Supplementary Material S1: Detailed Search Strategies

PubMed/MEDLINE Search Strategy

Step 1: "Reproductive Techniques, Assisted"[Mesh] OR "Fertilization in Vitro"[Mesh] OR "Sperm Injections, Intracytoplasmic"[Mesh]

Step 2: IVF OR ICSI OR "assisted reproductive technology" OR "assisted reproductive technique*" OR "in vitro fertilization" OR "intracytoplasmic sperm injection" OR "embryo transfer"

Step 3: Step 1 OR Step 2

Step 4: "Fertility Agents"[Mesh] OR "Gonadotropins"[Mesh] OR "Follicle Stimulating Hormone"[Mesh] OR "Luteinizing Hormone"[Mesh] OR "Chorionic Gonadotropin"[Mesh] OR "Progesterone"[Mesh] OR "Gonadotropin-Releasing Hormone"[Mesh]

Step 5: "recombinant FSH" OR "human menopausal gonadotropin" OR "GnRH agonist" OR "GnRH antagonist" OR leuprolide OR buserelin OR cetrorelix OR ganirelix OR "progesterone" OR dydrogesterone OR metformin OR letrozole OR "clomiphene citrate" OR "growth hormone"

Step 6: Step 4 OR Step 5

Step 7: "Congenital Abnormalities"[Mesh] OR "Birth Defects"[Mesh] OR "Teratogens"[Mesh]

Step 8: "**congenital malformation**" OR "**birth defect**" OR "**fetal abnormalit**" OR **teratogenic** OR "**congenital anomal**" OR "**developmental toxicity**"

Step 9: Step 7 OR Step 8

Step 10: Step 3 AND Step 6 AND Step 9

Step 11: Limit to humans, English, 1990-2025

Embase Search Strategy

Step 1: 'assisted reproduction'/exp OR 'in vitro fertilization'/exp OR 'intracytoplasmic sperm injection'/expStep 2: 'IVF':ti,ab,kw (IVF: appears in the title, abstract, or keywords) OR 'ICSI':ti,ab,kw OR 'assisted reproductive technology':ti,ab,kw OR 'in vitro fertilization':ti,ab,kw

Step 3: Step 1 OR Step 2

Step 4: 'fertility promoting agent'/exp OR 'gonadotropin'/exp OR 'follitropin'/exp OR 'lutropin'/exp OR 'choriogonadotropin'/exp OR 'progesterone'/exp OR 'gonadorelin'/exp

Step 5: 'recombinant FSH':ti,ab,kw OR 'human menopausal gonadotropin':ti,ab,kw OR 'dydrogesterone':ti,ab,kw OR 'metformin':ti,ab,kw OR 'letrozole':ti,ab,kw

Step 6: Step 4 OR Step 5

Step 7: 'congenital malformation'/exp OR 'birth defect'/exp OR 'teratogen'/exp

Step 8: 'congenital malformation':ti,ab,kw OR 'birth defect':ti,ab,kw OR 'teratogenic':ti,ab,kw OR 'congenital anomaly':ti,ab,kw

Step 9: Step 7 OR Step 8

Step 10: Step 3 AND Step 6 AND Step 9

Step 11: Limit to humans, English, 1990-2025

Note on Search Strategies: These represent the primary database examples; strategies for additional databases (e.g., Cochrane CENTRAL, Web of Science, Scopus) were adapted similarly to optimize each platform's vocabulary and structure.

Risk of Bias Assessment Criteria

Cochrane RoB 2.0 Domains for RCTs

1. **Randomization Process**

- Low risk: Adequate sequence generation and allocation concealment

- Some concerns: Limited information on randomization methods

- High risk: Inadequate or absent randomization

2. **Deviations from Intended Interventions**

- Low risk: Intention-to-treat analysis with appropriate handling of deviations

- Some concerns: Some protocol deviations without sensitivity analysis

- High risk: Substantial deviations affecting results

3. **Missing Outcome Data**

- Low risk: Complete data or less than 10 percent missing with appropriate handling

- Some concerns: 10-20 percent missing without sensitivity analysis

- High risk: Greater than 20 percent missing or inadequate handling

4. Measurement of Outcome

- Low risk: Standardized definitions and blinded assessment

- Some concerns: Non-standardized assessment methods

- High risk: Biased outcome measurement

5. Selection of Reported Result

- Low risk: All pre-specified outcomes reported

- Some concerns: Limited outcome reporting

- High risk: Selective reporting evident

Newcastle-Ottawa Scale for Observational Studies

Selection (Maximum 4 stars)

- Representativeness of exposed cohort (1 star)

- Selection of non-exposed cohort (1 star)

- Ascertainment of exposure (1 star)

- Demonstration of no outcome at start (1 star)

Comparability (Maximum 2 stars)

- Comparability of cohorts on design or analysis (up to 2 stars)

Outcome (Maximum 3 stars)

- Assessment of outcome (1 star)

- Follow-up long enough for outcomes (1 star)

- Adequacy of follow-up (1 star)

Quality Categories:

- Good quality: 7-9 stars

- Fair quality: 4-6 stars

- Poor quality: Less than or equal to 3 stars