**Supplementary 1: PRISMA Flow Chart**

*From:*  Page MJ, McKenzie JE, Bossuyt PM, Boutron I, Hoffmann TC, Mulrow CD, et al. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. BMJ 2021;372:n71. doi: 10.1136/bmj.n71

For more information, visit: <http://www.prisma-statement.org/>

BMI: body mass index

**Supplementary 2: Search Terms**

**Database: MEDLINE (Search 1)**

1. maternal obes\*.mp. [mp=title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, organism supplementary concept word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms]
2. maternal weight gain.mp. [mp=title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, organism supplementary concept word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms]
3. obese mother\*.mp. [mp=title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, organism supplementary concept word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms]
4. overweight mother\*.mp. [mp=title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, organism supplementary concept word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms]
5. maternal BMI.mp. [mp=title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, organism supplementary concept word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms]
6. maternal body mass index.mp. [mp=title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, organism supplementary concept word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms]
7. maternal overweight.mp. [mp=title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, organism supplementary concept word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms]
8. Obesity, Maternal/
9. prepregnancy BMI.mp. [mp=title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, organism supplementary concept word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms]
10. prepregnancy body mass index.mp. [mp=title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, organism supplementary concept word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms]
11. (maternal adj1 body mass index).mp. [mp=title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, organism supplementary concept word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms]
12. exp Pregnancy Complications/
13. Pregnancy Outcome/
14. adverse birth outcome\*.mp. [mp=title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, organism supplementary concept word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms]
15. adverse maternal outcome\*.mp. [mp=title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, organism supplementary concept word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms]
16. 12 or 13 or 14 or 15
17. 1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11
18. normal BMI.mp. [mp=title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, organism supplementary concept word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms]
19. normal weight.mp. [mp=title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, organism supplementary concept word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms]
20. healthy BMI.mp. [mp=title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, organism supplementary concept word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms]
21. healthy body mass index.mp. [mp=title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, organism supplementary concept word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms]
22. normal body mass index.mp. [mp=title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, organism supplementary concept word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms]
23. healthy weight.mp. [mp=title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, organism supplementary concept word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms]
24. ideal body weight.mp. [mp=title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, organism supplementary concept word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms]
25. Ideal Body Weight/
26. normal body weight.mp.
27. 18 or 19 or 20 or 21 or 22 or 23 or 24 or 25 or 26
28. 16 and 17 and 27
29. exp animals/ not humans.mp. [mp=title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, organism supplementary concept word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms]
30. 28 not 29

**Database: MEDLINE (Search 2) (Neural Tube Defect):**

1. maternal obes\*.mp. [mp=title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, organism supplementary concept word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms]
2. maternal weight gain.mp. [mp=title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, organism supplementary concept word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms]
3. obese mother\*.mp. [mp=title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, organism supplementary concept word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms]
4. overweight mother\*.mp. [mp=title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, organism supplementary concept word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms]
5. maternal BMI.mp. [mp=title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, organism supplementary concept word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms]
6. maternal body mass index.mp. [mp=title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, organism supplementary concept word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms]
7. maternal overweight.mp. [mp=title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, organism supplementary concept word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms]
8. Obesity, Maternal/
9. prepregnancy BMI.mp. [mp=title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, organism supplementary concept word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms]
10. prepregnancy body mass index.mp. [mp=title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, organism supplementary concept word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms]
11. (maternal adj1 body mass index).mp. [mp=title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, organism supplementary concept word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms]
12. 1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11
13. exp Congenital Abnormalities/
14. exp Neural Tube Defects/
15. congenital defect\*.mp. [mp=title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, organism supplementary concept word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms]
16. birth defect\*.mp. [mp=title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, organism supplementary concept word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms]
17. congenital malformation\*.mp. [mp=title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, organism supplementary concept word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms]
18. congenital abnormalit\*.mp. [mp=title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, organism supplementary concept word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms]
19. birth abnormalit\*.mp. [mp=title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, organism supplementary concept word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms]
20. NTD\*.mp. [mp=title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, organism supplementary concept word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms]
21. neural tube defect\*.mp. [mp=title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, organism supplementary concept word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms]
22. 13 or 14 or 15 or 16 or 17 or 18 or 19 or 20 or 21
23. 12 and 22

**Database: EMBASE (Search 1)**

1. maternal obes\*.mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword, floating subheading word, candidate term word]
2. maternal weight gain.mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword, floating subheading word, candidate term word]
3. obese mother\*.mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword, floating subheading word, candidate term word]
4. overweight mother\*.mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword, floating subheading word, candidate term word]
5. maternal BMI.mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword, floating subheading word, candidate term word]
6. maternal body mass index.mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword, floating subheading word, candidate term word]
7. maternal overweight.mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword, floating subheading word, candidate term word]
8. prepregnancy BMI.mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword, floating subheading word, candidate term word]
9. prepregnancy body mass index.mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword, floating subheading word, candidate term word]
10. (maternal adj1 body mass index).mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword, floating subheading word, candidate term word]
11. exp Pregnancy Complications/
12. Pregnancy Outcome/
13. adverse birth outcome\*.mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword, floating subheading word, candidate term word]
14. adverse maternal outcome\*.mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword, floating subheading word, candidate term word]
15. 11 or 12 or 13 or 14
16. maternal obesity/
17. normal BMI.mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword, floating subheading word, candidate term word]
18. normal weight.mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword, floating subheading word, candidate term word]
19. healthy BMI.mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword, floating subheading word, candidate term word]
20. healthy body mass index.mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword, floating subheading word, candidate term word]
21. normal body mass index.mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword, floating subheading word, candidate term word]
22. healthy weight.mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword, floating subheading word, candidate term word]
23. ideal body weight.mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword, floating subheading word, candidate term word]
24. Ideal Body Weight/
25. normal body weight.mp.
26. 17 or 18 or 19 or 20 or 21 or 22 or 23 or 24 or 25
27. (exp animal/ or nonhuman/) not exp human/
28. obes\*.mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword, floating subheading word, candidate term word]
29. obesity/
30. 1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10 or 16 or 28 or 29
31. 15 and 26 and 30
32. 31 not 27

**Database: MEDLINE (Search 2) (Neural Tube Defect):**

1. maternal obes\*.mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword, floating subheading word, candidate term word]
2. maternal weight gain.mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword, floating subheading word, candidate term word]
3. obese mother\*.mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword, floating subheading word, candidate term word]
4. overweight mother\*.mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword, floating subheading word, candidate term word]
5. maternal BMI.mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword, floating subheading word, candidate term word]
6. maternal body mass index.mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword, floating subheading word, candidate term word]
7. maternal overweight.mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword, floating subheading word, candidate term word]
8. prepregnancy BMI.mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword, floating subheading word, candidate term word]
9. prepregnancy body mass index.mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword, floating subheading word, candidate term word]
10. (maternal adj1 body mass index).mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword, floating subheading word, candidate term word]
11. maternal obesity/
12. 1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11
13. exp neural tube defect/
14. exp congenital malformation/
15. neural tube defect\*.mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword, floating subheading word, candidate term word]
16. NTD\*.mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword, floating subheading word, candidate term word]
17. birth defect\*.mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword, floating subheading word, candidate term word]
18. congenital malformation\*.mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword, floating subheading word, candidate term word]
19. congenital defect\*.mp. [mp=title, abstract, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword, floating subheading word, candidate term word]
20. 13 or 14 or 15 or 16 or 17 or 18 or 19
21. 12 and 20
22. (exp animal/ or nonhuman/) not exp human/
23. 21 not 22

**Database: Global Health (Search 1):**

1. maternal obes\*.mp. [mp=abstract, title, original title, broad terms, heading words, identifiers, cabicodes]
2. maternal weight gain.mp. [mp=abstract, title, original title, broad terms, heading words, identifiers, cabicodes]
3. obese mother\*.mp. [mp=abstract, title, original title, broad terms, heading words, identifiers, cabicodes]
4. overweight mother\*.mp. [mp=abstract, title, original title, broad terms, heading words, identifiers, cabicodes]
5. maternal BMI.mp. [mp=abstract, title, original title, broad terms, heading words, identifiers, cabicodes]
6. maternal body mass index.mp. [mp=abstract, title, original title, broad terms, heading words, identifiers, cabicodes]
7. maternal overweight.mp. [mp=abstract, title, original title, broad terms, heading words, identifiers, cabicodes]
8. prepregnancy BMI.mp. [mp=abstract, title, original title, broad terms, heading words, identifiers, cabicodes]
9. prepregnancy body mass index.mp. [mp=abstract, title, original title, broad terms, heading words, identifiers, cabicodes]
10. (maternal adj1 body mass index).mp. [mp=abstract, title, original title, broad terms, heading words, identifiers, cabicodes]
11. adverse birth outcome.mp. [mp=abstract, title, original title, broad terms, heading words, identifiers, cabicodes]
12. adverse maternal outcome.mp. [mp=abstract, title, original title, broad terms, heading words, identifiers, cabicodes]
13. exp pregnancy complications/
14. 1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10
15. 11 or 12 or 13
16. 14 and 15

**Database: Global Health (Search 2) (Neural Tube Defect):**

1. maternal obes\*.mp. [mp=abstract, title, original title, broad terms, heading words, identifiers, cabicodes]
2. maternal weight gain.mp. [mp=abstract, title, original title, broad terms, heading words, identifiers, cabicodes]
3. obese mother\*.mp. [mp=abstract, title, original title, broad terms, heading words, identifiers, cabicodes]
4. overweight mother\*.mp. [mp=abstract, title, original title, broad terms, heading words, identifiers, cabicodes]
5. maternal BMI.mp. [mp=abstract, title, original title, broad terms, heading words, identifiers, cabicodes]
6. maternal body mass index.mp. [mp=abstract, title, original title, broad terms, heading words, identifiers, cabicodes]
7. maternal overweight.mp. [mp=abstract, title, original title, broad terms, heading words, identifiers, cabicodes]
8. prepregnancy BMI.mp. [mp=abstract, title, original title, broad terms, heading words, identifiers, cabicodes]
9. prepregnancy body mass index.mp. [mp=abstract, title, original title, broad terms, heading words, identifiers, cabicodes]
10. (maternal adj1 body mass index).mp. [mp=abstract, title, original title, broad terms, heading words, identifiers, cabicodes]
11. 1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10
12. congenital malformation\*.mp. [mp=abstract, title, original title, broad terms, heading words, identifiers, cabicodes]
13. congenital defect\*.mp. [mp=abstract, title, original title, broad terms, heading words, identifiers, cabicodes]
14. birth defect\*.mp. [mp=abstract, title, original title, broad terms, heading words, identifiers, cabicodes]
15. exp congenital abnormalities/
16. neural tube defect\*.mp. [mp=abstract, title, original title, broad terms, heading words, identifiers, cabicodes]
17. NTD\*.mp. [mp=abstract, title, original title, broad terms, heading words, identifiers, cabicodes]
18. 12 or 13 or 14 or 15 or 16 or 17
19. 11 and 18

**Database: Maternity & Infant Care (Search 1):**

1. maternal obes\*.mp. [mp=abstract, heading word, title]
2. maternal weight gain.mp. [mp=abstract, heading word, title]
3. obese mother\*.mp. [mp=abstract, heading word, title]
4. overweight mother\*.mp. [mp=abstract, heading word, title]
5. maternal BMI.mp. [mp=abstract, heading word, title]
6. maternal body mass index.mp. [mp=abstract, heading word, title]
7. maternal overweight.mp. [mp=abstract, heading word, title]
8. prepregnancy BMI.mp. [mp=abstract, heading word, title] (370)
9. prepregnancy body mass index.mp. [mp=abstract, heading word, title]
10. (maternal adj1 body mass index).mp. [mp=abstract, heading word, title]
11. Pregnancy complications.de.
12. Pregnancy outcome.de.
13. adverse birth outcome.mp. [mp=abstract, heading word, title]
14. adverse maternal outcome.mp. [mp=abstract, heading word, title]
15. 11 or 12 or 13 or 14
16. ("Weight gain (maternal)" or Prepregnancy weight).de.
17. 1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10 or 16
18. 15 and 17

**Database: Maternity & Infant Care (Search 2) (Neural Tube Defects):**

1. maternal obes\*.mp. [mp=abstract, heading word, title]
2. maternal weight gain.mp. [mp=abstract, heading word, title]
3. obese mother\*.mp. [mp=abstract, heading word, title]
4. overweight mother\*.mp. [mp=abstract, heading word, title]
5. maternal BMI.mp. [mp=abstract, heading word, title]
6. maternal body mass index.mp. [mp=abstract, heading word, title]
7. maternal overweight.mp. [mp=abstract, heading word, title]
8. prepregnancy BMI.mp. [mp=abstract, heading word, title] (370)
9. prepregnancy body mass index.mp. [mp=abstract, heading word, title]
10. (maternal adj1 body mass index).mp. [mp=abstract, heading word, title]
11. 1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10
12. neural tube defect\*.mp. [mp=abstract, heading word, title]
13. NTD\*.mp. [mp=abstract, heading word, title]
14. Neural tube defects.de.
15. congenital defect\*.mp. [mp=abstract, heading word, title]
16. birth defect\*.mp. [mp=abstract, heading word, title]
17. (Abnormalities or Birth defects).de.
18. congenital malformation\*.mp. [mp=abstract, heading word, title]
19. 12 or 13 or 14 or 15 or 16 or 17 or 18
20. 11 and 19

**Supplementary 3: Inclusion and Exclusion Criteria for Meta-Analysis**

**Table 1:** Inclusion and Exclusion Criteria for Meta-Analysis

|  |  |
| --- | --- |
| **Inclusion Criteria** | **Exclusion Criteria** |
| Pre-pregnancy BMI  | BMI is measured at ≥16 weeks of gestation/ Studies do not explicitly define the timing of when maternal BMI was measured |
| Studies assessing ≥1 of the following maternal outcomes: * Preterm delivery
* Gestational hypertension
* Gestational diabetes
* Caesarean Section
* Pre-eclampsia
 | Studies including pregnancies using assisted reproductive technology (e.g. IVF)  |
| Studies assessing ≥1 of the following infant outcomes: * Small-for-gestational-age
* Large-for-gestational-age
* Low birthweight
* Macrosomia
* Stillbirths
 | Pregnant populations with specific co-morbidities  |
| Studies assessing neural tube defects | Adolescent pregnancies |
| Cohort Studies | Reviews/Meta-analysis/Cross-Sectional/Case-Control studies |
| Studies using International WHO BMI classification\* | Studies that did not provide raw values for the outcome |
| Written in English/Translation available  | Studies evaluating mothers with multiple gestations |
| Any year of publication |  |
| Any country of origin  |  |

BMI: body mass index; IVF: in-vitro fertilization, WHO: World Health Organization

\*Studies assessing neural tube defects were exempt from this inclusion criterion

**Supplementary 4: Studies included in the Meta-Analysis of Maternal Obesity and Adverse Pregnancy Outcomes**

| **Study ID** | **Study type** | **Location** | **Sample Size** | **Participant age** | **BMI measurement** | **Gestational age** | **Newcastle-Ottawa Assessment Score (/9)** |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Normal BMI** | **Obese BMI** |
| Al-Hakmani 2016 | Prospective cohort  | Oman | 245 | 238 | Normal-27.2Obese-30.1 | ≤12 week of gestation | n/a | 6 |
| Anzaku 2015 | Prospective cohort  | Nigeria | 324 | 324 | 30 | ≤12 weeks of gestation | Normal-39.1Obese-38.9 | 6 |
| Avci 2015 | Retrospective cohort | Turkey | 542 | 103 | Normal-25.9Obese-30.5 | Pre-pregnancy | n/a | 6 |
| Blomberg 2009 | Retrospective cohort | Sweden | 660493 | 106612 | n/a | ≤12 weeks of gestation | n/a | 7 |
| Denison 2013 | Retrospective cohort  | Scotland | 61232 | 24354 | Normal-28.7Obese-29.6 | ≤16 weeks of gestation | n/a | 8 |
| Doi 2018 | Retrospective cohort  | Scotland | 71538 | 25173 | n/a | ≤12 weeks of gestation | n/a | 8 |
| Druil 2008 | Retrospective cohort  | Italy | 533 | 51 | 31.2 | Pre-pregnancy | 38.4 | 8 |
| El-Gillany 2010 | Prospective cohort  | Saudi Arabia | 307 | 226 | Normal-25.9Obese-30.7 | ≤12 weeks of gestation | n/a | 6 |
| Enomoto 2016 | Retrospective cohort  | Japan | 69126 | 2805 | Normal-32.0Obese-32.0 | Pre-pregnancy | Normal-38.4Obese-38.2 | 7 |
| Hauger 2008 | Retrospective cohort  | Argentina | 31286 | 3864 | n/a | Pre-pregnancy | n/a | 8 |
| Hung 2016 | Retrospective cohort  | Taiwan | 9021 | 267 | n/a | Pre-pregnancy | n/a | 6 |
| Kallen 1998 | Retrospective cohort | Sweden | 511894 | 32678 | n/a | Pre-pregnancy | n/a | 7 |
| Jensen 2003 | Retrospective cohort  | Denmark | 1094 | 637 | Normal -31Obese-39.6 | Pre-pregnancy | n/a | 6 |
| Khashan 2009 | Retrospective cohort | United Kingdom | 50,448 | 17832 | Normal-27.4Obese-28.8 | ≤16 weeks of gestation | n/a | 8 |
| McIntyre 2012 | Retrospective cohort | Australia | 45918 | 8996 | Normal-30.5Obese-30.5 | 12-16 weeks of gestation | n/a | 6 |
| Melchor 2019 | Retrospective cohort | Spain | 9778 | 2207 | Normal-33.8Obese-34.1 | 6-10 weeks of gestation | Normal-39.1Obese-39.1 | 7 |
| Moore2000 | Retrospective cohort | United States of America | 20977 | 1974 | n/a | Pre-pregnancy | n/a | 6 |
| Ovesen 2011 | Retrospective cohort | Denmark | 233,160 | 43161 | Normal-30.8Obese-30.6 | Pre-pregnancy | n/a | 7 |
| Simko 2019 | Retrospective cohort | Slovakia | 5400 | 358 | n/a | ≤12 weeks of gestation | n/a | 8 |
| Soltani 2017 | Retrospective cohort | Indonesia  | 344 | 6 | n/a | Pre-pregnancy | Normal-39.2Obese-40.3 | 6 |
| Toma 2017 | Retrospective cohort | Japan | 6801 | 207 | Normal-32.6Obese-32.6 | Pre-pregnancy | n/a | 6 |
| Vaswani 2013 | Retrospective cohort | UAE | 420 | 930 | Normal-32.6Obese-32.6 | Early pregnancy | n/a | 6 |
| Vinturache 2015 | Prospective cohort | Canada | 1313 | 211 | Normal-31Obese-30.5 | Pre-pregnancy | n/a | 5 |
| Zhang 2019 | Retrospective cohort | China | 152230 | 1027 | n/a | ≤12 weeks of gestation | n/a | 7 |
| Zutshi 2018 | Retrospective cohort | Oman | 912 | 901 | n/a | ≤12 weeks of gestation | n/a | 5 |

n/a: not available

**Supplementary 5: Forest Plots for each adverse pregnancy outcome from the meta-Analysis**

**Preterm Delivery**



**Gestational Hypertension**



**Gestational Diabetes Mellitus**



**Pre-eclampsia**



**Caesarean Section**



**Post-Partum Haemorrhage**



**Small-for-gestational-age infants**



**Large-for-gestational-age infants**



**Stillbirths**



**Low birthweight**



**Macrosomia**

****

**Neonatal Deaths**

****

**Neural tube defects**

****