**Supplementary Appendix**

Supplement to: Syngelaki A,Sequeira M, Roberge S,Andrade W, Nicolaides KH. Diet and exercise for preeclampsia prevention in overweight and obese pregnant women: systematic review and meta-analysis.

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**Supplementary Figure 1.** Funnel plot of trials of intervention vs. control on the risk of hypertensive disorders. The risk ratios are plotted against the standard error (Log risk ratio).

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**Supplementary Figure 2.** Forest plots of the risk of hypertensive disorders: comparison between interventions vs. control groups.

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**Supplementary Figure 3.** Forest plots of gestational weight gain: comparison between interventions vs. control groups.

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**Supplementary Figure 4.** Meta-regression on the association of gestational weight gain and the risk of preeclampsia (right) and hypertensive disorders (left).



**Supplementary Table 1.** Characteristics of the included trials.

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| --- | --- | --- | --- | --- | --- |
| **Author** | **Inclusion criteria** | **Exclusion criteria** | **Intervention** | **1ry outcome** | **Definitions** |
| Rae *et al.,*2000 | BMI >25 kg/m2GA 8-35 weeks GDM | Not reported | Diet: instruction on energy restricted diabetic diet. | Need for insulin therapy | PE: definition not givenGWG: weight difference between randomization and delivery. |
| Polley *et al.,* 2002 | Age >18 yearsBMI >25 kg/m2GA <20 weeks Singleton pregnancy  | Chronic medical disorders, previous pregnancy complications, drug abuse. | Diet: written and oral information on appropriate weight gain, healthy eating and exercise during pregnancy. Weight was measured in each visit and if above the recommended level further advice was given. | GWG | PE: definition not givenGH: definition not givenGWG: weight difference between self-reported pre-pregnancy weight and measured at last visit before delivery. |
| Wolff *et al.,*2008 | Age 18-45 yearsBMI >30 kg/m2 GA <16 weeksSingleton pregnancyCaucasian race | Medical conditions affecting fetal growth or contraindicate limitation of weight gain, smoking. | Diet: 10 consultations with dietitian. | GWG | PE: definition not givenGH: definition not givenGWG: weight difference between self-reported pre-pregnancy weight and measured at delivery. |
| Thornton *et al.,*2009 | BMI >30 kg/m2GA 12-18 weeksSingleton pregnancy  | Chronic medical disorders. | Diet: prescription of nutritional regimen and asked to record daily food consumption. | Perinataloutcome | PE: definition not givenGH: definition not givenGWG: weight difference between randomization and delivery. |
| Guelinckx *et al.,*2010 | BMI >29 kg/m2GA <15 weeksSingleton pregnancy | Chronic medical disorder, GDM. | Diet: 3 group sessions with nutritionist. | GWG | PE: BP >140/90 mmHg >20 weeks and proteinuria.GH: BP >140/90 mmHg >20 weeks without proteinuria.GWG: weight difference between self-reported pre-pregnancy weight and measured at delivery. |
| Phelan *et al.,*2011 | Age >18yBMI >25 kg/m2GA 10-16weeksSingleton pregnancy | Chronic medical disorders, weight loss during pregnancy, history of 3 miscarriages, smoking. | Diet: 1 consultation with an interventionist to discuss appropriate weight gain, physical activity and calorie goals. 3 phone calls with dietician. Weekly emails to prompt healthy eating and exercise habits. | GWG | PE: definition not givenGH: definition not givenGWG: weight difference between self-reported pre-pregnancy weight and measured at last visit before delivery. |
| Vinter *et al.,*2011 | Age 18-40 years BMI 30-45 kg/m2GA 10-14 weeks  | Chronic medical disorders, previous pregnancy complications | Diet and exercise: 4 sessions with dietitian, weekly exercise classes with physiotherapists for 6 months, 4-6 group sessions with physiotherapist to improve integration of physical activities in daily life. | GWG | PE: BP >140/90 mmHg on >1 occasion plus proteinuria.GH: BP >140/90 mmHg on >1 occasion without proteinuria.GWG: weight difference between first prenatal visit and last visit before delivery |
| Bogaerts *et al.,*2012 | BMI >29 kg/m2GA <15 weeksSingleton pregnancy Dutch speaking | Diabetes, primary need for nutritional advice.  | Diet: 4 lifestyle intervention sessions to raise awareness on healthy eating and physical activity.  | GWG | PE: BP >140/90 mmHg on >1 occasion >20 weeks’ gestation plus proteinuria.GH: BP >140/90 mmHg on >1 occasion >20 weeks’ gestation without proteinuria.GWG: weight difference between self-reported pre-pregnancy weight and measured at delivery. |
| Ruiz *et al.,*2013 | BMI >25 kg/m2GA 5-6 weeksSingleton pregnancy  | Contraindication to exercise, complicated pregnancies, high risk of preterm delivery | Exercise: structured, supervised, intervention program 3 days per week.  | GWG | HD: definition not givenGWG: weight difference between first prenatal visit and last visit before delivery |
| Dodd *et al.,*2014 | BMI >25 kg/m2GA 10-20 weeksSingleton pregnancy | Diabetes | Diet: 6 consultations with dietitian or research assistants. | BW >90th percentile | PE: BP >140/90 mmHg on >1 occasion >20 weeks’ gestation plus proteinuria or renal insufficiency, liver disease, neurological problems, hematological disturbance or fetal growth restriction.GH: BP >140/90 mmHg on >1 occasion >20 weeks’ gestation.GWG: weight difference between first prenatal visit and last visit before delivery |
| Pertrella *et al.,*2014 | Age >18 yearsBMI >25 kg/m2GA 12-13 weeksSingleton pregnancy | Chronic medical disorders, previous GDM, smoking, bariatric surgery, women who just engaged in regular physical activity, dietary supplements or herbal products. | Diet: 1 consultation with dietician.  | GWG | HD: definition not givenGWG: weight difference between randomization and delivery |
| Renault *et al.,*2014 | Age >18 years BMI >30 kg/m2 GA <16weeks Singleton pregnancy  | Diabetes, diseases limiting level of physical activity, bariatric surgery, alcohol or drug abuse, fetal defect. | Diet: consultations with dietitian every 2 weeks. | GWG | PE: BP >140/90 mmHg on >1 occasion >20 weeks’ gestation plus proteinuria.GH: BP >140/90 mmHg on >1 occasion >20 weeks’ gestation without proteinuria.GWG: weight difference between self-reported pre-pregnancy weight and measured at 36-37 weeks’ gestation. |
| Vesco *et al.,*2014 | Age >18 yearsBMI >30 kg/m2GA <21 weeks | Medical conditions requiring specialized nutritional care | Diet: 2-individual and 16 group sessions with dietician for dietary and exercise recommendations. | GWG | HD: definition not givenGWG: weight difference between randomization and 34 weeks’ gestation |
| Bisson *et al.,*2015 | Age >18 years, BMI >30 kg/m2GA <15 weeksSingleton pregnancy | Diabetes, chronic hypertension | Exercise: 1 supervised and 2 unsupervised sessions per week for 12 weeks.  | Time spent at physical activity at 36 weeks’ gestation | HD: definition not givenGWG: weight difference between 14 and 36 weeks’ gestation  |
| Poston *et al.,*2015 | Age >16years BMI >30 kg/m2GA 15-18 weeks Singleton pregnancy | Chronic medical disorders, taking metformin | Diet: 1 session per week for 8 weeks with health trainer.  | GDM | PE: BP >140/90 mmHg on >1 occasion plus proteinuria.GWG: definition not given |
| Seneviratne *et al.,*2015 | Age 18-40 yearsBMI ≥25 kg/m2GA <20 weeks Singleton pregnancy  | Smoking, contraindications to antenatal exercise. | Exercise: home-based structured programme utilising magnetic stationary bicycles from 20 to 35 weeks’ gestation for 3-5 times per week. Participants were visited at home at the beginning of the intervention by an exercise physiologist.  | BW | PE: BP >140/90 mmHg on >1 occasion >20 weeks’ gestation plus proteinuria.GH: BP >140/90 mmHg on >1 occasion >20 weeks’ gestation without proteinuria.GWG: weight difference between first prenatal visit and last visit before delivery. |
| Bruno *et al.,*2016 | Age >18 years BMI ≥25 kg/m2GA 9-12 weeksSingleton pregnancy  | Smoking, bariatric surgery, previous GDM, medical disorders limiting physical activity, dietary supplements that might affect body weight.  | Diet: 1 consultation with dietician.  | GDM | HD: definition not given |
| Garnaes *et al.,*2016 | BMI ≥28 kg/m2GA <18 weeks Singleton pregnancy | High risk for preterm delivery, diseases that could interfere with participation, exercise training (> 2 per week) in the period before randomisation. | Exercise: 3 supervised and 1 unsupervised sessions per week.  | GWG | HD: definition not givenGWG: weight difference between randomization and delivery. |
| McCarthy *et al.,*2016 | Age >18 years BMI >25 kg/m2 GA <20 weeksSingleton pregnancy English speaking | Diabetes, major fetal defect. | Diet: 1 consultation with midwife who provided simple dietary advice, target weight gain of 5–9 kg and encouraged serial self-weighing and recording. | Perinataloutcome | PE: BP >140/90 mmHg >20 weeks’ gestation plus proteinuria or renal insufficiency, liver disease, neurological problems, hematological disturbance, pulmonary edema, abruption or fetal growth restriction.GH: BP >140/90 mmHg >20 weeks’ gestation. |
| Barakat *et al.,*2017 | GA 9-11 weeksBMI >25 kg/m2 Singleton pregnancy | Diseases limiting level of physical activity, diabetes, GDM, history or risk of preterm delivery. | Exercise: 3 supervised sessions per week. | HD | HD: BP >140/90 mmHg on >1 occasion >20 weeks’ gestation with or without proteinuria. |
| Peaceman *et al.,*2017 | BMI 25-40 kg/m2GA <16 weeksSingleton pregnancy | Diabetes, bariatric surgery, IVF conception. | Diet: individualized dietitian-prescribed diet, physical activity, internet-based self-monitoring of diet adherence, and weekly coaching calls, with opportunities for group visits, webinars, and podcasts.  | GWG | HD: definition not givenGWG: Weight difference between randomisation and 36 weeks’ gestation.  |
| Peccei et al.,2017 | Age 18-49 yearsBMI 25-40 kg/m2GA <16 weeksSingleton pregnancy | Diabetes, history of eating disorders. | Diet: consultations with dietitian every 2 weeks throughout pregnancy. | GWG | PE: definition not givenGH: definition not givenGWG: Weight difference between randomization and last visit before delivery. |
| Wang *et al.,*2017 | Age >18 yearsBMI >24 kg/m2GA <13 weeks Singleton pregnancy  | Smoking, history of cervical insufficiency, medications for serious medical disorders, taking metformin or corticosteroids. | Exercise: supervised cycling program >3 sessions per week.  | GDM | PE: BP >140/90 mmHg >20 weeks’ gestation plus proteinuria or renal insufficiency, liver disease, neurological problems, hematological disturbance, or pulmonary edema.GH: BP >140/90 mmHg >20 weeks’ gestation.GWG: definition not given |

BMI = body mass index; GA = gestational age; GDM = gestational diabetes mellitus; GWG = gestational weight gain; PE = preeclampsia; GH = gestational hypertension; HD = hypertensive disorder; BW = birth weight; BP = blood pressure.