Supplemental Material 1

### Summary of keywords used

| Exposure | Outcome – Preterm birth | Outcome – Birth size |
|----------|-------------------------|----------------------|
| Diet* pattern* | Gestation* age | Birthweight |
| Eat* pattern* | Gestation* time | Birth weight |
| Diet* guideline* | Gestation* length | Neonat* weight |
| Diet* adhere* | Gestation* duration | Newborn weight |
| Diet* complian* | Prematur* deliver* | Weight at birth |
| Nutrition* adher* | Preterm birth* | SGA |
| Nutrition* complian* | Preterm deliver* | LGA |
| Diet* score* | | Macrosomi* |
| Diet* qualit* | | Newborn overweight |
| Diet* index* | | Neonat* overweight |
| Diet* indices | | Growth restriction |
| Diet* habit | | Growth retardation |
| Mediterranean diet* | | Intrauterine growth |
| Mediterranean style diet* | | IUGR |
| Mediterranean type diet* | | Fetal growth |
| Healthy eating index | | Birth size |
| New Nordic diet* | | Birth outcome* |
| Dietary approaches to stop hypertension | | Obstetric* outcome* |
| DASH diet* | | Pregnan* outcome* |

### Search strategy in Medline (via OvidSP):

("diet* pattern*" OR "eating pattern*" OR "diet* guideline*" OR "diet* adherence" OR "diet* compliance" OR "nutrition* adherence" OR "nutritional compliance" OR "diet* score*" OR "diet* quality" OR "diet* index*" OR "diet* indices" OR "diet* habit*" OR "mediterranean diet*" OR "mediterranean style diet*" OR "mediterranean type diet*" OR "healthy eating index" OR "new nordic diet*" OR "dash diet*" OR "dietary approaches to stop hypertension") AND ("premature delivery" OR "preterm birth*" OR "preterm delivery" OR "gestation* age" OR "gestation* time" OR "gestation* length" OR "gestation* duration" OR "birth weight" OR "birthweight" OR "neonatal weight" OR "neonate weight" OR "newborn weight" OR "weight at birth" OR "SGA" OR "LGA" OR "macrosomi*" OR "newborn overweight" OR "neonatal overweight" OR "growth restriction" OR "growth retardation" OR "intrauterine growth" OR "IUGR" OR "fetal growth" OR "birth size*" OR "birth outcome*" OR "obstetric* outcome*" OR "pregnancy outcome*")

### Search strategy in Embase:
Supplementary data

'diet* pattern*' OR 'eat* pattern*' OR 'diet* guideline*' OR 'diet* adhere*' OR 'diet* complian*'
OR 'nutrition* adhere*' OR 'nutrition* complian*' OR 'diet* score*' OR 'diet* quality*' OR 'diet* index*' OR 'diet* indices' OR 'diet* habit*' OR 'mediterranean diet*' OR 'mediterranean style diet*' OR 'mediterranean-type diet*' OR 'healthy eating index/exp OR 'healthy eating index' OR 'new nordic diet*' OR 'dash diet*' OR 'dietary approaches to stop hypertension/exp OR 'dietary approaches to stop hypertension' AND ('prematur* deliver*' OR 'preterm birth*' OR 'preterm deliver*' OR 'gestation* age' OR 'gestation* time' OR 'gestation* length' OR 'gestation* duration' OR 'birth weight'/exp OR 'birth weight' OR 'birthweight'/exp OR 'birthweight' OR 'neonat* weight' OR 'newborn weight'/exp OR 'newborn weight' OR 'weight at birth' OR 'sga' OR 'lga' OR 'macrosomi*' OR 'newborn overweight'/exp OR 'newborn overweight' OR 'neonat* overweight' OR 'growth restriction' OR 'growth retardation'/exp OR 'growth retardation' OR 'intrauterine growth'/exp OR 'intrauterine growth' OR 'iugr' OR 'fetal growth'/exp OR 'fetal growth' OR 'birth size*' OR 'birth outcome*' OR 'obstetric* outcome*' OR 'pregnan* outcome*')

Search strategy in CINAHL (via EBSCO) and CENTRAL:

('diet* pattern*' OR 'eat* pattern*' OR 'diet* guideline*' OR 'diet* adhere*' OR 'diet* complian*'
OR 'nutrition* adhere*' OR 'nutrition* complian*' OR 'diet* score*' OR 'diet* quality*' OR 'diet* index*' OR 'diet* indices' OR 'diet* habit*' OR 'mediterranean diet*' OR 'mediterranean style diet*' OR 'mediterranean-type diet*' OR 'healthy eating index' OR 'new nordic diet*' OR 'dash diet*' OR 'dietary approaches to stop hypertension') AND ('prematur* deliver*' OR 'preterm birth*' OR 'preterm deliver*' OR 'gestation* age' OR 'gestation* time' OR 'gestation* length' OR 'gestation* duration' OR 'birth weight'/exp OR 'birth weight' OR 'birthweight'/exp OR 'birthweight' OR 'neonat* weight' OR 'newborn weight'/exp OR 'newborn weight' OR 'weight at birth' OR 'sga' OR 'lga' OR 'macrosomi*' OR 'newborn overweight'/exp OR 'newborn overweight' OR 'neonat* overweight' OR 'growth restriction' OR 'growth retardation'/exp OR 'growth retardation' OR 'intrauterine growth'/exp OR 'intrauterine growth' OR 'iugr' OR 'fetal growth'/exp OR 'fetal growth' OR 'birth size*' OR 'birth outcome*' OR 'obstetric* outcome*' OR 'pregnan* outcome*')

Relevant articles will be included in this review if they meet the following criteria:

Study design
Observational studies and intervention trials

Study population
(i) Singleton pregnancies
(ii) Excluded studies on pregnant women with specific health conditions such as: HIV-infected, asthma, anemia, phenylketonuria, psychological disorder, Polycystic Ovary Syndrome, women with or at-risk of pre-eclampsia, gestational diabetes, women at risk of preterm delivery (e.g. short cervix), with previous macrocosmic births, overweight and obese (BMI >25 kg/m2) etc.
(iii) Excluded studies that focused on vulnerable population such as adolescence (< 19 year old), low nutritional status, smokers, users of long-term medications or abusers of alcohol or drugs, had bariatric surgery etc.
Exposure
Observational studies examining data-driven and index-based dietary patterns during pregnancy (including the periconceptional period but excluding preconception)

1 Data-driven approach - derived by principal component analysis, principal component factor analysis, exploratory factor analysis, or cluster analysis.

2 Index-based approach – indices constructed based on multiple food- and nutrient-related dietary components.

Intervention trials evaluating the effect of a global dietary modification during pregnancy will be considered. Dietary advice or recommendations should be clearly described in the study.

We excluded trials if they (1) focus on a single dietary component intervention such as low fat, low-GI diet (2) provided micronutrient, macronutrient or food supplementations for the subjects (3) multiple-intervention trials such as a combined diet and exercise intervention

Eating behaviors such as Ramadan fasting, frequency of meal patterns, eating style (e.g. emotional eaters, restrained eaters etc.) will be excluded.

Outcomes
Considered preterm birth, gestational age, and size at birth (i.e. birth weight, FGR, SGA, LGA).

The decision to include or exclude studies was hierarchical and initially made based on the study title, then of the study abstract and finally of the complete study manuscript.
## Supplementary data

### Supplemental Table 1. The quality of observational studies assessed by Newcastle-Ottawa Scale

| Cohort study | Representative-ness | Selection of non-exposure | Exposure assessment | Outcome not present at start | Comparability | Outcome assessment | Long enough follow-up | Adequate follow-up | Overall |
|--------------|---------------------|---------------------------|---------------------|-----------------------------|---------------|-------------------|----------------------|---------------------|--------|
| Gresham, 2016 (36) | * | * | * | * | * | - | * | * | 7 |
| Northstone, 2008 (25) | * | * | - | * | - | - | * | * | 6 |
| Lu, 2016 (26) | * | * | * | * | * | * | * | - | 8 |
| Colón-Ramos, 2015 (21) | * | * | - | * | - | - | * | * | 8 |
| Mikkelsen, 2008 (37) | * | * | * | * | * | - | * | - | 8 |
| Knudsen, 2008 (22) | * | * | * | * | * | * | * | * | 8 |
| Rasmussen, 2014 (38) | * | * | - | * | - | * | * | - | 8 |
| Timmermans, 2012 (39) | * | * | * | * | * | * | * | - | 8 |
| Chia, 2016 (14) | * | * | - | * | - | * | * | * | 8 |
| Chia, 2018 (41) | * | * | * | * | * | * | * | * | 8 |
| Shapiro, 2016 (42) | * | * | * | * | * | * | * | * | 9 |
| Starling, 2017 (27) | * | * | * | * | * | * | - | - | 8 |
| Wolff, 1995 (28) | * | * | - | - | * | - | * | - | 5 |
| Poon, 2013 (15) | * | * | * | * | * | * | - | - | 8 |
| Rodriíguez-Bernal, 2010 (16) | * | * | * | * | * | * | * | * | 9 |
| Chatzi (Mediterranean), 2012 (43) | * | * | * | * | * | * | - | - | 9 |
| Chatzi (Atlantic), 2012 (43) | * | * | * | * | * | * | - | - | 9 |
| Gesteiro, 2012 (17) | * | * | * | * | * | * | - | - | 9 |
| Haugen, 2008 (18) | * | * | * | * | * | * | - | - | 8 |
| Hillesund, 2014 (44) | * | * | * | * | * | * | * | * | 9 |
| Hillesund, 2014 (45) | * | * | * | * | * | * | * | * | 9 |
| Englund-Ogge, 2014 (19) | * | * | * | * | * | * | * | * | 8 |
| Badon, 2017 (46) | * | * | - | - | * | * | - | - | 7 |
| Okubo, 2012 (23) | * | * | * | * | * | * | - | - | 7 |
| Martin, 2015 (20) | * | * | * | * | * | * | * | * | 8 |
| Rifas-Shiman, 2009 (47) | * | * | * | * | * | * | * | * | 9 |
| Chatzi (Rheu), 2012 (43) | * | * | * | * | * | * | * | * | 9 |
| Coelho, 2015 (29) | * | * | * | * | * | * | * | * | 9 |
| Saunders, 2014 (48) | * | * | * | * | * | * | * | * | 6 |
| Mariscal-Arcas, 2009 (49) | - | * | * | * | - | - | - | - | 3 |
| Monteagudo, 2016 (24) | - | * | * | * | * | * | * | * | 6 |
| Abubakari, 2016 (30) | * | * | * | * | * | * | * | * | 7 |
| Zerfa, 2016 (31) | * | * | * | * | * | * | * | * | 8 |
| Gomez, 2017 (50) | - | * | * | - | * | * | * | * | 7 |
| Grandy, 2017 (51) | * | * | * | * | * | * | * | * | 8 |

### Case control study

| Case control study | Adequate case definition | Cases representative | Selection of controls | Definition of controls | Comparability | Exposure assessment | Same assessment for cases and controls | Non-response rate | Overall |
|--------------------|--------------------------|----------------------|-----------------------|------------------------|---------------|---------------------|----------------------------------------|-----------------|--------|
| Thompson, 2010 (35) | * | * | * | * | * | * | * | * | 7 |

1 A study can be awarded a maximum of one star for each category and a maximum of two stars for comparability.
2 Star assigned if cohort was truly or somewhat representative of the average pregnant women in community/population.
3 Star assigned where diets were assessed using validated food frequency questionnaire, multiple 24-h recalls, or multiple-day food record.
4 One star assigned where age/parity and BMI/height and weight were controlled for in analysis. Second star assigned where smoking was controlled for in analysis.
5 Star assigned where the follow-up rate was >70%.
Supplementary data

**Supplemental Table 2. Description of dietary patterns identified**

| Author                  | Dietary pattern                                                                 | Description of index-based dietary patterns                                                                                                                                                                                                                                                                  | Pooled (reasons) |
|-------------------------|---------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|
| Gresham (36)            | Australian Recommended Food Score (ARFS)                                        | At least two servings of fruit daily; at least four servings of vegetables daily; weekly consumption of one to four servings each of beef, veal, lamb, pork, chicken and fresh or canned fish; weekly consumption of up to five eggs; using reduced-fat or skimmed milk; using soya milk; consuming at least 500 ml milk daily; using high-fiber, whole meal, rye or multigrain bread; having at least four slices of bread daily; using polyunsaturated or monounsaturated spreads or no spread at all; consuming ricotta or cottage cheese; using low-fat cheese; consuming ice cream less than once weekly; consuming cheese less than once weekly; and consuming yoghurt at least once weekly | Yes (Healthy)    |
| Martin (20)             | Dietary Approaches to Stop Hypertension (DASH) diet                             | High intakes of fruits, vegetables, nuts and legumes, low-fat dairy, and whole grains were given 1 point for each quintile ranking (e.g., lowest quintile = 1 point, highest quintile = 5 points) Sodium, red and processed meats, and sweetened beverage intakes were reverse-scored, in which the lowest quintile of intake received 5 points and the highest quintile of intake was assigned 1 point | Yes (Healthy)    |
| Gesteiro (17)           | Healthy Eating Index (HEI)                                                      | Adequacy components: cereals, grains and legumes, vegetables, fruits, milk and dairy products, meat, eggs and fish, and dietary variety                                                                                                                | Yes (Healthy)    |
|                        |                                                                                 | Moderation components: total fat, saturated fat, cholesterol, sodium                                                                                                                                                                                                                          |
| Shapiro (42)            | Healthy Eating Index 2010 (HEI-2010)                                           | Adequacy components: total fruit, whole fruit, total vegetables, greens and beans, whole grains, dairy, total protein foods, seafood and plant proteins, fatty acids                                                                                                                                                      | Yes (Healthy)    |
| Grandy (51)             |                                                                                 | Moderation components: refined grains, sodium and empty calories                                                                                                                                                                                                                                        | Yes (Healthy)    |
| Chia (41)               | Healthy Eating Index for pregnant women in Singapore (HEI-SGP)                  | Adequacy components: total fruit, total vegetables, whole fruit, dark green leafy and orange vegetables, total rice and alternatives, whole grains, total protein foods, dairy, use of antenatal supplements containing iron, folate and calcium                                                                                      | Yes (Healthy)    |
|                         |                                                                                 | Moderation components: total fat, total saturated fat                                                                                                                                                                                                                                                   |                  |
| Reference | Index or Diet | Description | Notes |
|-----------|---------------|-------------|-------|
| Rodríguez-Bernal (16) | Alternate Healthy Eating Index for Pregnancy (AHEI-P) (score 0-100) | Vegetables (5 servings/day), fruit (4 servings/day), nuts and soy (1 serving/day), ratio of white meat (fish and poultry) to red meat (≥4:1), cereal fiber (15 g/day), trans fat (≤0.5% of energy), ratio of polyunsaturated to saturated fat (≥1), folate (≥600 g/day), iron (≥27 mg/day), and calcium (≥1000 mg/day) intakes from foods | Yes (Healthy; sensitivity analysis) |
| Poon (15) | Alternate Healthy Eating Index for Pregnancy (AHEI-P) (score 0-130) | Healthier components: vegetables, whole fruit, whole grains, nuts and legumes, long-chain (n-3) fats, polyunsaturated fats, folate, calcium and iron Less healthy components: sugar-sweetened beverages, red and processed meat, trans fat, and sodium | Yes (Healthy) |
| Rifas-shiman (47) | Alternate Healthy Eating Index for Pregnancy (AHEI-P) (score 0-90) | Vegetables (including tofu and soybeans), fruit, ratio of white to red meat, fiber, trans fat, ratio of PUFA to SFA, folate, calcium and iron from foods | Yes (Healthy) |
| Badon (46) | Modified Alternate Healthy Eating Index 2010 | Higher intakes of vegetables, fruit, whole grains, nuts, long-chain (n-3) fatty acids, and polyunsaturated fatty acids Lower intakes of red/processed meat, sugar-sweetened beverages, trans fat and sodium | Yes (Healthy) |
| Mikkelsen (37) | Mediterranean Diet (MD) (score 0-5) | Consumption of fish twice a week or more, intake of olive or rape seed oil, high consumption of fruits and vegetables (five a day or more), meat (other than poultry and fish) at most twice a week, and at most two cups of coffee a day | Yes (Healthy) |
| Haugen (18) | Mediterranean Diet (MD) (score 0-8) | Beneficial components: vegetables, legumes, fruits and nuts, cereals (primarily whole grain), fish and seafood, dairy products, ratio of daily consumption of monounsaturated lipids to saturated lipids Detrimental component: meat | Yes (Healthy) |
| Chatzi (Mediterranean) (43) | Mediterranean Diet (MD) (score 0-8) | Beneficial components: vegetables, legumes, fruits and nuts, cereals (primarily whole grain), fish and seafood, dairy products, ratio of daily consumption of monounsaturated lipids to saturated lipids Detrimental component: meat | Yes (Healthy) |
| Chatzi (Atlantic) (43) | Mediterranean Diet (MD) (score 0-8) | Beneficial components: vegetables, legumes, fruits and nuts, cereals (primarily whole grain), fish and seafood, dairy products, ratio of daily consumption of monounsaturated lipids to saturated lipids Detrimental component: meat | Yes (Healthy) |
## Supplementary data

| Study                  | Diet/Score Description                                                                 | Score Criteria                                                                 | Compliance  |
|-----------------------|----------------------------------------------------------------------------------------|--------------------------------------------------------------------------------|-------------|
| Chatzi (Rhea) (43)    | Mediterranean Diet Score (MDS) (score 0-9)                                             | Beneficial components: vegetables, legumes, fruits and nuts, cereals, fish and dairy products Detrimental components: meat, poultry and alcohol | Yes (Healthy) |
| Saunders (48)         | Mediterranean Diet Score (MDS) (score 0-9)                                             |                                                                                |             |
| Gomez Roig (50)       | Mediterranean Diet Score (MDS) (score 0-100)                                           | Favorable: Vegetables, fruits, cereals (including bread and potatoes), alcohol, MUFA:SFA ratio Unfavorable: Meat (including meat products) and milk (including lactic products), trans fat | No (iii)    |
| Poon (15)             | Alternate Mediterranean diet (aMED)                                                    | Healthier components: vegetables, legumes, fruits, nuts, whole grains, fish, and the ratio of monounsaturated to saturated fats Less healthy components: red and processed meats | Yes (Healthy; sensitivity analysis) |
| Gesteiro (17)         | Mediterranean Diet Adherence (MDA)                                                     | Use of olive oil as main culinary fat, ≥4 tablespoons of olive oil consumed per day including oil used for frying, salads, meals away from home and others, ≥2 servings of vegetables per day, ≥3 units of fruits, including natural fruit juices per day, <1 serving of red meat, hamburger or meat products (ham, sausage and others) per day, <1 serving of butter, margarine or cream consumed per day, <1 sweet or carbonated beverage number per day, ≥3 servings of legumes per week, ≥3 servings of fish or shellfish consumed per week, <3 servings of commercial (not home-made) sweets or pastries such as cakes, cookies, biscuits or custards per week, ≥3 servings of nuts (including peanuts) per week, consumption of chicken, turkey or rabbit meat instead of veal, pork, hamburger or sausage, ≥2 times per week of vegetables, pasta, rice or dishes seasoned with sofrito, sauce made with tomato, onion, leek or garlic and simmered with olive oil | Yes (Healthy; sensitivity analysis) |
| Mariscal-Arcas (49)   | Mediterranean Diet Score for Pregnancy (MDS-P)                                         | High consumption (>median intake) of vegetables, fruit and nuts, pulses, cereals, fish, high MUFA:SFA ratio | Yes (Healthy) |
| Monteagudo (24)       | New Nordic Diet                                                                        | Low consumption of meat and dairy products                                        | No (ii)     |
| Hillesund (44)        | New Nordic Diet                                                                        | (i) eating at least 24 main meals/week; (ii) eating Nordic fruits at least 5 times/week; (iii) | Yes (Healthy) |
### Supplementary data

| Author     | Dietary pattern | Description of data-driven dietary patterns                                                                 | Pooled (reasons) |
|------------|-----------------|-------------------------------------------------------------------------------------------------------------|------------------|
| Hillesund (45) | (NND) | eating root vegetables at least 5 times/week; (iv) eating cabbage at least 2 times/week; (v) eating potatoes at least one-third of total occasions of eating potatoes, rice or pasta; (vi) choosing whole grain bread more often than refined bread; (vii) eating oatmeal at least monthly; (viii) eating fish/game/berries about 2 times/week; (ix) drinking milk more often than juice; and (x) drinking at least six times as much water as sugar-sweetened beverages | Yes (Healthy) |
| Zerfu (31) | Women’s Dietary Diversity Scores (WDDS) | Starchy staples, dark green leafy vegetables, vitamin A rich fruits and vegetables, other fruits and vegetables, organ meat, meat/fish, eggs, legumes/nuts/seeds, milk/milk products | No (iv) |
| Thompson (35) | Traditional | Avocados, berry fruits, stone fruits, apples/pears, citrus fruits, bananas, dried fruits, green vegetables, root vegetables, peas/maize/lentils, potato, vegetarian substitute for meat such as tofu, hard cheeses, reduced fat cheese, dairy food/yogurt, bread, salad dressing, water | Yes (Healthy) |
|             | Junk | Ice cream, plain biscuits, sweet biscuits, scones, cakes, sweetened cereal, sweet spreads, sauces, crisps, pies, chocolate bar, lollies, ice blocks, milo (malted chocolate milk drink) | No (Only 1 study on unhealthy DP and SGA) |
|             | Fusion | Higher intakes of kiwi/feijoa, melon, tinned fruit, tinned in water, fruit pies, fried rice/noodles, boiled rice/pasta, chicken with skin, fish/shellfish, made-up meat dishes, soup with meat, condensed milk, jelly, porridge, instants noodles, milk Lower intakes of hard cheeses, coffee/tea, sherry/wine | No (iii) |
| Northstone (25) | Health conscious | Higher intakes of non-white bread, bran based cereal, oat based cereal, fish, cheese, pulses, pasta, rice, salad, fresh fruit, fruit juice Lower intakes of white bread | Yes (Healthy) |
|             | Processed | Higher intakes of white bread, meat pies, sausages, burgers, fried foods, pizza, eggs, roast potatoes, chips, baked beans Lower intakes of non-white bread | Yes (Unhealthy) |
|             | Confectionary | Biscuits, puddings, cakes/buns, sweets, chocolate, chocolate bars, crisps | No (iii) |
### Supplementary data

| Category                  | Description                                                                                           | Colonial-Ramos (21) | Lu (26)       |
|---------------------------|--------------------------------------------------------------------------------------------------------|---------------------|---------------|
| Vegetarian                | Higher intakes of meat substitutes, pulses, nuts and herbal tea, lower intakes of poultry, red meat   | No (iii)            | No (iii)      |
| Traditional               | Potatoes (not chips), leafy green vegetables, other green vegetables, carrots, other root vegetables, peas | No (iii)            | No (iii)      |
| Cereals, eggs, and Cantonese soups | Rice, pasta, porridge, eggs, Cantonese soups                                                              | No (iii)            | No (iii)      |
| Dairy                     | Dairy                                                                                                   | No (iii)            | No (iii)      |
| Fruits, nuts, and Cantonese desserts | Fruits, nuts, Cantonese desserts                                                                       | No (iii)            | No (iii)      |
| Meats                     | Red meat and processed meat                                                                            | No (iii)            | No (iii)      |
| Vegetables                | Leafy and cruciferous vegetables                                                                       | No (iii)            | No (iii)      |
| Varied                    | Noodles, bread, root vegetables, melon vegetables, mushrooms, sea vegetables, bean vegetables, processed vegetables, poultry, animal organ meat, fish, other seafood, bean products, yogurt, sweet beverages, puffed food, confectioneries, snacks | No (iii)            | No (iii)      |
| Healthy                   | Breakfast or cereal bars, yogurt (including frozen), milk as a beverage, banana, apples or pears, strawberries or other berries in season, broccoli, carrots or mixed vegetables with carrots, spinach cooked, green salad, lettuce salad, tomatoes raw, other vegetables (squash, cauliflower, okra, peppers), pinto, black or baked beans, chili with beans, soup (vegetable, vegetable-beef or tomato), bagels, English muffins, dinner rolls, salad dressing (regular or low fat), meat substitutes (veggie burgers, chicken, hot dogs or lunch meats), roasted or broiled chicken or turkey, fish not fried, peanut butter, peanuts, sunflower seeds, or other nuts and seeds, water | No (i)             | No (iii)      |
## Supplementary data

| Knudsen (22) | Western | Animal fat (butter and lard), margarine, processed meat, red meat, refined grains, eggs, potatoes, snacks, sweets, high-fat dairy | No (i) |
|---------------|---------|--------------------------------------------------------------------------------|-------|
|                | Health conscious | Vegetables, tomatoes, green leafy vegetables, fruit, fish, water, vegetable fats, poultry | No (i) |
| Intermediate   | Combined Health conscious and Western pattern | No (iii) |
| Rasmussen (38) | Western | Potatoes, French fries, bread white, fish cold, pork, beef veal, meat mixed, meat cold, egg, butter, margarine and dressing sauce | Yes (Unhealthy) |
|                | Vegetables | Cabbage, onion, mushroom, corn, salad, tomato, root, vegetables other, legumes and fruit other | No (iii) |

| Processed | Cheese (sliced or spreads), fried potatoes (French fries, home fries, hash browns), sandwich buns, sliced bread (white, dark, whole wheat), mayonnaise (sandwich breads), ketchup, salsa or chili peppers, mustard, barbecue sauce, soy sauce, gravy, donuts, cake, snack cakes, cupcakes, ho-hos, pastries, cookies, chocolate candy, candy, hard, skittles, starburst, snack chips like potato chips, tortilla chips, fritos, doritos, popcorn, pizza, hamburgers or cheese burgers, hot dogs or sausage (Polish, Italian or chorizo), lunch meats (turkey or regular), tacos, burritos, enchiladas, tamales with meat or chicken, fried chicken (nuggets, wings or patties), hi-c, cranberry juice cocktail, Hawaiian punch, tang, Kool-Aid, lemonade, sports drinks, or fruit flavored drinks, soft drinks (coke, sprite, orange) regular or diet | No (i) |
| Southern    | Eggs, breakfast sausage including in sandwiches/biscuits, bacon, cooked cereals (oatmeal, grits, cream of wheat), fresh peaches or nectarines, canned fruit, corn, green beans or green peas, greens (collards, turnip, or mustard), sweet potatoes, yams, coleslaw, cabbage, Chinese cabbage, cornbread, corn muffins, hush puppies, ribs, spareribs, liver (chicken livers or liverwurst), pigs feet, neck bones, oxtails, tongue, beef or pork dishes (beef stew, pot pie, hamburger helper), fried fish or fish sandwich, 100% orange or grapefruit juice | No (iii) |
| Healthy-Processed | Combined Healthy and Processed pattern | No (iii) |
| Healthy-Southern | Combined Healthy and Southern pattern | No (iii) |
| Southern-Processed | Combined Southern and Processed pattern | No (iii) |
| Mixed       | Reflects food from all patterns | No (iii) |
| Timmermans (39)   | Mediterranean diet | Higher intakes of fruit, vegetables, vegetable oil, fish, pasta and rice
Lower intakes of meat, potatoes and fatty sauces | Yes (Healthy) |
|-------------------|---------------------|-------------------------------------------------------------------------------------------------|---------------|
| Bouwland-Both (40) | Mediterranean diet  | Higher intakes of vegetables, legumes, eggs, pasta, rice, dairy, fish, shellfish, vegetables oils, alcoholic beverages
Lower intakes of potatoes, processed meat, margarine | No (iii)       |
|                   | Energy-rich         | Higher intakes of nuts, bread, breakfast cereals, margarine, snacks, sweets, non-sweetened nonalcoholic beverages
Lower intakes of fresh meat and sweetened, nonalcoholic beverages | No (iii)       |
|                   | Western             | Higher intakes of potatoes, fresh meat, processed meat, sweetened nonalcoholic beverages
Lower intakes of legumes, fruit, nuts, eggs, fish, shellfish | No (iii)       |
| Chia (14)         | Vegetable, fruit, and white rice | Higher intakes of cruciferous, leafy-green, and dark-yellow vegetables, other vegetables, fruits, white rice, whole-grain bread, non-fried fish, nuts and seeds
Lower intakes of fried potatoes, hamburgers, carbonated drinks, flavored rice, sweetened drinks, red meat and poultry which are deep-fried or cooked in curry, milk-based drinks | Yes (Healthy) |
|                   | Seafood and noodle  | Higher intakes of soup, fish and seafood products, noodles in soup, flavored noodles, low-fat red meat, seafood, soy sauce–based gravies, local sweet snacks, local savoury snacks, eggs
Lower intakes of white rice, ethnic bread, legumes and pulses, curry-based gravies, other grains such as uppuma, millet, corn, and glutinous rice | No (iii)       |
### Supplementary data

| Starling (27) | **Pasta, cheese, and processed meat** | Pasta, tomato-, and cream-based gravies, cheese, processed meat, white bread | No (iii) |
|--------------|--------------------------------------|--------------------------------------------------------------------------|---------|
| **Poultry-fruit-nut** | Added sugars, poultry, citrus, melons, berries, nuts and seeds, discretionary solid fat, cheese, whole grains, other fruits | | No (iii) |
| **Egg-starchy vegetable-non-whole grain** | Higher intakes of eggs, potatoes, starchy vegetables, non-whole grains Lower intakes of added sugars, yogurt, soy (tofu, meat analogs), dark-green vegetables, whole grains | | No (iii) |
| Wolff (28) | **Nutrient dense** | Vitamin A & C rich fruits & vegetables, other fruits, low fat dairy products, other vegetables | Yes (Healthy) |
| **Nutrient dilute** | Salty snacks (chips, popcorn, and pretzels), non-dairy desserts (cakes, cookies, doughnuts, pastries, pie, jello, and sherbet), and foods high in sugar (sugar, candy, syrup, jam, honey, soft drinks, and other sugar rich beverages) | | Yes (Unhealthy) |
| **Transitional** | Fats and oils (margarine, butter, vegetable oil, cream, bacon, mayonnaise, salad dressing, peanut butter, and olives), breads and cereals (cold/hot cereals, bread, rice, pasta, crackers, and other grain products), non-vitamin A and C rich vegetables, high fat meats (beef, pork, ham, organ meats, and eggs), and foods high in sugar (sugar, candy, syrup, jam, honey, soft drinks, and other sugar rich beverages) | | No (iii) |
| **Traditional** | Tortillas (flour and corn), legumes (including nuts and seeds), high fat meats (beef, pork, ham, organ meats, and eggs), and foods high in sugar (sugar, candy, syrup, jam, honey, soft drinks and other sugar rich beverages) | | No (iii) |
| **Protein rich** | Dairy desserts (ice cream, ice milk, and pudding made from milk), low fat meat (fish and poultry), and processed meats | | No (iii) |
| **High fat dairy** | High fat dairy products, soup, but less of low fat dairy products | | No (iii) |
| **Mixed dishes** | Mixed dishes (spaghetti with meat sauce, pizza, tacos, burritos, enchiladas, and tamales), soup, and processed meats | | No (iii) |
| Study                  | Diet                          | Food Items                                                                 | Healthy? (Sensitivity Analysis) |
|-----------------------|-------------------------------|-----------------------------------------------------------------------------|---------------------------------|
| Englund-Ogge (19)     | Prudent                       | Higher intakes of raw vegetables, cooked vegetables, salad, onion, leek, garlic, cooking oil (soybean oil, canola oil, corn oil, and sunflower oil), fruit, berries, mushrooms, olive oil, dried fruit, rice, nuts, herbal tea, water as beverage, whole grain cereals, yogurt (including probiotic yoghurt and cured milk enriched with Lactobacillus acidophilus LA-5, Bifidobacterium lactis Bb12, and/or Lactobacillus rhamnosus GG), poultry, fiber rich bread | Yes (Healthy; sensitivity analysis) |
|                       | Western                       | Higher intakes of salty snacks, chocolate and sweets, cakes, French fries, white bread, ketchup, dairy desserts, sugar sweetened drinks, buns, mayonnaise spreads, processed meat products (hot dogs, hamburgers etc.), waffles, pancakes, cookies, pasta | Yes (Unhealthy) |
|                       | Traditional                   | Higher intakes of boiled potatoes, fish products, gravy, lean fish, margarine, rice pudding, low fat milk, Lower intakes of lean fish and fiber rich bread | No (iii) |
| Okubo (23)            | Rice, fish and vegetables     | Rice, potatoes, nuts, pulses, fruits, green and yellow vegetables, white vegetables, mushrooms, seaweeds, Japanese and Chinese tea, fish, shellfish, sea products, miso soup and salt-containing seasoning | No (i) |
|                       | Meat and eggs                 | Beef and pork, processed meat, chicken, eggs, butter, and dairy products | No (iii) |
|                       | Wheat products                | Bread, confectioneries, fruit and vegetable juice, and soft drinks | No (iii) |
| Martin (20)           | Fish, vegetable and yogurt    | Apples or pears, bananas, peaches, cantaloupe, strawberries, oranges or tangerines, grapefruit, other fruits, raw tomatoes, broccoli, spinach, carrots, green salad, sweet potatoes, other vegetables, yogurt, low fat milk, high-fiber cereals, highly fortified cereals, chicken not fried, fish not fried, vegetable soup, refried beans or beans burritos, chili with beans, other soups (e.g. chicken noodle), whole wheat bread (e.g. dark, rye) | Yes (Healthy; sensitivity analysis) |
|                       | Fried chicken, collard green and sausages | Higher intakes of greens (e.g. collards, turnips), coleslaw or cabbage, beef (e.g. roast, steak), pork (e.g. chops, roasts, dinner ham), fried chicken, fried fish, hot dogs or dinner sausage, cornbread or hush puppies, gravy, eggs or egg biscuits, bacon, breakfast sausage, whole milk, vitamin C–rich drinks (e.g. Kool-Aid, Hi-C) | Yes (Unhealthy) |
### Supplementary data

| Diet Type | Characteristics | Health Status |
|-----------|-----------------|---------------|
| Cheese dish, French fries and burger | Green beans or peas, baked beans, corn, French fries or fried potatoes, white potatoes, rice or dishes with rice, hamburger or cheeseburger, tuna casserole or tuna sandwich, spaghetti with tomato sauce and meat, cheese dish (e.g. macaroni and cheese), salsa, ketchup, or taco sauce, ice cream, mixed dishes with beef or pork, biscuits or muffins | Yes (Unhealthy; sensitivity analysis) |
| Taco, cake, candy and pizza | Higher intakes of shellfish, pizza, salty snacks (e.g. chips, popcorn), mayonnaise, peanut butter, chocolate candy or candy bars, candy (not chocolate), tea or iced tea, sugar or honey in coffee/tea, pancakes or waffles, tortillas (corn or flour), tacos or burritos, cakes or cookies, white bread, bagels, or crackers Lower intakes of green beans or peas, greens (e.g. collards, turnips) | No (iii) |
| Western | Potato/cassava/yams, macaroni, flour/farofa/grits, soft drinks/cool drinks, pork/sausages/egg, pizza/burger/deep fried pastries | Yes (Unhealthy) |
| Prudent | Milk, yogurt, cheese, cracker, chicken/beef/fish/liver, fruit/fresh-fruit juice | No (iii) |
| Snack | Sandwich cookie, salty snacks, chocolate, chocolate drink mix | No (iii) |
| Traditional | Beans, rice, vegetables, breads, butter/margarine, and sugar | No (iii) |
| Health conscious | TZ (a local dish made from corn flour), banku (fermented corn and cassava dough), kenke (fermented corn dough), fufu (pounded boiled yam and cassava), rice/beans, jolof/fried rice, water, watermelon, pineapple, apple, mango, banana, avocado, traditional and exotic vegetables, mashed kenke drink, pawpaw, boiled and fried yam, fats and oil | No (iv) |
| Non-health conscious | Fan yogo (sweetened beverage), fan ice (ice cream), fan choco (chocolate based beverage), fan milk (milk based beverage), orange, fish, and alvaro (a local soft drink) | No (iv) |

1 Reasons for exclusion
(i) reported estimates were referenced to other dietary pattern
(ii) had unconventional outcome comparison, such as LBW with reference to infant overweight (>3500 g)
(iii) had dietary patterns that could not be categorized as healthy or unhealthy
(iv) studies that were based in resource-poor, low-income settings
### Supplemental Table 3. Characteristics of studies included in the systematic review and meta-analysis of maternal dietary patterns and infant birth outcomes

| Author, Year | Cohort | Country | n | Age, y | BMI, kg/m² | Dietary assessment tool | Pregnancy period assessed | Dietary pattern assessment method | Dietary patterns | Studied Outcomes |
|--------------|--------|---------|---|--------|------------|------------------------|---------------------------|-------------------------------|----------------|----------------|
| Thompson, 2010 (35) | Auckland Birthweight Collaborative (ABC) study | New Zealand | 1134 | 30 ± 6² | 77%²³ | 71-item FFQ | 0–4 wk | Data-driven (Principal component analysis) | *Junk*  *Traditional*  *Fusion* | Preterm, %  Birth weight, g  SGA¹, %  LGA, % |
| Gresham, 2016 (36) | Australian Longitudinal Study on Women’s Health (ALSWH) | Australia | 1907 | 21 ± 1 | NR | 74-item FFQ | Throughout | Index-based | Australian Recommended Food Score (ARFS) | 6.0  3.0 |
| Northstone, 2008 (25) | Avon Longitudinal Study of Parents and Children (ALSPAC) | England | 12053 | 28 ± 5² | 23 ± 4² | 44-item FFQ | 32 wk | Data-driven (Principal component analysis) | *Health conscious*  *Traditional*  *Processed*  *Confectionary*  *Vegetarian* | 3156 ± 458²  7.8  11 |
| Lu, 2016 (26) | Born in Guangzhou Cohort Study (BIGCS) | China | 6954 | 29 ± 3 | 20 ± 3² | 64-item FFQ | 23–27 wk | Data-driven (Cluster analysis) | *Cereals-eggs-Cantonese soups*  *Dairy*  *Fruits-nuts-Cantonese desserts*  *Meats*  *Vegetables*  *Varied* | NR |
| Colón-Ramos, 2015 (21) | Conditions Affecting Neurocognitive Development and Learning in Early Childhood (CANDLE) | United States | 1151 | 26 ± 5 | 28 ± 7 | 111-item FFQ | 4–26 wk | Data-driven (Factor analysis) | *Healthy*  *Processed*  *Southern*  *Healthy-processed*  *Healthy-southern*  *Southern-processed*  *Mixed* | NR |
| Mikkelsen, 2008 (37) | | | 35530 | 29 ± 4 | 23 ± 3 | Index-based | Mediterranean diet | 4.3 |
| Knudsen, 2008 (22) | Danish National Birth Cohort (DNBC) | Denmark | 44612 | 29 ± NR | NR | Data-driven (Factor analysis) | *Western*  *Health conscious*  *Intermediate* | 2.5 |
| Rasmussen, 2014 (38) | | | 59949 | NR | NR | Data-driven (Principal component analysis) | *Vegetables*  *Alcohol*  *Western*  *Nordic*  *Seafood*  *Candy*  *Rice-pasta-poultry* | 4.5 |
| Timmermans, 2012 (39) | Generation R | Netherlands | 3207 | 31 ± 4 | 24 ± 4² | Data-driven (Logistic regression) | Mediterranean diet | 3487 ± 556 |
| Bouwland-Both, 2013 (40) | | | 847 | 32 ± 4 | 24 ± 4² | Data-driven (Factor analysis) | *Mediterranean*  *Energy-rich*  *Western* | NR |
## Supplementary data

| Author, Year | Cohort | Country | n   | Age, y | BMI, kg/m² | Dietary assessment tool | Pregnancy period assessed | Dietary pattern assessment method | Dietary patterns | Studied Outcomes |
|--------------|--------|---------|-----|--------|------------|------------------------|---------------------------|-------------------------------|-----------------|-----------------|
| Chia, 2016 (14) | Growing Up in Singapore Towards healthy Outcomes (GUSTO) | Singapore | 923 | 30 ± 5 | 23 ± 4 | Single 24 h recall; 3-d food diary | 26–28 wk | Data-driven (Factor analysis) | • Vegetable-fruit-white rice  
• Seafood-noodle  
• Pasta-cheese-processed meat | 7.6 3086 ± 437 13 15 |
| Chia, 2018 (41) | Healthy Start study | United States | 1079 | 28 ± 6 | NR | Multiple 24 h recalls | Throughout | Index-based | Healthy Eating Index for pregnant women in Singapore (HEI-SGP) | 7.2 3090 ± 451 |
| Shapiro, 2016 (42) | Hispanic Health and Nutrition Examination Survey (HHANES) | United States | 549 | 24 ± 5 | 26 ± 6 | 57-item FFQ | Throughout | Data-driven (Factor analysis) | • Poultry-fruit-nut  
• Egg-starchy vegetable-non-whole grain | 3281 ± 432 |
| Wolff, 1995 (28) | Infant Feeding Practices Study II (IFPS II) | United States | 893 | 29 ± 5 | 26 ± 6 | FFQ | 28–36 wk | Index-based | • Alternative Healthy Eating Index for Pregnancy (AHEI-P)  
• Alternate Mediterranean diet (aMED) | 3443 ± 454 8 9.2 |
| Rodríguez-Bernal, 2010 (16) | Infancia y Medio Ambiente (INMA) Mediterranean | Spain | 787 | 46% ¹ | NR | 100-item FFQ | 0–14 wk | Index-based | Alternative Healthy Eating Index for Pregnancy (AHEI-P) | 3324 ± 432 9.9 |
| Chatzi, 2012 (43) | Merida cohort study | Spain | 1386 | 30 ± NR | 24 ± NR | FFQ | 0–14 wk | Index-based | Mediterranean diet | 3233 ± 188 10 |
| Chatzi, 2012 (43) | INMA-Atlantic | Spain | 1074 | 31 ± NR | 23 ± NR | FFQ | 0–14 wk | Index-based | Mediterranean diet | 3283 ± 465 8.9 |
| Gesteiro, 2012 (17) | Norway | Norway | 66597 | 30 ± 5 | 24 ± 4 | 255-item FFQ | 0–22 wk | Data-driven (Principal component analysis) | • Prudent  
• Western  
• Traditional | 5.3 |
| Haugen, 2008 (18) | Norwegian Mother and Child Cohort Study (MoBa) | Norway | 26125 | 30 ± 4 | 24 ± 3 | FFQ | 0–15 wk | Index-based | Mediterranean Diet (MD) | 4.5 |
| Hillesund, 2014 (44) | Norwegian Mother and Child Cohort Study (MoBa) | Norway | 72072 | 30 ± 5 | 24 ± 4 | FFQ | 0–15 wk | Index-based | New Nordic Diet (NND) | 5.2 |
| Hillesund, 2014 (45) | Norwegian Mother and Child Cohort Study (MoBa) | Norway | 66000 | 46% ¹ | NR | FFQ | Throughout | Data-driven (Cluster analysis) | • Meat and eggs  
• Wheat products  
• Rice-fish-vegetables | 3103 ± 344 4.2 |
| Badon, 2017 (46) | Omega study | United States | 2924 | 33 ± 4 | 23 ± 5 | FFQ | 3-15 wk | Index-based | Modified Alternate Healthy Eating Index 2010 | 3446 ± 553 |
| Okubo, 2012 (23) | Osaka Maternal and Child Health Study (OMCHS) | Japan | 803 | 30 ± 4 | 20 ± 2 | FFQ | Throughout | Data-driven (Cluster analysis) | • Meat and eggs  
• Wheat products  
• Rice-fish-vegetables | 3103 ± 344 4.2 |
## Supplementary data

| Author, Year          | Cohort                          | Country        | n   | Age, y | BMI, kg/m² | Dietary assessment tool | Pregnancy assessment period | Dietary pattern assessment method | Dietary patterns                              | Studied Outcomes |
|-----------------------|---------------------------------|----------------|-----|--------|------------|-------------------------|-------------------------------|--------------------------------------|------------------------------------------------|-----------------|
| Martin, 2015 (20)     | Pregnancy, Infection, and Nutrition (PIN) | United States | 3143| 62%³  | 59%³       | 109/119-item FFQ          | 14–29 wk                      | Index-based                       | Dietary Approaches to Stop Hypertension (DASH) diet | Preterm, %   |
|                       |                                 |                |     |        |            |                         |                               |                                      |                                                            | Birth weight, g |
|                       |                                 |                |     |        |            |                         |                               |                                      | Fish-vegetable-yogurt                   | 12             |
|                       |                                 |                |     |        |            |                         |                               |                                      | Cheese dish-French fries-burger       |                |
|                       |                                 |                |     |        |            |                         |                               |                                      | Fried chicken-collard green-sausages  |                |
|                       |                                 |                |     |        |            |                         |                               |                                      | Taco-cake-candy-pizza                 |                |
| Rifas-shiman, 2009 (47)| Project Viva                    | United States  | 1777| 32 ± 5 | 25 ± 5    | 166-item FFQ             | 0–12 wk                      | Index-based                        | Alternative Healthy Eating Index for Pregnancy (AHEI-P) | Preterm, %   |
|                       |                                 |                | 1666|        |            |                         | 14–28 wk                      |                                      |                                                            | Birth weight, g |
|                       |                                 |                |     |        |            |                         |                               |                                      |                                                                 | SGA, %        |
|                       |                                 |                |     |        |            |                         |                               |                                      |                                                                 | LGA, %        |
| Chatzi, 2012 (43)     | RHEA cohort                     | Greece         | 889 | 29 ± 5¹ | 24 ± 5²   | 250-item FFQ             | 0–18 wk                      | Index-based                        | Mediterranean Diet (MD)                | Preterm, %   |
|                       |                                 |                |     |        |            |                         |                               |                                      |                                                            | Birth weight, g |
|                       |                                 |                |     |        |            |                         |                               |                                      | Mediterranean Diet Score (MDS)         | SGA, %        |
|                       |                                 |                |     |        |            |                         |                               |                                      |                                                                 | LGA, %        |
| Coelho, 2015 (29)     | Social Capital and Psychosocial Factors associated with Prematurity and Low Birth Weight | Brazil         | 1298| 25 ± 6 | 80%³      | 29-item FFQ              | 30–40 wk                      | Data-driven                        | Prudent, Traditional, Western, Snack | Preterm, %   |
|                       |                                 |                |     |        |            |                         |                               |                                      |                                                            | Birth weight, g |
|                       |                                 |                |     |        |            |                         |                               |                                      |                                                                 | SGA, %        |
|                       |                                 |                |     |        |            |                         |                               |                                      |                                                                 | LGA, %        |
| Saunders, 2014 (48)   | TIMOUN Mother–Child Cohort Study | France         | 728 | 31 ± 7 | 59%³      | 214-item FFQ             | Throughout                    | Index-based                        | Mediterranean Diet Score (MDS)         | Preterm, %   |
|                       |                                 |                |     |        |            |                         |                               |                                      |                                                            | Birth weight, g |
|                       |                                 |                |     |        |            |                         |                               |                                      | Mediterranean Diet Score for Pregnancy (MDS-P) | SGA, %        |
| Mariscal-Arcas, 2009 (49)| NR                            | Spain          | 318 | 32 ± 5 | 23 ± 4    | FFQ                      | Throughout                    | Index-based                        | Mediterranean Diet Score (MDS)         | Preterm, %   |
|                       |                                 |                |     |        |            |                         |                               |                                      |                                                            | Birth weight, g |
|                       |                                 |                |     |        |            |                         |                               |                                      | Mediterranean Diet Score for Pregnancy (MDS-P) | SGA, %        |
| Montesagado, 2016 (24) | NR                            | Spain          | 320 | 32 ± 5 | 23 ± 4    | FFQ                      | Throughout                    | Index-based                        | Mediterranean Diet Score (MDS)         | Preterm, %   |
|                       |                                 |                |     |        |            |                         |                               |                                      |                                                            | Birth weight, g |
|                       |                                 |                |     |        |            |                         |                               |                                      | Mediterranean Diet Score for Pregnancy (MDS-P) | SGA, %        |
| Abubakari, 2016 (30)  | NR                              | Ghana          | 578 | 98%³  | 61%³      | 55-item FFQ              | Throughout                    | Data-driven                        | Health conscious, Non-health conscious | Preterm, %   |
|                       |                                 |                |     |        |            |                         |                               |                                      |                                                            | Birth weight, g |
| Zerfu, 2016 (31)      | NR                              | Ethiopia       | 374 | 25 ± 1 | NR        | Multiple 24 h recalls    | Throughout                    | Index-based                        | Women’s Dietary Diversity Score (WDDS) | Preterm, %   |
|                       |                                 |                |     |        |            |                         |                               |                                      |                                                            | Birth weight, g |
| Gomez, 2017 (50)      | NR                              | Spain          | 127 | 31 ± 0.4 | 23 ± 0.3 | 127-item FFQ          | 27–40 wk                      | Index-based                        | Mediterranean Diet Score (MDS)         | Preterm, %   |
|                       |                                 |                |     |        |            |                         |                               |                                      |                                                            | Birth weight, g |
| Grandy, 2017 (51)     | NR                              | United States  | 41  | 31 ± 6 | 30 ± 7    | Multiple 24 h recalls    | 37–40 wk                      | Index-based                        | Healthy Eating Index 2010 (HEI-2010) | Preterm, %   |
|                       |                                 |                |     |        |            |                         |                               |                                      |                                                            | Birth weight, g |
|                       |                                 |                |     |        |            |                         |                               |                                      | Mediterranean Diet Score (MDS)         | SGA, %        |
|                       |                                 |                |     |        |            |                         |                               |                                      |                                                                 | LGA, %        |

¹ Values are mean ± SD. BMI, body mass index; FFQ, food frequency questionnaire; NR, not reported; SGA, small for gestational age
² Values were obtained from other reports of the same cohort
³ Percentage of study population with mean age <30 y or mean prepregnancy BMI <25kg/m².
⁴ Percentage of small for gestational age, fetal growth restriction or low birth weight
Supplementary Table 4. Adjusted covariates for preterm birth

| Covariate                              | Gresham (36) | Rasmussen (38) | Mikkelsen (37) | Cha (41) | England-Ogge (19) | Haugen (18) | Hillesund (44) | Zerlin (31) | Martin (20) | Saunders (48) |
|----------------------------------------|--------------|----------------|----------------|---------|-------------------|-------------|----------------|-------------|-------------|---------------|
| Parity                                 | Y            | Y              | Y              | Y       | Y                 | Y           | Y              | Y           | Y           | Y             |
| Pre-pregnancy BMI                      | Y            | Y              | Y              | Y       | Y                 | Y           | Y              | Y           | Y           | Y             |
| Age                                    | Y            | Y              | Y              | Y       | Y                 | Y           | Y              | Y           | Y           | Y             |
| Education                              | Y            | Y              | Y              | Y       | Y                 | Y           | Y              | Y           | Y           | Y             |
| Smoking                                | Y            | Y              | Y              | Y       | Y                 | Y           | Y              | Y           | Y           | Y             |
| Height                                 | Y            | Y              | Y              | Y       | Y                 | Y           | Y              | Y           | Y           | Y             |
| Energy intake                          | Y            | Y              | Y              | Y       | Y                 | Y           | Y              | Y           | Y           | Y             |
| Marital/cohabitant status              | Y            | Y              | Y              | Y       | Y                 | Y           | Y              | Y           | Y           | Y             |
| Income/socioeconomic status            | Y            | Y              | Y              | Y       | Y                 | Y           | Y              | Y           | Y           | Y             |
| Physical activity                      | Y            | Y              | Y              | Y       | Y                 | Y           | Y              | Y           | Y           | Y             |
| Race/Ethnicity                         | Y            | Y              | Y              | Y       | Y                 | Y           | Y              | Y           | Y           | Y             |
| Gestational weight gain                | Y²           | Y²             | Y              | Y       | Y                 | Y           | Y              | Y           | Y           | Y             |
| Alcohol drinking                       | Y            | Y              | Y              | Y       | Y                 | Y           | Y              | Y           | Y           | Y             |
| Infant sex                             | Y            | Y              | Y              | Y       | Y                 | Y           | Y              | Y           | Y           | Y             |
| Other dietary patterns                 | Y            | Y              | Y              | Y       | Y                 | Y           | Y              | Y           | Y           | Y             |
| Diabetes                               | Y            | Y              | Y              | Y       | Y                 | Y           | Y              | Y           | Y           | Y             |
| Area of residence                      | Y            | Y              | Y              | Y       | Y                 | Y           | Y              | Y           | Y           | Y             |
| Enrollment site                        | Y            | Y              | Y              | Y       | Y                 | Y           | Y              | Y           | Y           | Y             |
| Hemoglobin concentration               | Y            | Y              | Y              | Y       | Y                 | Y           | Y              | Y           | Y           | Y             |
| History of previous preterm birth      | Y            | Y              | Y              | Y       | Y                 | Y           | Y              | Y           | Y           | Y             |
| Hypertension                           | Y            | Y              | Y              | Y       | Y                 | Y           | Y              | Y           | Y           | Y             |
| Mid-upper arm circumference            | Y            | Y              | Y              | Y       | Y                 | Y           | Y              | Y           | Y           | Y             |
| Place of birth                         | Y            | Y              | Y              | Y       | Y                 | Y           | Y              | Y           | Y           | Y             |
| Pregnancy weight                       | Y            | Y              | Y              | Y       | Y                 | Y           | Y              | Y           | Y           | Y             |

*Y denotes covariate that was adjusted*
### Supplemental Table 5. Adjusted covariates for birth weights of offspring

| Covariate                                | Northstone (25) | La (26) | Colón-Ramos (21) | Timmermans (39) | Bouwland-Both (40) | Chiia (14) | Chiia (41) | Starling (27) | Shapiro (42) | Wolf (28) | Rodriuez-Bernal (16) | Chazi (43) (Atlantic) | Chazi (43) (Mediterranean) | Chazi (45) (Rhea) | Poon (15) | Gesteiro-Mariscal-Arca (49) | Grandy (51) | Badon (46) | Okubo (23) | Coelho (29) |
|------------------------------------------|-----------------|---------|------------------|-----------------|-------------------|-------------|------------|---------------|---------------|------------|-----------------------|------------------------|--------------------------|----------------------|-----------|-------------------------------|-------------|-----------|-----------|-----------|
| Pre-pregnancy BMI                        | Y               | Y       | Y                | Y               |                   | Y           | Y          |               |               |            | Y                     | Y                      | Y                       | Y                     | Y         | Y                       | Y           |           | Y         | Y         |
| Age                                      | Y               | Y       | Y                | Y               |                   | Y           | Y          |               |               |            | Y                     | Y                      | Y                       | Y                     | Y         | Y                       | Y           |           | Y         | Y         |
| Infant sex                               | Y               | Y       | Y                | Y               |                   | Y           | Y          |               |               |            | Y                     | Y                      | Y                       | Y                     | Y         | Y                       | Y           |           | Y         | Y         |
| Smoking                                  | Y\(^1\)         | Y       | Y                | Y               |                   | Y           | Y          |               |               |            | Y                     | Y                      | Y                       | Y                     | Y         | Y                       | Y           |           | Y         | Y         |
| Gestational age                          | Y               | Y       | Y                | Y               |                   | Y           | Y          |               |               |            | Y                     | Y                      | Y                       | Y                     | Y         | Y                       | Y           |           | Y         | Y         |
| Parity                                   | Y               | Y       | Y                | Y               |                   | Y           | Y          |               |               |            | Y                     | Y                      | Y                       | Y                     | Y         | Y                       | Y           |           | Y         | Y         |
| Education                                | Y               | Y       | Y                | Y               |                   | Y           | Y          |               |               |            | Y                     | Y                      | Y                       | Y                     | Y         | Y                       | Y           |           | Y         | Y         |
| Energy intake                            | Y               | Y       | Y                | Y               |                   | Y           | Y          |               |               |            | Y                     | Y                      | Y                       | Y                     | Y         | Y                       | Y           |           | Y         | Y         |
| Income/social class                      | Y               | Y       | Y                | Y               |                   | Y           | Y          |               |               |            | Y                     | Y                      | Y                       | Y                     | Y         | Y                       | Y           |           | Y         | Y         |
| Race/ethnicity                           | Y               | Y       | Y                | Y               |                   | Y           | Y          |               |               |            | Y                     | Y                      | Y                       | Y                     | Y         | Y                       | Y           |           | Y         | Y         |
| Alcohol drinking                         | Y               | Y       | Y                | Y               |                   | Y           | Y          |               |               |            | Y                     | Y                      | Y                       | Y                     | Y         | Y                       | Y           |           | Y         | Y         |
| Gestational weight gain                  | Y               | Y       | Y                | Y               |                   | Y           | Y          |               |               |            | Y                     | Y                      | Y                       | Y                     | Y         | Y                       | Y           |           | Y         | Y         |
| Height                                   | Y               | Y       | Y                | Y               |                   | Y           | Y          |               |               |            | Y                     | Y                      | Y                       | Y                     | Y         | Y                       | Y           |           | Y         | Y         |
| Physical activity                        | Y               | Y       | Y                | Y               |                   | Y           | Y          |               |               |            | Y                     | Y                      | Y                       | Y                     | Y         | Y                       | Y           |           | Y         | Y         |
| Dietary supplement use                    | Y               | Y       | Y                | Y               |                   | Y           | Y          |               |               |            | Y                     | Y                      | Y                       | Y                     | Y         | Y                       | Y           |           | Y         | Y         |
| Father BMI                               | Y               | Y       | Y                | Y               |                   | Y           | Y          |               |               |            | Y                     | Y                      | Y                       | Y                     | Y         | Y                       | Y           |           | Y         | Y         |
| Father education                         | Y               | Y       | Y                | Y               |                   | Y           | Y          |               |               |            | Y                     | Y                      | Y                       | Y                     | Y         | Y                       | Y           |           | Y         | Y         |
| Other dietary patterns                   | Y               | Y       | Y                | Y               |                   | Y           | Y          |               |               |            | Y                     | Y                      | Y                       | Y                     | Y         | Y                       | Y           |           | Y         | Y         |
| Adequacy of prenatal care                |                 |         |                  |                 |                   | Y           | Y          |               |               |            | Y                     | Y                      | Y                       | Y                     | Y         | Y                       | Y           |           | Y         | Y         |
| Change in diet in previous 1 month       |                 |         |                  |                 |                   | Y           | Y          |               |               |            | Y                     | Y                      | Y                       | Y                     | Y         | Y                       | Y           |           | Y         | Y         |
| Crown rump length z score                | Y               |         |                  | Y               |                   | Y           | Y          |               |               |            | Y                     | Y                      | Y                       | Y                     | Y         | Y                       | Y           |           | Y         | Y         |
| Delivery type                            |                 |         |                  | Y               |                   | Y           | Y          |               |               |            | Y                     | Y                      | Y                       | Y                     | Y         | Y                       | Y           |           | Y         | Y         |
| Duration of last menstrual cycle         |                 |         |                  | Y               |                   | Y           | Y          |               |               |            | Y                     | Y                      | Y                       | Y                     | Y         | Y                       | Y           |           | Y         | Y         |
| Family structure                         |                 |         |                  | Y               |                   | Y           | Y          |               |               |            | Y                     | Y                      | Y                       | Y                     | Y         | Y                       | Y           |           | Y         | Y         |
| Father education                         |                 |         |                  | Y               |                   | Y           | Y          |               |               |            | Y                     | Y                      | Y                       | Y                     | Y         | Y                       | Y           |           | Y         | Y         |
| Hemoglobin concentration                 |                 |         |                  | Y               |                   | Y           | Y          |               |               |            | Y                     | Y                      | Y                       | Y                     | Y         | Y                       | Y           |           | Y         | Y         |
| Hypertension and preeclampsia            |                 |         |                  | Y               |                   | Y           | Y          |               |               |            | Y                     | Y                      | Y                       | Y                     | Y         | Y                       | Y           |           | Y         | Y         |
| Marital status                           |                 |         |                  | Y               |                   | Y           | Y          |               |               |            | Y                     | Y                      | Y                       | Y                     | Y         | Y                       | Y           |           | Y         | Y         |
| Medical problems in pregnancy            |                 |         |                  | Y               |                   | Y           | Y          |               |               |            | Y                     | Y                      | Y                       | Y                     | Y         | Y                       | Y           |           | Y         | Y         |
| Occupation                               |                 |         |                  | Y               |                   | Y           | Y          |               |               |            | Y                     | Y                      | Y                       | Y                     | Y         | Y                       | Y           |           | Y         | Y         |
| Season in which baseline data was collected|                 |         |                  | Y               |                   | Y           | Y          |               |               |            | Y                     | Y                      | Y                       | Y                     | Y         | Y                       | Y           |           | Y         | Y         |
| Stress                                   |                 |         |                  | Y               |                   | Y           | Y          |               |               |            | Y                     | Y                      | Y                       | Y                     | Y         | Y                       | Y           |           | Y         | Y         |
| Systolic and diastolic blood pressure    |                 |         |                  | Y               |                   | Y           | Y          |               |               |            | Y                     | Y                      | Y                       | Y                     | Y         | Y                       | Y           |           | Y         | Y         |
| Week of gestation at baseline survey     |                 |         |                  | Y               |                   | Y           | Y          |               |               |            | Y                     | Y                      | Y                       | Y                     | Y         | Y                       | Y           |           | Y         | Y         |

\(^1\) Y denotes covariate that was adjusted.
Supplementary data

Supplemental Table 6. Adjusted covariates for small/large for gestational age\(^1\)

|                          | Thompson (35) | Gresham (36) | Lu (26) | Knuiken (22) | Chia (14) | Rodríguez-Bernal (16) | Chatzi (43) (Atlantic) | Chatzi (43) (Mediterranean) | Chatzi (43) (Rhea) | Poon (15) | Hillesund (45) | Abdullahi (30) | Monteagudo (24) | Gimeno (50) | Oktobo (23) | Riles-shiman (47) | Saunders (48) |
|--------------------------|---------------|--------------|---------|--------------|-----------|-----------------------|------------------------|--------------------------|----------------------|------------|----------------|----------------|----------------|------------|-------------|---------------|---------------|
| Gestational age          | Y             | Y            | Y       | Y            | Y         | Y                     | Y                      | Y                        | Y                     | Y          | Y              | Y              | Y              | Y          | Y           | Y             | Y             |
| Smoking                  | Y             | Y            | Y       | Y            | Y         | Y                     | Y                      | Y                        | Y                     | Y          | Y              | Y              | Y              | Y          | Y           | Y             | Y             |
| Age                      | Y             | Y            | Y       | Y            | Y         | Y                     | Y                      | Y                        | Y                     | Y          | Y              | Y              | Y              | Y          | Y           | Y             | Y             |
| Infant sex               | Y             | Y            | Y       | Y            | Y         | Y                     | Y                      | Y                        | Y                     | Y          | Y              | Y              | Y              | Y          | Y           | Y             | Y             |
| Height                   | Y             | Y            | Y       | Y            | Y         | Y                     | Y                      | Y                        | Y                     | Y          | Y              | Y              | Y              | Y          | Y           | Y             | Y             |
| Parity                   | Y             | Y            | Y       | Y            | Y         | Y                     | Y                      | Y                        | Y                     | Y          | Y              | Y              | Y              | Y          | Y           | Y             | Y             |
| Education                | Y             | Y            | Y       | Y            | Y         | Y                     | Y                      | Y                        | Y                     | Y          | Y              | Y              | Y              | Y          | Y           | Y             | Y             |
| Pre-pregnancy BMI        | Y             | Y            | Y       | Y            | Y         | Y                     | Y                      | Y                        | Y                     | Y          | Y              | Y              | Y              | Y          | Y           | Y             | Y             |
| Energy intake            | Y             | Y            | Y       | Y            | Y         | Y                     | Y                      | Y                        | Y                     | Y          | Y              | Y              | Y              | Y          | Y           | Y             | Y             |
| Pre-pregnancy weight     | Y             | Y            | Y       | Y            | Y         | Y                     | Y                      | Y                        | Y                     | Y          | Y              | Y              | Y              | Y          | Y           | Y             | Y             |
| Father height            | Y             | Y            | Y       | Y            | Y         | Y                     | Y                      | Y                        | Y                     | Y          | Y              | Y              | Y              | Y          | Y           | Y             | Y             |
| Race/Ethnicity           | Y             | Y            | Y       | Y            | Y         | Y                     | Y                      | Y                        | Y                     | Y          | Y              | Y              | Y              | Y          | Y           | Y             | Y             |
| Gestational weight gain  | Y             | Y            | Y       | Y            | Y         | Y                     | Y                      | Y                        | Y                     | Y          | Y              | Y              | Y              | Y          | Y           | Y             | Y             |
| Income/Social class      | Y             | Y            | Y       | Y            | Y         | Y                     | Y                      | Y                        | Y                     | Y          | Y              | Y              | Y              | Y          | Y           | Y             | Y             |
| Alcohol drinking         | Y             | Y            | Y       | Y            | Y         | Y                     | Y                      | Y                        | Y                     | Y          | Y              | Y              | Y              | Y          | Y           | Y             | Y             |
| Gestational diabetes     | Y             | Y            | Y       | Y            | Y         | Y                     | Y                      | Y                        | Y                     | Y          | Y              | Y              | Y              | Y          | Y           | Y             | Y             |
| Physical activity        | Y             | Y            | Y       | Y            | Y         | Y                     | Y                      | Y                        | Y                     | Y          | Y              | Y              | Y              | Y          | Y           | Y             | Y             |
| Dietary supplement use   | Y             | Y            | Y       | Y            | Y         | Y                     | Y                      | Y                        | Y                     | Y          | Y              | Y              | Y              | Y          | Y           | Y             | Y             |
| Area of residence        | Y             | Y            | Y       | Y            | Y         | Y                     | Y                      | Y                        | Y                     | Y          | Y              | Y              | Y              | Y          | Y           | Y             | Y             |
| Change in diet in previous 1 month |            |              |         |             |           |                       |                        |                          |                       |            |                |                |                |            |             |               |               |
| Enrollment site          |               |              |         |             |           |                       |                        |                          |                       |            |                |                |                |            |             |               |               |
| Family structure         |               |              |         |             |           |                       |                        |                          |                       |            |                |                |                |            |             |               |               |
| Hemoglobin concentration |               |              |         |             |           |                       |                        |                          |                       |            |                |                |                |            |             |               |               |
| Hypertension             |               |              |         |             |           |                       |                        |                          |                       |            |                |                |                |            |             |               |               |
| Marital status           |               |              |         |             |           |                       |                        |                          |                       |            |                |                |                |            |             |               |               |
| Medical problems in pregnancy |            |              |         |             |           |                       |                        |                          |                       |            |                |                |                |            |             |               |               |
| Mid-upper arm circumference |              |              |         |             |           |                       |                        |                          |                       |            |                |                |                |            |             |               |               |
| Occupation               |               |              |         |             |           |                       |                        |                          |                       |            |                |                |                |            |             |               |               |
| Other dietary patterns   |               |              |         |             |           |                       |                        |                          |                       |            |                |                |                |            |             |               |               |
| Paternal age             |               |              |         |             |           |                       |                        |                          |                       |            |                |                |                |            |             |               |               |
| Pregnancy weight         |               |              |         |             |           |                       |                        |                          |                       |            |                |                |                |            |             |               |               |
| Season in which baseline data was collected |            |              |         |             |           |                       |                        |                          |                       |            |                |                |                |            |             |               |               |
| Umbilical cord serum organochloride pesticides levels |            |              |         |             |           |                       |                        |                          |                       |            |                |                |                |            |             |               |               |
| Week of gestation at baseline survey |            |              |         |             |           |                       |                        |                          |                       |            |                |                |                |            |             |               |               |

\(^1\) Y denotes covariate that was adjusted.
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**Supplemental Table 7. Pooled effect estimates of sensitivity analyses**

| Maternal healthy dietary pattern and risk of preterm birth | OR (95% CI) |
|----------------------------------------------------------|-------------|
| Overall estimate                                         | 0.79 (0.68, 0.91) |
| Omit one study at a time                                 | ranged from 0.72 (0.61, 0.84) to 0.87 (0.80, 0.95) |
| Alternately include similar dietary patterns from the same cohort | ranged from 0.73 (0.60, 0.89) to 0.87 (0.80, 0.94) |
| Raw data (i.e. non-transformed estimates)                 | 0.86 (0.77, 0.95) |

| Maternal unhealthy dietary pattern and risk of preterm birth | OR (95% CI) |
|------------------------------------------------------------|-------------|
| Overall estimate                                          | 1.17 (0.99, 1.39) |
| Omit one study at a time                                  | ranged from 1.12 (0.94, 1.33) to 1.25 (1.11, 1.40) |
| Alternately include similar dietary patterns from the same cohort | 1.16 (0.98, 1.37) |
| Raw data (i.e. non-transformed estimates)                  | 1.22 (0.98, 1.51) |

| Maternal healthy dietary patterns and birth weights of offspring | Mean difference (95% CI) |
|-----------------------------------------------------------------|-------------------------|
| Overall estimate                                                | -1.0 g (-36, 34) g      |
| Omit one study at a time                                         | ranged from 13 g (-18, 44) g to -11 g (-47, 26) g |
| Alternately include similar dietary patterns from the same cohort | ranged from -3.4 g (-38, 32) g to 4.5 g (-30, 39) g |
| High quality studies                                            | -9.8 g (-52, 32) g      |
| Raw data (i.e. non-transformed estimates)                        | 6.7 g (-8.5, 22) g      |

| Maternal unhealthy dietary patterns and birth weights of offspring | Mean difference (95% CI) |
|-----------------------------------------------------------------|-------------------------|
| Overall estimate                                                | -40 g (-61, -20) g      |
| Omit one study at a time                                         | ranged from -38 g (-81, -15) g to -42 g (-75, -9.2) g |
| Raw data (i.e. non-transformed estimates)                        | -19 g (-28, -9.3) g     |

| Maternal healthy dietary patterns and risk of SGA/FGR/LBW        | OR (95% CI) |
|-----------------------------------------------------------------|-------------|
| Overall estimate                                                | 0.86 (0.73, 1.01) |
| Omit one study at a time                                         | ranged from 0.83 (0.67, 1.04) to 0.89 (0.74, 1.06) |
| Alternately include similar dietary patterns from the same cohort | ranged from 0.86 (0.73, 1.01) to 0.79 (0.64, 0.98) |
| High quality studies                                            | 0.85 (0.71, 1.01)      |
| Raw data (i.e. non-transformed estimates)                        | 0.92 (0.86, 1.00)      |
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| Maternal healthy dietary patterns and risk of LGA | OR (95% CI) |
|------------------------------------------------|------------|
| Overall estimate                                | 1.03 (0.78, 1.38) |
| Omit one study at a time                        | ranged from 0.93 (0.72, 1.19) to 1.14 (0.77, 1.70) |
| Alternately include similar dietary patterns from the same cohort | 1.07 (0.82, 1.39) |
| Raw data (i.e. non-transformed estimates)       | 1.05 (0.92, 1.19) |

1 The estimates represent the risk or effect size in the top tertile of dietary pattern scores, compared with the bottom tertile. FGR, fetal growth restriction; LGA, large for gestational age; LBW, low birth weight; SGA, small for gestational age
Funnel plot of the observational studies that examined the association between maternal healthy dietary patterns and birth weights of offspring.
Funnel plot of the observational studies that examined the association between maternal healthy dietary patterns and the risk of small for gestational age/fetal growth restriction/low birth weight.