased risk of caesarean/complications	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
6.3 Women with no defined risk status	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
7 Maternal dehydration	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
7.1 Women at low risk of caesarean/complications	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
7.2 Women at increased risk of caesarean/complications	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
7.3 Women with no defined risk status	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
8 Maternal hyponatraemia	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
8.1 Women at low risk of caesarean/complications	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
8.2 Women at increased risk of caesarean/complications	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
8.3 Women with no defined risk status	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
9 Maternal hypoglycaemia	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
9.1 Women at low risk of caesarean/complications	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
9.2 Women at increased risk of caesarean/complications	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
9.3 Women with no defined risk status	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
10 Duration of labour (hours)	3	476	Mean Difference (IV, Random, 95% CI)	-0.29 [-1.55, 0.97]
10.1 Women at low risk of caesarean/complications	3	476	Mean Difference (IV, Random, 95% CI)	-0.29 [-1.55, 0.97]
10.2 Women at increased risk of caesarean/complications	0	0	Mean Difference (IV, Random, 95% CI)	0.0 [0.0, 0.0]
10.3 Women with no defined risk status	0	0	Mean Difference (IV, Random, 95% CI)	0.0 [0.0, 0.0]
11 Mobility in labour	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
11.1 Women at low risk of caesarean/complications	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
11.2 Women at increased risk of caesarean/complications	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
11.3 Women with no defined risk status	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
12 Maternal nausea	1	255	Risk Ratio (M-H, Random, 95% CI)	0.80 [0.54, 1.18]
12.1 Women at low risk of caesarean/complications	1	255	Risk Ratio (M-H, Random, 95% CI)	0.80 [0.54, 1.18]
12.2 Women at increased risk of caesarean/complications	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
12.3 Women with no defined risk status	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
13 Maternal vomiting	3	2574	Risk Ratio (M-H, Random, 95% CI)	0.90 [0.62, 1.31]
13.1 Women at low risk of caesarean/complications	3	2574	Risk Ratio (M-H, Random, 95% CI)	0.90 [0.62, 1.31]
13.2 Women at increased risk of caesarean/complications	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
13.3 Women with no defined risk status	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
14 Augmentation of labour	5	3103	Risk Ratio (M-H, Random, 95% CI)	1.02 [0.95, 1.09]
14.1 Women at low risk of caesarean/complications	5	3103	Risk Ratio (M-H, Random, 95% CI)	1.02 [0.95, 1.09]
14.2 Women at increased risk of caesarean/complications	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
14.3 Women with no defined risk status	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
15 Narcotic pain relief	3	349	Risk Ratio (M-H, Random, 95% CI)	0.94 [0.74, 1.21]
15.1 Women at low risk of caesarean/complications	3	349	Risk Ratio (M-H, Random, 95% CI)	0.94 [0.74, 1.21]
15.2 Women at increased risk of caesarean/complications	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
15.3 Women with no defined risk status	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
16 Epidural analgesia	5	3103	Risk Ratio (M-H, Random, 95% CI)	0.98 [0.91, 1.05]
16.1 Women at low risk of caesarean/complications	5	3103	Risk Ratio (M-H, Random, 95% CI)	0.98 [0.91, 1.05]
16.2 Women at increased risk of caesarean/complications	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
16.3 Women with no defined risk status	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
17 Poor maternal expulsive efforts	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
17.1 Women at low risk of caesarean/complications	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
17.2 Women at increased risk of caesarean/complications	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
17.3 Women with no defined risk status	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
18 Regurgitation during general anaesthesia	1	2426	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
18.1 Women at low risk of caesarean/complications	1	2426	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
18.2 Women at increased risk of caesarean/complications	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
18.3 Women with no defined risk status	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
19 Mendelson's syndrome	2	2754	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
19.1 Women at low risk of caesarean/complications	2	2754	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
19.2 Women at increased risk of caesarean/complications	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
19.3 Women with no defined risk status	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
20 Maternal mortality	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
20.1 Women at low risk of caesarean/complications	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
20.2 Women at increased risk of caesarean/complications	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
20.3 Women with no defined risk status	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
21 Postpartum haemorrhage (> 1000 ml)	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
21.1 Women at low risk of caesarean/complications	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
21.2 Women at increased risk of caesarean/complications	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
21.3 Women with no defined risk status	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
22 Maternal admission to intensive care	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]

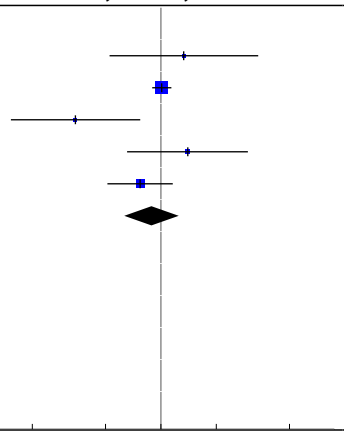
Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
22.1 Women at low risk of caesarean/complications	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
22.2 Women at increased risk of caesarean/complications	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
22.3 Women with no defined risk status	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
23 Length of maternal hospital stay	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
23.1 Women at low risk of caesarean/complications	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
23.2 Women at increased risk of caesarean/complications	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
23.3 Women with no defined risk status	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
24 Maternal comfort	0	0	Mean Difference (IV, Random, 95% CI)	0.0 [0.0, 0.0]
24.1 Women at low risk of caesarean/complications	0	0	Mean Difference (IV, Random, 95% CI)	0.0 [0.0, 0.0]
24.2 Women at increased risk of caesarean/complications	0	0	Mean Difference (IV, Random, 95% CI)	0.0 [0.0, 0.0]
24.3 Women with no defined risk status	0	0	Mean Difference (IV, Random, 95% CI)	0.0 [0.0, 0.0]
25 Maternal feelings of pain, thirst or hunger	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
25.1 Women at low risk of caesarean/complications	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
25.2 Women at increased risk of caesarean/complications	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
25.3 Women with no defined risk status	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
26 Fully breastfeeding at discharge	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
26.1 Women at low risk of caesarean/complications	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
26.2 Women at increased risk of caesarean/complications	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
26.3 Women with no defined risk status	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
27 Maternal feelings of control	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
27.1 Women at low risk of caesarean/complications	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]

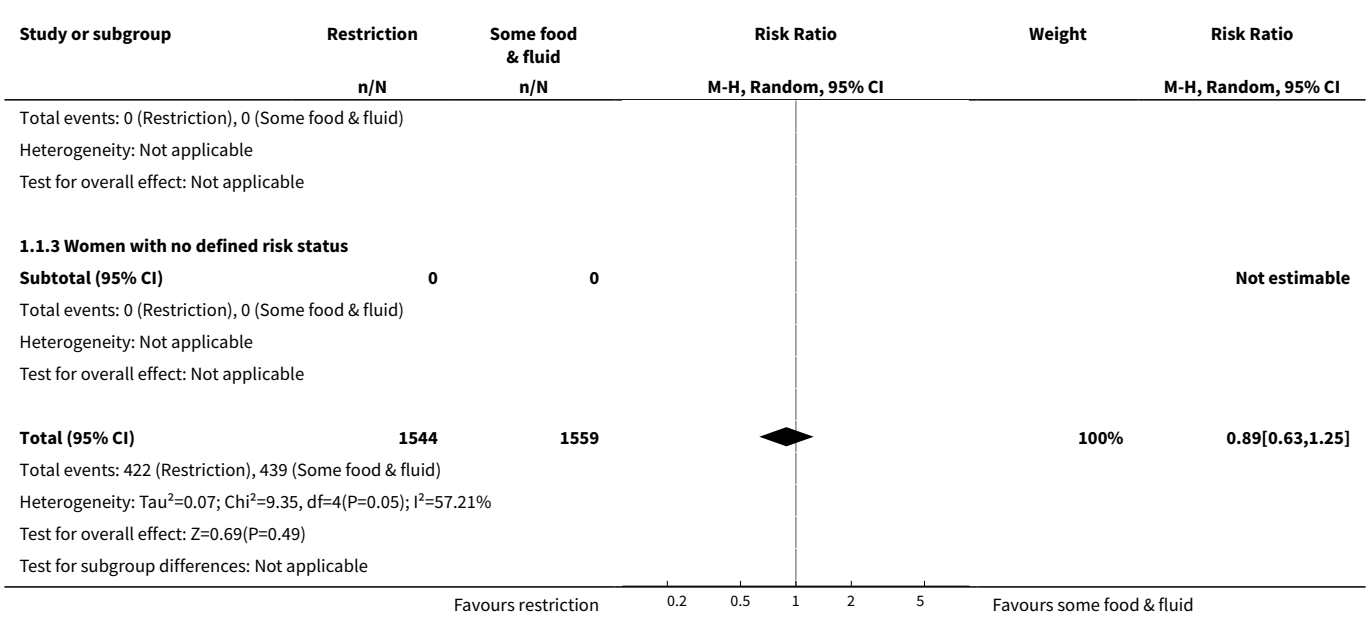
Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
27.2 Women at increased risk of caesarean/complications	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
27.3 Women with no defined risk status	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
28 Fetal distress	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
28.1 Women at low risk of caesarean/complications	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
28.2 Women at increased risk of caesarean/complications	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
28.3 Women with no defined risk status	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
29 Cord blood pH < 7.2	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
29.1 Women at low risk of caesarean/complications	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
29.2 Women at increased risk of caesarean/complications	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
29.3 Women with no defined risk status	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
30 Infant hyperinsulinism	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
30.1 Women at low risk of caesarean/complications	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
30.2 Women at increased risk of caesarean/complications	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
30.3 Women with no defined risk status	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
31 Infant hyponatraemia	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
31.1 Women at low risk of caesarean/complications	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
31.2 Women at increased risk of caesarean/complications	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
31.3 Women with no defined risk status	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
32 Infant intravenous therapy	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
32.1 Women at low risk of caesarean/complications	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
32.2 Women at increased risk of caesarean/complications	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
32.3 Women with no defined risk status	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
33 Infant gavage feeding	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
33.1 Women at low risk of caesarean/complications	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
33.2 Women at increased risk of caesarean/complications	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
33.3 Women with no defined risk status	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
34 Infant admission to intensive care	1	2426	Risk Ratio (M-H, Random, 95% CI)	1.03 [0.73, 1.45]
34.1 Women at low risk of caesarean/complications	1	2426	Risk Ratio (M-H, Random, 95% CI)	1.03 [0.73, 1.45]
34.2 Women at increased risk of caesarean/complications	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
34.3 Women with no defined risk status	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
35 Length of infant hospital stay	0	0	Mean Difference (IV, Random, 95% CI)	0.0 [0.0, 0.0]
35.1 Women at low risk of caesarean/complications	0	0	Mean Difference (IV, Random, 95% CI)	0.0 [0.0, 0.0]
35.2 Women at increased risk of caesarean/complications	0	0	Mean Difference (IV, Random, 95% CI)	0.0 [0.0, 0.0]
35.3 Women with no defined risk status	0	0	Mean Difference (IV, Random, 95% CI)	0.0 [0.0, 0.0]

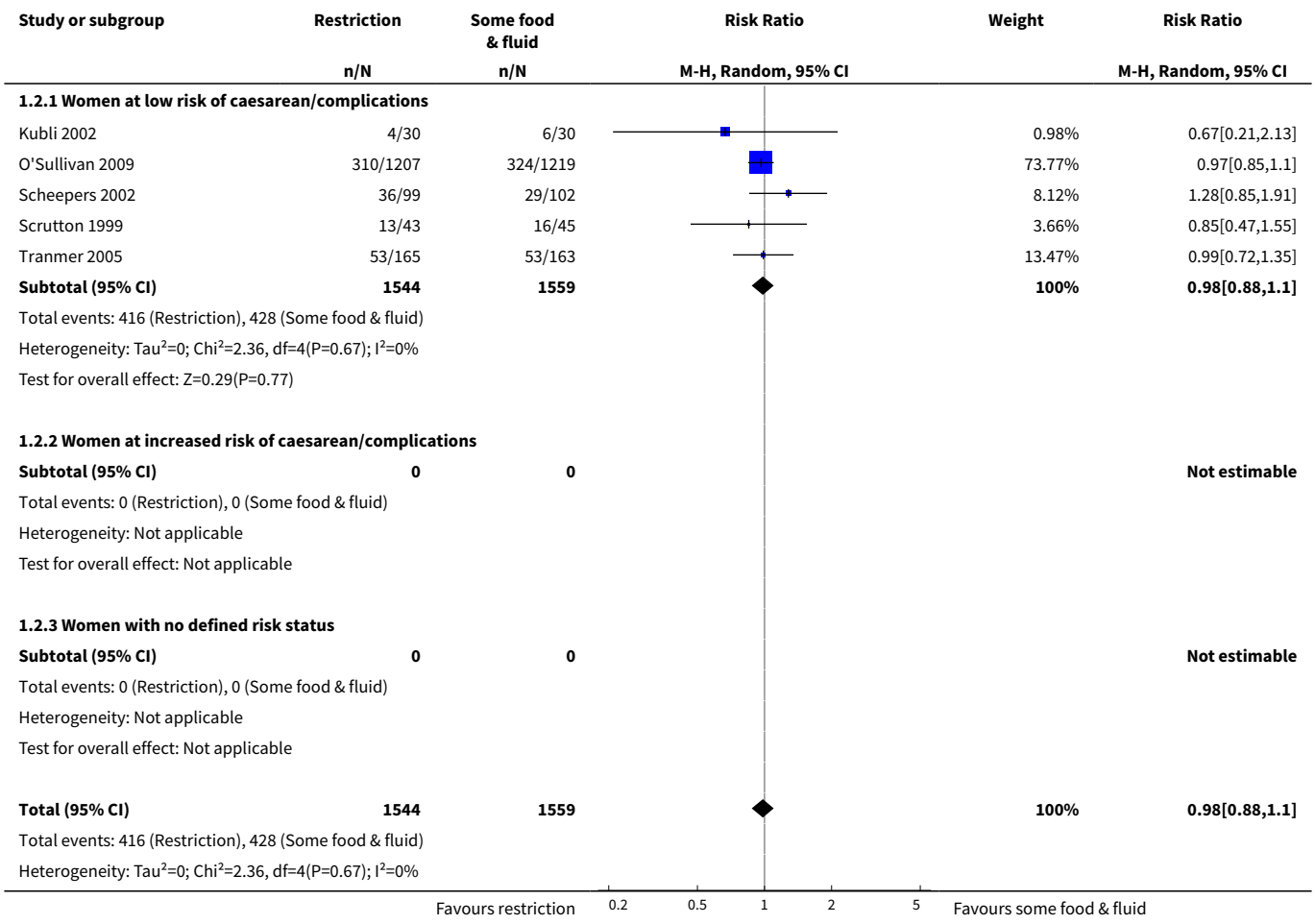
Analysis 1.1. Comparison 1 Any restriction of oral fluid and food versus some fluid and food, Outcome 1 Caesarean section (primary outcome).

Study or subgroup	Restriction	Some food & fluid	Risk Ratio	Weight	Risk Ratio
	n/N	n/N	M-H, Random, 95% CI		M-H, Random, 95% CI
1.1.1 Women at low risk of caesarean/complications					
Kubli 2002	8/30	6/30		10.03%	1.33[0.53,3.38]
O'Sullivan 2009	363/1207	362/1219		38.65%	1.01[0.9,1.14]
Scheepers 2002	7/99	21/102		12.27%	0.34[0.15,0.77]
Scrutton 1999	12/43	9/45		13.46%	1.4[0.65,2.97]
Tranmer 2005	32/165	41/163		25.59%	0.77[0.51,1.16]
Subtotal (95% CI)	**1544**	**1559**		**100%**	**0.89[0.63,1.25]**
Total events: 422 (Restriction), 439 (Some food & fluid)					
Heterogeneity: Tau^2=0.07; Chi^2=9.35, df=4(P=0.05); I^2=57.21%					
Test for overall effect: Z=0.69(P=0.49)					
1.1.2 Women at increased risk of caesarean/complications					
Subtotal (95% CI)	**0**	**0**			**Not estimable**

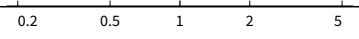




Analysis 1.2. Comparison 1 Any restriction of oral fluid and food versus some fluid and food, Outcome 2 Operative vaginal birth (primary outcome).

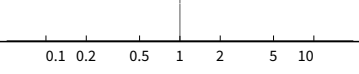


Study or subgroup	Restriction	Some food & fluid	Risk Ratio	Weight	Risk Ratio
	n/N	n/N	M-H, Random, 95% CI		M-H, Random, 95% CI
Test for overall effect: Z=0.29(P=0.77)					
Test for subgroup differences: Not applicable					



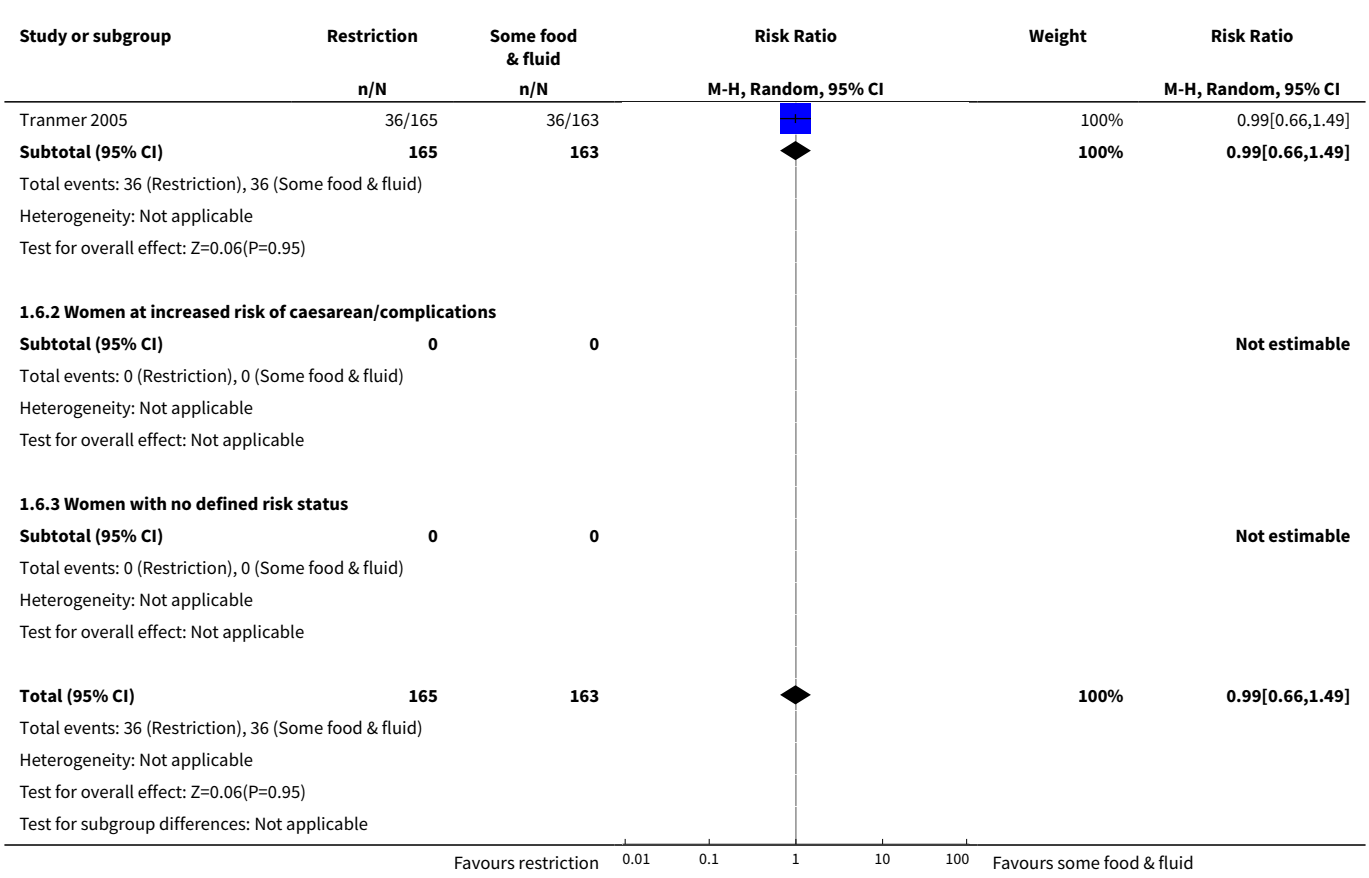
Analysis 1.4. Comparison 1 Any restriction of oral fluid and food versus some fluid and food, Outcome 4 Apgar < 7 at 5 min (primary outcome).

Study or subgroup	Any restriction	Some food & fluid	Risk Ratio	Weight	Risk Ratio
	n/N	n/N	M-H, Random, 95% CI		M-H, Random, 95% CI
1.4.1 Women at low risk of caesarean/complications					
Kubli 2002	1/30	0/30		3.92%	3[0.13,70.83]
O'Sullivan 2009	22/1207	16/1219		96.08%	1.39[0.73,2.63]
Scrutton 1999	0/43	0/45			Not estimable
Tranmer 2005	0/165	0/163			Not estimable
Subtotal (95% CI)	**1445**	**1457**		**100%**	**1.43[0.77,2.68]**
Total events: 23 (Any restriction), 16 (Some food & fluid)					
Heterogeneity: Tau^2=0; Chi^2=0.22, df=1(P=0.64); I^2=0%					
Test for overall effect: Z=1.12(P=0.26)					
1.4.2 Women at increased risk of caesarean/complications					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Any restriction), 0 (Some food & fluid)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
1.4.3 Women with no defined risk status					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Any restriction), 0 (Some food & fluid)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
Total (95% CI)	**1445**	**1457**		**100%**	**1.43[0.77,2.68]**
Total events: 23 (Any restriction), 16 (Some food & fluid)					
Heterogeneity: Tau^2=0; Chi^2=0.22, df=1(P=0.64); I^2=0%					
Test for overall effect: Z=1.12(P=0.26)					
Test for subgroup differences: Not applicable					

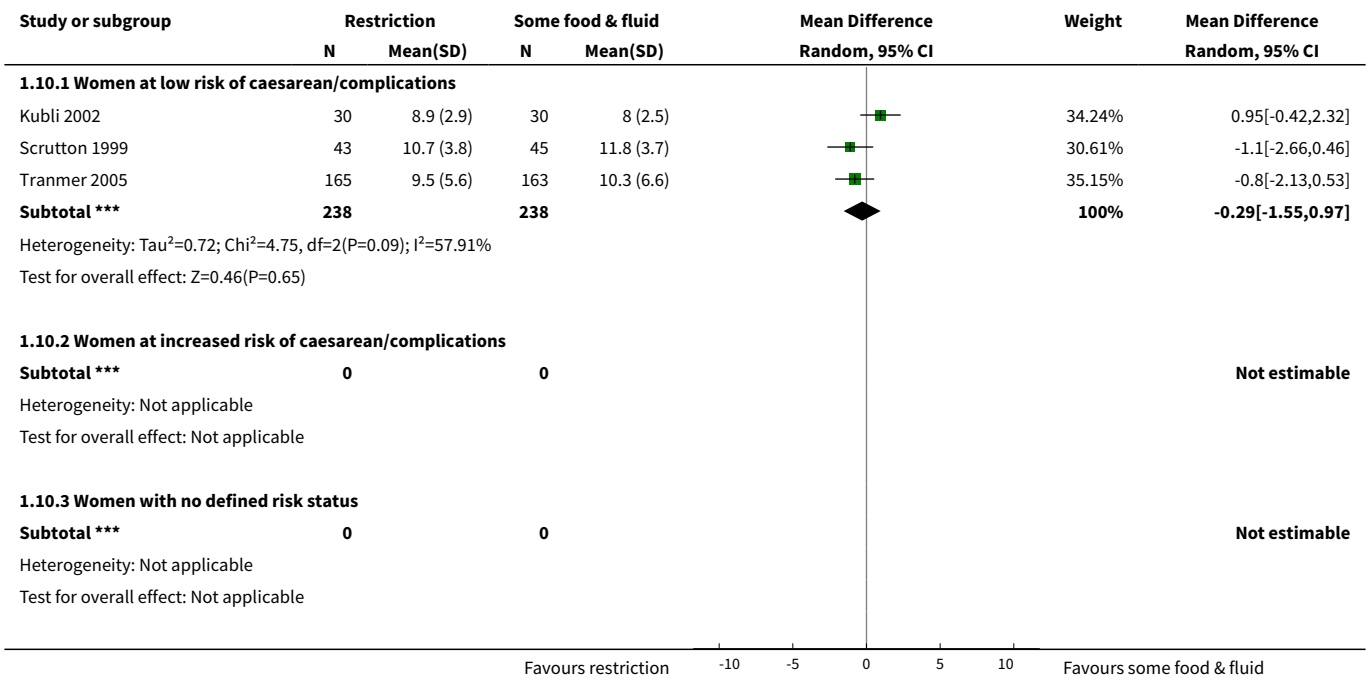


Analysis 1.6. Comparison 1 Any restriction of oral fluid and food versus some fluid and food, Outcome 6 Maternal ketoacidosis.

Study or subgroup	Restriction	Some food & fluid	Risk Ratio	Weight	Risk Ratio
	n/N	n/N	M-H, Random, 95% CI		M-H, Random, 95% CI
1.6.1 Women at low risk of caesarean/complications					



Analysis 1.10. Comparison 1 Any restriction of oral fluid and food versus some fluid and food, Outcome 10 Duration of labour (hours).



Study or subgroup	Restriction N	Restriction Mean(SD)	Some food & fluid N	Some food & fluid Mean(SD)	Mean Difference Random, 95% CI	Weight	Mean Difference Random, 95% CI
Total ***	**238**		**238**			**100%**	**-0.29[-1.55,0.97]**
Heterogeneity: Tau²=0.72; Chi²=4.75, df=2(P=0.09); I²=57.91%							
Test for overall effect: Z=0.46(P=0.65)							
Test for subgroup differences: Not applicable							

Favours restriction -10 -5 0 5 10 Favours some food & fluid

Analysis 1.12. Comparison 1 Any restriction of oral fluid and food versus some fluid and food, Outcome 12 Maternal nausea.

Study or subgroup	Restriction n/N	Some food & fluid n/N	Risk Ratio M-H, Random, 95% CI	Weight	Risk Ratio M-H, Random, 95% CI
1.12.1 Women at low risk of caesarean/complications					
Tranmer 2005	34/133	39/122		100%	0.8[0.54,1.18]
Subtotal (95% CI)	**133**	**122**		**100%**	**0.8[0.54,1.18]**
Total events: 34 (Restriction), 39 (Some food & fluid)					
Heterogeneity: Not applicable					
Test for overall effect: Z=1.13(P=0.26)					
1.12.2 Women at increased risk of caesarean/complications					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Restriction), 0 (Some food & fluid)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
1.12.3 Women with no defined risk status					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Restriction), 0 (Some food & fluid)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
Total (95% CI)	**133**	**122**		**100%**	**0.8[0.54,1.18]**
Total events: 34 (Restriction), 39 (Some food & fluid)					
Heterogeneity: Not applicable					
Test for overall effect: Z=1.13(P=0.26)					
Test for subgroup differences: Not applicable					

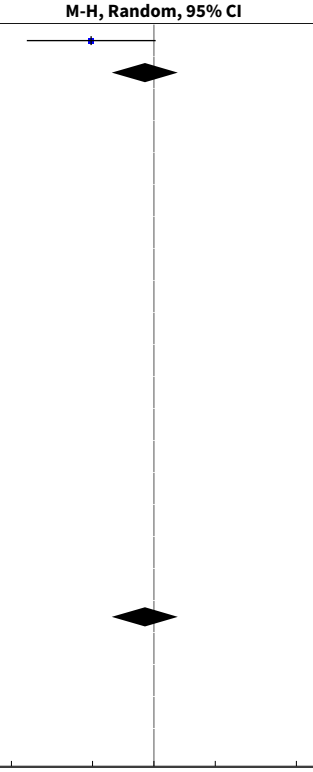
Favours restriction 0.01 0.1 1 10 100 Favours some food & fluid

Analysis 1.13. Comparison 1 Any restriction of oral fluid and food versus some fluid and food, Outcome 13 Maternal vomiting.

Study or subgroup	Restriction n/N	Some food & fluid n/N	Risk Ratio M-H, Random, 95% CI	Weight	Risk Ratio M-H, Random, 95% CI
1.13.1 Women at low risk of caesarean/complications					
Kubli 2002	14/30	11/30		23.48%	1.27[0.69,2.33]
O'Sullivan 2009	406/1207	430/1219		58.1%	0.95[0.85,1.06]

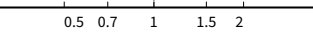
Favours restriction 0.2 0.5 1 2 5 Favours some food & fluid

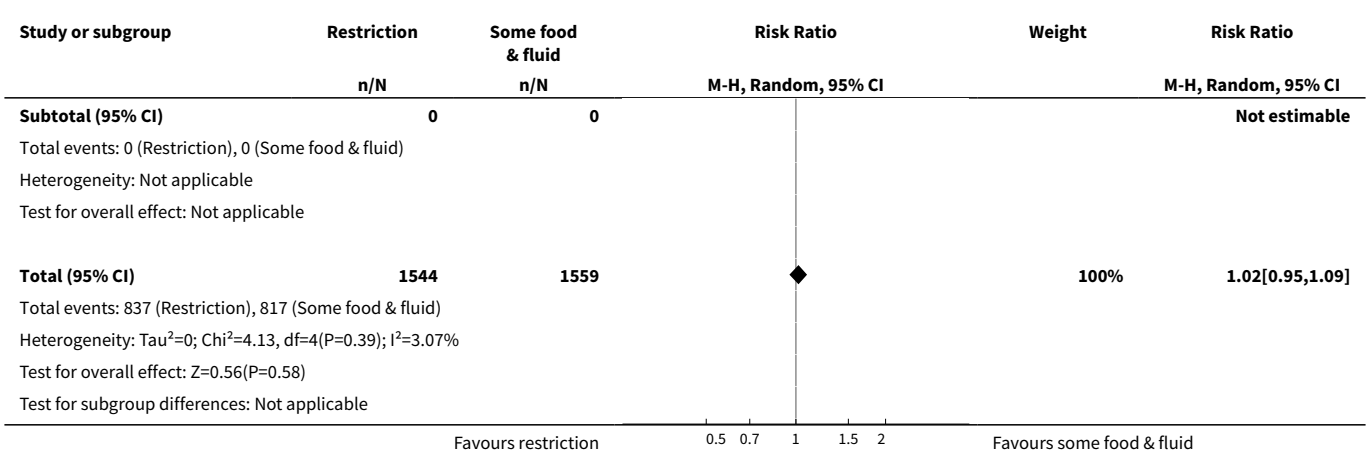
Study or subgroup	Restriction n/N	Some food & fluid n/N	Risk Ratio M-H, Random, 95% CI	Weight	Risk Ratio M-H, Random, 95% CI
Scrutton 1999	8/43	17/45		18.42%	0.49[0.24,1.02]
Subtotal (95% CI)	**1280**	**1294**		**100%**	**0.9[0.62,1.31]**
Total events: 428 (Restriction), 458 (Some food & fluid)					
Heterogeneity: Tau^2=0.06; Chi^2=4.02, df=2(P=0.13); I^2=50.3%					
Test for overall effect: Z=0.53(P=0.6)					
1.13.2 Women at increased risk of caesarean/complications					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Restriction), 0 (Some food & fluid)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
1.13.3 Women with no defined risk status					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Restriction), 0 (Some food & fluid)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
Total (95% CI)	**1280**	**1294**		**100%**	**0.9[0.62,1.31]**
Total events: 428 (Restriction), 458 (Some food & fluid)					
Heterogeneity: Tau^2=0.06; Chi^2=4.02, df=2(P=0.13); I^2=50.3%					
Test for overall effect: Z=0.53(P=0.6)					
Test for subgroup differences: Not applicable					



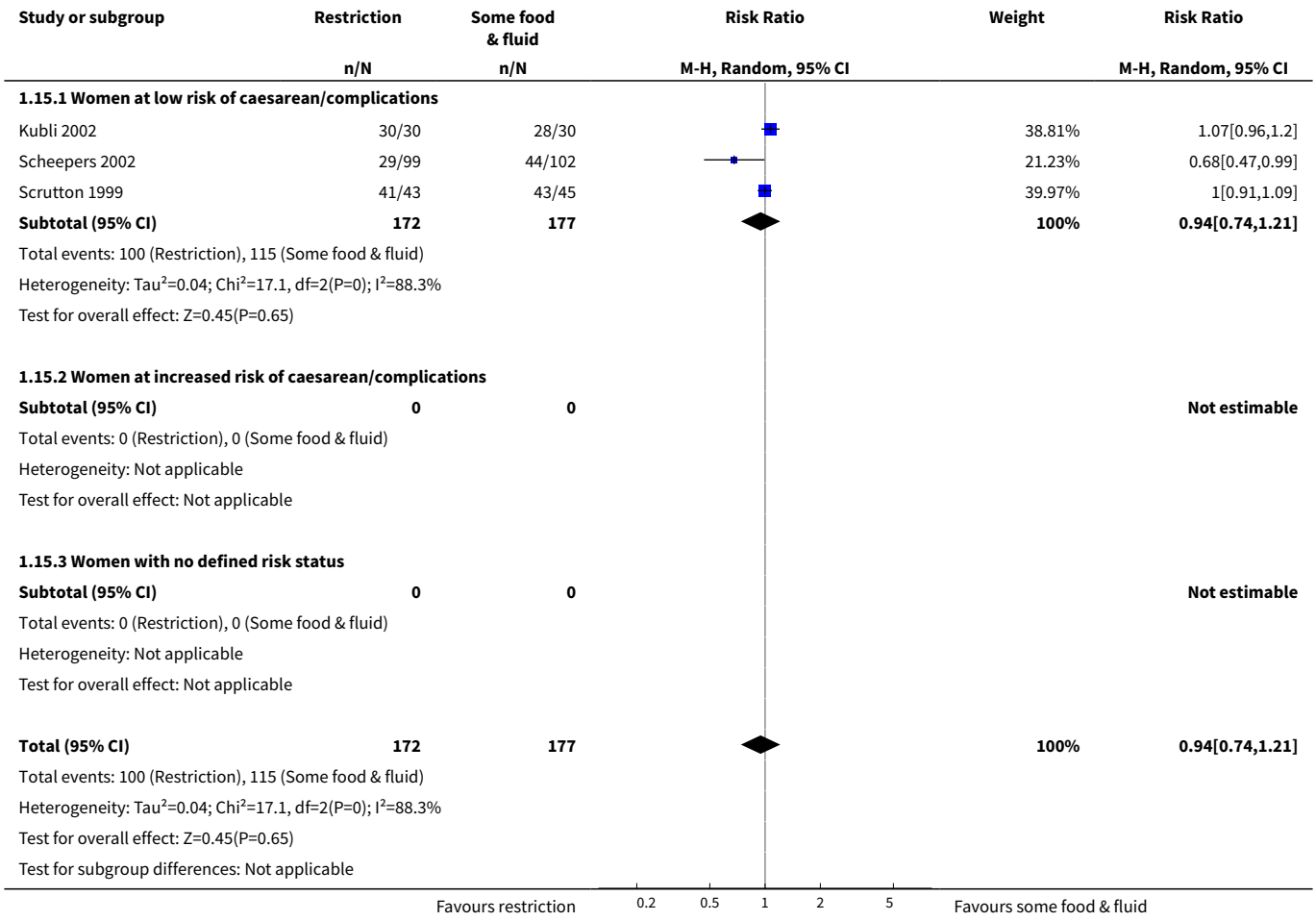
Analysis 1.14. Comparison 1 Any restriction of oral fluid and food versus some fluid and food, Outcome 14 Augmentation of labour.

Study or subgroup	Restriction n/N	Some food & fluid n/N	Risk Ratio M-H, Random, 95% CI	Weight	Risk Ratio M-H, Random, 95% CI
1.14.1 Women at low risk of caesarean/complications					
Kubli 2002	14/30	16/30		1.89%	0.88[0.53,1.45]
O'Sullivan 2009	673/1207	647/1219		73.63%	1.05[0.98,1.13]
Scheepers 2002	28/99	24/102		2.21%	1.2[0.75,1.92]
Scrutton 1999	31/43	38/45		9.51%	0.85[0.68,1.07]
Tranmer 2005	91/165	92/163		12.76%	0.98[0.81,1.18]
Subtotal (95% CI)	**1544**	**1559**		**100%**	**1.02[0.95,1.09]**
Total events: 837 (Restriction), 817 (Some food & fluid)					
Heterogeneity: Tau^2=0; Chi^2=4.13, df=4(P=0.39); I^2=3.07%					
Test for overall effect: Z=0.56(P=0.58)					
1.14.2 Women at increased risk of caesarean/complications					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Restriction), 0 (Some food & fluid)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
1.14.3 Women with no defined risk status					



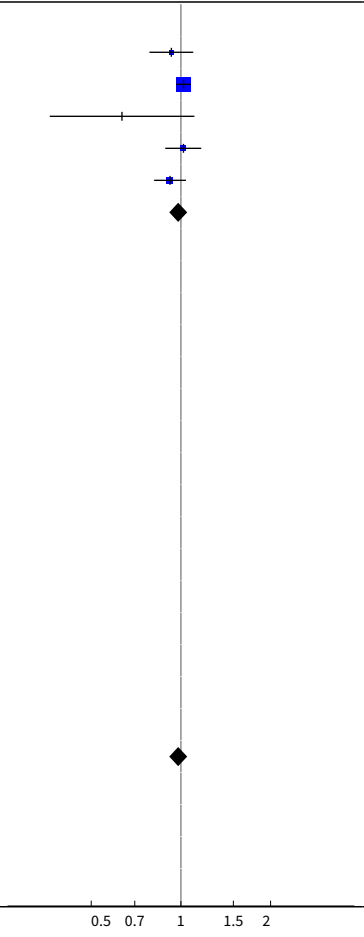


Analysis 1.15. Comparison 1 Any restriction of oral fluid and food versus some fluid and food, Outcome 15 Narcotic pain relief.



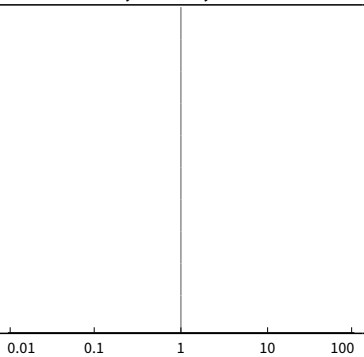
Analysis 1.16. Comparison 1 Any restriction of oral fluid and food versus some fluid and food, Outcome 16 Epidural analgesia.

Study or subgroup	Restriction n/N	Some food & fluid n/N	Risk Ratio M-H, Random, 95% CI	Weight	Risk Ratio M-H, Random, 95% CI
1.16.1 Women at low risk of caesarean/complications					
Kubli 2002	26/30	28/30		13.18%	0.93[0.78,1.1]
O'Sullivan 2009	813/1207	804/1219		46.23%	1.02[0.97,1.08]
Scheepers 2002	16/99	26/102		1.49%	0.63[0.36,1.11]
Scrutton 1999	39/43	40/45		17.6%	1.02[0.89,1.17]
Tranmer 2005	120/165	129/163		21.51%	0.92[0.81,1.04]
Subtotal (95% CI)	**1544**	**1559**		**100%**	**0.98[0.91,1.05]**
Total events: 1014 (Restriction), 1027 (Some food & fluid)					
Heterogeneity: Tau^2=0; Chi^2=5.71, df=4(P=0.22); I^2=29.95%					
Test for overall effect: Z=0.61(P=0.54)					
1.16.2 Women at increased risk of caesarean/complications					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Restriction), 0 (Some food & fluid)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
1.16.3 Women with no defined risk status					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Restriction), 0 (Some food & fluid)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
Total (95% CI)	**1544**	**1559**		**100%**	**0.98[0.91,1.05]**
Total events: 1014 (Restriction), 1027 (Some food & fluid)					
Heterogeneity: Tau^2=0; Chi^2=5.71, df=4(P=0.22); I^2=29.95%					
Test for overall effect: Z=0.61(P=0.54)					
Test for subgroup differences: Not applicable					

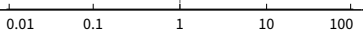


Analysis 1.18. Comparison 1 Any restriction of oral fluid and food versus some fluid and food, Outcome 18 Regurgitation during general anaesthesia.

Study or subgroup	Restriction n/N	Some food & fluid n/N	Risk Ratio M-H, Random, 95% CI	Weight	Risk Ratio M-H, Random, 95% CI
1.18.1 Women at low risk of caesarean/complications					
O'Sullivan 2009	0/1207	0/1219			Not estimable
Subtotal (95% CI)	**1207**	**1219**			**Not estimable**
Total events: 0 (Restriction), 0 (Some food & fluid)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
1.18.2 Women at increased risk of caesarean/complications					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Restriction), 0 (Some food & fluid)					

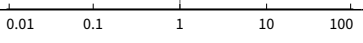


Study or subgroup	Restriction	Some food & fluid	Risk Ratio	Weight	Risk Ratio
	n/N	n/N	M-H, Random, 95% CI		M-H, Random, 95% CI
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
1.18.3 Women with no defined risk status					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Restriction), 0 (Some food & fluid)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
Total (95% CI)	**1207**	**1219**			**Not estimable**
Total events: 0 (Restriction), 0 (Some food & fluid)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
Test for subgroup differences: Not applicable					

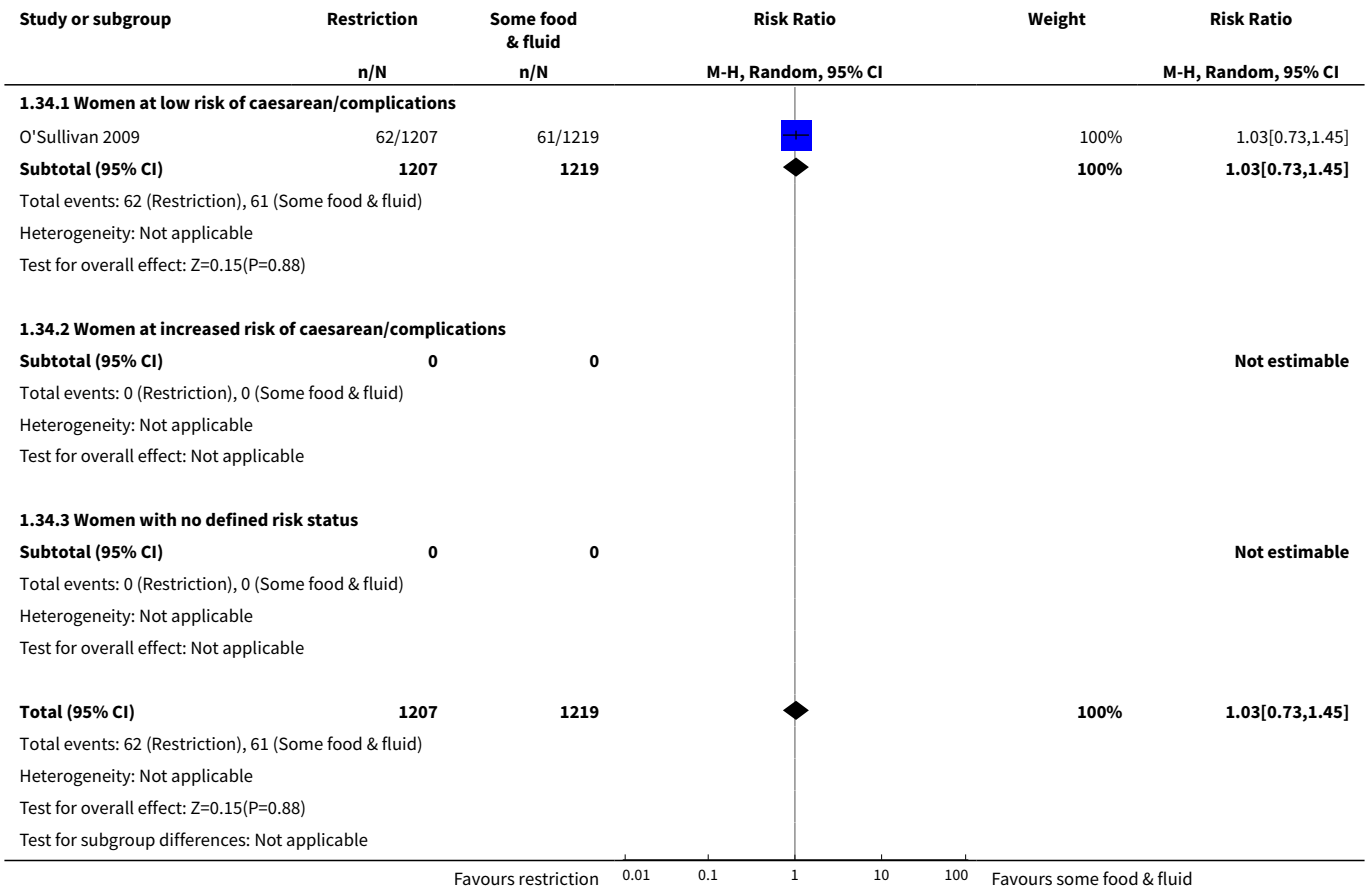


Analysis 1.19. Comparison 1 Any restriction of oral fluid and food versus some fluid and food, Outcome 19 Mendelson's syndrome.

Study or subgroup	Restriction	Some food & fluid	Risk Ratio	Weight	Risk Ratio
	n/N	n/N	M-H, Random, 95% CI		M-H, Random, 95% CI
1.19.1 Women at low risk of caesarean/complications					
O'Sullivan 2009	0/1207	0/1219			Not estimable
Tranmer 2005	0/165	0/163			Not estimable
Subtotal (95% CI)	**1372**	**1382**			**Not estimable**
Total events: 0 (Restriction), 0 (Some food & fluid)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
1.19.2 Women at increased risk of caesarean/complications					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Restriction), 0 (Some food & fluid)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
1.19.3 Women with no defined risk status					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Restriction), 0 (Some food & fluid)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
Total (95% CI)	**1372**	**1382**			**Not estimable**
Total events: 0 (Restriction), 0 (Some food & fluid)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
Test for subgroup differences: Not applicable					



Analysis 1.34. Comparison 1 Any restriction of oral fluid and food versus some fluid and food, Outcome 34 Infant admission to intensive care.



Comparison 2. Complete restriction of oral fluid and food (other than ice chips) versus freedom to eat and drink

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Caesarean section (primary outcome)	1	328	Risk Ratio (M-H, Fixed, 95% CI)	0.77 [0.51, 1.16]
1.1 Women at low risk of caesarean/complications	1	328	Risk Ratio (M-H, Fixed, 95% CI)	0.77 [0.51, 1.16]
1.2 Women at increased risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
1.3 Women with no defined risk status	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
2 Operative vaginal birth (primary outcome)	1	328	Risk Ratio (M-H, Fixed, 95% CI)	0.99 [0.72, 1.35]
2.1 Women at low risk of caesarean/complications	1	328	Risk Ratio (M-H, Fixed, 95% CI)	0.99 [0.72, 1.35]

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
2.2 Women at increased risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
2.3 Women with no defined risk status	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
3 Maternal satisfaction (primary outcome)	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
3.1 Women at low risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
3.2 Women at increased risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
3.3 Women with no defined risk status	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
4 Apgar < 7 at 5 min (primary outcome)	1	328	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
4.1 Women at low risk of caesarean/complications	1	328	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
4.2 Women at increased risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
4.3 Women with no defined risk status	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
5 Neonatal hypogylcaemia (primary outcome)	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
5.1 Women at low risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
5.2 Women at increased risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
5.3 Women with no defined risk status	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
6 Maternal ketoacidosis	1	328	Risk Ratio (M-H, Fixed, 95% CI)	0.99 [0.66, 1.49]
6.1 Women at low risk of caesarean/complications	1	328	Risk Ratio (M-H, Fixed, 95% CI)	0.99 [0.66, 1.49]
6.2 Women at increased risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
6.3 Women with no defined risk status	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
7 Maternal dehydration	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
7.1 Women at low risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
7.2 Women at increased risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
7.3 Women with no defined risk status	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
8 Maternal hypoglycaemia	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
8.1 Women at low risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
8.2 Women at increased risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
8.3 Women with no defined risk status	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
9 Maternal hyponatraemia	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
9.1 Women at low risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
9.2 Women at increased risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
9.3 Women with no defined risk status	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
10 Duration of labour (hours)	1	328	Mean Difference (IV, Fixed, 95% CI)	-0.80 [-2.13, 0.53]
10.1 Women at low risk of caesarean/complications	1	328	Mean Difference (IV, Fixed, 95% CI)	-0.80 [-2.13, 0.53]
10.2 Women at increased risk of caesarean/complications	0	0	Mean Difference (IV, Fixed, 95% CI)	0.0 [0.0, 0.0]
10.3 Women with no defined risk status	0	0	Mean Difference (IV, Fixed, 95% CI)	0.0 [0.0, 0.0]
11 Mobility in labour	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
11.1 Women at low risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
11.2 Women at increased risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
11.3 Women with no defined risk status	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
12 Maternal nausea	1	255	Risk Ratio (M-H, Fixed, 95% CI)	0.80 [0.54, 1.18]
12.1 Women at low risk of caesarean/complications	1	255	Risk Ratio (M-H, Fixed, 95% CI)	0.80 [0.54, 1.18]
12.2 Women at increased risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
12.3 Women with no defined risk status	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
13 Maternal vomiting	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
13.1 Women at low risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
13.2 Women at increased risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
13.3 Women with no defined risk status	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
14 Augmentation of labour	1	328	Risk Ratio (M-H, Fixed, 95% CI)	0.98 [0.81, 1.18]
14.1 Women at low risk of caesarean/complications	1	328	Risk Ratio (M-H, Fixed, 95% CI)	0.98 [0.81, 1.18]
14.2 Women at increased risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
14.3 Women with no defined risk status	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
15 Narcotic pain relief	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
15.1 Women at low risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
15.2 Women at increased risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
15.3 Women with no defined risk status	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
16 Epidural analgesia	1	328	Risk Ratio (M-H, Fixed, 95% CI)	0.92 [0.81, 1.04]
16.1 Women at low risk of caesarean/complications	1	328	Risk Ratio (M-H, Fixed, 95% CI)	0.92 [0.81, 1.04]
16.2 Women at increased risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
16.3 Women with no defined risk status	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
17 Poor maternal expulsive efforts	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
17.1 Women at low risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
17.2 Women at increased risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
17.3 Women with no defined risk status	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
18 Regurgitation during general anaesthesia	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
18.1 Women at low risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
18.2 Women at increased risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
18.3 Women with no defined risk status	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
19 Mendelson's syndrome	1	328	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
19.1 Women at low risk of caesarean/complications	1	328	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
19.2 Women at increased risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
19.3 Women with no defined risk status	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
20 Maternal mortality	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
20.1 Women at low risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
20.2 Women at increased risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
20.3 Women with no defined risk status	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
21 Postpartum haemorrhage (> 1000 ml)	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
21.1 Women at low risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
21.2 Women at increased risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
21.3 Women with no defined risk status	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
22 Maternal admission to intensive care	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
22.1 Women at low risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
22.2 Women at increased risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
22.3 Women with no defined risk status	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
23 Length of maternal hospital stay	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
23.1 Women at low risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
23.2 Women at increased risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
23.3 Women with no defined risk status	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]

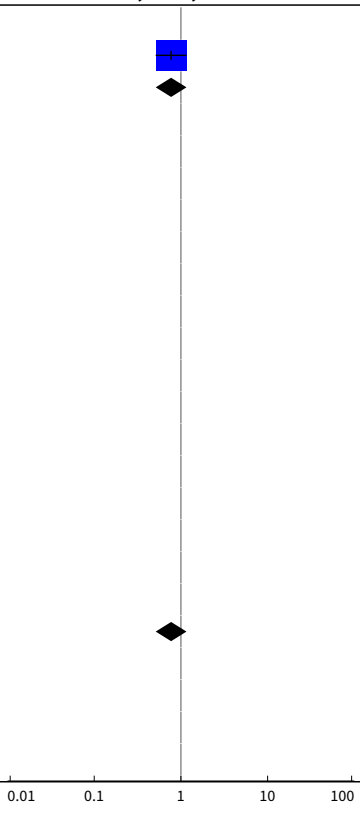
Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
24 Maternal comfort	0	0	Mean Difference (IV, Fixed, 95% CI)	0.0 [0.0, 0.0]
24.1 Women at low risk of caesarean/complications	0	0	Mean Difference (IV, Fixed, 95% CI)	0.0 [0.0, 0.0]
24.2 Women at increased risk of caesarean/complications	0	0	Mean Difference (IV, Fixed, 95% CI)	0.0 [0.0, 0.0]
24.3 Women with no defined risk status	0	0	Mean Difference (IV, Fixed, 95% CI)	0.0 [0.0, 0.0]
25 Maternal feelings of pain, thirst or hunger	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
25.1 Women at low risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
25.2 Women at increased risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
25.3 Women with no defined risk status	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
26 Fully breastfeeding at discharge	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
26.1 Women at low risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
26.2 Women at increased risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
26.3 Women with no defined risk status	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
27 Maternal feelings of control	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
27.1 Women at low risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
27.2 Women at increased risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
27.3 Women with no defined risk status	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
28 Fetal distress	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
28.1 Women at low risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
28.2 Women at increased risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
28.3 Women with no defined risk status	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
29 Cord blood pH < 7.2	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
29.1 Women at low risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
29.2 Women at increased risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
29.3 Women with no defined risk status	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
30 Infant hyperinsulinism	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
30.1 Women at low risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
30.2 Women at increased risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
30.3 Women with no defined risk status	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
31 Infant hyponatraemia	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
31.1 Women at low risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
31.2 Women at increased risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
31.3 Women with no defined risk status	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
32 Infant intravenous therapy	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
32.1 Women at low risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
32.2 Women at increased risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
32.3 Women with no defined risk status	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
33 Infant gavage feeding	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
33.1 Women at low risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
33.2 Women at increased risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
33.3 Women with no defined risk status	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
34 Infant admission to intensive care	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
34.1 Women at low risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
34.2 Women at increased risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
34.3 Women with no defined risk status	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
35 Length of infant hospital stay	0	0	Mean Difference (IV, Fixed, 95% CI)	0.0 [0.0, 0.0]
35.1 Women at low risk of caesarean/complications	0	0	Mean Difference (IV, Fixed, 95% CI)	0.0 [0.0, 0.0]
35.2 Women at increased risk of caesarean/complications	0	0	Mean Difference (IV, Fixed, 95% CI)	0.0 [0.0, 0.0]
35.3 Women with no defined risk status	0	0	Mean Difference (IV, Fixed, 95% CI)	0.0 [0.0, 0.0]

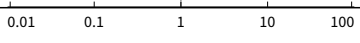
Analysis 2.1. Comparison 2 Complete restriction of oral fluid and food (other than ice chips) versus freedom to eat and drink, Outcome 1 Caesarean section (primary outcome).

Study or subgroup	Complete restriction n/N	Freedom to eat and drink n/N	Risk Ratio M-H, Fixed, 95% CI	Weight	Risk Ratio M-H, Fixed, 95% CI
2.1.1 Women at low risk of caesarean/complications					
Tranmer 2005	32/165	41/163		100%	0.77[0.51,1.16]
Subtotal (95% CI)	**165**	**163**		**100%**	**0.77[0.51,1.16]**
Total events: 32 (Complete restriction), 41 (Freedom to eat and drink)					
Heterogeneity: Not applicable					
Test for overall effect: Z=1.25(P=0.21)					
2.1.2 Women at increased risk of caesarean/complications					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Complete restriction), 0 (Freedom to eat and drink)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
2.1.3 Women with no defined risk status					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Complete restriction), 0 (Freedom to eat and drink)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
Total (95% CI)	**165**	**163**		**100%**	**0.77[0.51,1.16]**
Total events: 32 (Complete restriction), 41 (Freedom to eat and drink)					
Heterogeneity: Not applicable					
Test for overall effect: Z=1.25(P=0.21)					
Test for subgroup differences: Not applicable					



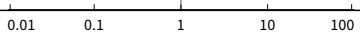
Analysis 2.2. Comparison 2 Complete restriction of oral fluid and food (other than ice chips) versus freedom to eat and drink, Outcome 2 Operative vaginal birth (primary outcome).

Study or subgroup	Complete restriction n/N	Freedom to eat and drink n/N	Risk Ratio M-H, Fixed, 95% CI	Weight	Risk Ratio M-H, Fixed, 95% CI
2.2.1 Women at low risk of caesarean/complications					
Tranmer 2005	53/165	53/163		100%	0.99[0.72,1.35]
Subtotal (95% CI)	**165**	**163**		**100%**	**0.99[0.72,1.35]**
Total events: 53 (Complete restriction), 53 (Freedom to eat and drink)					
Heterogeneity: Tau^2=0; Chi^2=0, df=0(P<0.0001); I^2=100%					
Test for overall effect: Z=0.08(P=0.94)					
2.2.2 Women at increased risk of caesarean/complications					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Complete restriction), 0 (Freedom to eat and drink)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
2.2.3 Women with no defined risk status					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Complete restriction), 0 (Freedom to eat and drink)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
Total (95% CI)	**165**	**163**		**100%**	**0.99[0.72,1.35]**
Total events: 53 (Complete restriction), 53 (Freedom to eat and drink)					
Heterogeneity: Tau^2=0; Chi^2=0, df=0(P<0.0001); I^2=100%					
Test for overall effect: Z=0.08(P=0.94)					
Test for subgroup differences: Not applicable					



Analysis 2.4. Comparison 2 Complete restriction of oral fluid and food (other than ice chips) versus freedom to eat and drink, Outcome 4 Apgar < 7 at 5 min (primary outcome).

Study or subgroup	Complete restriction n/N	Freedom to eat and drink n/N	Risk Ratio M-H, Fixed, 95% CI	Weight	Risk Ratio M-H, Fixed, 95% CI
2.4.1 Women at low risk of caesarean/complications					
Tranmer 2005	0/165	0/163			Not estimable
Subtotal (95% CI)	**165**	**163**			**Not estimable**
Total events: 0 (Complete restriction), 0 (Freedom to eat and drink)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
2.4.2 Women at increased risk of caesarean/complications					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Complete restriction), 0 (Freedom to eat and drink)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
2.4.3 Women with no defined risk status					



Study or subgroup	Complete restriction n/N	Freedom to eat and drink n/N	Risk Ratio M-H, Fixed, 95% CI	Weight	Risk Ratio M-H, Fixed, 95% CI
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Complete restriction), 0 (Freedom to eat and drink)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
Total (95% CI)	**165**	**163**			**Not estimable**
Total events: 0 (Complete restriction), 0 (Freedom to eat and drink)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
Test for subgroup differences: Not applicable					

Favours complete restrict 0.01 0.1 1 10 100 Favours freedom to eat

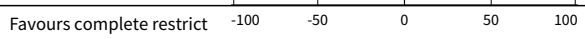
Analysis 2.6. Comparison 2 Complete restriction of oral fluid and food (other than ice chips) versus freedom to eat and drink, Outcome 6 Maternal ketoacidosis.

Study or subgroup	Complete restriction n/N	Freedom to eat and drink n/N	Risk Ratio M-H, Fixed, 95% CI	Weight	Risk Ratio M-H, Fixed, 95% CI
2.6.1 Women at low risk of caesarean/complications					
Tranmer 2005	36/165	36/163		100%	0.99[0.66,1.49]
Subtotal (95% CI)	**165**	**163**		**100%**	**0.99[0.66,1.49]**
Total events: 36 (Complete restriction), 36 (Freedom to eat and drink)					
Heterogeneity: Not applicable					
Test for overall effect: Z=0.06(P=0.95)					
2.6.2 Women at increased risk of caesarean/complications					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Complete restriction), 0 (Freedom to eat and drink)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
2.6.3 Women with no defined risk status					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Complete restriction), 0 (Freedom to eat and drink)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
Total (95% CI)	**165**	**163**		**100%**	**0.99[0.66,1.49]**
Total events: 36 (Complete restriction), 36 (Freedom to eat and drink)					
Heterogeneity: Not applicable					
Test for overall effect: Z=0.06(P=0.95)					
Test for subgroup differences: Not applicable					

Favours complete restrict 0.01 0.1 1 10 100 Favours freedom to eat

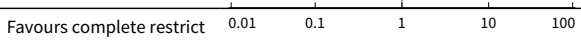
Analysis 2.10. Comparison 2 Complete restriction of oral fluid and food (other than ice chips) versus freedom to eat and drink, Outcome 10 Duration of labour (hours).

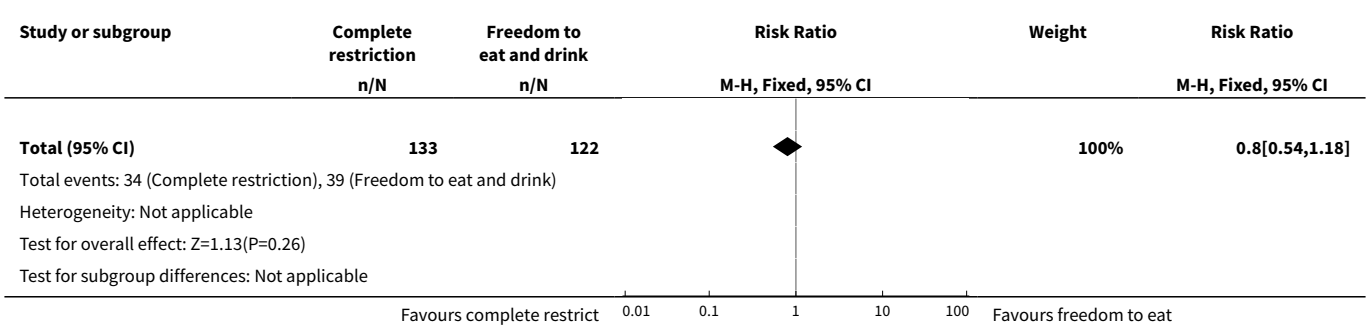
Study or subgroup	Complete restriction N	Complete restriction Mean(SD)	Freedom to eat and drink N	Freedom to eat and drink Mean(SD)	Mean Difference Fixed, 95% CI	Weight	Mean Difference Fixed, 95% CI
2.10.1 Women at low risk of caesarean/complications							
Tranmer 2005	165	9.5 (5.6)	163	10.3 (6.6)		100%	-0.8[-2.13,0.53]
Subtotal * **	**165**		**163**			**100%**	**-0.8[-2.13,0.53]**
Heterogeneity: Not applicable							
Test for overall effect: Z=1.18(P=0.24)							
2.10.2 Women at increased risk of caesarean/complications							
Subtotal * **	**0**		**0**				**Not estimable**
Heterogeneity: Not applicable							
Test for overall effect: Not applicable							
2.10.3 Women with no defined risk status							
Subtotal * **	**0**		**0**				**Not estimable**
Heterogeneity: Not applicable							
Test for overall effect: Not applicable							
Total * **	**165**		**163**			**100%**	**-0.8[-2.13,0.53]**
Heterogeneity: Not applicable							
Test for overall effect: Z=1.18(P=0.24)							
Test for subgroup differences: Not applicable							



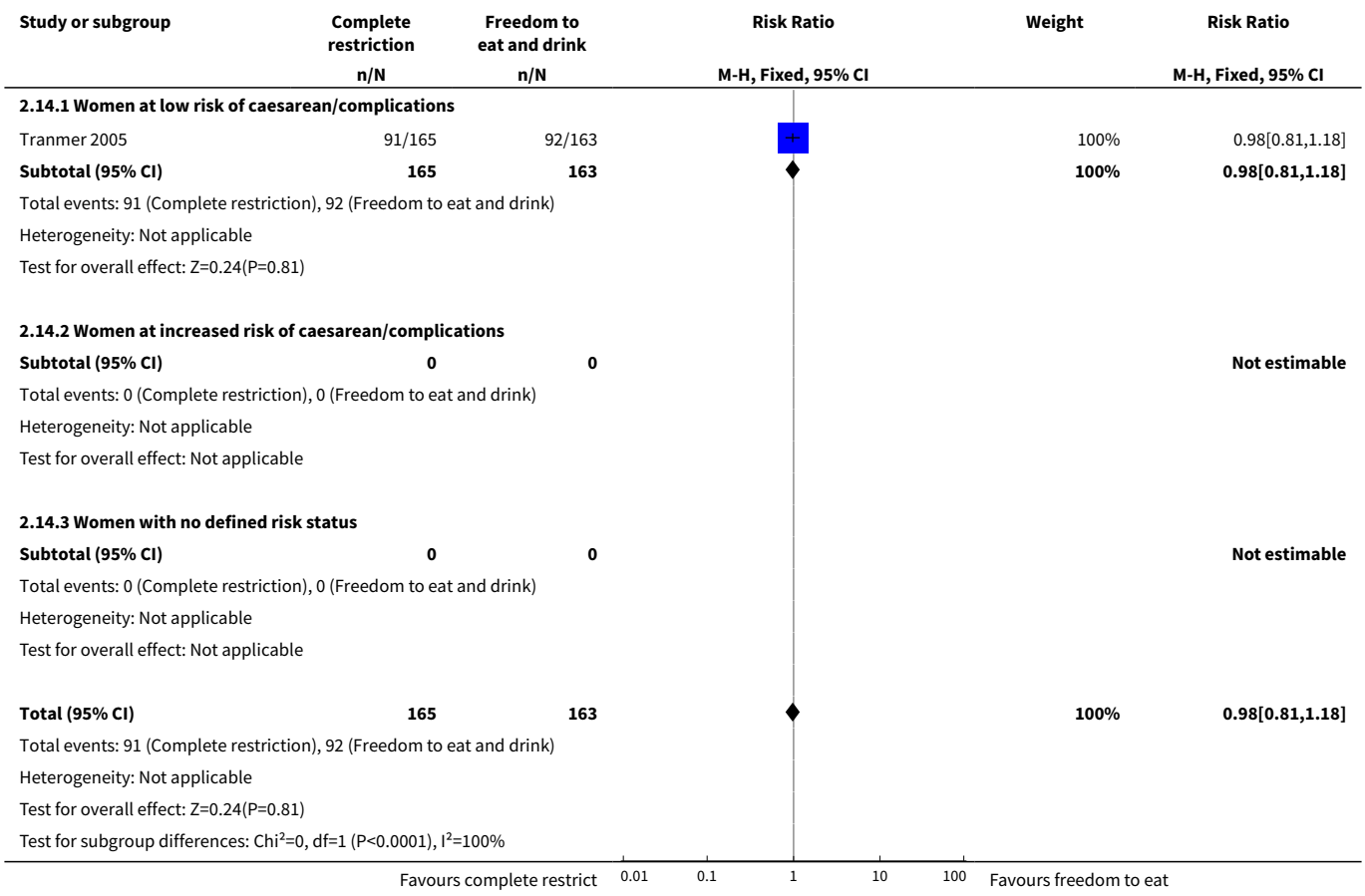
Analysis 2.12. Comparison 2 Complete restriction of oral fluid and food (other than ice chips) versus freedom to eat and drink, Outcome 12 Maternal nausea.

Study or subgroup	Complete restriction n/N	Freedom to eat and drink n/N	Risk Ratio M-H, Fixed, 95% CI	Weight	Risk Ratio M-H, Fixed, 95% CI
2.12.1 Women at low risk of caesarean/complications					
Tranmer 2005	34/133	39/122		100%	0.8[0.54,1.18]
Subtotal (95% CI)	**133**	**122**		**100%**	**0.8[0.54,1.18]**
Total events: 34 (Complete restriction), 39 (Freedom to eat and drink)					
Heterogeneity: Not applicable					
Test for overall effect: Z=1.13(P=0.26)					
2.12.2 Women at increased risk of caesarean/complications					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Complete restriction), 0 (Freedom to eat and drink)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
2.12.3 Women with no defined risk status					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Complete restriction), 0 (Freedom to eat and drink)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					



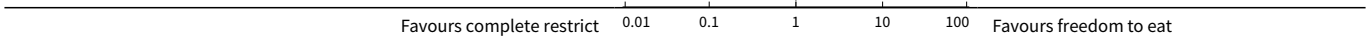


Analysis 2.14. Comparison 2 Complete restriction of oral fluid and food (other than ice chips) versus freedom to eat and drink, Outcome 14 Augmentation of labour.



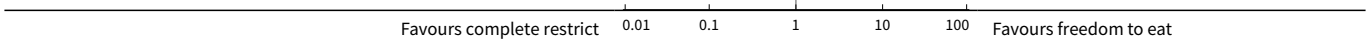
Analysis 2.16. Comparison 2 Complete restriction of oral fluid and food (other than ice chips) versus freedom to eat and drink, Outcome 16 Epidural analgesia.

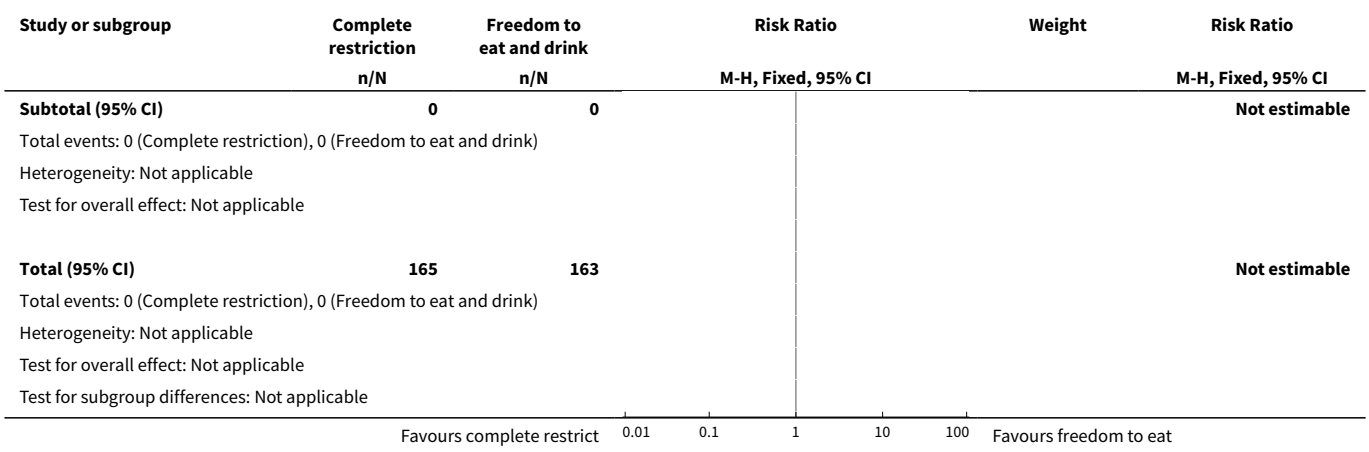
Study or subgroup	Complete restriction n/N	Freedom to eat and drink n/N	Risk Ratio M-H, Fixed, 95% CI	Weight	Risk Ratio M-H, Fixed, 95% CI
2.16.1 Women at low risk of caesarean/complications					
Tranmer 2005	120/165	129/163		100%	0.92[0.81,1.04]
Subtotal (95% CI)	**165**	**163**		**100%**	**0.92[0.81,1.04]**
Total events: 120 (Complete restriction), 129 (Freedom to eat and drink)					
Heterogeneity: Not applicable					
Test for overall effect: Z=1.36(P=0.18)					
2.16.2 Women at increased risk of caesarean/complications					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Complete restriction), 0 (Freedom to eat and drink)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
2.16.3 Women with no defined risk status					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Complete restriction), 0 (Freedom to eat and drink)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
Total (95% CI)	**165**	**163**		**100%**	**0.92[0.81,1.04]**
Total events: 120 (Complete restriction), 129 (Freedom to eat and drink)					
Heterogeneity: Not applicable					
Test for overall effect: Z=1.36(P=0.18)					
Test for subgroup differences: Not applicable					



Analysis 2.19. Comparison 2 Complete restriction of oral fluid and food (other than ice chips) versus freedom to eat and drink, Outcome 19 Mendelson's syndrome.

Study or subgroup	Complete restriction n/N	Freedom to eat and drink n/N	Risk Ratio M-H, Fixed, 95% CI	Weight	Risk Ratio M-H, Fixed, 95% CI
2.19.1 Women at low risk of caesarean/complications					
Tranmer 2005	0/165	0/163			Not estimable
Subtotal (95% CI)	**165**	**163**			**Not estimable**
Total events: 0 (Complete restriction), 0 (Freedom to eat and drink)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
2.19.2 Women at increased risk of caesarean/complications					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Complete restriction), 0 (Freedom to eat and drink)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
2.19.3 Women with no defined risk status					





Comparison 7. Water only versus specific oral fluid and food

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Caesarean section (primary outcome)	2	2514	Risk Ratio (M-H, Fixed, 95% CI)	1.02 [0.91, 1.15]
1.1 Women at low risk of caesarean/complications	2	2514	Risk Ratio (M-H, Fixed, 95% CI)	1.02 [0.91, 1.15]
1.2 Women at increased risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
1.3 Women with no defined risk status	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
2 Operative vaginal birth (primary outcome)	2	2514	Risk Ratio (M-H, Fixed, 95% CI)	0.96 [0.84, 1.10]
2.1 Women at low risk of caesarean/complications	2	2514	Risk Ratio (M-H, Fixed, 95% CI)	0.96 [0.84, 1.10]
2.2 Women at increased risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
2.3 Women with no defined risk status	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
3 Maternal satisfaction (primary outcome)	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
3.1 Women at low risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
3.2 Women at increased risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
3.3 Women with no defined risk status	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
4 Apgar < 7 at 5 min (primary outcome)	2	2514	Risk Ratio (M-H, Fixed, 95% CI)	1.39 [0.73, 2.63]

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
4.1 Women at low risk of caesarean/complications	2	2514	Risk Ratio (M-H, Fixed, 95% CI)	1.39 [0.73, 2.63]
4.2 Women at increased risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
4.3 Women with no defined risk status	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
5 Neonatal hypoglycaemia (primary outcome)	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
5.1 Women at low risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
5.2 Women at increased risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
5.3 Women with no defined risk status	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
6 Maternal ketoacidosis	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
6.1 Women at low risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
6.2 Women at increased risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
6.3 Women with no defined risk status	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
7 Maternal dehydration	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
7.1 Women at low risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
7.2 Women at increased risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
7.3 Women with no defined risk status	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
8 Maternal hyponatraemia	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
8.1 Women at low risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
8.2 Women at increased risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
8.3 Women with no defined risk status	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
9 Maternal hypoglycaemia	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
9.1 Women at low risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
9.2 Women at increased risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
9.3 Women with no defined risk status	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
10 Duration of labour (hours)	1	88	Mean Difference (IV, Fixed, 95% CI)	-1.10 [-2.66, 0.46]
10.1 Women at low risk of caesarean/complications	1	88	Mean Difference (IV, Fixed, 95% CI)	-1.10 [-2.66, 0.46]
10.2 Women at increased risk of caesarean/complications	0	0	Mean Difference (IV, Fixed, 95% CI)	0.0 [0.0, 0.0]
10.3 Women with no defined risk status	0	0	Mean Difference (IV, Fixed, 95% CI)	0.0 [0.0, 0.0]
11 Mobility in labour	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
11.1 Women at low risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
11.2 Women at increased risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
11.3 Women with no defined risk status	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
12 Maternal nausea	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
12.1 Women at low risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
12.2 Women at increased risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
12.3 Women with no defined risk status	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
13 Maternal vomiting	2	2514	Risk Ratio (M-H, Random, 95% CI)	0.76 [0.41, 1.41]
13.1 Women at low risk of caesarean/complications	2	2514	Risk Ratio (M-H, Random, 95% CI)	0.76 [0.41, 1.41]
13.2 Women at increased risk of caesarean/complications	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
13.3 Women with no defined risk status	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
14 Augmentation of labour	2	2514	Risk Ratio (M-H, Random, 95% CI)	0.97 [0.80, 1.19]
14.1 Women at low risk of caesarean/complications	2	2514	Risk Ratio (M-H, Random, 95% CI)	0.97 [0.80, 1.19]
14.2 Women at increased risk of caesarean/complications	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
14.3 Women with no defined risk status	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
15 Narcotic pain relief	1	88	Risk Ratio (M-H, Fixed, 95% CI)	1.00 [0.91, 1.09]
15.1 Women at low risk of caesarean/complications	1	88	Risk Ratio (M-H, Fixed, 95% CI)	1.00 [0.91, 1.09]
15.2 Women at increased risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
15.3 Women with no defined risk status	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
16 Epidural analgesia	2	2514	Risk Ratio (M-H, Fixed, 95% CI)	1.02 [0.97, 1.08]
16.1 Women at low risk of caesarean/complications	2	2514	Risk Ratio (M-H, Fixed, 95% CI)	1.02 [0.97, 1.08]
16.2 Women at increased risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
16.3 Women with no defined risk status	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
17 Poor maternal expulsive efforts	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
17.1 Women at low risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
17.2 Women at increased risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
17.3 Women with no defined risk status	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
18 Regurgitation during general anaesthesia	1	2426	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
18.1 Women at low risk of caesarean/complications	1	2426	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
18.2 Women at increased risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
18.3 Women with no defined risk status	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
19 Mendelson's syndrome	1	2426	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
19.1 Women at low risk of caesarean/complications	1	2426	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
19.2 Women at increased risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
19.3 Women with no defined risk status	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
20 Maternal mortality	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]

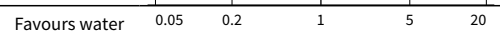
Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
20.1 Women at low risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
20.2 Women at increased risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
20.3 Women with no defined risk status	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
21 Postpartum haemorrhage (> 1000 ml)	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
21.1 Women at low risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
21.2 Women at increased risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
21.3 Women with no defined risk status	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
22 Maternal admission to intensive care	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
22.1 Women at low risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
22.2 Women at increased risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
22.3 Women with no defined risk status	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
23 Length of maternal hospital stay	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
23.1 Women at low risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
23.2 Women at increased risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
23.3 Women with no defined risk status	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
24 Maternal comfort	0	0	Mean Difference (IV, Fixed, 95% CI)	0.0 [0.0, 0.0]
24.1 Women at low risk of caesarean/complications	0	0	Mean Difference (IV, Fixed, 95% CI)	0.0 [0.0, 0.0]
24.2 Women at increased risk of caesarean/complications	0	0	Mean Difference (IV, Fixed, 95% CI)	0.0 [0.0, 0.0]
24.3 Women with no defined risk status	0	0	Mean Difference (IV, Fixed, 95% CI)	0.0 [0.0, 0.0]
25 Maternal feelings of pain, thirst or hunger	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
25.1 Women at low risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
25.2 Women at increased risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
25.3 Women with no defined risk status	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
26 Fully breastfeeding at discharge	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
26.1 Women at low risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
26.2 Women at increased risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
26.3 Women with no defined risk status	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
27 Maternal feelings of control	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
27.1 Women at low risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
27.2 Women at increased risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
27.3 Women with no defined risk status	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
28 Fetal distress	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
28.1 Women at low risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
28.2 Women at increased risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
28.3 Women with no defined risk status	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
29 Cord blood pH < 7.2	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
29.1 Women at low risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
29.2 Women at increased risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
29.3 Women with no defined risk status	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
30 Infant hyperinsulinism	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
30.1 Women at low risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
30.2 Women at increased risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
30.3 Women with no defined risk status	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
31 Infant hyponatraemia	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
31.1 Women at low risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
31.2 Women at increased risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
31.3 Women with no defined risk status	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
32 Infant intravenous therapy	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
32.1 Women at low risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
32.2 Women at increased risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
32.3 Women with no defined risk status	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
33 Infant gavage feeding	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
33.1 Women at low risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
33.2 Women at increased risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
33.3 Women with no defined risk status	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
34 Infant admission to intensive care	1	2426	Risk Ratio (M-H, Fixed, 95% CI)	1.03 [0.73, 1.45]
34.1 Women at low risk of caesarean/complications	1	2426	Risk Ratio (M-H, Fixed, 95% CI)	1.03 [0.73, 1.45]
34.2 Women at increased risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
34.3 Women with no defined risk status	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
35 Length of infant hospital stay	0	0	Mean Difference (IV, Fixed, 95% CI)	0.0 [0.0, 0.0]
35.1 Women at low risk of caesarean/complications	0	0	Mean Difference (IV, Fixed, 95% CI)	0.0 [0.0, 0.0]
35.2 Women at increased risk of caesarean/complications	0	0	Mean Difference (IV, Fixed, 95% CI)	0.0 [0.0, 0.0]
35.3 Women with no defined risk status	0	0	Mean Difference (IV, Fixed, 95% CI)	0.0 [0.0, 0.0]

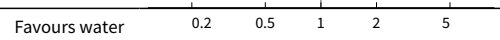
Analysis 7.1. Comparison 7 Water only versus specific oral fluid and food, Outcome 1 Caesarean section (primary outcome).

Study or subgroup	Water	Specific food and fluid	Risk Ratio	Weight	Risk Ratio
	n/N	n/N	M-H, Fixed, 95% CI		M-H, Fixed, 95% CI
7.1.1 Women at low risk of caesarean/complications					
O'Sullivan 2009	363/1207	362/1219		97.62%	1.01[0.9,1.14]
Scrutton 1999	12/43	9/45		2.38%	1.4[0.65,2.97]
Subtotal (95% CI)	**1250**	**1264**		**100%**	**1.02[0.91,1.15]**
Total events: 375 (Water), 371 (Specific food and fluid)					
Heterogeneity: Tau^2=0; Chi^2=0.67, df=1(P=0.41); I^2=0%					
Test for overall effect: Z=0.35(P=0.72)					
7.1.2 Women at increased risk of caesarean/complications					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Water), 0 (Specific food and fluid)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
7.1.3 Women with no defined risk status					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Water), 0 (Specific food and fluid)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
Total (95% CI)	**1250**	**1264**		**100%**	**1.02[0.91,1.15]**
Total events: 375 (Water), 371 (Specific food and fluid)					
Heterogeneity: Tau^2=0; Chi^2=0.67, df=1(P=0.41); I^2=0%					
Test for overall effect: Z=0.35(P=0.72)					
Test for subgroup differences: Not applicable					



Analysis 7.2. Comparison 7 Water only versus specific oral fluid and food, Outcome 2 Operative vaginal birth (primary outcome).

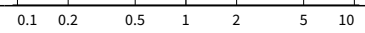
Study or subgroup	Water	Specific food and fluid	Risk Ratio	Weight	Risk Ratio
	n/N	n/N	M-H, Fixed, 95% CI		M-H, Fixed, 95% CI
7.2.1 Women at low risk of caesarean/complications					
O'Sullivan 2009	310/1207	324/1219		95.37%	0.97[0.85,1.1]
Scrutton 1999	13/43	16/45		4.63%	0.85[0.47,1.55]
Subtotal (95% CI)	**1250**	**1264**		**100%**	**0.96[0.84,1.1]**
Total events: 323 (Water), 340 (Specific food and fluid)					
Heterogeneity: Tau^2=0; Chi^2=0.17, df=1(P=0.68); I^2=0%					
Test for overall effect: Z=0.6(P=0.55)					
7.2.2 Women at increased risk of caesarean/complications					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Water), 0 (Specific food and fluid)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					



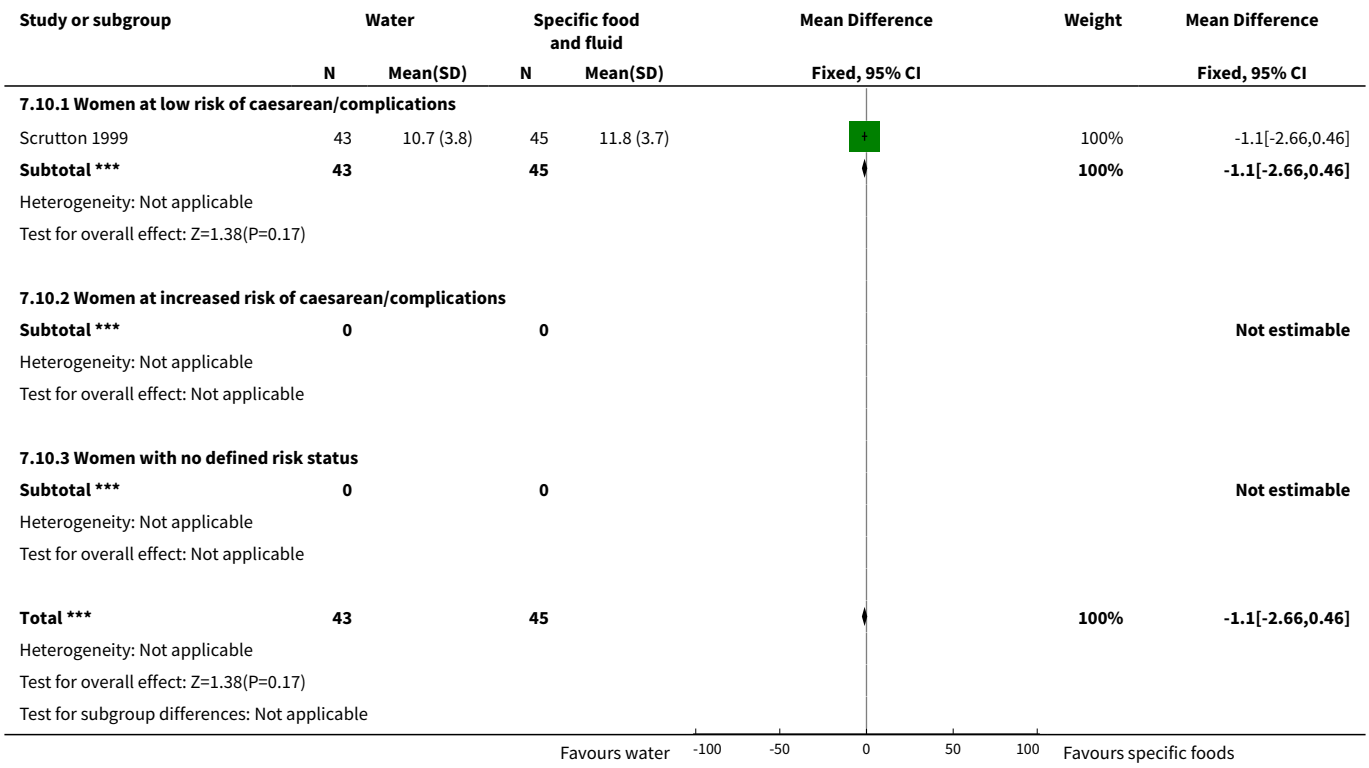
Study or subgroup	Water	Specific food and fluid	Risk Ratio	Weight	Risk Ratio
	n/N	n/N	M-H, Fixed, 95% CI		M-H, Fixed, 95% CI
7.2.3 Women with no defined risk status					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Water), 0 (Specific food and fluid)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
Total (95% CI)	**1250**	**1264**		**100%**	**0.96[0.84,1.1]**
Total events: 323 (Water), 340 (Specific food and fluid)					
Heterogeneity: Tau^2=0; Chi^2=0.17, df=1(P=0.68); I^2=0%					
Test for overall effect: Z=0.6(P=0.55)					
Test for subgroup differences: Chi^2=0, df=1 (P<0.0001), I^2=100%					

Analysis 7.4. Comparison 7 Water only versus specific oral fluid and food, Outcome 4 Apgar < 7 at 5 min (primary outcome).

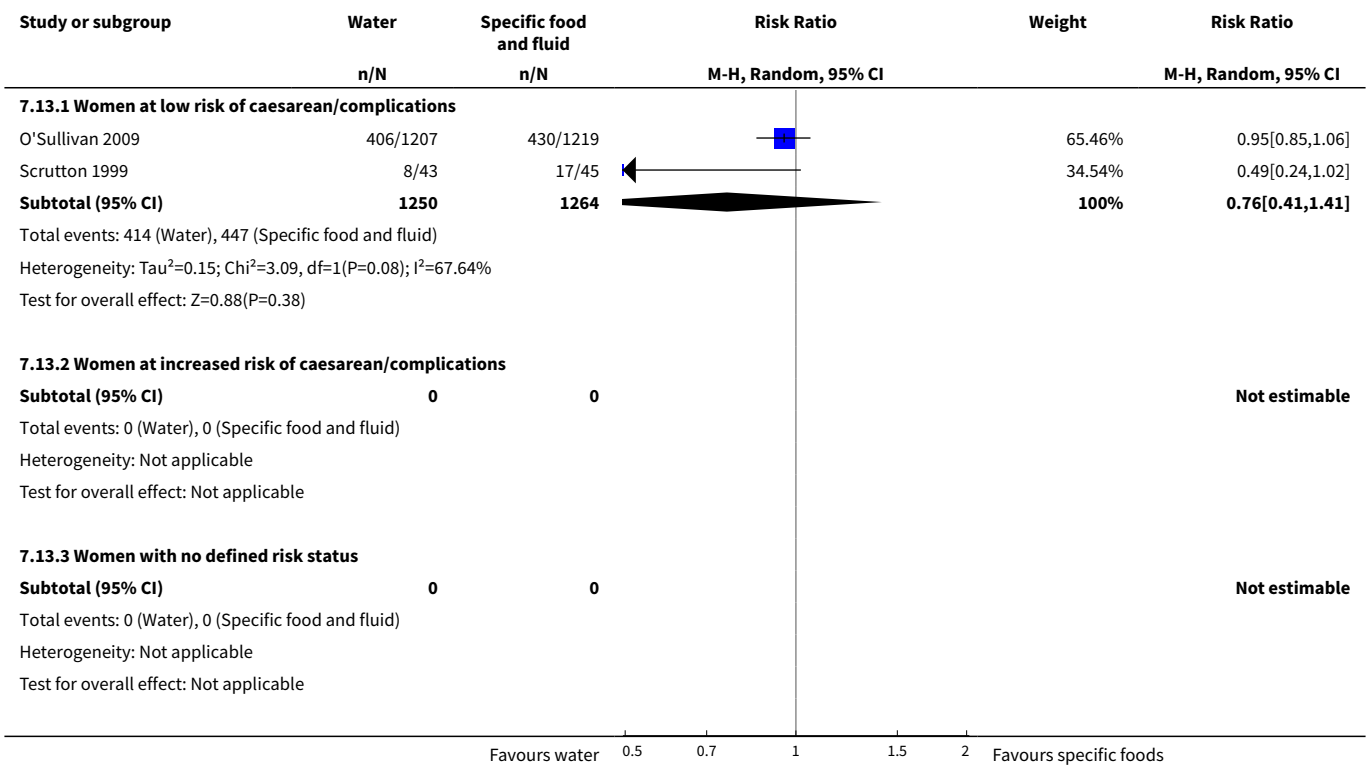
Study or subgroup	Water	Specific food and fluid	Risk Ratio	Weight	Risk Ratio
	n/N	n/N	M-H, Fixed, 95% CI		M-H, Fixed, 95% CI
7.4.1 Women at low risk of caesarean/complications					
O'Sullivan 2009	22/1207	16/1219		100%	1.39[0.73,2.63]
Scrutton 1999	0/43	0/45			Not estimable
Subtotal (95% CI)	**1250**	**1264**		**100%**	**1.39[0.73,2.63]**
Total events: 22 (Water), 16 (Specific food and fluid)					
Heterogeneity: Not applicable					
Test for overall effect: Z=1.01(P=0.31)					
7.4.2 Women at increased risk of caesarean/complications					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Water), 0 (Specific food and fluid)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
7.4.3 Women with no defined risk status					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Water), 0 (Specific food and fluid)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
Total (95% CI)	**1250**	**1264**		**100%**	**1.39[0.73,2.63]**
Total events: 22 (Water), 16 (Specific food and fluid)					
Heterogeneity: Not applicable					
Test for overall effect: Z=1.01(P=0.31)					
Test for subgroup differences: Not applicable					

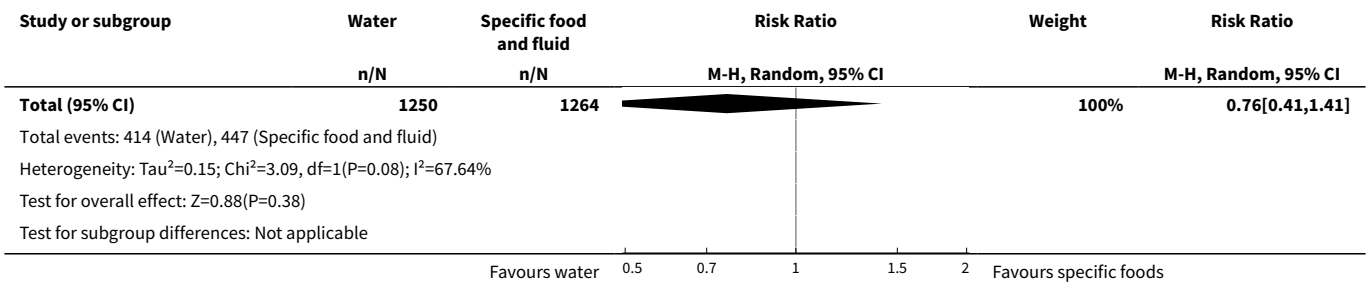


Analysis 7.10. Comparison 7 Water only versus specific oral fluid and food, Outcome 10 Duration of labour (hours).

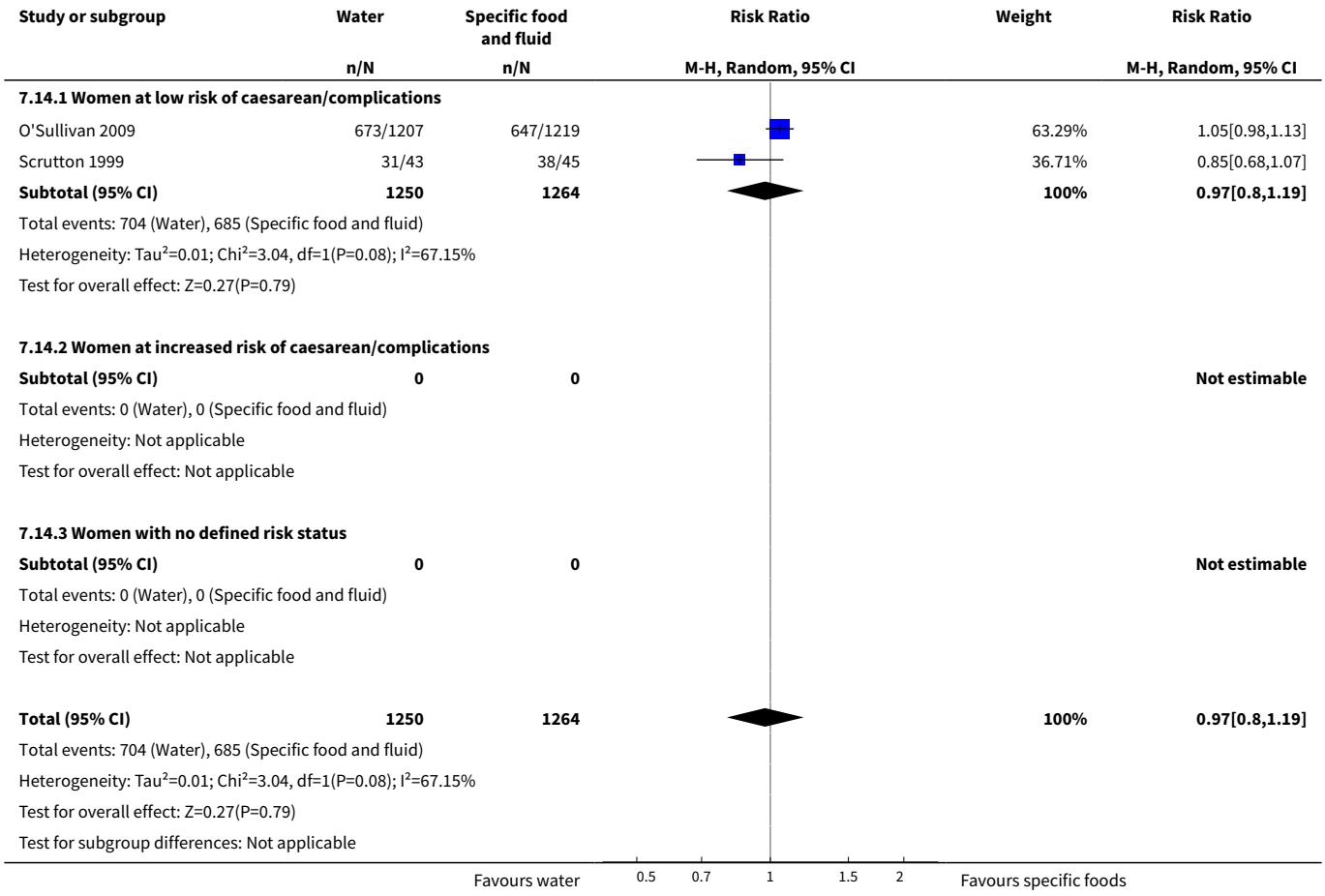


Analysis 7.13. Comparison 7 Water only versus specific oral fluid and food, Outcome 13 Maternal vomiting.

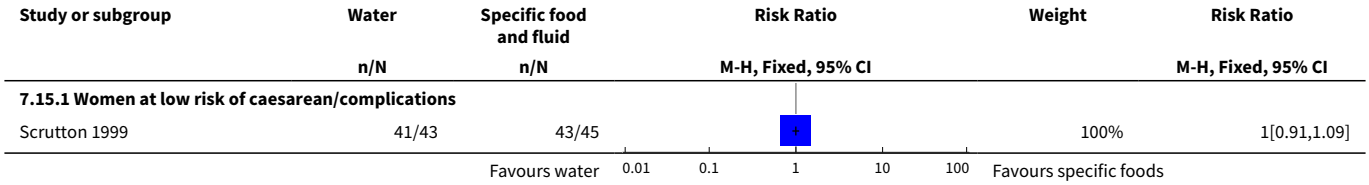




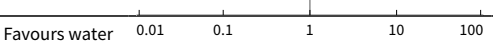
Analysis 7.14. Comparison 7 Water only versus specific oral fluid and food, Outcome 14 Augmentation of labour.



Analysis 7.15. Comparison 7 Water only versus specific oral fluid and food, Outcome 15 Narcotic pain relief.

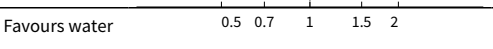


Study or subgroup	Water	Specific food and fluid	Risk Ratio	Weight	Risk Ratio
	n/N	n/N	M-H, Fixed, 95% CI		M-H, Fixed, 95% CI
Subtotal (95% CI)	**43**	**45**		**100%**	**1[0.91,1.09]**
Total events: 41 (Water), 43 (Specific food and fluid)					
Heterogeneity: Tau²=0; Chi²=0, df=0(P<0.0001); I²=100%					
Test for overall effect: Z=0.05(P=0.96)					
7.15.2 Women at increased risk of caesarean/complications					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Water), 0 (Specific food and fluid)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
7.15.3 Women with no defined risk status					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Water), 0 (Specific food and fluid)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
Total (95% CI)	**43**	**45**		**100%**	**1[0.91,1.09]**
Total events: 41 (Water), 43 (Specific food and fluid)					
Heterogeneity: Tau²=0; Chi²=0, df=0(P<0.0001); I²=100%					
Test for overall effect: Z=0.05(P=0.96)					
Test for subgroup differences: Not applicable					

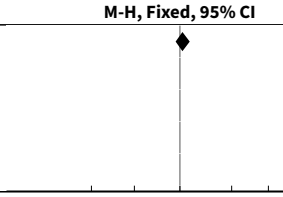


Analysis 7.16. Comparison 7 Water only versus specific oral fluid and food, Outcome 16 Epidural analgesia.

Study or subgroup	Water	Specific food and fluid	Risk Ratio	Weight	Risk Ratio
	n/N	n/N	M-H, Fixed, 95% CI		M-H, Fixed, 95% CI
7.16.1 Women at low risk of caesarean/complications					
O'Sullivan 2009	813/1207	804/1219		95.34%	1.02[0.97,1.08]
Scrutton 1999	39/43	40/45		4.66%	1.02[0.89,1.17]
Subtotal (95% CI)	**1250**	**1264**		**100%**	**1.02[0.97,1.08]**
Total events: 852 (Water), 844 (Specific food and fluid)					
Heterogeneity: Tau²=0; Chi²=0, df=1(P=0.99); I²=0%					
Test for overall effect: Z=0.76(P=0.45)					
7.16.2 Women at increased risk of caesarean/complications					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Water), 0 (Specific food and fluid)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
7.16.3 Women with no defined risk status					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Water), 0 (Specific food and fluid)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					

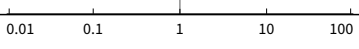


Study or subgroup	Water	Specific food and fluid	Risk Ratio	Weight	Risk Ratio
	n/N	n/N	M-H, Fixed, 95% CI		M-H, Fixed, 95% CI
Total (95% CI)	**1250**	**1264**		**100%**	**1.02[0.97,1.08]**
Total events: 852 (Water), 844 (Specific food and fluid)					
Heterogeneity: Tau^2=0; Chi^2=0, df=1(P=0.99); I^2=0%					
Test for overall effect: Z=0.76(P=0.45)					
Test for subgroup differences: Not applicable					



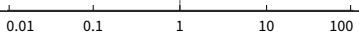
Analysis 7.18. Comparison 7 Water only versus specific oral fluid and food, Outcome 18 Regurgitation during general anaesthesia.

Study or subgroup	Water	Specific food and fluid	Risk Ratio	Weight	Risk Ratio
	n/N	n/N	M-H, Fixed, 95% CI		M-H, Fixed, 95% CI
7.18.1 Women at low risk of caesarean/complications					
O'Sullivan 2009	0/1207	0/1219			Not estimable
Subtotal (95% CI)	**1207**	**1219**			**Not estimable**
Total events: 0 (Water), 0 (Specific food and fluid)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
7.18.2 Women at increased risk of caesarean/complications					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Water), 0 (Specific food and fluid)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
7.18.3 Women with no defined risk status					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Water), 0 (Specific food and fluid)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
Total (95% CI)	**1207**	**1219**			**Not estimable**
Total events: 0 (Water), 0 (Specific food and fluid)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
Test for subgroup differences: Not applicable					



Analysis 7.19. Comparison 7 Water only versus specific oral fluid and food, Outcome 19 Mendelson's syndrome.

Study or subgroup	Water	Specific food and fluid	Risk Ratio	Weight	Risk Ratio
	n/N	n/N	M-H, Fixed, 95% CI		M-H, Fixed, 95% CI
7.19.1 Women at low risk of caesarean/complications					
O'Sullivan 2009	0/1207	0/1219			Not estimable



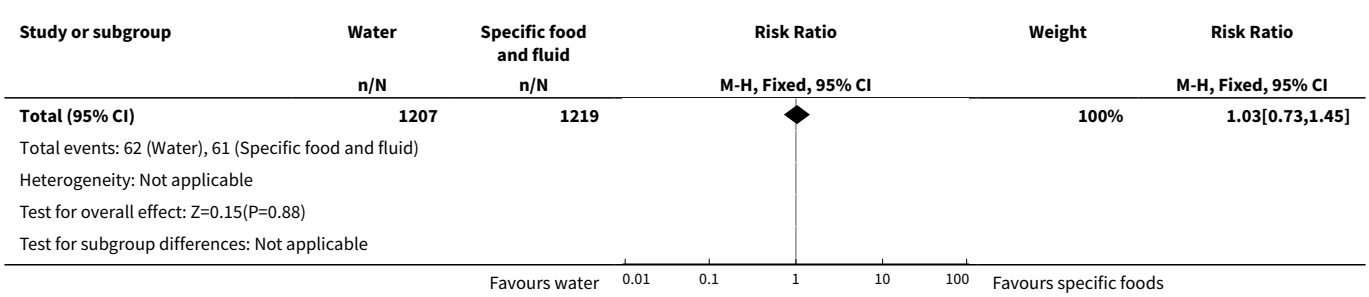
Study or subgroup	Water	Specific food and fluid	Risk Ratio	Weight	Risk Ratio
	n/N	n/N	M-H, Fixed, 95% CI		M-H, Fixed, 95% CI
Subtotal (95% CI)	**1207**	**1219**			**Not estimable**
Total events: 0 (Water), 0 (Specific food and fluid)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
7.19.2 Women at increased risk of caesarean/complications					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Water), 0 (Specific food and fluid)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
7.19.3 Women with no defined risk status					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Water), 0 (Specific food and fluid)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
Total (95% CI)	**1207**	**1219**			**Not estimable**
Total events: 0 (Water), 0 (Specific food and fluid)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
Test for subgroup differences: Not applicable					

Favours water 0.01 0.1 1 10 100 Favours specific foods

Analysis 7.34. Comparison 7 Water only versus specific oral fluid and food, Outcome 34 Infant admission to intensive care.

Study or subgroup	Water	Specific food and fluid	Risk Ratio	Weight	Risk Ratio
	n/N	n/N	M-H, Fixed, 95% CI		M-H, Fixed, 95% CI
7.34.1 Women at low risk of caesarean/complications					
O'Sullivan 2009	62/1207	61/1219		100%	1.03[0.73,1.45]
Subtotal (95% CI)	**1207**	**1219**		**100%**	**1.03[0.73,1.45]**
Total events: 62 (Water), 61 (Specific food and fluid)					
Heterogeneity: Not applicable					
Test for overall effect: Z=0.15(P=0.88)					
7.34.2 Women at increased risk of caesarean/complications					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Water), 0 (Specific food and fluid)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
7.34.3 Women with no defined risk status					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Water), 0 (Specific food and fluid)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					

Favours water 0.01 0.1 1 10 100 Favours specific foods



Comparison 10. Water only versus oral carbohydrate based fluids

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Caesarean section (primary outcome)	2	261	Risk Ratio (M-H, Random, 95% CI)	0.66 [0.17, 2.53]
1.1 Women at low risk of caesarean/complications	2	261	Risk Ratio (M-H, Random, 95% CI)	0.66 [0.17, 2.53]
1.2 Women at increased risk of caesarean/complications	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
1.3 Women with no defined risk status	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
2 Operative vaginal birth (primary outcome)	2	261	Risk Ratio (M-H, Fixed, 95% CI)	1.17 [0.80, 1.71]
2.1 Women at low risk of caesarean/complications	2	261	Risk Ratio (M-H, Fixed, 95% CI)	1.17 [0.80, 1.71]
2.2 Women at increased risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
2.3 Women with no defined risk status	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
3 Maternal satisfaction (primary outcome)	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
3.1 Women at low risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
3.2 Women at increased risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
3.3 Women with no defined risk status	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
4 Apgar < 7 at 5 min (primary outcome)	1	60	Risk Ratio (M-H, Fixed, 95% CI)	3.0 [0.13, 70.83]
4.1 Women at low risk of caesarean/complications	1	60	Risk Ratio (M-H, Fixed, 95% CI)	3.0 [0.13, 70.83]
4.2 Women at increased risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
4.3 Women with no defined risk status	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
5 Neonatal hypoglycaemia (primary outcome)	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
5.1 Women at low risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
5.2 Women at increased risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
5.3 Women with no defined risk status	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
6 Maternal ketoacidosis	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
6.1 Women at low risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
6.2 Women at increased risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
6.3 Women with no defined risk status	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
7 Maternal dehydration	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
7.1 Women at low risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
7.2 Women at increased risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
7.3 Women with no defined risk status	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
8 Maternal hyponatraemia	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
8.1 Women at low risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
8.2 Women at increased risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
8.3 Women with no defined risk status	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
9 Maternal hypoglycaemia	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
9.1 Women at low risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
9.2 Women at increased risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
9.3 Women with no defined risk status	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
10 Duration of labour (hours)	1	60	Mean Difference (IV, Fixed, 95% CI)	0.95 [-0.42, 2.32]

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
10.1 Women at low risk of caesarean/complications	1	60	Mean Difference (IV, Fixed, 95% CI)	0.95 [-0.42, 2.32]
10.2 Women at increased risk of caesarean/complications	0	0	Mean Difference (IV, Fixed, 95% CI)	0.0 [0.0, 0.0]
10.3 Women with no defined risk status	0	0	Mean Difference (IV, Fixed, 95% CI)	0.0 [0.0, 0.0]
11 Mobility in labour	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
11.1 Women at low risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
11.2 Women at increased risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
11.3 Women with no defined risk status	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
12 Maternal nausea	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
12.1 Women at low risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
12.2 Women at increased risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
12.3 Women with no defined risk status	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
13 Maternal vomiting	1	60	Risk Ratio (M-H, Fixed, 95% CI)	1.27 [0.69, 2.33]
13.1 Women at low risk of caesarean/complications	1	60	Risk Ratio (M-H, Fixed, 95% CI)	1.27 [0.69, 2.33]
13.2 Women at increased risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
13.3 Women with no defined risk status	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
14 Augmentation of labour	2	261	Risk Ratio (M-H, Fixed, 95% CI)	1.07 [0.75, 1.52]
14.1 Women at low risk of caesarean/complications	2	261	Risk Ratio (M-H, Fixed, 95% CI)	1.07 [0.75, 1.52]
14.2 Women at increased risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
14.3 Women with no defined risk status	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
15 Narcotic pain relief	2	261	Risk Ratio (M-H, Random, 95% CI)	0.86 [0.36, 2.06]
15.1 Women at low risk of caesarean/complications	2	261	Risk Ratio (M-H, Random, 95% CI)	0.86 [0.36, 2.06]

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
15.2 Women at increased risk of caesarean/complications	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
15.3 Women with no defined risk status	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
16 Epidural analgesia	2	261	Risk Ratio (M-H, Random, 95% CI)	0.80 [0.44, 1.43]
16.1 Women at low risk of caesarean/complications	2	261	Risk Ratio (M-H, Random, 95% CI)	0.80 [0.44, 1.43]
16.2 Women at increased risk of caesarean/complications	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
16.3 Women with no defined risk status	0	0	Risk Ratio (M-H, Random, 95% CI)	0.0 [0.0, 0.0]
17 Poor maternal expulsive efforts	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
17.1 Women at low risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
17.2 Women at increased risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
17.3 Women with no defined risk status	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
18 Regurgitation during general anaesthesia	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
18.1 Women at low risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
18.2 Women at increased risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
18.3 Women with no defined risk status	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
19 Mendelson's syndrome	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
19.1 Women at low risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
19.2 Women at increased risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
19.3 Women with no defined risk status	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
20 Maternal mortality	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
20.1 Women at low risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
20.2 Women at increased risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]

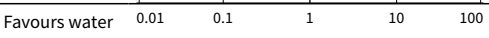
Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
20.3 Women with no defined risk status	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
21 Postpartum haemorrhage (> 1000 ml)	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
21.1 Women at low risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
21.2 Women at increased risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
21.3 Women with no defined risk status	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
22 Maternal admission to intensive care	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
22.1 Women at low risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
22.2 Women at increased risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
22.3 Women with no defined risk status	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
23 Length of maternal hospital stay	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
23.1 Women at low risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
23.2 Women at increased risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
23.3 Women with no defined risk status	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
24 Maternal comfort	0	0	Mean Difference (IV, Fixed, 95% CI)	0.0 [0.0, 0.0]
24.1 Women at low risk of caesarean/complications	0	0	Mean Difference (IV, Fixed, 95% CI)	0.0 [0.0, 0.0]
24.2 Women at increased risk of caesarean/complications	0	0	Mean Difference (IV, Fixed, 95% CI)	0.0 [0.0, 0.0]
24.3 Women with no defined risk status	0	0	Mean Difference (IV, Fixed, 95% CI)	0.0 [0.0, 0.0]
25 Maternal feelings of pain, thirst or hunger	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
25.1 Women at low risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
25.2 Women at increased risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
25.3 Women with no defined risk status	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
26 Fully breastfeeding at discharge	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
26.1 Women at low risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
26.2 Women at increased risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
26.3 Women with no defined risk status	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
27 Maternal feelings of control	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
27.1 Women at low risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
27.2 Women at increased risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
27.3 Women with no defined risk status	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
28 Fetal distress	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
28.1 Women at low risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
28.2 Women at increased risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
28.3 Women with no defined risk status	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
29 Cord blood pH < 7.2	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
29.1 Women at low risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
29.2 Women at increased risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
29.3 Women with no defined risk status	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
30 Infant hyperinsulinism	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
30.1 Women at low risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
30.2 Women at increased risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
30.3 Women with no defined risk status	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
31 Infant hyponatraemia	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
31.1 Women at low risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
31.2 Women at increased risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
31.3 Women with no defined risk status	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
32 Infant intravenous therapy	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
32.1 Women at low risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
32.2 Women at increased risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
32.3 Women with no defined risk status	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
33 Infant gavage feeding	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
33.1 Women at low risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
33.2 Women at increased risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
33.3 Women with no defined risk status	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
34 Infant admission to intensive care	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
34.1 Women at low risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
34.2 Women at increased risk of caesarean/complications	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
34.3 Women with no defined risk status	0	0	Risk Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]
35 Length of infant hospital stay	0	0	Mean Difference (IV, Fixed, 95% CI)	0.0 [0.0, 0.0]
35.1 Women at low risk of caesarean/complications	0	0	Mean Difference (IV, Fixed, 95% CI)	0.0 [0.0, 0.0]
35.2 Women at increased risk of caesarean/complications	0	0	Mean Difference (IV, Fixed, 95% CI)	0.0 [0.0, 0.0]
35.3 Women with no defined risk status	0	0	Mean Difference (IV, Fixed, 95% CI)	0.0 [0.0, 0.0]

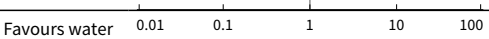
Analysis 10.1. Comparison 10 Water only versus oral carbohydrate based fluids, Outcome 1 Caesarean section (primary outcome).

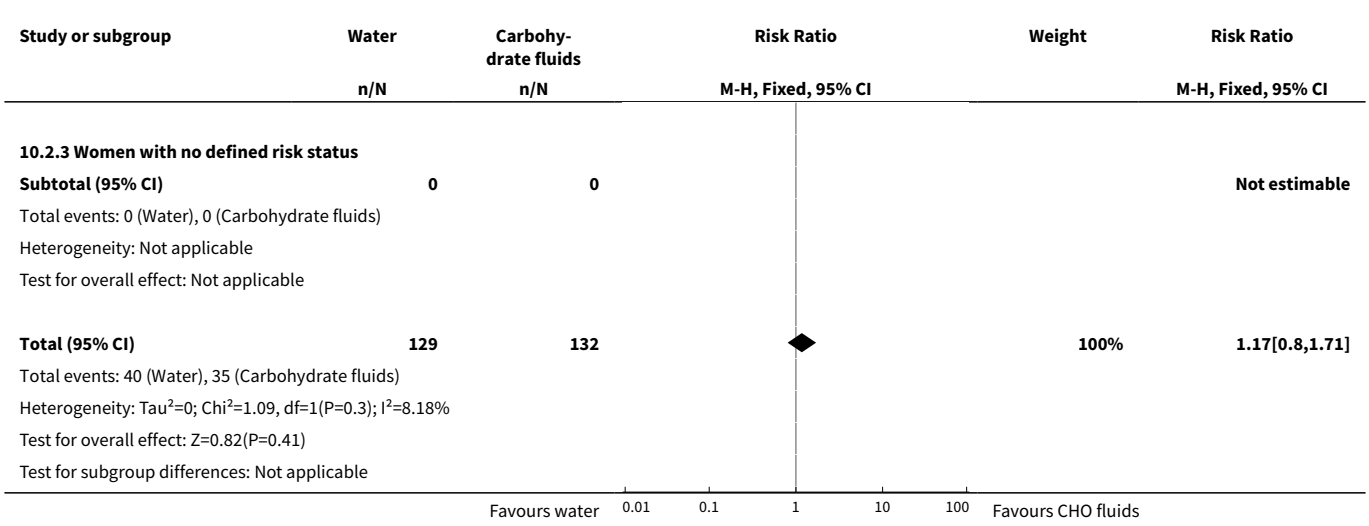
Study or subgroup	Water n/N	Carbohydrate fluids n/N	Risk Ratio M-H, Random, 95% CI	Weight	Risk Ratio M-H, Random, 95% CI
10.1.1 Women at low risk of caesarean/complications					
Kubli 2002	8/30	6/30		48.54%	1.33[0.53,3.38]
Scheepers 2002	7/99	21/102		51.46%	0.34[0.15,0.77]
Subtotal (95% CI)	**129**	**132**		**100%**	**0.66[0.17,2.53]**
Total events: 15 (Water), 27 (Carbohydrate fluids)					
Heterogeneity: Tau^2=0.74; Chi^2=4.73, df=1(P=0.03); I^2=78.84%					
Test for overall effect: Z=0.6(P=0.55)					
10.1.2 Women at increased risk of caesarean/complications					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Water), 0 (Carbohydrate fluids)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
10.1.3 Women with no defined risk status					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Water), 0 (Carbohydrate fluids)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
Total (95% CI)	**129**	**132**		**100%**	**0.66[0.17,2.53]**
Total events: 15 (Water), 27 (Carbohydrate fluids)					
Heterogeneity: Tau^2=0.74; Chi^2=4.73, df=1(P=0.03); I^2=78.84%					
Test for overall effect: Z=0.6(P=0.55)					
Test for subgroup differences: Not applicable					



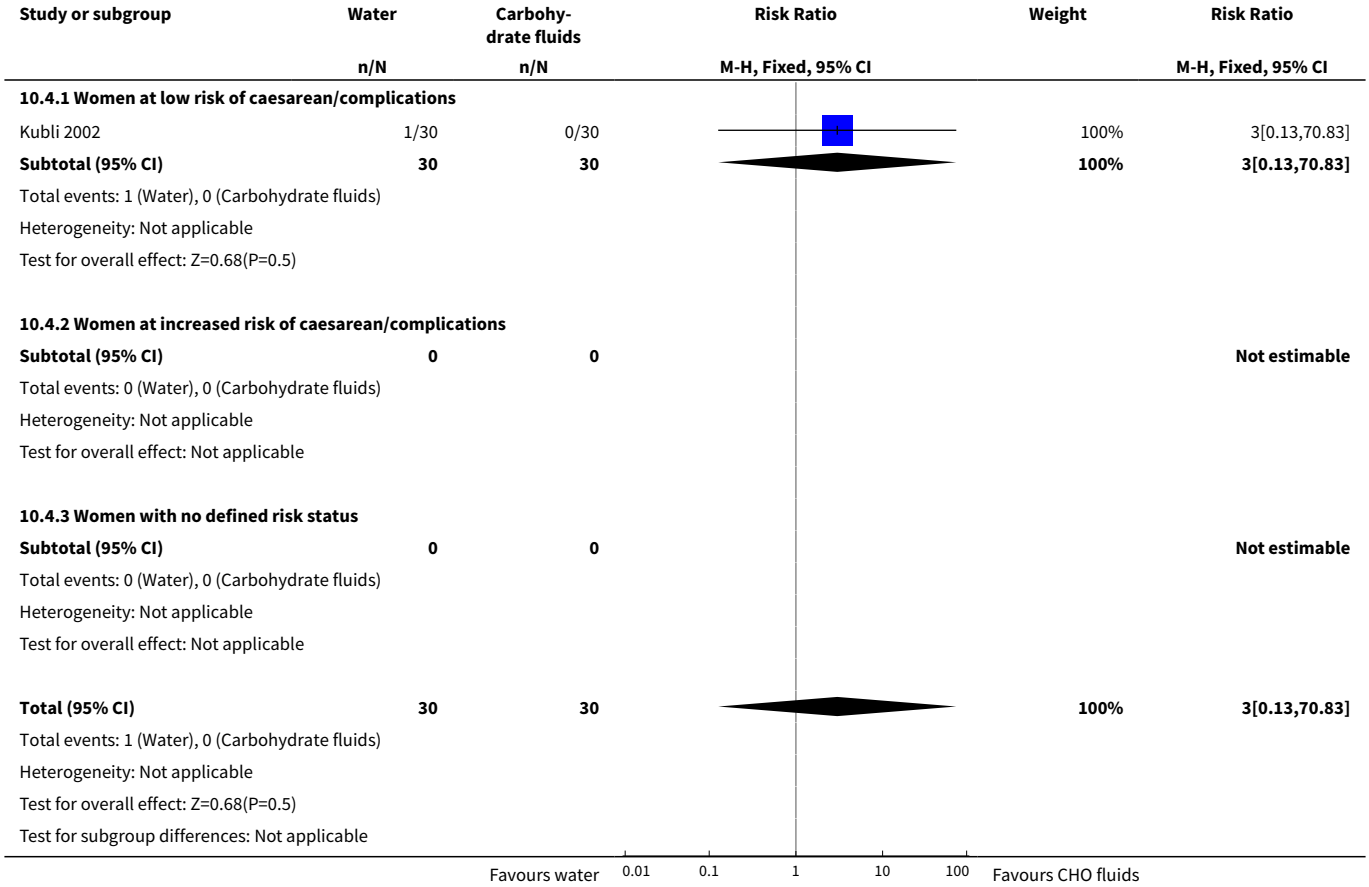
Analysis 10.2. Comparison 10 Water only versus oral carbohydrate based fluids, Outcome 2 Operative vaginal birth (primary outcome).

Study or subgroup	Water n/N	Carbohydrate fluids n/N	Risk Ratio M-H, Fixed, 95% CI	Weight	Risk Ratio M-H, Fixed, 95% CI
10.2.1 Women at low risk of caesarean/complications					
Kubli 2002	4/30	6/30		17.36%	0.67[0.21,2.13]
Scheepers 2002	36/99	29/102		82.64%	1.28[0.85,1.91]
Subtotal (95% CI)	**129**	**132**		**100%**	**1.17[0.8,1.71]**
Total events: 40 (Water), 35 (Carbohydrate fluids)					
Heterogeneity: Tau^2=0; Chi^2=1.09, df=1(P=0.3); I^2=8.18%					
Test for overall effect: Z=0.82(P=0.41)					
10.2.2 Women at increased risk of caesarean/complications					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Water), 0 (Carbohydrate fluids)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					



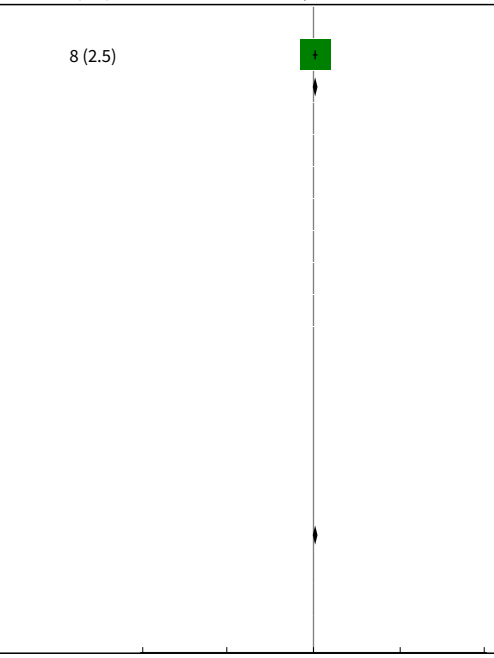


Analysis 10.4. Comparison 10 Water only versus oral carbohydrate based fluids, Outcome 4 Apgar < 7 at 5 min (primary outcome).



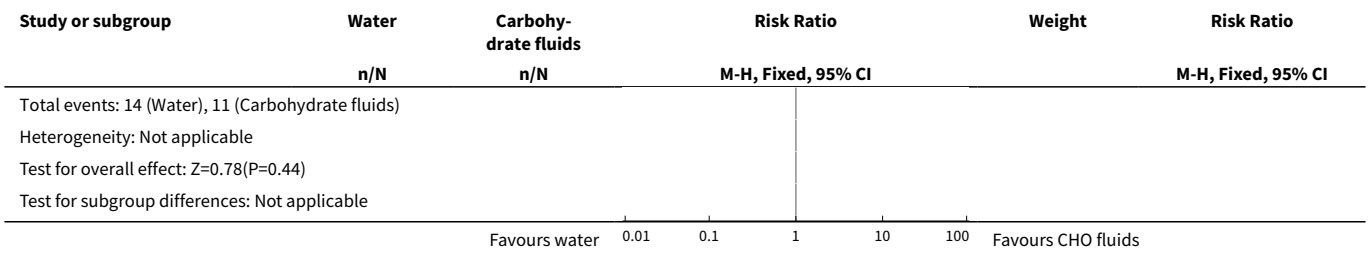
Analysis 10.10. Comparison 10 Water only versus oral carbohydrate based fluids, Outcome 10 Duration of labour (hours).

Study or subgroup	Water N	Water Mean(SD)	Carbohydrate fluids N	Carbohydrate fluids Mean(SD)	Mean Difference Fixed, 95% CI	Weight	Mean Difference Fixed, 95% CI
10.10.1 Women at low risk of caesarean/complications							
Kubli 2002	30	8.9 (2.9)	30	8 (2.5)		100%	0.95[-0.42,2.32]
Subtotal ***	**30**		**30**			**100%**	**0.95[-0.42,2.32]**
Heterogeneity: Not applicable							
Test for overall effect: Z=1.36(P=0.17)							
10.10.2 Women at increased risk of caesarean/complications							
Subtotal ***	**0**		**0**				**Not estimable**
Heterogeneity: Not applicable							
Test for overall effect: Not applicable							
10.10.3 Women with no defined risk status							
Subtotal ***	**0**		**0**				**Not estimable**
Heterogeneity: Not applicable							
Test for overall effect: Not applicable							
Total ***	**30**		**30**			**100%**	**0.95[-0.42,2.32]**
Heterogeneity: Not applicable							
Test for overall effect: Z=1.36(P=0.17)							
Test for subgroup differences: Not applicable							

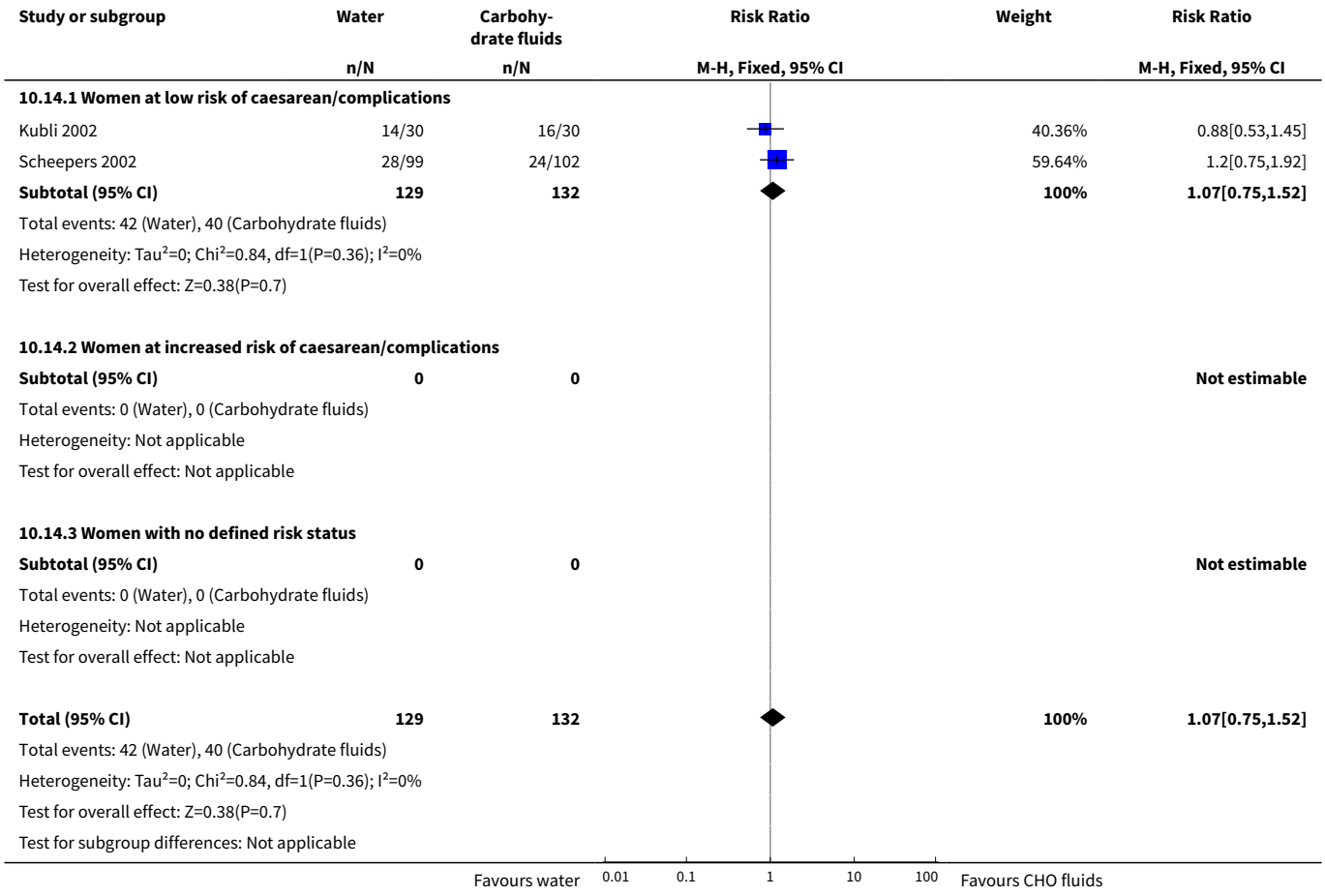


Analysis 10.13. Comparison 10 Water only versus oral carbohydrate based fluids, Outcome 13 Maternal vomiting.

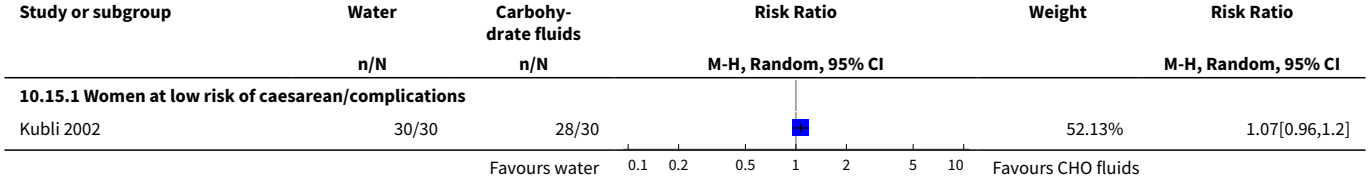
Study or subgroup	Water n/N	Carbohydrate fluids n/N	Risk Ratio M-H, Fixed, 95% CI	Weight	Risk Ratio M-H, Fixed, 95% CI
10.13.1 Women at low risk of caesarean/complications					
Kubli 2002	14/30	11/30		100%	1.27[0.69,2.33]
Subtotal (95% CI)	**30**	**30**		**100%**	**1.27[0.69,2.33]**
Total events: 14 (Water), 11 (Carbohydrate fluids)					
Heterogeneity: Not applicable					
Test for overall effect: Z=0.78(P=0.44)					
10.13.2 Women at increased risk of caesarean/complications					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Water), 0 (Carbohydrate fluids)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
10.13.3 Women with no defined risk status					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Water), 0 (Carbohydrate fluids)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
Total (95% CI)	**30**	**30**		**100%**	**1.27[0.69,2.33]**

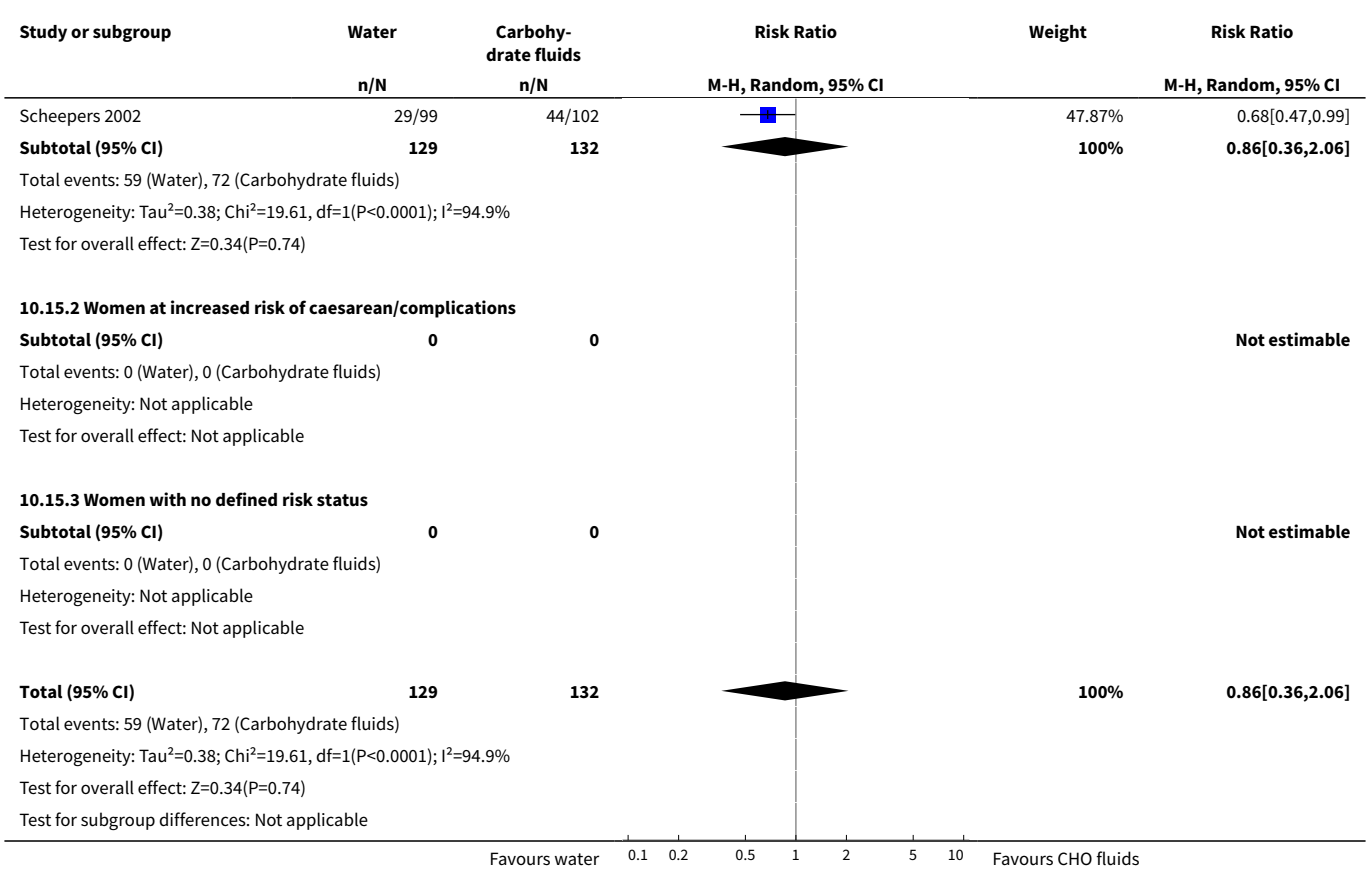


Analysis 10.14. Comparison 10 Water only versus oral carbohydrate based fluids, Outcome 14 Augmentation of labour.

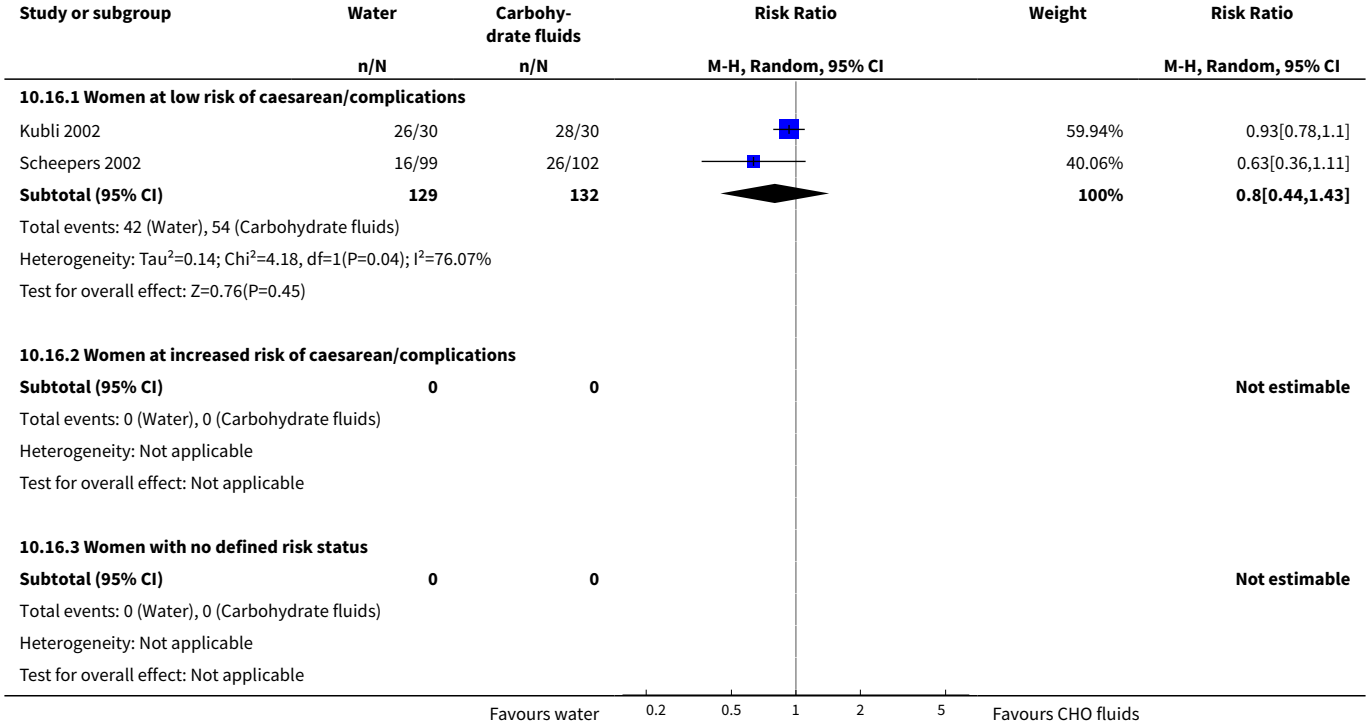


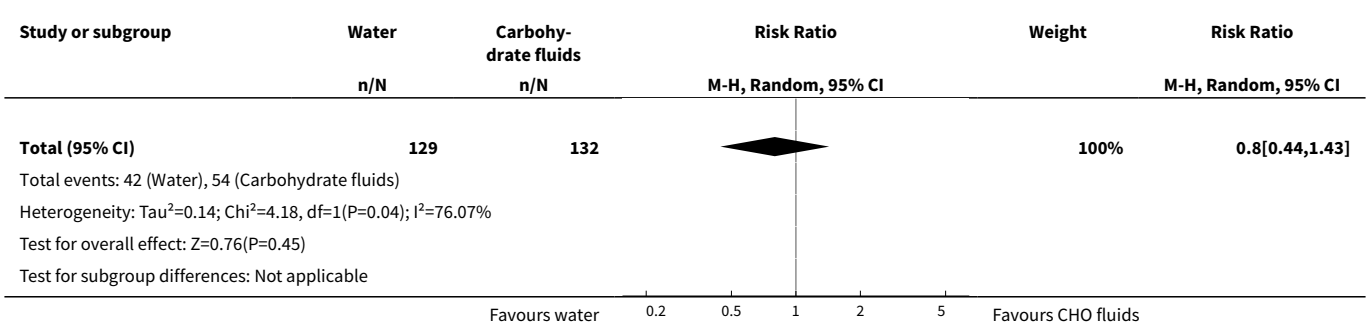
Analysis 10.15. Comparison 10 Water only versus oral carbohydrate based fluids, Outcome 15 Narcotic pain relief.





Analysis 10.16. Comparison 10 Water only versus oral carbohydrate based fluids, Outcome 16 Epidural analgesia.





ADDITIONAL TABLES

Table 1. Interventions during labour in women at low risk in O'Sullivan study

Intervention	Water only	Food in labour
Oxytocin augmentation	56% (673/1207)	53% (647/1219)
IV fluids in labour	69% (838/1207)	67% (820/1219)
Epidural	67% (813/1207)	66% (804/1219)
Caesarean section	30% (363/1207)	30% (362/1219)
Operative vaginal birth	27% (310/1207)	27% (324/1219)

IV: intravenous

APPENDICES

Appendix 1. Methods used to assess trials included in previous versions of this review

The following methods were used to assess Kubli 2002; O'Sullivan 2009; Scheepers 2002; Scrutton 1999; Tranmer 2005; Scheepers 2004; Shennan 2005.

Two review authors have independently assessed for inclusion all the potential studies we identified as a result of the search strategy. We have resolved any disagreement through discussion, or if required we have consulted the third author.

Data extraction and management

We designed a form to extract data. At least two review authors have extracted the data using the agreed form. We resolved discrepancies through discussion, or if required we consulted the third author. We entered data into Review Manager software (RevMan 2008) (all or a subsample) and checked for accuracy.

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

Assessment of risk of bias in included studies

Two review authors independently assessed risk of bias for each study using the criteria outlined in the *Cochrane Handbook for Systematic Reviews of Interventions* (Higgins 2008). We resolved any disagreements by discussion or by involving the third author.

1) Sequence generation (checking for possible selection bias)

We described for each included study the methods used to generate the allocation sequence in sufficient detail to allow an assessment of whether it should have produced comparable groups.

We assessed the methods used as:

- adequate (e.g. random number table; computer random-number generator; tossing a coin, minimisation);
- inadequate (e.g. odd or even date of birth; hospital or clinic record number);
- unclear.

2) Allocation concealment (checking for possible selection bias)

We described for each included study the method used to conceal the allocation sequence in sufficient detail and determined whether intervention allocation could have been foreseen in advance of, or during, recruitment.

We assessed the methods as:

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

3) Blinding (checking for possible performance bias)

We described for each included study all the methods used, if any, to blind study participants and personnel from knowledge of which intervention a participant received. We also provided any information relating to whether the intended blinding was effective. Where blinding was not possible, we assessed whether the lack of blinding was likely to have introduced bias.

We assessed the methods as:

- adequate, inadequate or unclear for participants;
- adequate, inadequate or unclear for personnel;
- adequate, inadequate or unclear for outcome assess.

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

We described for each included study the completeness of outcome data for each main outcome, including attrition and exclusions from the analysis. We stated whether attrition and exclusions were reported, the numbers (compared with the total randomised participants), reasons for attrition/exclusion where reported, and any re-inclusions in analyses which we undertook.

We assessed the methods as:

- adequate (e.g. where there were no missing data or where reasons for missing data are balanced across groups);
- inadequate (e.g. where missing data are likely to be related to outcomes or are not balanced across groups);
- unclear (e.g. where there is insufficient reporting of attrition or exclusions to permit a judgement to me made).

5) Selective reporting bias

We described for each included study how the possibility of selective outcome reporting bias was examined by us and what we found.

We assessed the methods as:

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

6) Other sources of bias

We described for each included study any important concerns we had about other possible sources of bias. For example, was there a potential source of bias related to the specific study design? Was the trial stopped early due to some data-dependent process? Was there extreme baseline imbalance? Has the study been claimed to be fraudulent?

We assessed whether each study was free of other problems that could put it at risk of bias:

- yes;
- no;
- unclear.

7) Overall risk of bias

We made explicit judgements about risk of bias for important outcomes both within and across studies. With reference to (1) to (6) above, we assessed the likely magnitude and direction of the bias and whether we considered it was likely to impact on the findings. We explored the impact of the level of bias through undertaking sensitivity analyses; see 'Sensitivity analysis'.

Measures of treatment effect

Dichotomous data

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

Continuous data

For continuous data, we used the mean difference (MD) if outcomes were measured in the same way between trials. We used the standardised mean difference (SMD) to combine trials that measure the same outcome, but used different methods.

Unit of analysis issues

Cluster-randomised trials

We found no cluster-randomised trials, but had we done so, we would have included them in the analyses along with individually-randomised trials. Their sample sizes would have been adjusted using the methods described in Gates 2005 using an estimate of the intracluster correlation co-efficient (ICC) derived from the trial (if possible), or from another source. We would also have performed the meta-analysis in two parts.

Dealing with missing data

For included studies, we noted the levels of attrition. We would have explored the impact of including studies with high levels of missing data in the overall assessment of treatment effect by using sensitivity analysis, had the issue arisen.

Where data have not been reported for some outcomes or groups, we attempted to contact the study authors for further information.

Assessment of heterogeneity

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

Assessment of reporting biases

Where we might have suspected reporting bias (see 'Selective reporting bias' above), we would have attempted to contact study authors asking them to provide missing outcome data. Where this was not possible, and we thought the missing data could introduce serious bias, we would have explored the impact of including such studies in the overall assessment of results by a sensitivity analysis.

Had there been 10 or more studies in a meta-analysis, we would have investigated reporting biases (such as publication bias) using funnel plots. We would have assessed funnel plot asymmetry visually, and used formal tests for funnel plot asymmetry. For continuous outcomes, we would have used the test proposed by Egger 1997, and for dichotomous outcomes we would have used the tests proposed by Harbord 2006 or Peters 2006. If asymmetry had been detected by any of these tests or had been suggested by a visual assessment, we would have performed exploratory analyses to investigate it.

Intention-to-treat analysis

We analysed data on all participants with available data in the group to which they were allocated, regardless of whether or not they received the allocated intervention. If in the original reports participants were not analysed in the group to which they were randomised, and there was sufficient information in the trial report, we attempted to restore them to the correct group.

Incomplete outcome data (attrition and exclusions)

See 'Assessment of risk of bias in included studies' section above.

Selective outcome reporting bias

See 'Assessment of risk of bias in included studies' section above.

Data synthesis

We carried out statistical analysis using the Review Manager software (RevMan 2008). We used fixed-effect meta-analysis for combining data where it was reasonable to assume that studies were estimating the same underlying treatment effect: i.e. where trials were examining the same intervention, and the trials' populations and methods were judged sufficiently similar. If there was clinical heterogeneity sufficient to expect that the underlying treatment effects differed between trials, or if substantial statistical heterogeneity was detected, we used

random-effects analysis to produce an overall summary, if this was considered clinically meaningful. If an average treatment effect across trials had not been clinically meaningful, we would not have combined the heterogeneous trials. If we used random-effects analyses, we presented the results as the average treatment effect with its 95% confidence interval.

Subgroup analysis and investigation of heterogeneity

Had there been sufficient data, we would have conducted planned subgroup analyses classifying whole trials by interaction tests as described by Deeks 2001.

We planned to carry out the following subgroup analyses.

1. Women at low risk of potentially requiring general anaesthesia versus women at high risk of potentially requiring general anaesthesia. We looked at all outcomes for this subgroup analysis as we believed this to be such an important consideration.
2. Routine administration of intravenous (IV) fluids in the restricted group versus no routine administration of IV fluids in the restricted group. We restricted these analyses to primary outcomes only.

We were unable to undertake the subgroup analysis comparing the administration of IV fluids as the data did not exist. We will restrict any future subgroup analyses to primary outcomes only.

Sensitivity analysis

We carried out sensitivity analysis to explore the effect of trial quality for primary outcomes in the review. Where there was risk of bias associated with a particular aspect of study quality (e.g. inadequate allocation concealment), we explored this by sensitivity analysis.

F E E D B A C K

Nazziwa, 14 February 2012

Summary

The objective of this review was to evaluate the effects of oral intake during labour on obstetric and neonatal outcomes. The authors' conclusions were that oral fluids and food during labour do not effect neonatal or obstetric outcomes. However, a fully dilated cervix is a major contributor to spontaneous delivery, and the quicker the cervix dilates the shorter the labour. The kind of food laboring mothers need is food that contributes to the process of cervical dilation, thus shortening labour, that gives them energy, and that hydrates them and prepares them for the afterbirth period. The foods used in the studies in this review were those rich in carbohydrates, thus providing energy and hydration to the patients. They lacked nutritional benefits that might help with cervical dilation process. This may have caused the balance between the two groups, hence the observation of no difference between the groups.

The review needed to include foods rich in oxytocin for improvement in rate of dilation, carbohydrates for energy; potassium to reduce the incidence of vomiting, and foods that contribute to milk production. One food that is rich in these essential components is the date fruit[1]. The botanical name of the date palm is *Phoenix dactylifera*, a member of the family Palmae (Arecaceae). If such foods had been included in the review then there would have been an effect on some of the outcome variables, such as labour duration and cervical dilation rate.

References

1. Al-Kuran O, Al-Mehaisen L, Bawadi H, Beitawi S, Amarin Z. The effect of late pregnancy consumption of date fruit on labour and delivery. J Obstet Gynaecol. 2011;31(1):29-31.

[Feedback received from Aisha Nazziwa, 14 February 2012]

Reply

Thank you for your feedback. You are proposing an interesting hypothesis. In fact, the objective of this review was not to evaluate the effects of oral intake in labour on obstetric and neonatal outcomes but "*To determine the benefits and harms of oral fluid and food restriction during labour...*", so we considered the restriction of what women might normally consume during labour as the intervention. We concluded that "*The evidence identified no benefits or harms…" so we* were careful not to say that 'oral foods and fluids do not affect neonatal and obstetric outcomes', but that we found no evidence to this effect; that is, we found 'no evidence of effect' and not 'evidence of no effect'. We can only include in the systematic review trials that have been undertaken, and we identified none which tested your hypothesis on the consumption of dates. If we were in the future to identify such a trial, we would include it, if appropriate; for example, in Comparison 6 'Complete restriction of oral fluid and food (other than ice chips) versus specific oral food and fluids', In addition, for some women it is not the length of labour which is important but their ability to work with their body to give birth to their baby, and restricting food and fluids in labour may interfere with how women feel about the birth.

Contributors

Mandisa Singata, Joan Tranmer and Gill Gyte

Osborn, 6 March 2012

Summary

Aspiration in association with obstetric anaesthesia is a condition with significant maternal morbidity and risk of maternal mortality. This review includes a relatively small number of cases of the rare but serious complications of aspiration. It is therefore possibly open to debate for the authors to state in the abstract conclusion: "there is no justification for the restriction of fluids and food in labour for women at low risk of complications".

The next sentence states that as there are no studies looking specifically at women with increased risk of complications: "there is no evidence to support restrictions in this group of women". This conclusion could potentially be misconstrued as supporting women in the high risk group eating in labour. As there are no specific studies comparing diet in labour in high risk women, the conclusion for high risk women, could have been: "as there are no studies looking specifically at women with increased risk of complication, there is no evidence to support not restricting food in this group of women".

Conflict of interest statement:
I certify that I have no affiliations with or involvement in any organization or entity with a financial interest in the subject matter of my feedback.

[Feedback received from Kym Osborn, 6 March 2012]

Reply

Thank you for your feedback. We agree that in the absence of evidence regarding the risk for women with high risk of complications, the conclusion of the review should be neutral, so we have modified our wording to make this clearer: “We found no evidence from randomised trials on which to base practice regarding food or fluids in labour for women at increased risk of complications”.

Contributors

Mandisa Singata, Joan Tranmer and Gill Gyte

WHAT'S NEW

Date	Event	Description
9 July 2013	New search has been performed	Search updated in June 2013. Eight new reports identified. No new trials included. Two were excluded (Ciura 2012; Kardel 2010), one new trial is awaiting classification (Kordi 2010) and five are ongoing (Davila-Exposito 2009; Espinosa 2011; Heidari 2012; Simonet 2012; Yarvani 2011). In addition, we excluded four trials that were previously awaiting classification (Goodall 1999; Laifer 2000; Yiannouzis 1994; Zhao 1996).
9 July 2013	New citation required but conclusions have not changed	Review updated.

HISTORY

Protocol first published: Issue 4, 2002
Review first published: Issue 1, 2010

Date	Event	Description
16 October 2012	Feedback has been incorporated	Authors responded to feedback - see Feedback 1 and Feedback 2.
23 July 2012	Feedback has been incorporated	Feedback received from Aisha Nazziwa and Kym Osborn - see Feedback 1 and Feedback 2.

Date	Event	Description
10 February 2012	Amended	Contact details updated.
19 November 2008	Amended	Converted to new review format.

CONTRIBUTIONS OF AUTHORS

All three review authors have contributed to the preparation of the protocol. All three authors undertook data extraction. G Gyte (GG) entered the data into RevMan and M Singata (MS) and J Tranmer (JT) checked this for accuracy. GG drafted the results section. All three authors discussed and agreed the interpretation. GG prepared the 2013 update, which was approved by MS and JT.

DECLARATIONS OF INTEREST

One of the review authors (J Tranmer) is principal author of one of the trials that was considered for inclusion. She did not participate in the decisions regarding data from this trial, which were considered by the other two review authors.

SOURCES OF SUPPORT

Internal sources

- University of the Witwatersrand (MS), South Africa.
- The University of Liverpool, UK.

External sources

- World Health Organization Long-term Institutional Development Grant (MS), Switzerland.
- National Institute for Health Research, UK.

  NIHR NHS Cochrane Collaboration Programme Grant Scheme award for NHS-prioritised centrally-managed, pregnancy and childbirth systematic reviews: CPGS02
- UNDP-UNFPA-UNICEF-WHO-World Bank Special Programme of Research, Development and Research Training in Human Reproduction (HRP), the Department of Reproductive Health and Research (RHR), World Health Organization, Switzerland.

DIFFERENCES BETWEEN PROTOCOL AND REVIEW

The protocol said an additional search would be undertaken of the Cochrane Controlled Trials Register using specific search terms.

#1 (ORAL near FEED*)
#2 (ORAL near FLUID*)
#3 (ORAL near HYDRAT*)
#4 (ORAL near INTAKE)
#5 EAT*
#6 DRINK*
#7 FOOD
#8 LABOR
#9 LABOUR
#10 LABOR*:ME
#11 ((((((#1 or #2) or #3) or #4) or #5) or #6) or #7)
#12 ((#8 or #9) or #10)
#13 (#11 and #12)

However, as this was already covered in the search undertaken by the Pregnancy and Childbirth Group office, we did not undertake the additional search and we have removed the reference to it.

We have modified the wording in the methods sections for ‘Assessment of heterogeneity’, ‘Assessment of reporting bias’ and ‘Data synthesis’ to update them with the new methods being used by the group, developed in conjunction with the group's statistician, Simon Gates, and Richard Riley. We have used these new methods in the review.

In contrast to the published protocol, we included 'allowing particular oral food and fluid regimens' in our types of interventions.

We have added 'maternal mortality' as a secondary outcome and changed 'Breastfeeding success' to 'Fully breastfeeding at discharge'.

INDEX TERMS

Medical Subject Headings (MeSH)

*Drinking; *Eating; *Labor, Obstetric; Beverages [adverse effects]; Cesarean Section [statistics & numerical data]; Dietary Carbohydrates [administration & dosage] [adverse effects]; Fasting [*adverse effects]; Randomized Controlled Trials as Topic

MeSH check words

Female; Humans; Pregnancy