



**Variation in Outcome Reporting in Endometriosis Trials:  
A Systematic Review.**

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42 Short title: Outcome reporting in Endometriosis trials

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44 Condensation:

45 Variation in outcomes and outcome measures collected and reported within  
46 endometriosis trials limits the usefulness of research to inform clinical practice.

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## 66 Abstract

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2 67 **Background:** There is no consensus amongst patients, healthcare professionals,  
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4 68 and researchers regarding the outcomes and outcome measures which should be  
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6 69 collected and reported in endometriosis trials assessing potential interventions.  
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10 70 **Objective:** We reviewed the outcomes and outcome measures reported in  
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12 71 randomized controlled trials and their relationship with methodological quality, year  
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14 72 of publication, commercial funding, and journal impact factor.  
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18 73 **Study Design:** We searched [1] Cochrane Central Register of Controlled Trials, [2]  
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20 74 Embase, and [3] MEDLINE from inception to November 2014. We included all  
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22 75 randomized controlled trials evaluating a surgical intervention with or without a  
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24 76 medical adjuvant therapy for the treatment of endometriosis symptoms. Two authors  
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26 77 independently selected trials, assessed methodological quality (Jadad score; range  
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28 78 one to five), outcome reporting quality (MOMENT criteria; range one to six), year of  
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30 79 publication, impact factor in the year of publication, and commercial funding (yes or  
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32 80 no). Univariate and bivariate analysis were performed using Spearman Rh and  
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34 81 Mann-Whitney U tests. We used a multivariate linear regression model to assess  
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36 82 relationship associations between outcome reporting quality and other variables.  
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43 83 **Results:** There were 54 randomized controlled trials (5427 participants) which  
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45 84 reported 164 outcomes and 113 outcome measures. The three most commonly  
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47 85 reported primary outcomes were dysmenorrhea (10 outcome measures; 23 trials),  
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49 86 dyspareunia (11 outcome measures; 21 trials), and pregnancy (3 outcome  
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51 87 measures; 26 trials). The mean quality of outcome reporting was 3.15 (95%  
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53 88 confidence interval (CI) 1.65 - 4.65) and methodological quality 3.61 (95% CI 2.35 -  
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55 89 4.88). Multivariate linear regression demonstrated a relationship between outcome  
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57 90 reporting quality with methodological quality ( $\beta=0.325$ ;  $p=0.038$ ) and year of  
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publication ( $\beta=0.067$ ;  $p=0.040$ ). No relationship was demonstrated between outcome reporting quality with journal impact factor ( $Rho=0.190$ ;  $p=0.212$ ) or commercial funding ( $p=0.370$ )

**Conclusion:** Variation in outcome reporting within published endometriosis trials prohibits comparison, combination, and synthesis of data. This limits the usefulness of research to inform clinical practice, enhance patient care, and improve patient outcomes. International consensus among stakeholders is needed to establish a core outcome set for endometriosis trials.

**Key Words:** Core-outcome sets, Endometriosis, Outcome harmonization, Outcome variation.

## Introduction

Endometriosis affects 1 in 10 women and impairs health related quality of life in the domains of fertility, pain, psychological, and social functioning. Endometriosis is poorly understood and is currently managed with holistic, medical, and surgical interventions. There is no consensus amongst patients, healthcare professionals, and researchers regarding the outcomes and outcome measures which should be collected and reported in endometriosis trials assessing potential interventions. The factors linked to outcome reporting variation are unclear. Without consensus, the variation in outcome reporting within effectiveness trials produces misleading results as individual studies cannot be compared or combined, favoring ineffective interventions or underestimating harms [1,2]. The accurate measurement and reporting of consistent comparable outcomes is crucial.

In line with recommendations from the US Congress established Patient-Centered Outcomes Research Institute (PCORI) this review will help towards ensuring the selection of “outcomes that people in the population of interest notice and care about” [3].

We aimed to systematically organize and describe the outcomes, their measurement instruments and definitions reported by randomized controlled trials evaluating surgical interventions for endometriosis. We evaluated the methodological and outcome reporting quality of those studies. Finally we aimed to assess whether publication features such as journal impact factor, year of publication, methodological quality, and publication location (general or women’s health specific journal) are correlated to outcome reporting or methodological quality.

## Materials and Methods

### Sources

A protocol with explicitly defined objectives, criteria for study selection, and approaches assessing outcomes selection was developed. The systematic review was registered with the Core Outcome Measures in Effectiveness Trials Initiative Register [4] and conducted in accordance with the PRISMA statement [5]. A comprehensive and systematic literature review was undertaken searching the Cochrane Central Register of Controlled Trials (CENTRAL), Embase, and Medline from database inception to November 2014 (see appendix 1). We searched the Cochrane Register of Systematic reviews to identify relevant Cochrane systematic reviews searching the bibliography for eligible trials [6].

### Study Selection

Two reviewers (MH & JMD) independently screened titles and abstracts. They critically reviewed the full text of selected studies to assess eligibility. Any discrepancies between the reviewers were resolved by discussion with a third author (KSK). We included randomized control trials (RCTs) assessing the effectiveness of any surgical intervention with or without an adjuvant medical therapy for the treatment of pain and subfertility associated with endometriosis. We excluded quasi-randomized, non-randomized, analytical, and diagnostic studies.

Two reviewers (MH and JD) extracted the data independently using a piloted data extraction sheet. The study characteristics were extracted from the trial report including the publishing journal, study design, setting, participants, interventions, sample size calculation, and pharmaceutical funding. The impact factor in the year of publication was identified by reviewing data provided by Researchgate. We

systematically reviewed primary and secondary outcomes and their definitions and instruments. The study characteristics and outcomes were summarized in tabular form and presented with descriptive statistics within summary tables and diagrams.

### **Quality Assessment**

Two reviewers (MH and JD) independently assessed each study's methodological quality using the JADAD criteria. The five point validated scoring system assesses the following: 1. Was the trial described as randomized? (1-point); 2. Did the trial use an appropriate method of randomization? (1-point); 3. Was the trial blinded? (1-point), 4. Did the trial use an appropriate method of blinding? (1-point), 5. Did the trial account for all patients randomized? (1-point) [7].

Two reviewers (MH and JD) independently assessed each study's outcome reporting using the six point MOMENT scoring system validated for the development of a core outcome set [8]: 1. Was a primary outcome stated? (1-point), 2. Was the primary outcome clearly defined for reproducible measures? (1-point), 3. Were the secondary outcomes clearly stated? (1-point), 4. Were the secondary outcomes clearly defined for reproducible measures? (1-point), 5. Do the authors explain the choice of outcome? (1-point), 6. Are the methods used designed to enhance quality of measures appropriate? (1-point). There is no defined rating score therefore a previously used cut off of  $\geq 4$  was used to represent 'high' quality trials [8].

### **Analysis**

Univariate association between continuous factors was assessed by non-parametric correlation coefficient (Spearman rho). The comparison of outcome reporting quality was assessed between groups according to type of journal (general vs. specialist), funding source (commercial or other), year of publication and impact factor in the

year of publication. Journals specific to obstetrics and gynecology as listed by [www.scimagojr.com](http://www.scimagojr.com) were classified as specialist. Funding status was identified in the article text including commercial funding or the donation of equipment, which had facilitated the trial. These univariate analyses were performed using non-parametric Mann Whitney U tests. To assess the multivariate relationship with quality of outcome reporting we used a multivariate linear regression model including journal type, impact factor in the year of publication, year of publication and methodological quality as independent variables and outcome reporting as dependent variable. Only significant predictors were retained in the final model. We globally checked linear regression assumptions by exploring residuals versus predicted plot. All the analyses were performed using Stata program (StataCorp. 2013. Stata Statistical Software: Release 13. College Station, TX: StataCorp LP).

## Results

The search strategy identified 1570 titles and abstracts. We screened 1409 titles and abstracts following the exclusion of 161 duplicate records (figure 1). We included 54 RCTs [9-62] (Table 1). The included trials collected and reported 164 outcomes and 113 outcome measures (Table 2). Unfortunately the outcome measurement or definition was not described within the trial report for 110 outcomes. The commonest outcome domains were pain 29/54 trials (53%), subfertility 22/54 trials (41%), and quality of life 9/54 trials (17%). When considering the pain domain, commonly reported pain outcomes were dysmenorrhea (23 RCTs, 10 outcome measures), dyspareunia (21 RCTs, 11 outcome measures), and pelvic pain (15 RCTs, 9 outcome measures). Three trials did not specify the outcome measure used to assess pain [16, 26,27] (Tables 2,3, and 4). Dysmenorrhea was measured by ten



different outcome measures: visual analogue scale anchored between 0-10; visual analogue scale anchored between 0-100; visual analogue scale anchored between 0 (no pain) and 10 (severe pain); a visual analogue scale with no specified parameters; a questionnaire including three domains activities of daily living, coexistence of systemic symptoms, and analgesic requirement; a questionnaire with ranked symptoms; a questionnaire with no further description available; a ranked ordinal scale (1 to 5); number of episodes; and not specified.

The three most commonly reported fertility outcomes were pregnancy (26 RCTs, 5 outcome measures), miscarriage (7 RCTs , 2 outcome measures), and live birth (5 RCTs, 2 outcome measures). Pregnancy was measured with the following outcome measures: ultrasound scan visualizing fetal heart; ultrasound growth scan; serum beta HCG; pregnancy greater than 20 weeks gestation; not specified (Tables 3 and 4, Figure 2).

Quality of life was reported by nine trials using 10 different outcome measures including World Health Organization Quality of Life-BREF; EuroQol-5D; Short Form Health Survey 12; Short Form Health Survey 36; Hospital Anxiety and Depression Scale; Greene Climacteric Scale; Blatt Kupperman Menopausal Index; Sabbatsberg Sexual Rating Scale; Revised Sabbatsberg Sexual Rating Scale; and Sexual Activity Questionnaire [9,17,26,27,45,50,54,55,60].

Intraoperative and postoperative complications were collected and reported by 14 RCTs using 25 different outcomes and 5 different outcome measures [12,21,23,26-29,32,33,36,37,39,41,62].

The mean outcome reporting quality was 3.15/6 (95% CI 1.65; 4.65) and methodological quality 3.61/5 (95% CI 2.35 - 4.88). Table 1 summarizes quality assessment. Just over half of all trials clearly reported a primary outcome 32/54

[10,11,12,15,18,21,23,24,26-30,33,34,36,37,39,43,45-47,50,53-57,59-62] while just under half, 26/54 [9,10,20,21,24,26,27,30-34,37,39,43,45,49,50,52,53-55,57,60-62] described using a power calculation to influence their sample size. The majority of studies, 89% (n=48/54), were published in an obstetrics and gynecology specific journal while 11% (n=6/54) trials were published in general medical journals including one trial in The New England Journal of Medicine [37]. Studies receiving commercial or pharmaceutical funding accounted for 22% of trials (n=12/54)[16,24,25,29-31,33,37-39,50,57], while 4% of trials (n=2/54)[10,32] did not receive funding and 74% of trials (n=40) did not specify whether they received private funding [9,11-15,17-23,26-28,34-36,40-49,51-56,58-62].

We explored the relationship between quality of outcome reporting with impact factor in the year of publication, study quality, year of publication, journal type, and commercial funding (Table 5). After exploring data we found one study [37] behaving clearly differently to the other studies in terms of impact factor (IF =27.776). This outlier was excluded from further analysis. Univariate analysis results are shown in table 5. Year of publication and methodological quality of the paper correlated positively with quality of outcome reporting. Neither impact factor nor type of journal nor commercial funding was associated with outcome reporting. Multivariate analysis confirmed that both factors (year of publication and methodological quality) were independently associated with outcome reporting (Table 5). Residual plot did not show any evidence of violating assumptions of linear regression.

## Discussion

## Summary

In this study, there was outcome reporting heterogeneity. The commonest comparable outcome (dysmenorrhea) and measurement tool (visual analogue scale from 1-10) assessed were reported infrequently.

There was a relationship between the quality of outcomes reported and the quality of a study but there was not an association with journal impact factor at publication in a multivariable analysis. The RCTs included were from an international setting with different patient populations. This meant we could make no meaningful comparisons relating to ethnicity.

### **Strengths and Weaknesses**

The strengths of this prospectively registered review include its originality, robust search strategy and methodological design. To our knowledge, this is the first systematic review to describe outcome reporting variation in endometriosis trials. In order to prevent bias in the review process, the search was guided by the Cochrane Collaboration handbook. There was good agreement between reviewers for the selection and assessment of trials, with discrepancies resolved quickly. This review was not without limitations. We included only randomized controlled trials, missing outcomes included in observational studies. Many included trials used outcomes generated from patient reported questionnaires. These introduce methodological inaccuracies as they lack reliability, are difficult to replicate and unable to gauge the sensitivity of the measurement tool [63]. This creates heterogeneity between endpoints and an inability to compare the effectiveness of an intervention on a specified disease outcome [64].

### **Interpretation**

281 The lack of association between journal impact factor and outcome reporting quality  
282 may suggest that journals prioritize the results reported or methodological quality  
283 ahead of outcome reporting quality. This can introduce outcome reporting bias. The  
284 high prevalence of outcome reporting bias can impact on Cochrane reviews [65].  
285 When adjusting for outcome reporting bias the treatment effect estimate became  
286 non-significant in 19% of Cochrane reviews and 26% would have overestimated the  
287 treatment effect by 20% or more. Furthermore, It's reported that 85% of research  
288 funding is wasted across all aspects of the research cycle with three of the four  
289 sources of waste are closely related to the outcomes reporting: 1) important  
290 outcomes are not assessed, 2) published research fails to set the study in the  
291 context with all previous similar research and, 3) over 50% of planned study  
292 outcomes are not reported [66].

293 The All Trials initiative has looked to ensure that all RCTs are published regardless  
294 of their findings. This hopes to eliminate publication bias from studies that are  
295 withheld from publication where there is negative or no effect demonstrated [67]. The  
296 selection of 'cherry picked' attractive results for submission without negative or  
297 inconclusive results is difficult to prove or negate without a set of core outcomes.

298 There is widespread acknowledgement that outcome reporting variation limits the  
299 usefulness of research to inform clinical practice [68]. Systematic reviews and meta-  
300 analyses are the highest quality research that can be used to implement evidenced  
301 based medicine, yet diversity in outcome reporting prohibits the combination of  
302 results for meta-analysis. This is of particular importance to health economists and  
303 funding bodies as two thirds of the annual health related disease costs for  
304 endometriosis (€9579) are attributed to loss of productivity. This is comparable to  
305 Crohns disease or Diabetes mellitus [69].

**306 Recommendation(s)**

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2 307 The selection of pre-defined appropriate outcomes within endometriosis is essential  
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4 308 to reduce bias and enhance patient care. The development and use of a collection of  
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6 309 well-defined, discriminatory, and feasible outcomes termed a core outcome set  
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9 310 would help to address these concerns [70]. These include endpoints to be reported  
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11 311 as a minimum while not restricting a particular trial or systematic review to the core  
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14 312 outcome set. The Core Outcome Measures in Effectiveness Trials (COMET)  
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16 313 Initiative was launched in January 2010 to address this lack of standardized  
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19 314 outcomes through aiding the development of core outcome set. In most trials, the  
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21 315 primary outcome would be selected from the core outcome set.  
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24 316 This move towards higher quality published research is supported by CoRe  
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26 317 Outcomes in WomeN's health (CROWN) initiative, led by journal editors,  
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29 318 encouraging the publication of studies using outcomes from a core outcome set  
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32 319 where available. The implementation of core outcome sets will augment the  
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34 320 production of comparable data for improved evidence based patient care [70].  
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36 321 National and international stakeholders including the World Health Organization,  
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39 322 National Institutes of Health, and the Cochrane Collaboration are committed to  
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41 323 supporting, developing, and implementing core outcome sets.  
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44 324 This study demonstrates that reporting of outcomes following the surgical treatment  
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47 325 of endometriosis is inconsistent and requires standardization. There is no  
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49 326 internationally agreed selection of outcomes for trials and systematic reviews  
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52 327 evaluating surgical interventions for the treatment of endometriosis. The  
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54 328 development and use of core outcome sets routinely in the treatment of  
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57 329 endometriosis will improve the possibility of scientifically summarizing outcomes from  
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59 330 different studies and centers and also reduce outcome reporting bias [65]. In the  
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absence of a core outcome set for endometriosis we recommend the use of the three commonest outcomes and outcome measures to maximize the contribution to meta-analysis following trial completion (Tables 3 and 4).

## Conclusion

The variation in outcomes leads to multidirectional research that lacks comparability and threatens patient care. There is an evident need for harmonization towards patient centered clinical outcomes through the development of a core outcome set in endometriosis.

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587 **Table legends**

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608 **Table 1.** Outcome reporting in Endometriosis trials: Study Characteristics

Study	IF	Method. quality	Outcome quality	Intervention group one	Intervention group two	Intervention group three
Abbott 2004	3.17	5	4	Diagnostic laparoscopy + delayed surgical treatment	Surgical treatment + repeat surgery	
Abu Hashim 2012	1.85	5	6	Surgical treatment + superovualtion with letrozole + intrauterine insemination	Surgical treatment + superovulation with clomiphene citrate + intrauterine insemination	
Acien 2002	3.202	2	2	Surgical treatment + interferon $\alpha$ -2b	Surgical treatment + saline	
Alborzi 2004	3.17	2	5	Surgical treatment + ovarian fenestration and coagulation	Surgical treatment + ovarian cystectomy	
Alborzi 2007	3.168	2	2	Surgical Treatment + ovarian fenestration and coagulation	Surgical treatment + ovarian cystectomy	Surgical treatment + ovarian fenestration and cystectomy

Alborzi 2011	1.072	2	2	Surgical treatment + GnRHa	Surgical treatment + aromatase inhibitor	Surgical treatment
Alkatout 2013	1.575	2	2	Surgical treatment	HT	Surgical treatment + hormone therapy
Audebert 1998	0.745	2	2	Surgery treatment + GnRHa	GnRHa + Surgical treatment	
Ballester 2011	3.468	2	4	Laparoscopy + colorectal resection	Laparotomy + colorectal resection	
Beretta 1998	3.344	2	2	Surgical treatment + ovarian cystectomy	Surgical treatment + ovarian fenestration and coagulation	
Bianchi 1999	3.643	3	2	Surgical treatment + Danocrine	Surgical treatment	
Busacca 2001	2.751	3	2	Surgical treatment + GnRH agonist	Surgical treatment	

Candiani 1992	1.982	3	3	Surgical treatment + presacral neurectomy	Surgical treatment	
Cobellis 2011	1.974	5	3	Surgery treatment + Fatty acid amide	Surgical treatment + selective COX2 NSAID	Surgical treatment
Cosson 2002	3.202	3	4	Surgical treatment + Progestin	Surgical treatment + GnRHa	
Costello 2010	3.122	5	6	Surgical treatment + multimodal intraoperative analgesia	Surgical treatment + placebo	
Creus 2008	2.537	5	0	Surgical treatment + Xanthine derivative	Surgical treatment + placebo	
Darai 2010	7.474	3	5	Laparoscopy + colorectal resection	Laparotomy + colorectal resection	
Darai 2011	3.564	3	2	Laparoscopy + colorectal resection	Laparotomy + colorectal resection	

diZerega 2007	3.168	5	3	Surgical treatment + Adhesion barrier gel	Surgical treatment	
Healey 2010	3.122	5	3	Surgical treatment + ablation	Surgical treatment + excision	
Hoo 2014	3.483	5	6	Surgical treatment + ovarian suspension	Surgical treatment	
Jarrell 2005	999	5	2	Surgical treatment	Diagnostic Laparoscopy + biopsy	
Kamencic 2008	999	3	2	Surgical treatment + Xanthine derivative	Surgical treatment	
Koninckx 2013	2.03	5	6	Surgical treatment + humidified CO2 pneumoperitoneum	Surgical treatment + peritoneal full conditioning and barrier gel	
Lalchandani 2005	999	2	3	Diagnostic laparoscopy + GnRHa + HT	Surgical treatment + helium thermal coagulator	

Loverro 2008	1.565	5	2	Surgical treatment + GnRHa	Surgical treatment + placebo	
Mais 1995	999	2	5	Surgical treatment + adhesion barrier	Surgical treatment	
Marcoux 1997	27.766	5	6	Surgical treatment + ablation	Surgical treatment + excision	
Matorras 2002	3.202	2	2	Bilateral salpingo-oophrectomy + HT	Bilateral salpingo-oophrectomy	
Moini 2012	0.471	5	4	Surgical treatment	Diagnostic Laparoscopy	
Morgante 1999	3.643	2	3	Surgical treatment + GnRHa + Danocrine	Surgical treatment + GnRHa	
Nowroozi 1987	999	3	1	Surgical treatment + ablation	Diagnostic Laparoscopy	

Parazzini 1994	2.247	5	3	Surgical treatment + GnRHa	Surgical treatment	
Parazzini 1999	3.643	3	2	Surgical treatment + ablation	Surgical treatment + excision	Diagnostic Laparoscopy
Seiler 1986	999	3	0	Surgical treatment + ablation	Treatment with Danocrine	
Soysal 2004	3.072	5	4	Surgical treatment + GnRHa	Surgical treatment + GnRHa + aromatase inhibitor	
Surrey 1994	999	2	3	GIFT + Surgical treatment	GIFT	
Sutton 1994	2.464	5	3	Surgical treatment + presacral neurectomy	Diagnostic Laparoscopy	
Sutton 1997	2.612	4	2	Surgical treatment + presacral neurectomy	Diagnostic Laparoscopy	

Sutton 2001	0.63	5	2	Surgical treatment + presacral neurectomy	Surgical treatment	
Tanmahasamut 2012	4.798	5	5	Surgical treatment + Mirena IUS	Surgical treatment	
Telimaa 1988	999	4	1	Surgical treatment + Danocrine	Surgical treatment + progestin	Surgical treatment + placebo
Tsai 2004	0.778	5	2	Surgical treatment + GnRHa	Surgical treatment + Danocrine	Surgical treatment
Vercellini 1999	2.657	3	4	Surgical treatment + GnRHa	Surgical treatment	
Vercellini 2002	3.202	3	4	Surgical treatment + Progestin	Surgical treatment + COCP	
Vercellini 2003A	3.483	5	5	Surgical treatment + presacral neurectomy	Surgical treatment	



Vercellini 2003B	3.483	3	3	Surgical treatment + Mirena IUS	Surgical treatment	
Wickstrom 2012	4.542	5	3	Tubal pertubation + lidocaine	Tubal pertubation + placebo	
Wright 2005	3.114	4	2	Surgical treatment + ablation	Surgical treatment + excision	
Zhao 2013	1.401	1	2	Surgical treatment + chinese medicine	Surgical treatment + GnRHa + HT	Surgical treatment + progestin
Zhao 2013B	1.401	3	6	Surgical treatment + chinese medicine	Surgical treatment + GnRHa + HT	Surgical treatment + progestin
Zhu 2014	1.877	3	2	Surgical treatment + COCP	Surgical treatment + COCP + Chinese medicine	Surgical treatment
Zullo 2003	2.518	5	4	Surgical treatment + presacral neurectomy	Surgical treatment	

610 Abbreviations

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612 COCP – Combined oral contraceptive pill

613 COX – cyclooxygenase

614 GIFT – Gamete Intra-fallopian tube transfer

615 GnRHa – Gonadotropin releasing hormone agonist

616 HT – Hormone therapy

617 IF – Impact Factor

618 IUI – Intrauterine insemination

619 NSAID – Non-steroidal anti-inflammatory

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**Table 2.** Outcome reporting in Endometriosis trials: Outcome and outcome measures reported.

Domain	RCTs*	Outcomes	Outcome measure
Pain	37	32	24
Subfertility	32	28	11
Quality of life	9	10	10
Surgical adverse events	14	34	5
Medical adverse events	8	22	0

\*RCTs – Randomized Controlled Trials

**Table 3.** Outcome reporting in Endometriosis trials: Reported pain and fertility outcomes.

Outcome domain	Outcome	Trials (n)
Fertility outcomes	Pregnancy	26
	Miscarriage	7
	Live birth	5
	Estradiol	5
	Ectopic pregnancy	4
	Endometrial thickness	2
	Number of follicles >18mm	3
	Ampules of gonadotropin	1
	Days of stimulation	1
	Early fetal loss	1
	Embryos per cycle	1
	Follicular Stimulating Hormone	1
	Luteinizing Hormone	1
	Number of oocytes per cycle	1
	Pregnancy Interval	1
	Pregnancy subsequent cycle	1
	Reproductive outcome	1
	Singleton delivery	1
	Still birth	1
	Term delivery	2
	Twin delivery	1
	Twin pregnancy	1
	Vaginal delivery	1
Pain Outcomes	Dysmenorrhea	23
	Dyspareunia	21
	Pelvic pain	15
	Non-menstrual pelvic pain	6
	Dyschezia	6
	Overall pain	5
	Postop pain	3
	Abdominal pain	2
	Back Pain	2
	Aggregate pain	1
	Analgesia use	3
	Analgesic requirement	2
	Chest discomfort	1
	General Discomfort	1
	General pain	1
	Global intensity of pain	1
	Lateral menstrual pain	1
	Painless first stage of labor	1
	Postop opioid analgesia	1
	Rectal pain	1

Shoulder pain	1
Thigh pain	1
Voiding pain	1

**Table 4.** Outcome reporting in Endometriosis trials: Outcome measures for commonly reported outcomes.

Outcome	Outcome measure	n
Dysmenorrhea	Visual analogue scale (0-10)	8
	Visual analogue scale (0-100)	7
	Visual analogue scale (0-10 with description)	3
	Visual analogue scale (no description)	1
	Ranked ordinal scale (1 to 5)	1
	Likert scale (0-10)	3
	Questionnaire (with description)	2
	Questionnaire (ranked symptoms)	1
	Questionnaire (no description)	1
	Number of episodes	1
Pregnancy	Not specified	2
	Serum $\beta$ HCG	4
	Ultrasound (visualizing foetal heart)	4
	Ultrasound (growth scan)	2
Quality of Life	Not specified	20
	World Health Organisation Quality of Life-	1
	EuroQol-5D	1
	Short Form Health Survey 12	1
	Short Form Health Survey 36	6
	Hospital Anxiety and Depression Scale	2
	Greene Climateric Scale	1
	Blatt Kupperman Menopausal Index	1
	Sabbatsberg Sexual Rating Scale	1
	Revised Sabbatsberg Sexual Rating Scale	2
	Sexual Activity Questionnaire	1

n = number of randomized trials reporting individual outcome measure

**Table 5:** Outcome reporting in Endometriosis trials: Multiple linear regression analysis to determine factors associated with quality of outcome reporting.

Factor	Univariable		Multivariable*	
	Rho Spearman	p	$\beta$	p
Study quality+	0.379	0.010	0.325	0.038
Impact factor at publication	0.190	0.212	-	-
Journal type (specialist / generalist)**	-	0.691	-	-
Year of publication	0.294	0.050	0.067	0.040
Commercial funding**	-	0.370	-	-

+ Measurement details in methodology section

\* Based on best sub-set regression

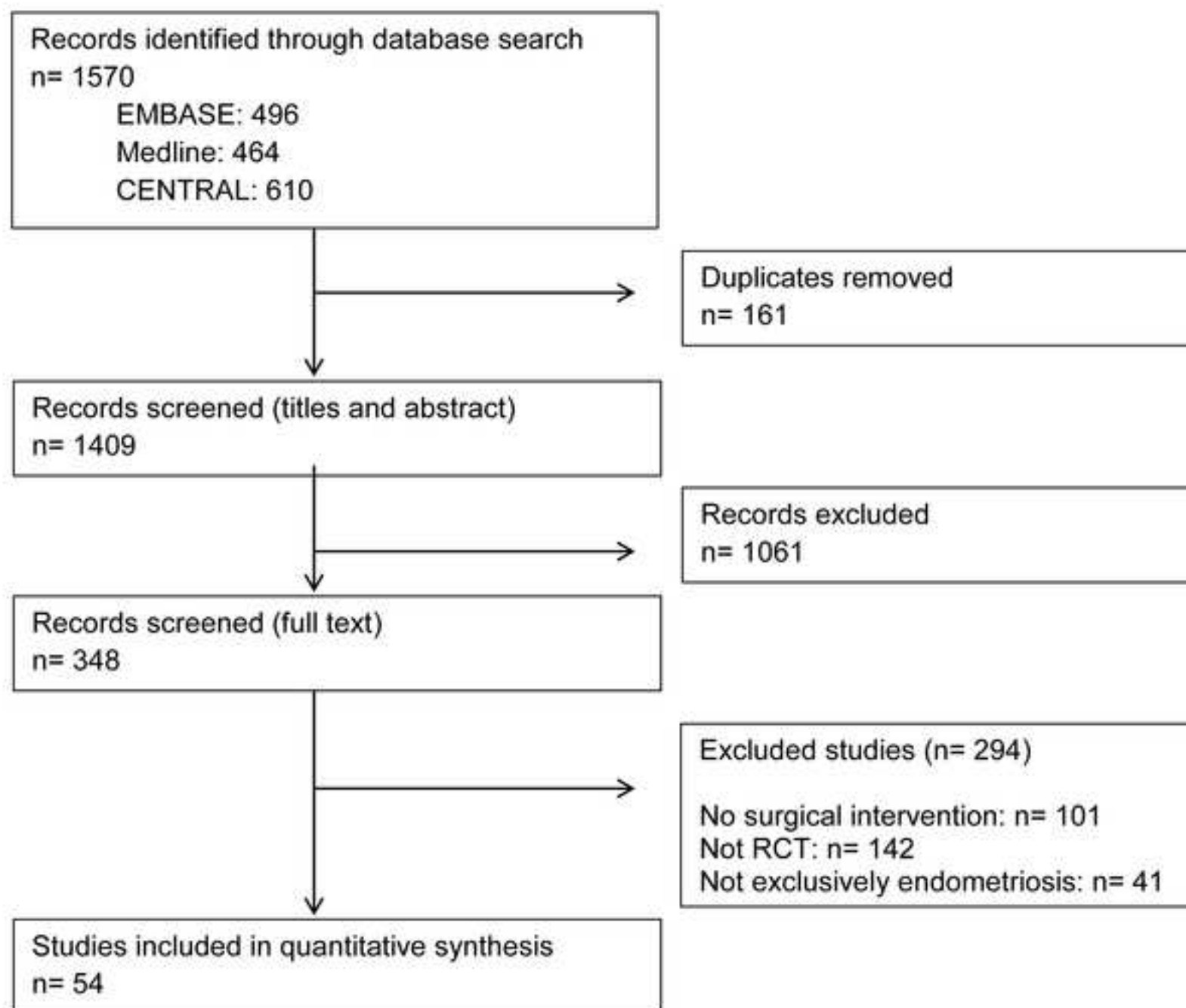
\*\* Based on Mann-Whitney test

674 **Figure Legends**

675 **Figure 1.** Outcome reporting in Endometriosis trials: Flow of included studies.

676 **Figure 2.** Outcome reporting in Endometriosis trials: Largest 25 studies listed by study size showing pain and fertility outcomes.

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**Figure 1.** Outcome reporting in Endometriosis trials: Flow of included studies.



Figure(s)  
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Figure 2. Outcome reporting in Endometriosis trials: Largest 25 studies listed by study size showing pain and fertility outcomes.

Study	Outcome	Study size (n)	Pain									Fertility									
			Triad			Other						Pregnancy outcome							ART**		
			Dyschezia	Dysmenorrhoea	Dyspareunia	Overall pain	Abdominal pain	Shoulder pain	Pelvic pain*	Thigh pain	Postoperative pain	Pregnancy	Ectopic pregnancy	Miscarriage	Twin pregnancy	Term delivery	Live birth	Still birth	Gonadotrophin use	Number of follicles	Embryos per cycle
Alkatout 2013		450		X	X		X						X	X	X						
Marcoux 1997		348												X							
Zhao 2013		320																			
Vercellini 1999		269				X									X						
Vercellini 2003A		180		X	X				X												
Healey 2010		178	X	X	X	X	X		X	X											
Zhao 2013B		176																			
Matorras 2002		172																			
Zhu 2014		158		X	X	X											X				
Moini 2012		146																			
Alborzi 2010		144		X	X				X												
Cosson 2002		142				X															
Zullo 2003		141		X	X				X												
Abu Hashim 2012		136																			
Nowroozi 1987		123						X													
Creus 2008		104																			
Parazzini 1999		101																			
Alborzi 2004		100				X															
Vercellini 2002		90		X	X				X												
Seiler 1986		90																			
Busacca 2001		89		X	X				X												
Alborzi 2007		88																	X		
Soysal 2004		80																			
Bianchi 1999		77		X					X												
Parazzini 1994		75							X												
Other studies (29)		1452	5	14	14	0	0	0	13	0	2	9	1	2	0	0	3	0	0	1	1

\*Pelvic pain = This includes non-menstrual pelvic pain    \*\*ART = Assisted reproductive technology