Strategies for improving the acceptability and acceptance of the copper intrauterine device (Review)

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[Intervention Review]

Strategies for improving the acceptability and acceptance of the copper intrauterine device

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ABSTRACT

Background

Intrauterine devices (IUDs) are highly effective and are the most widely used reversible contraceptive method in the world. However, in developed countries IUDs are among the least common methods of contraception used. We evaluated the effect of interventions to increase uptake of the copper IUD, a long-acting, reversible contraceptive method.

Objectives

To determine effectiveness of interventions to improve uptake and continuation of the copper IUD.

Search methods

We searched the Cochrane Central Register of Controlled Trials (CENTRAL), MEDLINE, EMBASE, POPLINE, PsycINFO, PubMed, ClinicalTrials.gov, International Clinical Trials Registry Platform (ICTRP) and OpenSIGLE. We also handsearched references of relevant reviews and included studies.

Selection criteria

We included randomised controlled trials (RCTs) and controlled before and after studies of interventions which measured use and uptake of contraception including copper IUD as an outcome.

Data collection and analysis

Two authors independently screened the search results for relevant studies and extracted data from included studies. We used RevMan 5.1 to calculate Peto odd ratios (OR) with 95% confidence intervals (CI) for dichotomous outcomes. We conducted meta-analysis by pooling data for similar types of intervention where possible. We used the GRADE system to evaluate the quality of evidence.

Main results

Nine studies representing 7960 women met our inclusion criteria, including seven randomised controlled trials and two controlled before and after studies that reported IUD uptake postintervention. We evaluated the quality of evidence as moderate to low. Three studies on contraceptive counselling and referrals by community workers showed an increase in uptake of the IUD among intervention

groups (Peto OR 2.00; 95% CI 1.40 to 2.85). Two studies on antenatal contraceptive counselling also favoured the intervention groups (Peto OR 2.33; 95% CI 1.39 to 3.91). One study on postnatal couple contraceptive counselling also showed an increase in IUD uptake compared to control (Peto OR 5.73; 95% CI 3.59 to 9.15). The results of one study evaluating postnatal home visits and two studies on enhanced postabortion contraceptive counselling did not reach statistical significance.

Authors' conclusions

Community-based interventions and antenatal contraceptive counselling improved uptake of copper IUD contraception. Since the copper IUD is one of the most effective reversible contraceptive methods, primary care and family planning and practitioners could consider adopting these interventions. Although our review suggests these interventions are clinically effective, a cost-benefit analysis may be required to evaluate applicability.

PLAIN LANGUAGE SUMMARY

Ways to increase use of non-hormonal long-acting birth control

The copper intrauterine device (copper IUD) is a highly-effective non-hormonal type of birth control, and is the most commonly used method in the world. However, use of the copper IUD is low in countries with relatively high rates of unintended pregnancy, such as the United Kingdom and United States. Our review looked at studies of different interventions to improve use of the copper IUD.

We did computer searches for relevant studies and looked at the reference lists of study reports to identify more studies. We found nine studies of moderate to low quality. Three studies on contraceptive counselling and referrals by community workers showed an increase in use of the copper IUD. Two studies on antenatal contraceptive counselling and one study on postnatal couple counselling, with provision of an information leaflet before being discharged from the maternity ward, also showed an increase in use of the copper IUD. A study on postnatal home visits and two studies on enhanced postabortion contraceptive counselling did not show an increase in use of the copper IUD. More high-quality research is needed to look at the longer-term effectiveness of interventions to improve use of the copper IUD.

SUMMARY OF FINDINGS FOR THE MAIN COMPARISON *[Explanation]*

Contraceptive counselling and referral by community workers for married women 15 to 49 years old

Patient or population: married women aged 15 to 45/49
Settings: home
Intervention: contraceptive counselling and referral by community workers

Outcomes	Illustrative comparative risks* (95% CI)		Relative effect (95% CI)	No of participants (studies)	Quality of the evidence (GRADE)	Comments
	Assumed risk	Corresponding risk				
	Control	Contraceptive counselling and referral by the community workers				
Uptake of IUD Number of women who use IUD as a contraceptive	**12 per 1000**	**24 per 1000** (17 to 34)	**OR 2.00** (1.4 to 2.85)	6224 (3 studies)	⊕⊕⊕◯ **moderate**[1,2]	

*The basis for the **assumed risk** (e.g. the median control group risk across studies) is provided in footnotes. The **corresponding risk** (and its 95% confidence interval) is based on the assumed risk in the comparison group and the **relative effect** of the intervention (and its 95% CI).
CI: confidence interval; **IUD:** intrauterine device; **OR:** odds ratio

GRADE Working Group grades of evidence
High quality: Further research is very unlikely to change our confidence in the estimate of effect.
Moderate quality: Further research is likely to have an important impact on our confidence in the estimate of effect and may change the estimate.
Low quality: Further research is very likely to have an important impact on our confidence in the estimate of effect and is likely to change the estimate.
Very low quality: We are very uncertain about the estimate.

[1] These studies have 'high' risk of bias for two categories or higher.
[2] Unexplained heterogeneity of $I^2 = 86\%$; two studies suggested benefit, however the confidence intervals do not overlap.

BACKGROUND

Description of the condition

Unintended or unplanned pregnancies due to contraceptive failures are associated with method efficacy and user-adherence factors, such as incorrect and inconsistent use (Kost 2008; Trussell 2004; Trussell 2009). Non-hormonal intrauterine devices (IUDs) or copper IUDs are considered to be highly effective in preventing pregnancy, with failure rates being less then 1%, and low reliance on user adherence (Mansour 2010; Trussell 2009). Copper IUDs are also considered an effective method of emergency contraception (Cheng 2008).

Description of the intervention

IUDs are the most widely used reversible contraceptive method in the world (at 14.2% in 2009 and 15.4% in 2007), followed by oral contraceptive pills and male condoms (United Nations 2008; United Nations 2009). An estimated 175 million women worldwide were using copper IUDs and intrauterine systems (IUS) in 2007, of whom just 5 million used hormonal IUS (Sivin 2010). This high prevalence is attributed to the copper IUD being the most commonly used method in developing countries, particularly China (United Nations 2008; United Nations 2009).

Contraceptive choices and use or non-use of particular methods are influenced by, and associated with, a number of complex factors. These include socio-demographic characteristics, knowledge, information, lifestyle need, perceptions of women, availability and accessibility of services, healthcare providers' attitude and knowledge; and also other external factors such as legal restrictions on the availability of abortion services and reproductive rights (Belfield 2009; Campbell 2006; Frost 2008; Oddens 1997; Wellings 2007).

How the intervention might work

The quality of family planning counselling is an important component in increasing contraceptive uptake; interventions such as specialist contraceptive counselling can increase uptake of long-term contraceptive methods (Davie 1996). Interventions could be client- or provider-focused and may include provision of educational materials or programmes, peer or multi-component counselling, medical interventions to increase acceptability, provider education programmes and checklist tools.

Why it is important to do this review

Although IUDs are the most commonly used reversible contraceptive method in the world, the use of IUDs is much lower (at 9%) in developed countries, where the most commonly used methods are oral contraceptive pills and condoms. Furthermore, national surveys of contraceptive use in the United Kingdom show that the use of long-acting reversible contraceptives (LARCs) including copper IUDs is lower than in many other European countries (Lader 2009). A large study of contraceptive use among 12,000 women (age between 15 to 49 years old) across five European countries also shows that oral contraceptive pills and condoms are the most commonly used methods in Europe, with the United Kingdom showing the lowest use of IUDs (Haimovich 2009; Skouby 2004). Interventions or strategies to improve acceptance and acceptability of hormonal contraceptives were assessed in a previous Cochrane systematic review (Halpern 2006). This systematic review will examine whether client- and provider-interventions could increase uptake or continuation of a non-hormonal long-acting reversible contraceptive method, namely copper IUDs.

OBJECTIVES

The objective of this review was to determine the effectiveness of interventions to improve uptake and continuation of the copper IUD.

METHODS

Criteria for considering studies for this review

Types of studies

We considered studies which are randomised controlled trials, controlled clinical trials and controlled before and after studies comparing an intervention with standard care or comparing multiple interventions, and interrupted time series that reported objectively measured outcomes concerning the effect of interventions to improve uptake and continuation of contraception including the copper IUD.

Types of participants

Eligible participants were women of reproductive age. We excluded trials with women who have specific health conditions such as diabetes or HIV.

Types of interventions

Eligible interventions were designed to improve contraceptive use or to reduce unplanned pregnancy, and included contraceptive and family planning counselling; information provision in leaflets and other formats; decision aids; education and training programmes

for the providers. We considered interventions which aimed to improve contraceptive use or to reduce unplanned pregnancy through improving contraceptive use; and we included all studies which measured IUD uptake as an outcome.

Types of outcome measures

Primary outcomes

The primary outcome of interest was a change in uptake or use of the copper IUD postintervention.

Secondary outcomes

Additional outcomes intended to be included were continuation of copper IUD, which is measured by discontinuation or removal rate; knowledge of contraception (copper IUD), reasons for use or non-use of contraceptive (copper IUD) and reasons for removal if available.

Search methods for identification of studies

We searched the following computerised databases: the Cochrane Central Register of Controlled Trials (CENTRAL), PubMed, MEDLINE, EMBASE, POPLINE, PsycINFO, ClinicalTrials.gov, the World Health Organization (WHO) International Clinical Trials Registry Platform (ICTRP) and OpenSIGLE (System for Information on Grey Literature in Europe) using the following key words: contracepti*, birth control, uptake, use, acceptance.

Electronic searches

We used the following search strategies for each computerised databases.

- CENTRAL search used the search terms contracepti* OR birth?control AND (compliance OR accept* OR adherence OR continu* OR discontinu* OR use OR uptake)); search restricted to Cochrane Reviews, Other Reviews, Clinical Trials, and date range limited to 1990-2010.
- PubMed search used the search terms (contracepti* OR "birth control") AND (intervention AND (compliance OR acceptance OR adherence OR continu* OR discontinu* OR use OR uptake)).
- POPLINE used the search terms (contracepti* / birth control) & (intervention & (accept* / adherence / continu* / discontinu* / use / uptake).
- EMBASE, PsycINFO and MEDLINE (via OVID) searches used the search terms (contracepti* OR birth control) AND (intervention AND (compliance OR accept* OR adherence OR continu*)); search limited to humans, publication year 1990-2010.
- ClinicalTrials.gov search used the search terms contraceptive OR contraception OR birth control OR family planning; search limited by gender, not seniors 66+.
- WHO International Clinical Trials Registry Platform (ICTRP) search used the search terms contraception OR contraceptive OR in the Condition search field.

The general term 'contraception' or 'contraceptive' was to ensure that the interventions with a primary or secondary outcome of contraceptive use or uptake of the participants including copper IUD were not missed during the search. The terms 'birth control' and 'family planning' were used as some studies were listed under these keywords rather than contraception or IUD.

Searching other resources

We examined studies listed in the relevant reviews, systematic reviews and references of included studies. We contacted investigators of completed unpublished studies to obtain data. We also contacted the first authors of identified and included studies to request additional information about studies where a breakdown by types of contraceptive used was not reported.

Data collection and analysis

Selection of studies

The primary and secondary authors screened the titles and abstracts from the literature search to identify relevant studies. The two authors retrieved and screened the full text of all the relevant studies independently using our inclusion and exclusion criteria. We included all studies published between January 1990 and June 2011 as specified in the protocol. We excluded studies which did not present any of the outcome measures. We also excluded studies which focused on women with chronic health conditions such as diabetes or HIV.

Data extraction and management

Two authors independently extracted data from the studies. We resolved discrepancies between the two independent reviewing authors through discussion and the involvement of a third author when needed. We used Review Manager 5.1 to analyse the data (RevMan 2011). We found a few studies which made no distinction between levonorgestrel-releasing intrauterine device (LNG-IUD) and copper intrauterine device. We contacted the primary authors of these studies to clarify ambiguities and to seek additional data as required. We excluded studies in which the primary authors were not able to provide separate copper IUD uptake data.

Assessment of risk of bias in included studies

We assessed the biases and risk of biases using a domain-based evaluation as recommended by the *Cochrane Handbook for Systematic Reviews of Interventions* (Higgins 2009). We considered factors such as study design, randomisation method (where applicable), allocation concealment, blinding and losses to follow-up. We assessed randomised and non-randomised studies using the same dimensions which included selection bias (concerning comparability of groups, confounding and adjustment), performance bias (concerning the fidelity of the interventions, and quality of the information regarding who received what interventions, including blinding of participants and healthcare providers), detection bias (concerning unbiased and correct assessment of outcome, including blinding of assessors), attrition bias (concerning completeness of sample, follow-up and data) and reporting bias (concerning publication biases and selective reporting of results).

Measures of treatment effect

The primary outcome, uptake, is measured by the number of women using, or that used, copper IUDs during and postintervention. We calculated the effect of intervention using Peto odds ratios (OR) with 95% confidence interval (CI). We intended to measure continuation of use of copper IUDs by the number of women who discontinued use or removed the method.

Unit of analysis issues

We followed the method of combining groups as recommended in the *Cochrane Handbook for Systematic Reviews of Interventions* in cases of cluster-randomised trials and cross-over trials. For trials comparing more than two intervention groups, we assessed the relevant intervention group.

Dealing with missing data

Where applicable, we contacted the original investigators of the study to request missing data and results, or results shown in diagrams without specific numbers for analysis. We carried out the analysis according to intention-to-treat (ITT) for studies where we were not able to receive information on missing data from the authors. Where any assumptions were made on the missing data, such as missing at random or assumed to have a particular value, we included the potential impact of missing data in the Discussion section of the review (Higgins 2009).

Assessment of heterogeneity

We assessed the outcome data for heterogeneity using the I^2 statistic. We did not pool the results if there was significant heterogeneity present. We performed subgroup analyses to explore possible causes of heterogeneity in the first instance.

Assessment of reporting biases

We used funnel plots to identify possible biases. We assessed all reporting biases at the study level as recommended in *Cochrane Handbook for Systematic Reviews of Interventions* (Chan 2005; Kirkham 2010). The assessment results of reporting biases are included within the 'Risk of bias' tables.

Data synthesis

We analysed data with Review Manager 5.1 (RevMan 2011). All outcomes were dichotomous. For the number of women who used the IUD postintervention we used the Peto odds ratio (OR) due IUD uptake being a rare outcome. We used a Mantel-Haenszel odds ratio for the secondary outcome, knowledge. We grouped studies on the basis of intervention type, participant characteristics and study setting.

Subgroup analysis and investigation of heterogeneity

We conducted subgroup analyses by intervention type, participant characteristics and study setting.

Sensitivity analysis

We planned to investigate whether the treatment effect size would vary by studies excluded due to design or methods. We compared the results of fixed and random-effects models.

RESULTS

Description of studies

See: Characteristics of included studies; Characteristics of excluded studies; Characteristics of ongoing studies.
See: Characteristics of included studies; Characteristics of excluded studies; Characteristics of ongoing studies.

Results of the search

Our search located 1347 trials registered with ClinicalTrials.gov; 221 trials registered with WHO International Clinical Trials Registry Platform; 12,353 articles via POPLINE and OVID for EMBASE, MEDLINE and PsycINFO; and 1573 studies via CENTRAL. We also located 40 potentially relevant studies through previous reviews found via the search.

Included studies

A total of nine studies, representing 7960 women (4960 in the intervention groups and 3009 in the control groups), met our inclusion criteria. Although we retrieved a substantial number of studies which aimed to improve contraceptive use, we found very few studies with IUD use results. The studies included were published in peer-reviewed journals (Bashour 2008; Douthwaite 2005; Ferreira 2010; Jahanfar 2005; Kambo 1994; Saeed 2008; Schunmann 2006; Smith 2002; Soliman 1999).

Bashour 2008 conducted a randomised controlled trial to assess the effectiveness of a community-based intervention, home visits to postpartum patients who recently gave birth at the Maternity Teaching Hospital in Damascus, Syria. A total of 876 women were recruited and randomly allocated to three groups, Group A (n = 285) with four home visits, Group B (n = 294) with one home visit, and Group C the control group (n = 297) with no home visit. Registered midwives who received special training carried out home visits to the intervention groups to provide emotional support, examine mother and child, educate the mother and discuss choices and plans for family planning.

Douthwaite 2005 evaluated the impact of the Lady Health Worker Programme (LHWP) on the uptake of modern contraceptive methods. The Lady Health Workers (LHW) are trained community-based female workers attached to a government health facility; the doorstep family planning services intervention includes motivating women to practise family planning, providing oral contraceptive pills and condoms, and referring for injections, IUD and sterilisation. Data from a random sample survey of 4277, of which 3346 married women were from the intervention area and 931 from the control area, were analysed for current use of reversible modern methods postintervention. Women who had undergone sterilisation were excluded from the study.

Ferreira 2010 performed a randomised control trial to assess the effectiveness of personalised postabortion counselling on acceptability and use of contraceptive methods by low-income women from the northeast region of Brazil. Women were recruited within one to two weeks after the abortion and followed for a period of six months. A total of 246 women were enrolled and randomly allocated to the intervention and control group equally (n = 123 for each arm). The intervention group received 30 minutes of personalised and comprehensive face-to-face contraceptive counselling, and the control group received standard care, which is 30 to 40 minutes of educational group counselling.

Jahanfar 2005 studied the impact of community-based distribution (CBD) on contraceptive knowledge, use and continuation among non-pregnant married women in suburbs of Hamedan City, Iran. The intervention (CBD) group received five visits, the first two and the last visit were by a midwife and interval visits by a trained distribution agent (DA) at home. DAs were trained by the midwife on the Johns Hopkins University checklists for family planning programmes and the GATHER (Greet, Ask, Tell, Help, Explain, Return) guidelines. Pamphlets and written materials were also provided for distribution. The control group received standard care of two visits by a midwife, one at the beginning of the trial and one at month six, both without contraceptive counselling or provision. In addition to contraceptive counselling, the CBD group also received oral contraceptive pills, condoms and injectable contraceptives if required, as well as a referral letter to the nearest family planning clinic for those who chose intrauterine device, tubectomy or vasectomy. Stratified random sampling was used in this controlled field trial; 100 participants were enrolled for the CBD and 200 were in the control group (with three lost to follow-up).

Kambo 1994 conducted a controlled before and after pilot study to explore the feasibility of using traditional practitioners to promote family planning in Uttar Pradesh, India. Two blocks were matched for key variables; 22 traditional practitioners in the intervention block were trained to provide contraceptive counselling and received a monthly honorarium for the provision. Cross-sectional surveys were carried out before and after the intervention in both control and intervention villages. A total of 1000 women were surveyed in the intervention group prior to the intervention and 800 after the intervention; 850 women each in the control group before and after the intervention.

Saeed 2008 carried out a postpartum contraceptive counselling and leaflet provision trial at the Department of Obstetrics and Gynaecology, Shifa International Hospital, Islamabad, Pakistan. Six hundred and forty-eight women were enrolled in the study, of which 48 were lost to follow-up. After delivery, the women were randomised into control and intervention groups by the use of four randomisation charts. Each woman in the intervention group received 20 minutes of informal contraceptive counselling along with her husband or a close relative, and a simple one-page leaflet on contraceptive methods was given at the time of discharge. Control group women were discharged without a counselling session or leaflets and both groups were asked return for follow-up at 8 to 12 weeks postnatal.

Schunmann 2006 conducted a randomised controlled trial of specialist contraceptive counselling and enhanced contraceptive provision after termination of pregnancy (TOP) in a hospital in Edinburgh. The intervention group (n = 316) received an in-depth interview on demographic details and a full reproductive history before termination, in addition to contraceptive discussions at the initial consultation with standard care provided (n = 297). The intervention group also received three months' supply of oral contraceptive pills or firm arrangements for insertion of IUD/IUS at a local family planning clinic for medical TOP patients, whereas the standard care is one month's supply of pills and referral to a local family planning clinic. Insertion of IUD/IUS was offered to both control and intervention groups, but only women in the intervention group were offered implants.

Smith 2002 examined the effects of contraceptive counselling at an antenatal clinic appointment that took place between 24 and 36 weeks of pregnancy. The randomised controlled study was carried

out in three different locations across three continents: People's Republic of China (Shanghai), South Africa (Cape Town) and Scotland (Edinburgh). Antenatal clinic sessions were randomised on a weekly basis in Edinburgh and Cape Town, and on a daily basis in Shanghai. A total of 771 participants received expert contraceptive advice and 886 controls received standard care. Although it was cross-national study, data and analysis were reported by individual site.

Soliman 1999 investigated the impact of antenatal counselling on knowledge and practice of contraception among a postnatal cohort at the maternity hospital at the University of Mansoura. The randomised controlled trial consists of 200 women participants who were randomly assigned to the control and intervention group. Antenatal counselling sessions were provided for the women and their husbands using the GATHER (Greet, Ask, Tell, Help, Explain, Return) technique.

Excluded studies

Of the relevant studies we retrieved, we excluded 31 studies with reasons. Some of the reasons for exclusion were:

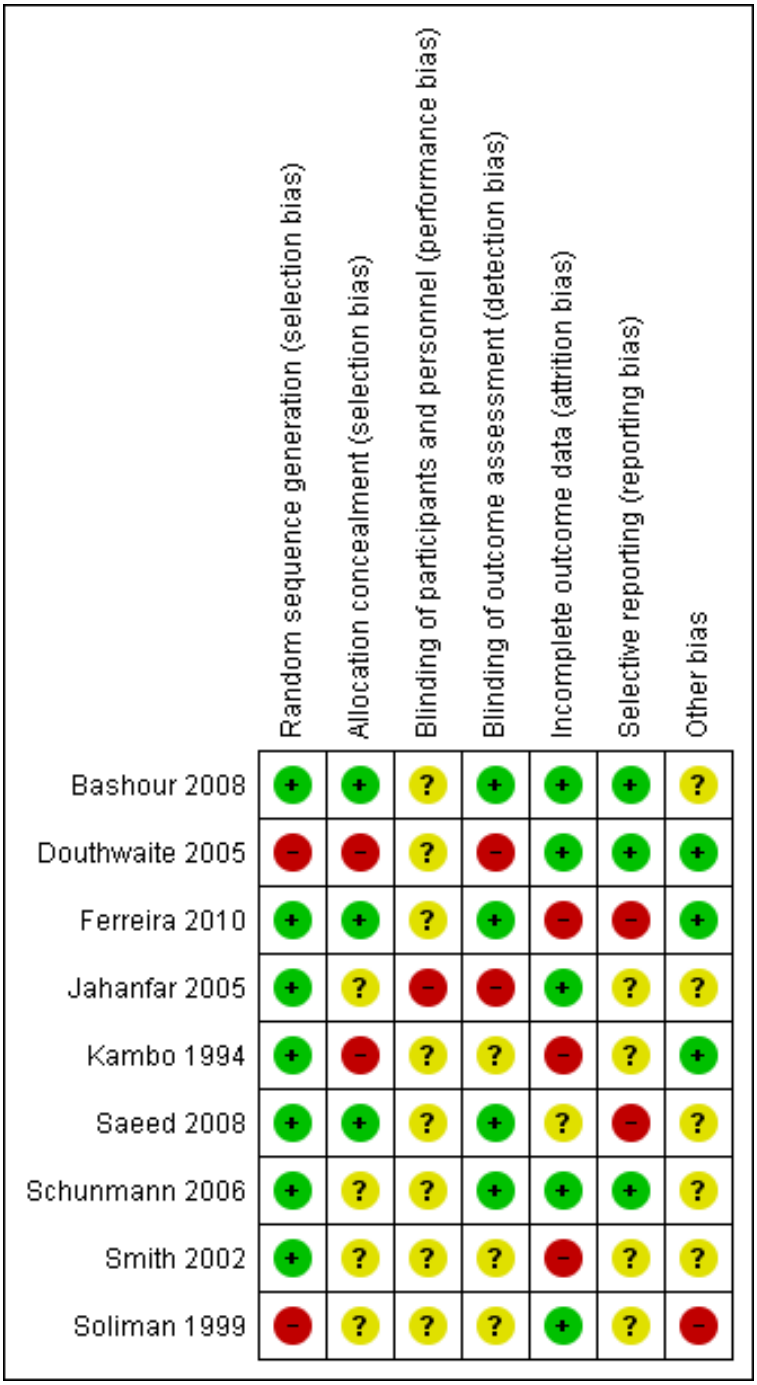
- no IUD outcome reported and no specific data on IUD available from the study's primary author whether use or continuation;
- participants fell outside of the inclusion criteria, e.g. males;
- no comparison group with the intervention group, or cross-sectional study with no baseline;
- participants were recruited on the basis of request for IUD insertion.

Excluded studies may have more than one reason for exclusion. We excluded the majority of the excluded studies due to lack of data on IUD.

Risk of bias in included studies

The 'Risk of bias' summary has been illustrated in Figure 1.

Figure 1. 'Risk of bias' summary: review authors' judgements about each risk of bias item for each included study.



Allocation

All studies were randomised except one, Douthwaite 2005, which attempted matching between the control and intervention groups. Information on sequence generation was provided for all randomised studies, except one trial (Soliman 1999) which did not provide details on the randomisation process. Four trials (Bashour 2008; Ferreira 2010; Saeed 2008; Schunmann 2006) had adequate concealment of allocation.

Blinding

The blinding of assignment was not stated in most trials and blinding was not possible due to the nature of the interventions. The outcome assessors were blind to the allocation in four studies (Bashour 2008; Ferreira 2010; Saeed 2008; Schunmann 2006). Two of the studies (Douthwaite 2005; Jahanfar 2005) were evaluated by the supervisors who trained the personnel. It was not clear whether the outcome assessors were blinded in three of the studies (Kambo 1994; Smith 2002; Soliman 1999).

Incomplete outcome data

Losses to follow-up were high(20% or greater) in three of the studies (Ferreira 2010; Kambo 1994; Smith 2002). All studies specified information about losses by study group except one (Saeed 2008).

Selective reporting

All included studies clearly defined their main objectives and interventions. One study (Saeed 2008) did not report knowledge of contraception postintervention, although it was one of the aims of the study. Ferreira 2010 provided results based on an intention-to-treat analysis and no comparison was made between 45% of the control group who discontinued the education group counselling and those who did not. The study concluded that individualised contraceptive counselling had greater acceptability compared to the control group(98.4% compared to 70.6%) although almost half of those in the control group discontinued.

Other potential sources of bias

Power and sample size calculations were not reported in three of the studies (Bashour 2008; Jahanfar 2005; Saeed 2008). There was no information on the "routine care" that the control group received in Soliman 1999.

Effects of interventions

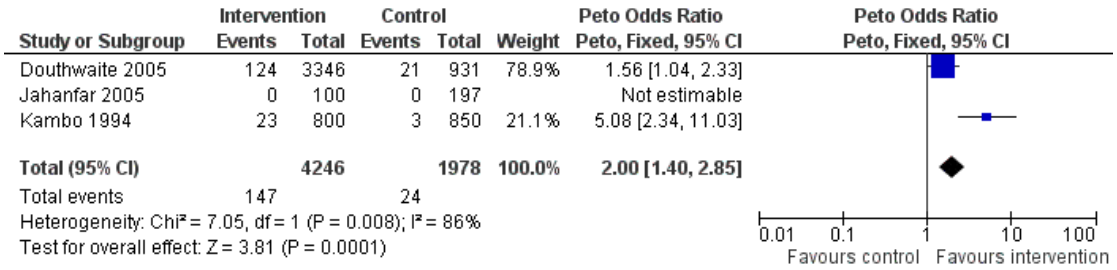
See: **Summary of findings for the main comparison** Community-based contraceptive counselling; **Summary of findings 2** Antenatal contraceptive counselling for postpartum contraceptive use; **Summary of findings 3** Postnatal contraceptive counselling and information leaflet prior to discharge; **Summary of findings 4** Contraceptive counselling during postnatal home visits; **Summary of findings 5** Enhanced contraceptive counselling and provision postabortion

Overall, the studies included fell into three types of interventions: community-based contraceptive provision, interventions for postpartum contraception, and interventions for postabortion contraception. Due to differences in the interventions and participants, we did not combine all the studies in a meta-analysis. We performed subgroup analyses for each type of intervention and presented pooled data where appropriate. We were unable to include most of the secondary outcomes in the analysis due to lack of data.

Community-based counselling and referral

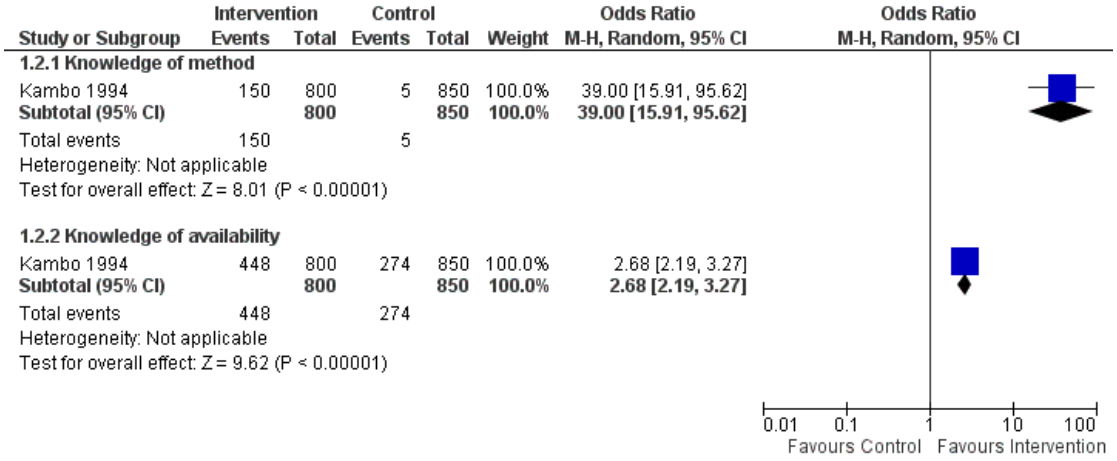
Three studies (Douthwaite 2005; Jahanfar 2005; Kambo 1994) with an aggregated sample size of 6624 (intervention = 4246, control = 1978) reported the impact of contraceptive counselling and referral by trained community workers on uptake of modern contraceptives including intrauterine device (IUD). A greater increase in uptake of IUD for the intervention groups was observed (Peto odds ratio (OR) 1.56; 95% confidence interval (CI) 1.04 to 2.33 and Peto OR 5.08; 95% CI 2.34 to 11.03) in Douthwaite 2005 and Kambo 1994, respectively; and zero uptake of IUD was reported for both intervention and control group in Jahanfar 2005(Figure 2). When we pooled data from the studies we detected statistically significant heterogeneity (Chi^2 = 7.05, df = 1, P = 0.008, I^2 = 86%). This high heterogeneity was possibly due to a large study effect shown in Kambo 1994, however we were not able to perform subgroup analysis given the small number of studies.

Figure 2. Forest plot of comparison: 1 Effectiveness of community-based family planning programme: community workers versus control, outcome: 1.1 Uptake of IUD.



Only one study assessed knowledge of IUD as an outcome. Kambo 1994 reported a significantly greater increase in knowledge about the method for the intervention group compared to control group (Mantel-Haenszel (M-H) OR 39.00; 95% CI 15.91 to 95.62) (Figure 3). The study also reported an increase in knowledge in terms of availability and where to obtain the IUD in the intervention group compared to the control group (M-H OR 2.68; 95% CI 2.19 to 3.27).

Figure 3. Forest plot of comparison: 1 Effectiveness of community-based family planning programme: community workers versus control, outcome: 1.2 Knowledge of IUD.



Counselling for postpartum contraception

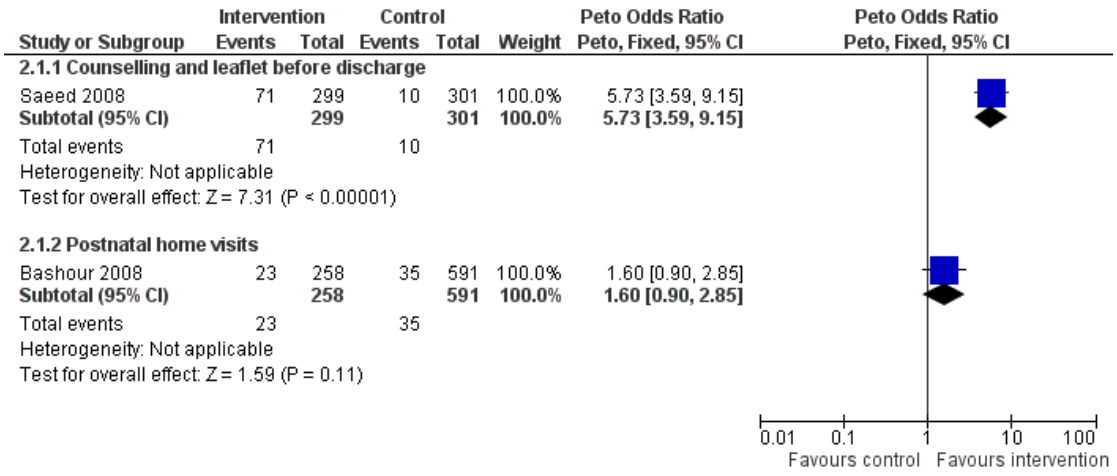
Four studies evaluated contraceptive counselling to improve uptake of postpartum contraception. Two of the studies (Bashour 2008; Saeed 2008) were randomised controlled trials on postnatal contraceptive counselling, and Smith 2002 and Soliman 1999 were on antenatal contraceptive counselling.

Postnatal counselling

Two studies assessed the impact of postnatal contraceptive counselling on postpartum contraceptive use. Due to significant differ-

ences between the studies (Chi^2 = 11.29, df = 1, P = 0.0008, I^2 = 91.1%), we did not pool data. Saeed 2008, a randomised controlled trial on provision of contraceptive counselling with husband or close relative and an educational leaflet priori to discharge, showed a greater increase in IUD uptake among the intervention group compare to the control (Peto OR 5.73; 95% CI 3.59 to 9.15). Bashour 2008, a trial of postnatal contraceptive discussion at home visits, also showed an increase in IUD uptake among the intervention group compared to the control (Peto OR 1.96; 95% CI 0.90 to 2.85), however this increase was not statistically significant (Figure 4).

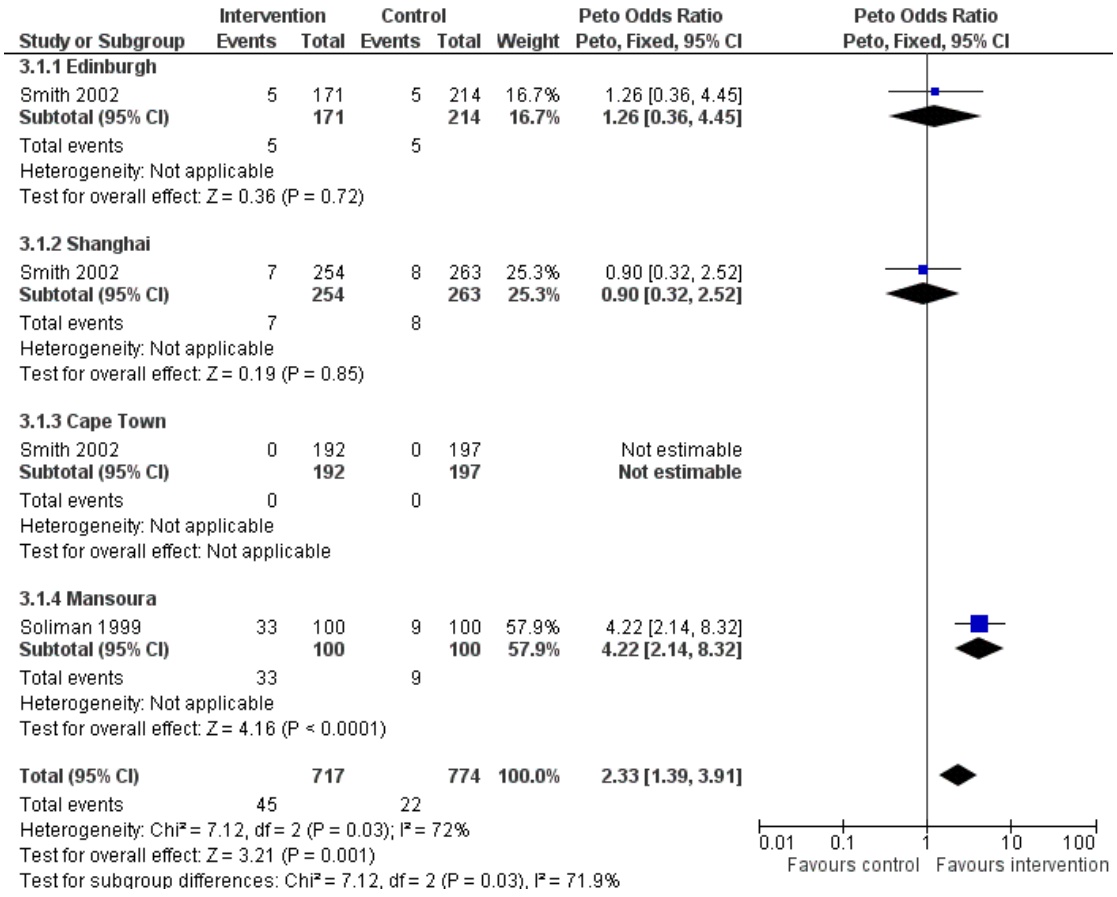
Figure 4. Forest plot of comparison: 2 Effectiveness of contraceptive counselling provision among postpartum population: postnatal counselling versus control, outcome: 2.1 Uptake of IUD.



Antenatal counselling

The pooled data with an aggregated sample size of 1491 (intervention = 717, control = 774) indicated a greater increase in IUD uptake at 12 weeks postpartum for those who received antenatal contraceptive counselling compared to those in the control group (Peto OR 2.33; 95% CI 1.39 to 3.91)(Figure 5). We noted a medium level of heterogeneity (Chi^2 = 8.09, df = 3, P = 0.04, I^2 = 63%) and subgroup analysis showed that only among those with a normal pregnancy in Soliman 1999 was there a statistically significant increase in use in the intervention group compared to the control (Peto OR 5.00; 95% CI 2.34 to 12.01). However, in the Smith 2002 study, there were differences in standard care between the sites: in Shanghai and Cape Town standard care included a postpartum contraception discussion while standard care in Edinburgh involved no formal discussion of postpartum contraception during the antenatal period.

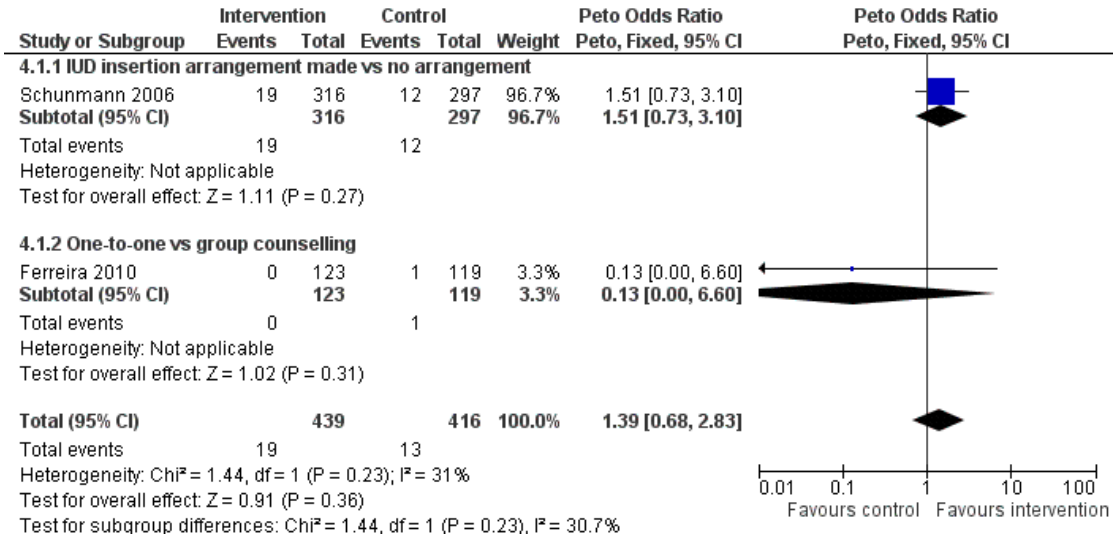
Figure 5. Forest plot of comparison: 3 Effectiveness of contraceptive counselling provision among postpartum population (short-term): antenatal counselling versus control, outcome: 3.1 Uptake of IUD.



Enhanced counselling for postabortion contraception

Two trials (Ferreira 2010; Schunmann 2006) evaluated enhanced counselling and contraceptive provision for postabortion contraceptive uptake. The pooled data from the studies showed low heterogeneity (Chi^2 square = 1.44, df = 1, P = 0.23, I^2 = 30.7%) and the difference between intervention and control groups was not statistically significant. Schunmann 2006 showed an increase in IUD uptake among those who received enhanced counselling and service provision, however it was not statistically significant (Figure 6). In the aggregated data, differences between intervention and control groups were also not found to be statistically significant. It is important to note that both control and intervention groups received some form of contraceptive counselling for both the postabortion studies included, but in the intervention groups this was more intensive. The control group in Schunmann 2006 received contraceptive counselling before the abortion procedure and further discussion after the abortion. Similarly, the control group in Ferreira 2010 received group contraceptive counselling.

Figure 6. Forest plot of comparison: 6 Effectiveness of family planning counselling among postabortion population, outcome: 6.1 Uptake of IUD.



ADDITIONAL SUMMARY OF FINDINGS *[Explanation]*

Antenatal contraceptive counselling for postpartum contraceptive use

Patient or population: women receiving antenatal care
Settings: healthcare facilities (hospitals/clinics)
Intervention: antenatal contraceptive counselling

Outcomes	Illustrative comparative risks* (95% CI)		Relative effect (95% CI)	No of participants (studies)	Quality of the evidence (GRADE)	Comments
	Assumed risk	Corresponding risk				
	Control	Antenatal contraceptive counselling				
Uptake of IUD Number of women who use IUD as a contraceptive	**28 per 1000**	**64 per 1000** (39 to 102)	**OR 2.33** (1.39 to 3.9)	1491 (2 studies)	⊕⊕⊕◯ **moderate**[1,2]	

*The basis for the **assumed risk** (e.g. the median control group risk across studies) is provided in footnotes. The **corresponding risk** (and its 95% confidence interval) is based on the assumed risk in the comparison group and the **relative effect** of the intervention (and its 95% CI).
CI: confidence interval; **IUD:** intrauterine device; **OR:** odds ratio

GRADE Working Group grades of evidence
High quality: Further research is very unlikely to change our confidence in the estimate of effect.
Moderate quality: Further research is likely to have an important impact on our confidence in the estimate of effect and may change the estimate.
Low quality: Further research is very likely to have an important impact on our confidence in the estimate of effect and is likely to change the estimate.
Very low quality: We are very uncertain about the estimate.

[1] Unclear and high risk of bias detected for both studies.
[2] Pooled data showed Peto OR 2.33 with 95% CI 1.39 to 3.90.

Postnatal contraceptive counselling and information leaflet prior to discharge

Patient or population: postpartum
Settings: healthcare facilities (hospital, maternity ward)
Intervention: postnatal contraceptive counselling and information leaflet prior to discharge from maternity ward

Outcomes	Illustrative comparative risks* (95% CI)		Relative effect (95% CI)	No of participants (studies)	Quality of the evidence (GRADE)	Comments
	Assumed risk	Corresponding risk				
	Control	Postnatal contraceptive counselling and information leaflet prior to discharge				
Uptake of IUD Number of women who use IUD as a contraceptive	**33 per 1000**	**165 per 1000** (110 to 239)	**OR 5.73** (3.59 to 9.15)	600 (1 study)	⊕⊕⊕○ **moderate**[1,2]	

*The basis for the **assumed risk** (e.g. the median control group risk across studies) is provided in footnotes. The **corresponding risk** (and its 95% confidence interval) is based on the assumed risk in the comparison group and the **relative effect** of the intervention (and its 95% CI).
CI: Confidence interval; **IUD:** intrauterine device; **OR:** Odds ratio

GRADE Working Group grades of evidence
High quality: Further research is very unlikely to change our confidence in the estimate of effect.
Moderate quality: Further research is likely to have an important impact on our confidence in the estimate of effect and may change the estimate.
Low quality: Further research is very likely to have an important impact on our confidence in the estimate of effect and is likely to change the estimate.
Very low quality: We are very uncertain about the estimate.

[1] Outcome measures were not specified; knowledge mentioned in the aim and reported for the baseline but not reported postintervention.
[2] Large effect: uptake of IUD is large for the intervention group compared to the control.

Postnatal home visits for postpartum care including contraception

Patient or population: postpartum
Settings: home
Intervention: postnatal home visits and contraceptive counselling during the visits

Outcomes	Illustrative comparative risks* (95% CI)		Relative effect (95% CI)	No of participants (studies)	Quality of the evidence (GRADE)	Comments
	Assumed risk	Corresponding risk				
	Control	Postnatal home visits				
Uptake of IUD Number of women who use IUD as a contraceptive	**59 per 1000**	**92 per 1000** (54 to 152)	**OR 1.6** (0.9 to 2.85)	849 (1 study)	⊕⊕◯◯[1] **low**	

*The basis for the **assumed risk** (e.g. the median control group risk across studies) is provided in footnotes. The **corresponding risk** (and its 95% confidence interval) is based on the assumed risk in the comparison group and the **relative effect** of the intervention (and its 95% CI).
CI: confidence interval; **IUD:** intrauterine device; **OR:** odds ratio

GRADE Working Group grades of evidence
High quality: Further research is very unlikely to change our confidence in the estimate of effect.
Moderate quality: Further research is likely to have an important impact on our confidence in the estimate of effect and may change the estimate.
Low quality: Further research is very likely to have an important impact on our confidence in the estimate of effect and is likely to change the estimate.
Very low quality: We are very uncertain about the estimate.

[1] The study power calculation was performed to detect postpartum morbidity, namely haemorrhoids. Although contraceptive uptake was one of the outcomes, all other (five) outcomes of the study were neonatal outcomes.

Enhanced contraceptive counselling and provision for postabortion

Patient or population: postabortion
Settings: healthcare facilities
Intervention: enhanced contraceptive counselling and provision

Outcomes	Illustrative comparative risks* (95% CI)		Relative effect (95% CI)	No of participants (studies)	Quality of the evidence (GRADE)	Comments
	Assumed risk	Corresponding risk				
	Control	Enhanced contraceptive counselling and provision				
Uptake of IUD Number of women using IUD as a contraceptive	**31 per 1000**	**43 per 1000** (21 to 84)	**OR 1.39** (0.68 to 2.83)	855 (2 studies)	⊕⊕◯◯ **low**[1,2,3,4,5]	

*The basis for the **assumed risk** (e.g. the median control group risk across studies) is provided in footnotes. The **corresponding risk** (and its 95% confidence interval) is based on the assumed risk in the comparison group and the **relative effect** of the intervention (and its 95% CI).
CI: confidence interval; **IUD:** intrauterine device; **OR:** odds ratio

GRADE Working Group grades of evidence
High quality: Further research is very unlikely to change our confidence in the estimate of effect.
Moderate quality: Further research is likely to have an important impact on our confidence in the estimate of effect and may change the estimate.
Low quality: Further research is very likely to have an important impact on our confidence in the estimate of effect and is likely to change the estimate.
Very low quality: We are very uncertain about the estimate.

[1] Low and statistically not significant heterogeneity.
[2] One of the studies was a trial of one-to-one counselling versus group counselling; also another study recruited participants specifically from low-income group.
[3] One of the studies includes no effect with 95% confidence interval 0.00 to 6.60.
[4] High risk of bias for one of the studies.
[5] The control group for one of the studies received group counselling and the discontinuation rate was 45%, given that only one IUD uptake for the control group and none among the intervention group, the results may be affected by the high discontinuation rate.

DISCUSSION

Summary of main results

Three main types of interventions identified were: community-based contraceptive counselling and referral, post- and antenatal contraceptive counselling, and enhanced postabortion contraceptive counselling. The community-based provision of contraceptive counselling studies provided evidence for an increase in intrauterine device (IUD) use among the intervention groups compared to the control groups.

Perinatal interventions evaluating both post- and antenatal counselling in healthcare settings led to an increase in uptake of the IUD; however postnatal home visits did not demonstrate statistically significant increases in uptake of the IUD postpartum, compared to usual care.

Intensive contraceptive counselling postabortion compared with standard care did not result in a statistically significant increase in IUD uptake; however the strength of evidence in this area was low. None of the studies included compared contraceptive counselling around the time of termination of pregnancy with no contraceptive counselling. The studies included in the review were comparing intensive one-to-one contraceptive counselling and enhanced provision to group contraceptive counselling or less intensive contraceptive counselling, and they did not show significantly improved uptake of the copper IUD. Therefore, we cannot conclude that enhanced contraceptive counselling postabortion is not an effective intervention for improving use of the copper IUD per se as we were not able to compare it with no provision.

Only one study, on community-based distribution and counselling, evaluated changes in knowledge by method, and the results showed a substantial increase in knowledge, both in terms of understanding the IUD and knowing where to access the method.

Overall completeness and applicability of evidence

We restricted studies which did not report use of the IUD as an outcome; a few of the studies excluded reported uptake of highly effective or effective contraceptives but did not distinguish this by specific method. We contacted primary authors for clarification and requested additional data for those with no specific IUD data reported.

Quality of the evidence

We used the GRADE approach to evaluate the quality of evidence (GRADE Working Group 2004). The dimensions considered are: study design and risk of bias, study limitation (risk of bias), inconsistency of results, indirectness of evidence, imprecision, publication bias, large or very large effect, and plausible confounding factors that would change the effect. The assessment was grouped based on the data for analysis. We found the quality of evidence for enhanced counselling and contraceptive provision for uptake of postabortion contraception to be low (Summary of findings 5).

We found the quality of evidence on contraceptive counselling and referral by community workers and antenatal contraceptive counselling to be moderate (Summary of findings for the main comparison; Summary of findings 2). We found the quality of evidence for postnatal contraceptive counselling prior to discharge and postnatal home visits for postpartum contraception to be low (Summary of findings 3; Summary of findings 4).

Potential biases in the review process

The quality of review might have been affected as no included studies were specifically aiming to increase acceptability and acceptance of the copper IUD (as opposed to contraception or reliable contraception in general). We found in the initial exploratory search that we would be unlikely to find studies specifically designed with an objective of increasing uptake of only the copper IUD. Therefore, we widened our search strategy to include all studies aiming to improve use of any type of contraception. Although we did not restrict our search to English language only, all our search engines are in English and generated very few articles or reports of studies that were not published in English.

Agreements and disagreements with other studies or reviews

We have found no previous studies or reviews specifically measuring uptake of the IUD. In terms of interventions for postpartum contraception, our findings were consistent with a Cochrane systematic review on education for contraceptive use by women after childbirth (Lopez 2010). The review focused on postnatal counselling only and concluded that contraceptive education may increase contraceptive use. Our analysis also showed an increase in uptake of the IUD in the intervention groups compared to the control groups for both postnatal and antenatal counselling. Our findings on enhanced contraceptive counselling and provision for postabortion contraception were also consistent with a previously published systematic review (Ferreira 2009). Ferreira 2009 reviewed the effect of contraceptive counselling on the use of family planning methods and found no differences between the intervention and control groups.

AUTHORS' CONCLUSIONS

Implications for practice

Contraceptive counselling and referral by trained community-based workers led to more intrauterine device (IUD) use than no provision. However, the generalisability of these developing country studies to developed country settings may need further evaluation. Antenatal contraceptive counselling was effective in increasing uptake of the copper IUD for postpartum contraception.

Postnatal couple contraceptive counselling and information leaflet provision prior to discharge also showed an increase in uptake of the IUD compared to those discharged without this intervention.

Implications for research

None of the studies included had the specific aim of improving uptake of the copper IUD, though uptake of contraceptives was sometimes reported by method. Secondary outcomes of our review, continuation rates, were rarely reported; the few studies that reported contraceptive use in the long-term had no individual follow-up but instead reported cohort effect. Most of the randomised controlled trials did not report power and sample size calculations, or allocations to intervention and control groups. Better documentation and reporting are needed on the research design and long-term impact of interventions for long-acting contraceptives.

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* *Indicates the major publication for the study*

CHARACTERISTICS OF STUDIES

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

Bashour 2008

Methods	Randomised controlled trial with 3 study arms; outcomes assessed at 4 months postpartum
Participants	Women who recently gave birth at the maternity teaching hospital in Damascus, Syria, and who were available for follow-up over 6 months; women who delivered prematurely or had babies with low birth weight (< 2500 g) were excluded
Interventions	Home visits by midwives to examine, follow up, educate, support and counsel women who had recently given birth Group A: 4 visits on days 1, 3, 7 and 30 following delivery (285 women of 301 eligible, 15 excluded for bad address and 1 refused) Group B: 1 visit on day 3 (294 women of 301 eligible, 3 excluded for bad address and 4 refused) Group C: no visits (297 of 301 eligible, 4 refused)
Outcomes	Maternal postpartum morbidities; postnatal care uptake; contraceptive uptake and type; infant immunisation, feeding and morbidities
Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	"Randomising was in blocks of 7 where a caseload of 21 eligible deliveries per day was assumed."
Allocation concealment (selection bias)	Low risk	"the random allocation relied on numbered opaque and sealed envelopes."
Blinding of participants and personnel (performance bias) All outcomes	Unclear risk	Participants were blinded, however, the midwives who carried out the home visits were not blinded
Blinding of outcome assessment (detection bias) All outcomes	Low risk	The outcome assessors were blinded. Although they could tell from the interviews, they were not fully aware of the study objectives
Incomplete outcome data (attrition bias) All outcomes	Low risk	Of 903 women recruited, 876 completed the study; 3% losses were due to refusals (N = 9) and bad addresses (N = 18), most of whom were from Group A

Bashour 2008 (*Continued*)

Selective reporting (reporting bias)	Low risk	Analysis and reporting was comprehensive; all outcomes measured were reported
Other bias	Unclear risk	The power calculation was based on haemorrhoids, to detect decrease in this morbidity from 15% in nonexposed group to 7% in the exposed group

Douthwaite 2005

Methods	Controlled before and after study; evaluation conducted 6 years after the programme began; only those with a minimum of 4 years of intervention were eligible for inclusion in the sample
Participants	Women of reproductive age living in rural Pakistan. Women with no children were excluded due to lack of data on whether or not they wanted children (N = 4277, 931 in non-intervention control group and 3346 in the intervention group); women using sterilisations are excluded
Interventions	Community-based family planning programme using outreach workers (Lady Health Workers - LHWs) to provide a doorstep family planning service which included motivating women to practice family planning, providing oral contraceptive pills and condoms, and referring for injectables, IUD and sterilisation
Outcomes	Use of reversible modern contraceptive methods: oral contraceptive pills, injectables, condom and IUD
Notes	Women in the intervention group seemed to be better off than those in the control group; socio-economic indicators for the control and intervention groups showed that 27% of those in intervention group were literate whereas only 14% of the control group were. Also the proportion of those who were able to make decisions was higher in the intervention group

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	High risk	Two LHWs were randomly selected and a sample of 8 households was drawn from each of the selected LHWs. Attempted matching between control and intervention groups, however, it was a non-random sample selection for the control group
Allocation concealment (selection bias)	High risk	Not stated

Douthwaite 2005 (*Continued*)

Blinding of participants and personnel (performance bias) All outcomes	Unclear risk	No evidence of blinding and unlikely given nature of the intervention
Blinding of outcome assessment (detection bias) All outcomes	High risk	No information on blinding. The interviews were conducted with LHWs, households that they serve, as well as supervisors and key staff at the health facilities to which the LHWs are attached
Incomplete outcome data (attrition bias) All outcomes	Low risk	No applicable, however, no information on non-response or those who declined to participate
Selective reporting (reporting bias)	Low risk	Probably all reported
Other bias	Low risk	Logistic regression used to control the differences in the socio-economic factors

Ferreira 2010

Methods	A prospective randomised controlled trial with a parallel group conducted in July 2008 to September 2009; 6-month follow-up interview using the same questionnaire for the intervention and control groups
Participants	Women of reproductive age who had an abortion at public maternities in Recife, Brazil; women were recruited within 1 to 2 weeks after the abortion and followed for a period of 6 months; 246 eligible and agreed to participate, 123 allocated to intervention and 123 allocated to control group
Interventions	The intervention was personalised and comprehensive (face-to-face) contraceptive counselling (30 minutes) by trained providers on education and information about fertility after abortion, contraceptive methods, future plans to use contraceptives, and experience with last method; also free provision of the chosen method and verification of understanding of its use Standard care is 30 to 40 minutes educational group counselling (approximately 20 to 25 women) by specialised nursing staff on contraceptive methods and their side effects, followed by a visit to the gynaecologist and supply of the chosen method
Outcomes	Primary outcomes: contraceptive acceptability and chosen method, use of contraceptives during 6-month follow-up period and consistent and correct use Secondary outcomes: satisfaction with the method and pregnancies
Notes	

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**

Ferreira 2010 (*Continued*)

Random sequence generation (selection bias)	Low risk	"women were allocated through a simple randomisation method using random number tables by independent statistician" Note: probably done
Allocation concealment (selection bias)	Low risk	Women were not aware of their assignments and the provider was informed about the allocation after the admission interview
Blinding of participants and personnel (performance bias) All outcomes	Unclear risk	There was no information on blinding and it is unlikely that participants and providers are unaware given the nature of the intervention
Blinding of outcome assessment (detection bias) All outcomes	Low risk	Follow-up by trained gynaecologist who was blinded to the study arms
Incomplete outcome data (attrition bias) All outcomes	High risk	Total of 4 lost to follow-up, all in the control group; also high discontinuation rate (45%) from control group (55/123) and 2/123 discontinued the intervention group
Selective reporting (reporting bias)	High risk	Intention-to-treat analysis was undertaken and there was no information on the difference between those who continued with the group counselling within the control group and those who did not
Other bias	Low risk	No other biases noted

Jahanfar 2005

Methods	Controlled trial; stratified random sampling using variables: age, occupation, level of education and number of children
Participants	Non-pregnant married women aged between 15 and 45 years (100 in the intervention group and 200 in the control group) living in Hamedan City, Iran
Interventions	Community-based distribution (CBD) programme which provided 5 community health worker visits in 2 months for contraceptive counselling, and oral contraceptive pills, condoms or injectables were given if required; those who chose IUD or permanent methods were referred to the nearest family planning clinic with a referral letter. The control group received 2 midwife visits in 6 months, no contraceptives were provided; however they did have access to a Family Planning Clinic
Outcomes	The level of contraceptive knowledge; suitability of chosen contraception; correct usage of contraception; continuity of contraceptive usage; occurrence of unwanted pregnancy

Notes		
Risk of bias		
Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Low risk	"A stratified random sampling technique was adopted" Note: probably done
Allocation concealment (selection bias)	Unclear risk	Sampling was based on age, occupation, level of education and number of children; however, no information on concealment was provided
Blinding of participants and personnel (performance bias) All outcomes	High risk	Personnel not blinded, the midwife visited both intervention and control groups
Blinding of outcome assessment (detection bias) All outcomes	High risk	The midwife who trained community health workers for the intervention also visited the control group and collected data
Incomplete outcome data (attrition bias) All outcomes	Low risk	Small number lost to follow-up (3/200 in control)
Selective reporting (reporting bias)	Unclear risk	Not clear how the contraceptive continuation rate was measured, whether it was looked at for each visit or just during the last. Also, there were no specific continuation rates for each method reported, only overall continuation of contraceptive usage was reported (98.9% in the intervention group and 84.5% in the control group with $P < 0.0001$)
Other bias	Unclear risk	Sample size power calculation was not reported; it was stated that the study proposed to reduce unwanted pregnancy from 25% to 10%, however, it was not clear whether the sample size calculation was based on this

Kambo 1994

Methods	Before and after comparison, cross-sectional study with intervention and non-intervention groups
Participants	Married women aged 15 to 45 years old (1000 in intervention group, 850 in control group) living in Uttar Pradesh, India; average age for the 2 groups was 29 years old; literacy rate for the non-intervention group was slightly higher, at 29%, than intervention group, at 23%
Interventions	Provision of contraceptive counselling, distribution of condoms and oral contraceptives by trained traditional practitioners. Traditional medical practitioners received training on human reproduction, family planning methods including their use, side effects and management, a referral system and other relevant user and provider information; the training emphasised motivational and counselling skills. Over the 2-year intervention period, the trained practitioners counselled on suitable methods, distributed condoms and oral contraceptives, referred clients who chose an IUD or sterilisation to a clinic, followed up and treated them for minor side effects or referred them for major complications
Outcomes	Knowledge and use of modern contraceptive methods
Notes	

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Low risk	"Two blocks were selected and were ascribed to the intervention and nonintervention Primary Health Centre blocks." "Fifty households were selected by systematic random sampling from intervention and nonintervention villages." Note: probably done
Allocation concealment (selection bias)	High risk	No allocation information given and it is highly unlikely to be concealed
Blinding of participants and personnel (performance bias) All outcomes	Unclear risk	No information on blinding of personnel, however may not be possible due to the nature of intervention
Blinding of outcome assessment (detection bias) All outcomes	Unclear risk	It was not clear whether the Traditional Medical Practitioners (the intervention) were the ones who carried out the data collection or whether it was done by independent researchers
Incomplete outcome data (attrition bias) All outcomes	High risk	200 (20%) lost to follow-up from the intervention group because trained practition-

Kambo 1994 (*Continued*)

		ers dropped out in 4 intervention villages
Selective reporting (reporting bias)	Unclear risk	There was a considerable gap (7 years) between the end of the study and publication of the article
Other bias	Low risk	No other risk of bias noted

Saeed 2008

Methods	Randomised controlled trial, blinded; follow-up at 8 to 12 weeks postnatal
Participants	Postpartum (women admitted to the labour ward and who recently delivered), 299 women in the intervention group and 301 women in the control group
Interventions	The intervention group received a 20-minute informal counselling session in the presence of their husbands or a close relative as well as a simple one-page leaflet containing the basic information on contraceptive methods at the time of discharge. The control group received no counselling session or leaflet
Outcomes	Contraceptive methods used postpartum
Notes	No information on power and sample size

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Low risk	"Women were randomised into two groups (A and B) by a block of four randomisation charts" Note: probably done
Allocation concealment (selection bias)	Low risk	"There was thorough concealment of allocation, and similar characteristics were evident in the responders for the different levels of each factor." Note: probably done, however, no detail on how "thorough concealment of allocation" was performed
Blinding of participants and personnel (performance bias) All outcomes	Unclear risk	It is possible that participants were aware of which study arm they were in, as those in the intervention group were counselled with their husband or close relative

Saeed 2008 (*Continued*)

Blinding of outcome assessment (detection bias) All outcomes	Low risk	The physician recording the follow-up data was blinded and not aware of which study arms the women belonged to
Incomplete outcome data (attrition bias) All outcomes	Unclear risk	Although the authors mentioned that there was no bias, there were 48 lost to follow-up and it was not specified how many were from each group. There was no explanation of reasons for loss to follow-up
Selective reporting (reporting bias)	High risk	Parity reported as 2 to 5 being highest frequency in both groups; it is a wide range for parity as the woman's or her partner's desire for having another child many differ between those already with 5 children and those who had 2. Also outcome measures were not specified. Knowledge of contraception was mentioned in the aim and reported for the baseline; however, it was not reported, or possibly not measured, postintervention
Other bias	Unclear risk	There was no information given on how the sample size was estimated

Schunmann 2006

Methods	Randomised controlled trial, blinded; the randomisation was by weeks
Participants	Women who underwent termination of pregnancy at the Royal Infirmary of Edinburgh, Scotland; 613 were randomised to intervention group (n = 316) and standard care (n = 297)
Interventions	Specialist contraceptive advice and enhanced provision; standard care included brief contraception discussion, provision of pills (1-month supply), condoms, IUD/IUS insertion or referrals; in addition to standard care, intervention group received 3 months supply of pills, implants if chosen, an appointment or firm arrangement for insertion of IUD/IUS if not inserted before discharge
Outcomes	Contraceptive method uptake and continuation at 16 weeks; repeat abortion rate after 2 years through case notes review
Notes	

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**

Schunmann 2006 (*Continued*)

Random sequence generation (selection bias)	Low risk	"calendar weeks were randomised by the statistician using random number tables" Note: probably done
Allocation concealment (selection bias)	Unclear risk	It was stated that the unit staff was informed verbally on the first day of each working week whether it was a control or intervention week
Blinding of participants and personnel (performance bias) All outcomes	Unclear risk	No information on blinding of personnel
Blinding of outcome assessment (detection bias) All outcomes	Low risk	The baseline data collection for the control group is from case notes, and for the intervention group the data were collected from both interviews and case records. No information was provided on blinding of the people collecting data at 16 weeks follow-up
Incomplete outcome data (attrition bias) All outcomes	Low risk	High loss to follow-up at the 16-week follow-up questionnaire: 117 in intervention group (n = 316) and 119 in standard care (n = 297). However, the analysis for contraceptive uptake was based case notes, and characteristics of those lost to follow-up were analysed and compared with those who were not lost to follow-up
Selective reporting (reporting bias)	Low risk	All outcomes were reported. Also reported the profile of those who declined to participate in the study
Other bias	Unclear risk	Significant differences between those who responded to the 16-week follow-up and those who did not, particularly with regards to previous abortion and education - those who responded were less likely to have had a previous abortion (16% versus 31%) and were more likely to have completed tertiary education (31% versus 11%)

Smith 2002

Methods	Randomised controlled trial in 3 countries, People's Republic of Chian (Shanghai), South Africa (Cape Town) and Scotland (Edinburgh)
Participants	Women attending antenatal clinics (N = 1500, 500 women from each site, equally divided between control and intervention groups) when they were between 24 and 36 weeks gestation
Interventions	Provision of expert contraceptive counselling during the antenatal period; intervention group received 20-minute counselling session tailored to the anticipated contraceptive needs of each individual woman who was then given appropriate written information to take home. Control group received standard local care with regard to contraceptive advice; contraception is not formally discussed at all during antenatal period in Edinburgh but it is discussed briefly during group antenatal classes in Shanghai and Cape Town
Outcomes	Contraceptive uptake, recall of advice received, contraceptive use at 1-year follow-up and pregnancy at 1-year follow-up
Notes	

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Low risk	"antenatal clinic sessions were randomised" Note: probably done
Allocation concealment (selection bias)	Unclear risk	Not specified how the allocation was made
Blinding of participants and personnel (performance bias) All outcomes	Unclear risk	Not blinded, as both professionals and participants will have to discuss contraception during antenatal sessions
Blinding of outcome assessment (detection bias) All outcomes	Unclear risk	It is not clear whether the follow-ups at 16 weeks and 1 year after birth were conducted by the same nurse who carried out the intervention
Incomplete outcome data (attrition bias) All outcomes	High risk	High loss to follow-up in all centres except Shanghai (33% to 38% in Edinburgh, 25% to 28% in Cape Town, 2% to 1% in Shanghai for the intervention and control groups, respectively)
Selective reporting (reporting bias)	Unclear risk	Pattern of use was measured by contraceptive use at 1 month, 3 months and 6 months; continuation rates of each method were not reported

Smith 2002 (*Continued*)

Other bias	Unclear risk	Study design inconsistent across the 3 sites. The Edinburgh site gave participants the opportunity to decline additional contraceptive counselling, however, authors addressed this issue

Soliman 1999

Methods	Randomised controlled trial
Participants	Women in second trimester of pregnancy (N = 200, 100 in intervention and 100 in control group) at the antenatal clinics in Mansoura, Egypt
Interventions	Antenatal counselling sessions using 'GATHER' technique were provided to women and their husbands; individual family planning counselling secessions given in 3 consecutive secessions (1 hour each); counselling sessions covered the anatomy and function of the female reproductive system, the purpose and benefits of family planning; and follow-up visits, information on contraceptives; audiovisual aids such as flip charts, posters, contraceptive methods and a pelvic model were also used
Outcomes	Knowledge and practice of contraception
Notes	

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	High risk	"women were randomly allocated to one of the two groups" Note: probably done, however, no information given on the randomisation process
Allocation concealment (selection bias)	Unclear risk	No information on the allocation process
Blinding of participants and personnel (performance bias) All outcomes	Unclear risk	No information on blinding, it is highly unlikely that it is blinded due to the nature of the intervention
Blinding of outcome assessment (detection bias) All outcomes	Unclear risk	Insufficient information
Incomplete outcome data (attrition bias) All outcomes	Low risk	There were no losses to follow-up; it appears that the "defaulters" were followed up in their homes
Selective reporting (reporting bias)	Unclear risk	Insufficient information

Soliman 1999 (*Continued*)

Other bias	High risk	No description or information on what constitutes the "routine care of the clinic" for the control group

IUD: intrauterine device; IUS: intrauterine system; LHW: lady health worker

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

Study	Reason for exclusion
Bender 2004	Clarified with the main author and found that IUD use may also include levonorgestrel-releasing intrauterine device (LNG-IUD) not just copper IUD. No separate data on copper IUD use were available
Bianchi-Demicheli 2003	The study focus on TOP as an intervention
Boise 2003	No specific IUD outcome measure was reported
Bolam 1998	No specific IUD outcome was measured or reported
Daniel 2008	No specific contraceptive use (e.g. IUD) was reported
El-Tagy 2003	No comparison group (i.e. control or before intervention)
Goodman 2008	The study compared between interval and postabortal insertions; no data were reported on the of uptake of IUDs - only per month insertion rate was reported
Ha 2003	The study participants fell outside of the inclusion criteria, no IUD use reported
Ha 2005	The study participants fell outside of the inclusion criteria
Hubacher 2006	The study participants fell outside of the inclusion criteria; the study outcomes measured provider's monthly insertion rate
Johnson 2002	No specific IUD outcome measure was reported
Langston 2010	No specific contraceptive method (e.g. IUD) outcome reported; uptake of methods for the intervention and usual care (control) groups reported at aggregated level as: very effective methods, effective methods and less effective methods
Lee 2011	No specific IUD outcome measure was reported
Lou 2004	No specific contraceptive use was measured except condoms
Luck 2000	No IUD use outcome was measured

(*Continued*)

Masch 2008	The study design fell outside the inclusion criteria; before and after study with no control group
McCarraher 2010	The study design fell outside the inclusion criteria; before and after study with no control group
Nac. ar 2003	No specific contraceptive methods used were reported; contraceptive methods used were aggregated
Nobili 2006	No specific contraceptive methods used were reported; contraceptive methods used were aggregated into 'effective method' and 'ineffective method'
Ortayli 2001	No comparison group or control group in the study; the before and after study only measured the participants' contraceptive use during the month of conception and the method started when leaving the clinic
PARTNERS Project 2000	Specific contraceptive method usage was not reported
Ponce 2000	The study focused on sexually transmitted diseases (STD) risk factors and IUD choice
Postlethwaite 2007	Study participants fell outside of the inclusion criteria
Rasch 2004	No IUD outcome was reported; there was no comparison group
Rose 2010	The study design is outside the inclusion criteria; a prospective note search before and after study, with the control being the pre-intervention period, compared to the postintervention period
Shrestha 2002	The study design is outside of the inclusion criteria; it was before and after study with no control group
Shrewood-Fabre 2002	The study evaluated overall impact of a contraception programme, of which only one intervention (media campaigns) was within the eligibility criteria for participants; outcomes reported were for overall programme and impact of media campaigns alone was not evaluated
Stevens 1992	No IUD outcome reported
Sääv 2007	The study was for provision of sublingual misoprostol plus diclofenac prior to insertion of an IUD; outcomes were the effect on cervical dilatation and side effects
Thompson 2006	No specific contraceptive method (e.g. IUD) outcome was reported; all methods are aggregated under "modern" methods
Yassin 2005	The study design fell outside of the inclusion criteria: it is a before and after study with no control group
Zhu 2009	No specific contraceptive methods used (e.g. IUD) were reported

IUD: intrauterine device; TOP: termination of pregnancy

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

Dulli 2010

Trial name or title	PPFPIZ (Postpartum Family Planning Services Through Enhanced Family Planning in Immunization Services)
Methods	Randomised controlled trial
Participants	Women attending immunisation services for their infant
Interventions	Educational brochures, group education and individual counselling on the benefits of the health timing and spacing of births, pregnancy risk and return to fertility during the extended postpartum period (12 months), and referral to family planning services for those who are interested
Outcomes	Use of a modern contraceptive method among postpartum women
Starting date	February 2010
Contact information	Lisa S Dulli, Family Health International
Notes	

Norman 2010

Trial name or title	Better Contraceptive Choices
Methods	Interventional multi-site randomised controlled trial. Randomisation by blocking (4) and stratified for parity and study site
Participants	Women seeking a therapeutic abortion in their second trimester of pregnancy (over 12 weeks gestation) who are interested in intrauterine contraception
Interventions	Immediate insertion compared to a planned insertion at 4 weeks
Outcomes	Primary outcomes: pregnancy rate at one year Secondary outcomes: 1. costs and cost effectiveness; 2. rates of loss to follow-up; 3. adverse events (such as infection or perforation: anticipated at under 1%); 4. expulsion; 5. continuation of method; 6. satisfaction with IUD chosen and with insertion timing assigned
Starting date	June 2010
Contact information	Wendy V. Norman, wvnorman@interchange.ubc.ca
Notes	

IUD: intrauterine device

DATA AND ANALYSES

Comparison 1. Effectiveness of community-based family planning programme: community workers versus control

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Uptake of IUD	3	6224	Peto Odds Ratio (Peto, Fixed, 95% CI)	2.00 [1.40, 2.85]
2 Knowledge of IUD	1		Odds Ratio (M-H, Random, 95% CI)	Subtotals only
2.1 Knowledge of method	1	1650	Odds Ratio (M-H, Random, 95% CI)	39.00 [15.91, 95.62]
2.2 Knowledge of availability	1	1650	Odds Ratio (M-H, Random, 95% CI)	2.68 [2.19, 3.27]

Comparison 2. Effectiveness of contraceptive counselling provision among postpartum population: postnatal counselling versus control

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Uptake of IUD	2		Peto Odds Ratio (Peto, Fixed, 95% CI)	Subtotals only
1.1 Counselling and leaflet before discharge	1	600	Peto Odds Ratio (Peto, Fixed, 95% CI)	5.73 [3.59, 9.15]
1.2 Postnatal home visits	1	849	Peto Odds Ratio (Peto, Fixed, 95% CI)	1.60 [0.90, 2.85]

Comparison 3. Effectiveness of contraceptive counselling provision among postpartum population (short-term): antenatal counselling versus control

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Uptake of IUD	2	1491	Peto Odds Ratio (Peto, Fixed, 95% CI)	2.33 [1.39, 3.91]
1.1 Edinburgh	1	385	Peto Odds Ratio (Peto, Fixed, 95% CI)	1.26 [0.36, 4.45]
1.2 Shanghai	1	517	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.90 [0.32, 2.52]
1.3 Cape Town	1	389	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
1.4 Mansoura	1	200	Peto Odds Ratio (Peto, Fixed, 95% CI)	4.22 [2.14, 8.32]

Comparison 4. Effectiveness of family planning counselling among postabortion population

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Uptake of IUD	2	855	Peto Odds Ratio (Peto, Fixed, 95% CI)	1.39 [0.68, 2.83]
1.1 IUD insertion arrangement made vs no arrangement	1	613	Peto Odds Ratio (Peto, Fixed, 95% CI)	1.51 [0.73, 3.10]
1.2 One-to-one vs group counselling	1	242	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.13 [0.00, 6.60]

Analysis 1.1. Comparison 1 Effectiveness of community-based family planning programme: community workers versus control, Outcome 1 Uptake of IUD.

Review: Strategies for improving the acceptability and acceptance of the copper intrauterine device

Comparison: 1 Effectiveness of community-based family planning programme: community workers versus control

Outcome: 1 Uptake of IUD

Study or subgroup	Intervention n/N	Control n/N	Peto Odds Ratio Peto,Fixed,95% CI	Peto Odds Ratio Peto,Fixed,95% CI
Douthwaite 2005	124/3346	21/931		1.56 [1.04, 2.33]
Jahanfar 2005	0/100	0/197		0.0 [0.0, 0.0]
Kambo 1994	23/800	3/850		5.08 [2.34, 11.03]
Total (95% CI)	**4246**	**1978**		**2.00 [1.40, 2.85]**

Total events: 147 (Intervention), 24 (Control)

Heterogeneity: Chi^2 = 7.05, df = 1 (P = 0.01); I^2 =86%

Test for overall effect: Z = 3.81 (P = 0.00014)

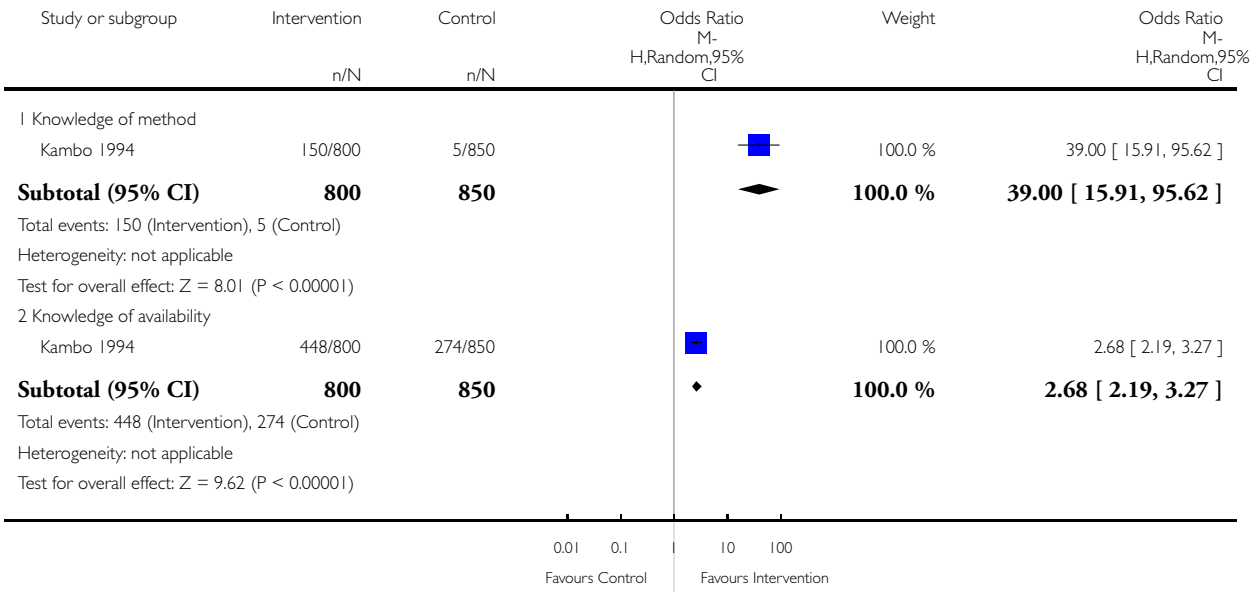
Test for subgroup differences: Not applicable

Analysis 1.2. Comparison 1 Effectiveness of community-based family planning programme: community workers versus control, Outcome 2 Knowledge of IUD.

Review: Strategies for improving the acceptability and acceptance of the copper intrauterine device

Comparison: 1 Effectiveness of community-based family planning programme: community workers versus control

Outcome: 2 Knowledge of IUD

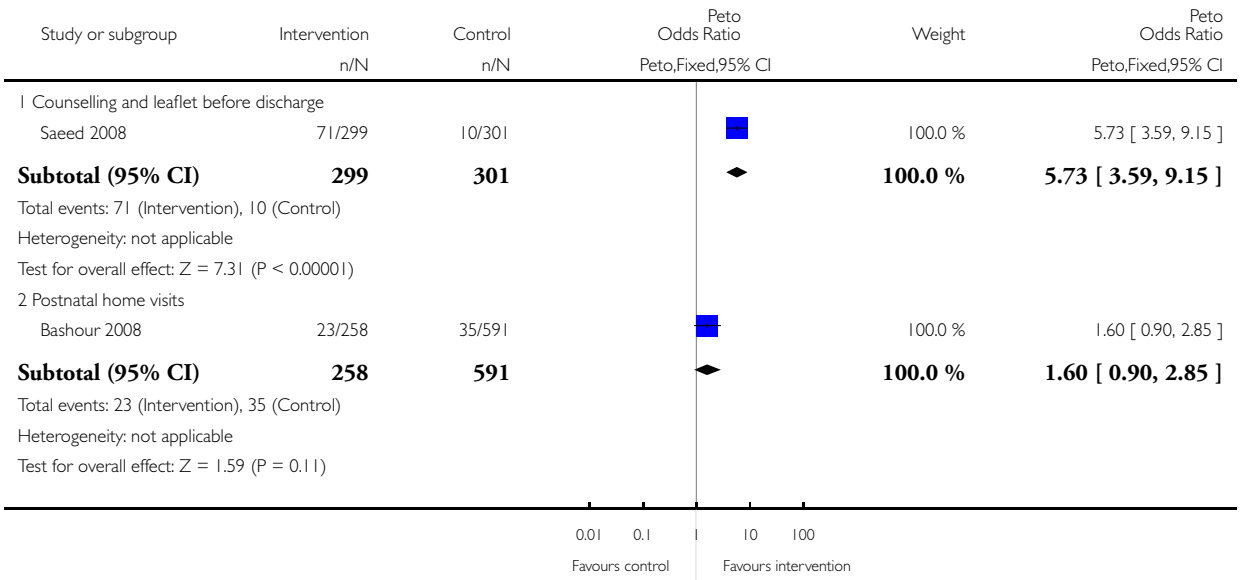


Analysis 2.1. Comparison 2 Effectiveness of contraceptive counselling provision among postpartum population: postnatal counselling versus control, Outcome 1 Uptake of IUD.

Review: Strategies for improving the acceptability and acceptance of the copper intrauterine device

Comparison: 2 Effectiveness of contraceptive counselling provision among postpartum population: postnatal counselling versus control

Outcome: 1 Uptake of IUD



Analysis 3.1. Comparison 3 Effectiveness of contraceptive counselling provision among postpartum population (short-term): antenatal counselling versus control, Outcome 1 Uptake of IUD.

Review: Strategies for improving the acceptability and acceptance of the copper intrauterine device

Comparison: 3 Effectiveness of contraceptive counselling provision among postpartum population (short-term): antenatal counselling versus control

Outcome: 1 Uptake of IUD

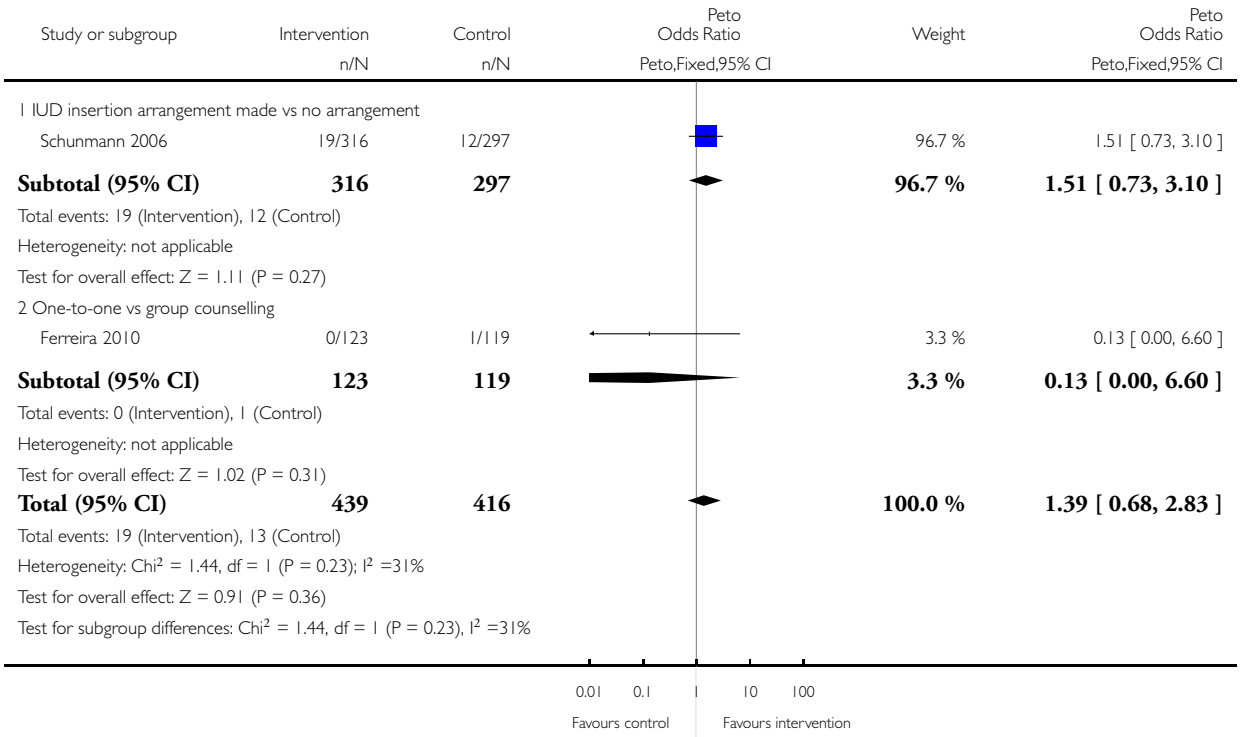
Study or subgroup	Intervention n/N	Control n/N	Peto Odds Ratio Peto,Fixed,95% CI	Peto Odds Ratio Peto,Fixed,95% CI
1 Edinburgh				
Smith 2002	5/171	5/214		1.26 [0.36, 4.45]
Subtotal (95% CI)	**171**	**214**		**1.26 [0.36, 4.45]**
Total events: 5 (Intervention), 5 (Control)				
Heterogeneity: not applicable				
Test for overall effect: Z = 0.36 (P = 0.72)				
2 Shanghai				
Smith 2002	7/254	8/263		0.90 [0.32, 2.52]
Subtotal (95% CI)	**254**	**263**		**0.90 [0.32, 2.52]**
Total events: 7 (Intervention), 8 (Control)				
Heterogeneity: not applicable				
Test for overall effect: Z = 0.19 (P = 0.85)				
3 Cape Town				
Smith 2002	0/192	0/197		0.0 [0.0, 0.0]
Subtotal (95% CI)	**192**	**197**		**0.0 [0.0, 0.0]**
Total events: 0 (Intervention), 0 (Control)				
Heterogeneity: not applicable				
Test for overall effect: Z = 0.0 (P < 0.00001)				
4 Mansoura				
Soliman 1999	33/100	9/100		4.22 [2.14, 8.32]
Subtotal (95% CI)	**100**	**100**		**4.22 [2.14, 8.32]**
Total events: 33 (Intervention), 9 (Control)				
Heterogeneity: not applicable				
Test for overall effect: Z = 4.16 (P = 0.000032)				
Total (95% CI)	**717**	**774**		**2.33 [1.39, 3.91]**
Total events: 45 (Intervention), 22 (Control)				
Heterogeneity: Chi^2 = 7.12, df = 2 (P = 0.03); I^2 =72%				
Test for overall effect: Z = 3.21 (P = 0.0013)				
Test for subgroup differences: Chi^2 = 7.12, df = 2 (P = 0.03), I^2 =72%				

Analysis 4.1. Comparison 4 Effectiveness of family planning counselling among postabortion population, Outcome 1 Uptake of IUD.

Review: Strategies for improving the acceptability and acceptance of the copper intrauterine device

Comparison: 4 Effectiveness of family planning counselling among postabortion population

Outcome: 1 Uptake of IUD



HISTORY

Protocol first published: Issue 12, 2010

Review first published: Issue 3, 2012

CONTRIBUTIONS OF AUTHORS

All authors contributed to this systematic review. ME Arrowsmith and S Saxena conceived the review. ME Arrowsmith, CRH Aicken and S Saxena designed and planned the review, and submitted the protocol for review by the Cochrane Fertility Review Group. CRH Aicken and ME Arrowsmith identified eligible reports and extracted data independently. S Saxena verified the results and conclusions. A Majeed and S Saxena provided analytical and editorial input.

DECLARATIONS OF INTEREST

None.

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Internal sources

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External sources

- No sources of support supplied