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Dietary Patterns Consumed During Pregnancy and Birth Weight: A Systematic Review

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2025 Dietary Guidelines Advisory Committee. 2024. Scientific Report of the 2025 Dietary Guidelines Advisory Committee: Advisory Report to the Secretary of Health and Human Services and Secretary of Agriculture. U.S. Department of Health and Human Services. https://doi.org/10.52570/DGAC2025

Raghavan R, Dreibelbis C, Kingshipp BJ, Wong, YP, Terry N, Abrams B, Bartholomew A, Bodnar LM, Gernand A, Rasmussen K, Siega-Riz AM, Stang JS, Casavale KO, Spahn JM, Stoody E. Dietary Patterns before and during Pregnancy and Gestational Age- and Sex-Specific Birth Weight: A Systematic Review. April 2019. U.S. Department of Agriculture, Food and Nutrition Service, Center for Nutrition Policy and Promotion, Nutrition Evidence Systematic Review. Available at: https://doi.org/10.52570/NESR.PB242018.SR0104.

Raghavan R, Dreibelbis C, Kingshipp BL, Wong YP, Abrams B, Gernand AD, Rasmussen KM, Siega-Riz AM, Stang J, Casavale KO, Spahn JM, Stoody EE. Dietary patterns before and during pregnancy and maternal outcomes: a systematic review. Am J Clin Nutr. 2019 Mar 1;109(Suppl_7):705S-728S; doi: 10.1093/ajcn/nqy216.

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Plain language summary

What is the question?
The question is: What is the relationship between dietary patterns consumed during pregnancy and birth weight? The populations of interest for this question include individuals during pregnancy.

Why was this question asked?
This systematic review was conducted by the 2025 Dietary Guidelines Advisory Committee as part of the process to develop the *Dietary Guidelines for Americans, 2025-2030*.

How was this question answered?
The Committee conducted a systematic review to answer this question with support from the USDA Nutrition Evidence Systematic Review team. This review updated an existing review that was conducted as part of the Pregnancy and Birth to 24 Months Project.

What is the answer to the question?

- Dietary patterns consumed during pregnancy that are characterized by higher intakes of vegetables, fruits, legumes, nuts and seeds, grains, fish/seafood, dairy, and unsaturated fats, and lower intakes of red and processed meat, added sugars, and saturated fats may be associated with lower risk of small-for-gestational age in infants. This conclusion statement is based on evidence graded as limited.
- A conclusion statement cannot be drawn about the relationship between dietary patterns consumed during pregnancy and risk of large-for-gestational age, low birth weight, and macrosomia in infants because of substantial concerns with consistency, risk of bias, and generalizability in the body of evidence.

How up-to-date is this systematic review?
Conclusion statements from this review are based on articles published between January 1980 and January 2024.

Abstract

Background

This systematic review was conducted by the 2025 Dietary Guidelines Advisory Committee as part of the process to develop the *Dietary Guidelines for Americans, 2025-2030*. The U.S. Departments of Health and Human Services (HHS) and Agriculture (USDA) appointed the 2025 Dietary Guidelines Advisory Committee (Committee) in January 2023 to review evidence on high priority scientific questions related to diet and health. Their review forms the basis of their independent, science-based advice and recommendations to HHS and USDA, which is considered as the Departments develop the next edition of the *Dietary Guidelines*. As part of that process, the Committee conducted a systematic review with support from the USDA Nutrition Evidence Systematic Review (NESR) team to answer the following question: What is the relationship between dietary patterns consumed during pregnancy and birth weight? This review is an update to an existing review that was conducted by the Pregnancy Technical Expert Collaborative of the Pregnancy and Birth to 24 Months Project.

Methods

The Committee conducted a systematic review using the methodology of the USDA NESR team. The Committee first developed a protocol. The intervention/exposure was dietary patterns consumed during pregnancy, the comparators are different dietary patterns or different levels of adherence to/consumption of the same dietary pattern, and the outcomes were intrauterine growth restriction, small-for-gestational age, large-for-gestational age, low birth weight, and macrosomia. Additional inclusion criteria were established for the following study characteristics: a) use randomized or non-randomized controlled trial, prospective or retrospective cohort, or nested case-control study designs, b) be published in English in peer-reviewed journals, c) be from countries classified as high or very high on the Human Development Index, and d) enroll participants with a range of health statuses. The review excluded studies that exclusively enrolled participants with a disease or that did not control for at least 1 of the key confounders listed in the analytic framework.

NESR librarians conducted a literature search in PubMed, Embase, CINAHL, and Cochrane to identify articles published between January 2017 and January 2024. Two NESR analysts independently screened all electronic results and the reference lists of included articles based on the pre-determined criteria. The results of this search were combined with included articles from the existing review.

NESR analysts extracted data, from each included article, with a second analyst verifying accuracy of the extraction. Two NESR analysts independently conducted a formal risk of bias assessment, by study design, for each included article, then reconciled any differences in the assessment. The Committee qualitatively synthesized the evidence, from all included articles identified in the updated literature search and from the existing review, according to the synthesis plan, with attention given to the overarching themes or key concepts from the findings, similarities and differences between studies, and factors that may have affected the results. The Committee developed conclusion statements and graded the strength of evidence based on its consistency, precision, risk of bias, directness, and generalizability.

Results

Small-for-gestational age

Conclusion statement and grade:
Dietary patterns consumed during pregnancy that are characterized by higher intakes of vegetables, fruits, legumes, nuts and seeds, grains, fish/seafood, dairy, and unsaturated fats, and lower intakes of red and processed meat, added sugars, and saturated fats may be associated with lower risk of small-for-gestational age in infants. This conclusion statement is based on evidence graded as limited. (Grade: Limited)

Summary of the evidence:
- Forty-nine articles examined dietary patterns consumed during pregnancy and small-for-gestational age. Forty-two articles were from prospective cohort studies, 8 articles were from randomized controlled trials, and 1 article was also a non-randomized controlled trial.
- The direction and size of effects differed across studies.
- The size of groups was too small in some studies. Variation around the effect estimates were wide in some studies.
- Few studies were designed and conducted well.
- The interventions/exposures and outcomes that were examined do not directly represent those of interest in this review.
- The evidence may not apply to the U.S. population.

Large-for-gestational age, low birth weight, and macrosomia

Conclusion statement and grade:
A conclusion statement cannot be drawn about the relationship between dietary patterns consumed during pregnancy and risk of large-for-gestational age, low birth weight, and macrosomia in infants because of substantial concerns with consistency, risk of bias, and generalizability in the body of evidence. (Grade: Grade Not Assignable)

Summary of the evidence:

- Forty-five articles examined dietary patterns consumed during pregnancy and large-for-gestational age, low birth weight, and/or macrosomia. Thirty-six articles were from prospective cohort studies, 8 articles were from randomized controlled trials, and 1 article was also a non-randomized controlled trial.
- The direction and size of effects and the dietary patterns varied widely.
- Few studies were designed and conducted well.
- Generalizability of the body of evidence to the U.S. population, both in terms of participant characteristics and the dietary patterns, was limited.

Introduction

To prepare for the development of the *Dietary Guidelines for Americans, 2025-2030*, the U.S. Departments of Health and Human Services (HHS) (**Appendix 1**) and Agriculture (USDA) identified a proposed list of scientific questions based on relevance, importance, potential federal impact, and avoiding duplication, which were posted for public comment.[*] The Departments appointed the 2025 Dietary Guidelines Advisory Committee (Committee) in January 2023 to review evidence on the scientific questions. The Committee's review of the evidence forms the basis of the Scientific Report of the 2025 Dietary Guidelines Advisory Committee,[†] which includes independent, science-based advice and recommendations to HHS and USDA and is considered during the development of the next edition of the *Dietary Guidelines*.

The proposed scientific questions were refined and prioritized by the Committee for consideration in their review of the evidence. As part of that process, the following systematic review question was prioritized: What is the relationship between dietary patterns consumed during pregnancy and birth weight? The Committee conducted a systematic review to address this question, with support from USDA's Nutrition Evidence Systematic Review (NESR) team. This review is an update to the systematic review conducted by the Pregnancy Technical Expert Collaborative as part of the Pregnancy and Birth to 24 Months Project (**Table 1**), and the conclusion statements developed as part of that existing work can be found in **Appendix 2**.

Table 1. Review history

Date	Description	Citation
April 2019	Original systematic review conducted by the Pregnancy Technical Expert Collaborative as part of the Pregnancy and Birth to 24 Months Project published	Raghavan R, Dreibelbis C, Kingshipp BJ, Wong, YP, Terry N, Abrams B, Bartholomew A, Bodnar LM, Gernand A, Rasmussen K, Siega-Riz AM, Stang JS, Casavale KO, Spahn JM, Stoody E. Dietary Patterns before and during Pregnancy and Gestational Age- and Sex-Specific Birth Weight: A Systematic Review. April 2019. U.S. Department of Agriculture, Food and Nutrition Service, Center for Nutrition Policy and Promotion, Nutrition Evidence Systematic Review. Available at: https://doi.org/10.52570/NESR.PB242018.SR0104.
May 2023	Systematic review protocol for the 2025 Dietary Guidelines Advisory Committee published online	Fisher JO, Abrams S, Andres A, Byrd-Bredbenner C, Deierlein A, Eicher-Miller H, Odoms-Young A, Palacios C, Obbagy J, Bahnfleth C, Nevins J, Raghavan R, Scinto-Madonich S, Higgins M, Butera G, Terry N. Dietary Patterns Consumed During Pregnancy and Birth Weight: A Systematic Review Protocol. May 2023. U.S. Department of Agriculture, Food and Nutrition Service, Center for Nutrition Policy and Promotion, Nutrition Evidence Systematic Review. Available at: https://nesr.usda.gov/protocols.
October 2023	Revisions to the systematic review protocol for the 2025 Dietary Guidelines Advisory Committee published online	Fisher JO, Abrams S, Andres A, Byrd-Bredbenner C, Deierlein A, Eicher-Miller H, Odoms-Young A, Palacios C, Obbagy J, Bahnfleth C, Nevins J, Raghavan R, Scinto-Madonich S, Higgins M, Butera G, Terry N. Dietary Patterns Consumed During Pregnancy and Birth Weight: A Systematic Review Protocol. May 2023. U.S. Department of Agriculture, Food and Nutrition Service, Center for Nutrition Policy and Promotion, Nutrition Evidence Systematic Review. Available at: https://nesr.usda.gov/protocols.

[*] Dietary Guidelines for Americans: Learn About the Process. 2022. Available at: https://www.dietaryguidelines.gov/work-under-way/learn-about-process

[†] 2025 Dietary Guidelines Advisory Committee. 2024. Scientific Report of the 2025 Dietary Guidelines Advisory Committee: Advisory Report to the Secretary of Health and Human Services and Secretary of Agriculture. U.S. Department of Health and Human Services. https://doi.org/10.52570/DGAC2025

February 2024	Revisions to the systematic review protocol for the 2025 Dietary Guidelines Advisory Committee published online	Fisher JO, Abrams S, Andres A, Byrd-Bredbenner C, Deierlein A, Eicher-Miller H, Odoms-Young A, Palacios C, Obbagy J, Bahnfleth C, Nevins J, Raghavan R, Scinto-Madonich S, Higgins M, Butera G, Terry N. Dietary Patterns Consumed During Pregnancy and Birth Weight: A Systematic Review Protocol. May 2023. U.S. Department of Agriculture, Food and Nutrition Service, Center for Nutrition Policy and Promotion, Nutrition Evidence Systematic Review. Available at: https://nesr.usda.gov/protocols.
June 2024	Revisions to the systematic review protocol for the 2025 Dietary Guidelines Advisory Committee published online	Fisher JO, Abrams S, Andres A, Byrd-Bredbenner C, Deierlein A, Eicher-Miller H, Odoms-Young A, Palacios C, Obbagy J, Bahnfleth C, Nevins J, Raghavan R, Scinto-Madonich S, Higgins M, Butera G, Terry N. Dietary Patterns Consumed During Pregnancy and Birth Weight: A Systematic Review Protocol. May 2023. U.S. Department of Agriculture, Food and Nutrition Service, Center for Nutrition Policy and Promotion, Nutrition Evidence Systematic Review. Available at: https://nesr.usda.gov/protocols.

Methods

The Committee used NESR's methodology to conduct this systematic review. NESR's methodology is described in detail in its methodology manual,[*] as well as in the Committee's scientific report.[†] This section presents an overview of the specific methods used to answer the systematic review question: What is the relationship between dietary patterns consumed during pregnancy and birth weight?

This systematic review is an update to an existing NESR systematic review completed as part of the Pregnancy and Birth to 24 Months Project by the Pregnancy Technical Expert Collaborative,[‡] which included evidence published from January 1980 to January 2017. This update synthesized all of the eligible studies from January 1980 to January 2024 to develop and grade conclusion statements, according to the methods described below. This means that all of the eligible articles from the existing review and the newly published articles were re-synthesized as one body of evidence.

Develop a protocol

A systematic review protocol is the plan for how NESR's methodology will be used to conduct a specific systematic review and is established by the Committee, *a priori*, before any evidence is reviewed. The protocol is designed to capture the most appropriate and relevant body of evidence to answer the systematic review question. Development of the protocol involves discussion of the strengths and limitations of various methodological approaches relevant to the question, which then inform subsequent steps of the systematic review process. The protocol describes all of the methods that will be used throughout the systematic review process. Additionally, the protocol includes the following components, which are tailored to each systematic review question: the analytic framework, the inclusion and exclusion criteria, and the synthesis plan. The Committee used the analytic framework and the inclusion and exclusion criteria from the existing review and

[*] USDA Nutrition Evidence Systematic Review Branch. USDA Nutrition Evidence Systematic Review: Methodology Manual. February 2023. U.S. Department of Agriculture, Food and Nutrition Service, Center for Nutrition Policy and Promotion, Nutrition Evidence Systematic Review. Available at: https://nesr.usda.gov/methodology-overview

[†] 2025 Dietary Guidelines Advisory Committee. 2024. Scientific Report of the 2025 Dietary Guidelines Advisory Committee: Advisory Report to the Secretary of Health and Human Services and Secretary of Agriculture. U.S. Department of Health and Human Services. https://doi.org/10.52570/DGAC2025

[‡] Raghavan R, Dreibelbis C, Kingshipp BJ, et al. Dietary Patterns before and during Pregnancy and Gestational Age- and Sex-Specific Birth Weight: A Systematic Review. U.S. Department of Agriculture, Food and Nutrition Service, Center for Nutrition Policy and Promotion, Nutrition Evidence Systematic Review; 2019. https://doi.org/10.52570/NESR.PB242018.SR0104.

made adjustments to the protocol, as needed. Differences in the inclusion and exclusion criteria between existing and updated reviews are documented in **Appendix 3**.

The protocol was posted online (https://nesr.usda.gov/protocols) for the public to view and comment on. Revisions to the systematic review protocol were made during the review process. These amendments are documented in **Table 2**.

Table 2. Protocol revisions

Date	Protocol revision	Description
July 2023	The inclusion and exclusion criteria for the intervention/exposure and comparator were revised to clarify that: • a study must provide a description of the foods and beverages in both the intervention/exposure and comparator groups to be included. • studies that examine consumption of and/or adherence to similar dietary patterns of which only a specific component or food source differs between groups are excluded.	These revisions were made to clarify the inclusion and exclusion criteria for the intervention/exposure and comparator, but do not represent a change in how the criteria were applied. These revisions were made before any evidence was synthesized.
July 2023	Inclusion and exclusion criteria were added for confounders, specifying that studies must control for at least one key confounder listed in the analytic framework to be included.	This revision was made to enable focus on a stronger body of evidence. The revision was made before any evidence was synthesized.
January 2024	Inclusion and exclusion criteria for publication date were updated to document that the review will include studies published through January 2024.	This revision was made to document the final publication date range covered by the literature search.
April 2024	Inclusion and exclusion criteria for the outcome were revised to only include studies that report categorical birth weight outcomes. Studies that exclusively report continuous birth weight outcomes will be excluded.	This revision was made to enable focus on risk of birth weight outcomes of greater public health concern. The revision was made before any evidence was synthesized.

Develop an analytic framework

An analytic framework visually represents the overall scope of the systematic review question and depicts the contributing elements that were examined and evaluated. It presents the core elements of each systematic review question, including the **P**opulation (i.e., those who experience the intervention/exposure and/or outcome), **I**ntervention and/or exposure (i.e., the independent variable of interest), **C**omparator (i.e., the alternative being compared to the intervention or exposure), and **O**utcome(s). Definitions for key terms are also included because they provide the basis for how concepts are operationalized throughout the review. The Committee identified key confounders based on their knowledge of nutrition and health research and experience as subject matter experts. Key confounders are participant characteristics, such as demographics, health status, and diet and lifestyle behaviors, and/or other factors related to both the intervention/exposure and the outcome of interest that may impact the relationships of interest. Key confounders were considered during review and evaluation of the evidence, particularly during the risk of bias assessment of non-randomized and observational studies.

Figure 1 is the analytic framework for the systematic review. The intervention or exposure of interest is dietary patterns consumed during pregnancy. The comparators are different dietary patterns or different adherence/consumption levels to the same dietary pattern. The outcomes are intrauterine growth restriction (IUGR) in individuals during pregnancy and large-for-gestational age (LGA), small-for-gestational age (SGA), low birth weight (LBW), and macrosomia in infants at birth. The key confounders are age, race and/or ethnicity, socioeconomic position, anthropometry (pre-pregnancy BMI), smoking, parity, diabetes mellitus in current pregnancy, and current hypertensive disorders of pregnancy.

Figure 1. Analytic framework for the systematic review question: What is the relationship between dietary patterns consumed during pregnancy and birth weight?

Population	Intervention/ exposure	Comparator	Outcome	Key confounders
Individuals during pregnancy	Consumption of a dietary pattern	• Different dietary pattern(s) • Different adherence/ consumption levels to the same dietary pattern	In individuals during pregnancy: • Intrauterine growth restriction (IUGR) In infants at birth: • Large-for-gestational age (LGA) • Small-for-gestational age (SGA) • Low birth weight (LBW) • Macrosomia	• Age • Race and/or ethnicity • Socioeconomic position • Anthropometry (pre-pregnancy BMI) • Smoking • Parity • Diabetes mellitus in current pregnancy • Current hypertensive disorders of pregnancy

Synthesis organization:

I. ***Population:*** Individuals during pregnancy

   a. ***Outcome:*** IUGR; LGA; SGA; LBW; Macrosomia

Key definitions:

Dietary pattern – The quantities, proportions, variety, or combination of different foods, drinks, and nutrients (when available) in diets, and the frequency with which they are habitually consumed.

Develop inclusion and exclusion criteria

The inclusion and exclusion criteria provide an objective, consistent, and transparent framework for determining which articles to include in the systematic review (**Table 3**). These criteria ensure that the most relevant and appropriate body of evidence is identified for the systematic review question, and that the evidence reviewed is[*]:

- Applicable to the U.S. population of interest
- Relevant to Federal public health nutrition policies and programs
- Rigorous from a scientific perspective

[*]USDA Nutrition Evidence Systematic Review Branch. USDA Nutrition Evidence Systematic Review: Methodology Manual. February 2023. U.S. Department of Agriculture, Food and Nutrition Service, Center for Nutrition Policy and Promotion, Nutrition Evidence Systematic Review. Available at: https://nesr.usda.gov/methodology-overview

Table 3. Inclusion and exclusion criteria

Category	Inclusion Criteria	Exclusion Criteria
Study design	• Randomized controlled trials • Non-randomized controlled trials* • Prospective cohort studies • Retrospective cohort studies • Nested case-control studies	• Uncontrolled trials† • Case-control studies • Cross-sectional studies • Ecological studies • Narrative reviews • Systematic reviews • Meta-analyses • Modeling and simulation studies
Publication date	• January 1980 – January 2024‡	• Before January 1980, after January 2024
Population: Study participants	• Human	• Non-human
Population: Life stage	• At intervention or exposure: ○ Individuals during pregnancy • At outcome: ○ Individuals during pregnancy ○ Infants at birth	• At intervention or exposure: ○ Individuals before pregnancy ○ Individuals during postpartum ○ Infants at birth
Population: Health status	• Studies that <u>exclusively</u> enroll participants not diagnosed with a disease§ • Studies that enroll <u>some</u> participants: ○ diagnosed with a disease; ○ who became pregnant using Assisted Reproductive Technologies; ○ with multiple gestation pregnancies; ○ pre- or post-bariatric surgery; ○ and/or hospitalized for an illness, injury, or surgery	• Studies that <u>exclusively</u> enroll participants: ○ diagnosed with a disease;** ○ who became pregnant using Assisted Reproductive Technologies; ○ with multiple gestation pregnancies; ○ pre- or post-bariatric surgery; ○ and/or hospitalized for an illness, injury, or surgery††
Population: Analytic approach	• Studies that enroll both singleton and multiple gestation pregnancies and present uncombined findings	• Studies that enroll both singleton and multiple gestation pregnancies and only present aggregate findings

* Including quasi-experimental and controlled before-and-after studies

† Including uncontrolled before-and-after studies

‡ This review update date range encompasses the original systematic review date range, which included articles published from January 1980 to January 2017

§ Studies that enroll participants who are at risk for chronic disease were included

** Studies that exclusively enroll participants with obesity were included

†† Studies that exclusively enroll participants post-cesarean section were included

Category	Inclusion Criteria	Exclusion Criteria
Intervention/ exposure	• Studies that examine consumption of and/or adherence to a dietary pattern [i.e., the quantities, proportions, variety, or combination of different foods, drinks, and nutrients (when available) in diets, and the frequency with which they are habitually consumed], including, at a minimum, a description of the foods and beverages in the pattern of each intervention/exposure and comparator group ○ Dietary patterns may be measured or derived using a variety of approaches, such as adherence to a priori patterns (indices/scores), data driven patterns (factor or cluster analysis), reduced rank regression, or other methods, including clinical trials • Multi-component intervention in which the isolated effect of the dietary pattern on the outcome(s) of interest is provided or can be determined	• Studies that do not provide a description of the dietary pattern, which at minimum, must include the foods and beverages in the pattern (i.e., studies that examine a labeled dietary pattern, but do not describe the foods and beverages consumed in each intervention/exposure and comparator group) • Multi-component intervention in which the isolated effect of the dietary pattern on the outcome(s) of interest is not analyzed or cannot be determined (e.g., due to multiple intervention components within groups)
Comparator	• Consumption of and/or adherence to a different dietary pattern • Different levels of consumption of and/or adherence to a dietary pattern	• Consumption of and/or adherence to a similar dietary pattern of which only a specific component or food source is different between groups
Outcome(s)	• Intrauterine growth restriction (IUGR) • Large-for-gestational age (LGA) • Small-for-gestational age (SGA) • Low birth weight (LBW) • Macrosomia	• Birth weight outcomes measured continuously
Confounders	• Studies that control for at least one of the key confounders listed in the analytic framework	• Studies that do not control for any of the key confounders listed in the analytic framework
Publication status	• Peer-reviewed articles published in research journals	• Non-peer-reviewed articles, unpublished data or manuscripts, pre-prints, reports, editorials, retracted articles, and conference abstracts or proceedings
Language	• Published in English	• Not published in English
Country*	• Studies conducted in countries classified as high or very high on the Human Development Index the year(s) the intervention/exposure data were collected	• Studies conducted in countries classified as medium or low on the Human Development Index the year(s) the intervention/exposure data were collected

* The classification of countries on the Human Development Index (HDI) is based on the UN Development Program Human Development Report Office (http://hdr.undp.org/en/data) for the year the study intervention occurred or data were collected. If the study does not report the year(s) in which the intervention/exposure data were collected, the HDI classification for the year of publication is applied. Studies conducted prior to 1990 are classified based on 1990 HDI classifications. If the year is more recent than the available HDI values, then the most recent HDI classifications are used. If a country is not listed in the HDI, then the current country classification from the World Bank is used (The World Bank Country and Lending Groups, available from: https://datahelpdesk.worldbank.org/knowledgebase/articles/906519-world-country-and-lending-groups)

Search for and screen studies

NESR librarians, in collaboration with NESR analysts and the Committee, used the analytic framework and inclusion and exclusion criteria to develop a comprehensive literature search strategy. The literature search strategy included selecting and searching the appropriate bibliographic databases, translating search using syntax appropriate for the databases being searched, and employing search refinements, such as search filters. For existing reviews, search strategies were updated, as appropriate, for each database. The full literature search is documented in **Appendix 4**.

The results of all electronic database searches, after removal of duplicates, were screened independently by 2 NESR analysts using a step-wise process by reviewing titles, abstracts, and full-texts to determine which articles meet the inclusion criteria. Manual searching was conducted to find peer-reviewed published articles not identified through the electronic database search. These articles were also screened independently by 2 NESR analysts at the abstract and full-text levels.

Extract data and assess the risk of bias

NESR analysts extracted all essential data from each included article to describe key characteristics of the available evidence, such as the author, publication year, cohort/trial name, study design, population life stage at intervention/exposure and outcome, intervention/exposure and outcome assessment methods, and outcomes. One NESR analyst extracted the data and a second NESR analyst reviewed the extracted data for accuracy. Each article included in the systematic review underwent a formal risk of bias assessment, with 2 NESR analysts independently completing the risk of bias assessment using the tool that is appropriate for the study design.[*†‡]

Synthesize the evidence

The Committee described, compared, and combined the evidence from all included studies to answer the systematic review question[§]. Synthesis of the body of evidence involved identifying overarching themes or key concepts from the findings, identifying and explaining similarities and differences between studies, and determining whether certain factors impact the relationships being examined, which includes potential causes of heterogeneity across all included evidence.

Extracted data and risk of bias assessments for all included studies were tabulated to visually display results and facilitate synthesis. During synthesis, the Committee considered the effect direction, magnitude, and statistical significance of the results reported across the articles included in the body of evidence. The evidence was synthesized qualitatively without meta-analysis of effect estimates, statistical pooling or conversion of data, or quantitative tests of heterogeneity.

The synthesis plan for this review was designed with the end-use in mind, to inform the Committee's advice to HHS and USDA regarding dietary guidance across life stages. The first level of synthesis organization was by population at intervention or exposure, which includes individuals during pregnancy. Then, the evidence was organized by similar outcome based on the available evidence. When synthesizing dietary patterns evidence,

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[*] Sterne JAC, Savović J, Page MJ, et al. RoB 2: a revised tool for assessing risk of bias in randomised trials. *BMJ* 2019; 366: l4898.doi:10.1136/bmj.l4898

[†] Sterne JAC, Hernán MA, Reeves BC, et al. ROBINS-I: a tool for assessing risk of bias in non-randomized studies of interventions. *BMJ* 2016; 355; i4919; doi: 10.1136/bmj.i4919

[‡] Higgins JPT, Morgan RL, Rooney AA, et al. A tool to assess risk of bias in non-randomized follow-up studies of exposure effects (ROBINS-E). *Environment International* 2024 (published online Mar 24); doi: 10.1016/j.envint.2024.108602

[§] USDA Nutrition Evidence Systematic Review Branch. USDA Nutrition Evidence Systematic Review: Methodology Manual. February 2023. U.S. Department of Agriculture, Food and Nutrition Service, Center for Nutrition Policy and Promotion, Nutrition Evidence Systematic Review. Available at: https://nesr.usda.gov/methodology-overview focus was placed on the food and beverage components of the dietary patterns examined in the included studies (i.e., fruits, vegetables, whole grains, seafood), and not on the "label" or "name" of the pattern assigned by researchers (e.g., Mediterranean). To accomplish this, data visualizations were created to illustrate the components reflected in each dietary pattern studied. These visualizations allowed the Committee to compare and contrast the results across patterns while also identifying common foods and beverages reflected in patterns associated with beneficial, null, or adverse health outcomes.[*]

Develop conclusion statements and grade the evidence

After the Committee synthesized the body of evidence, they drafted conclusion statements. A conclusion statement is one or more summary statements carefully constructed to answer the systematic review question. Each conclusion statement reflects the evidence reviewed, as outlined in the analytic framework (e.g., PICO elements) and synthesis plan, and does not take evidence from other sources into consideration. Conclusion statements do not draw implications and should not be interpreted as dietary guidance. The Committee reviewed, discussed, and revised the conclusion statements until they reached agreement on wording that accurately reflected the body of evidence.

The Committee then graded the strength of the evidence underlying each conclusion statement. They did this using NESR's predefined criteria, based on five grading elements: consistency, precision, risk of bias, directness and generalizability of the evidence. Study design and publication bias were also considered.[†]

- <u>Consistency</u>: Consistency considers the degree of similarity in the direction and magnitude of effect across the body of evidence. This element also considers whether differences across the results can be explained by variations in study designs and methods.
- <u>Precision</u>: Precision considers the degree of certainty around an effect estimate for a given outcome. This element considers measures of variability, such as the width and range of confidence intervals, the number of studies, and sample sizes, within and across studies.
- <u>Risk of bias</u>: Risk of bias considers the likelihood that systematic errors resulting from the design and conduct of the studies could have impacted the accuracy of the reported results across the body of evidence.
- <u>Directness</u>: Directness considers the extent to which studies are designed to directly examine the relationship among the interventions/exposures, comparators, and outcome(s) of primary interest in the systematic review question.
- <u>Generalizability:</u> Generalizability considers whether the study participants, interventions and/or exposures, comparators, and outcomes examined in the body of evidence are applicable to the U.S. population of interest for the review.

The Committee assigned a grade to each conclusion statement (i.e., strong, moderate, limited, or grade not assignable). The grade communicates the strength of the evidence supporting a specific conclusion statement to decision makers and stakeholders. A conclusion statement can receive a grade of Strong, Moderate, or Limited, and if insufficient or no evidence is available to answer a systematic review question, then no grade is assigned (i.e., Grade Not Assignable) (**Table 4**). The overall grade is not based on a predefined formula for scoring or tallying ratings of each element. Rather, each overall grade reflects the expert group's thorough consideration of all of the grading elements, as they each relate to the specific nuances of the body of evidence under review.

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[*] English LK, Raghavan R, Obbagy JE, et al. Dietary Patterns and Health: Insights From NESR Systematic Reviews to Inform the Dietary Guidelines for Americans. JNEB. 2024 Jan; 56(4):75-87. doi: 10.1016/j.jneb.2023.10.001

[†] Spill MK, English LK, Raghavan R, et al. Perspective: USDA Nutrition Evidence Systematic Review Methodology: Grading the Strength of Evidence in Nutrition- and Public Health-Related Systematic Reviews. *Adv Nutr*. 2022 Aug 1;13(4):982-991. doi: 10.1093/advances/nmab147

Table 4. Definitions of NESR grades

Grade	Definition
Strong	The conclusion statement is based on a strong body of evidence as assessed by consistency, precision, risk of bias, directness, and generalizability. The level of certainty in the conclusion is strong, such that if new evidence emerges, modifications to the conclusion are unlikely to be required.
Moderate	The conclusion statement is based on a moderate body of evidence as assessed by consistency, precision, risk of bias, directness, and generalizability. The level of certainty in the conclusion is moderate, such that if new evidence emerges, modifications to the conclusion may be required.
Limited	The conclusion statement is based on a limited body of evidence as assessed by consistency, precision, risk of bias, directness, and generalizability. The level of certainty in the conclusion is limited, such that if new evidence emerges, modifications to the conclusion are likely to be required.
Grade Not Assignable	A conclusion statement cannot be drawn due to either a lack of evidence, or evidence that has severe limitations related to consistency, precision, risk of bias, directness, and generalizability.

Recommend future research

The Committee identified and documented research gaps and methodological limitations throughout the systematic review process. These gaps and limitations are used to develop research recommendations that describe the research, data, and methodological advances that are needed to strengthen the body of evidence on a particular topic. Rationales for the necessity of additional or stronger research are also provided with the research recommendations.

Peer review

This systematic review underwent external peer review in a process coordinated by staff from National Institutes of Health (NIH). NIH staff identified potential peer reviewers through outreach to a variety of professional organizations to select academic reviewers from U.S. colleges and universities across the country with a doctorate degree, including MDs, and expertise specific to the questions being reviewed. All peer reviewers were external to the *Dietary Guidelines* process, and therefore, current Committee members or Federal staff who supported the Committee or the development of the *Dietary Guidelines* were not eligible to serve as peer reviewers.

The peer review process was anonymous and confidential in that the peer reviewers were not identified to the Committee members or NESR staff, and in turn, the reviewers were asked not to share or discuss the review with anyone. Peer reviewers were made aware that per USDA, Food and Nutrition Service (FNS) agency policy, all peer reviewer comments would be summarized and made public, but comments would not be attributed to a specific reviewer.

Peer review occurred after draft conclusion statements were discussed by the full Committee at its third, fourth, fifth, and sixth public meetings. NIH staff assigned and distributed the reviews to at least 2 peer reviewers based on area of expertise. Following peer review, the Committee reviewed and discussed comments and made revisions to the systematic review, as needed, based on the discussion.

Health equity considerations

The Committee was charged by HHS and USDA to review all scientific questions with a health equity lens to ensure that the next edition of the *Dietary Guidelines* is relevant to people with diverse racial, ethnic, socioeconomic, and cultural backgrounds. The Committee made a number of health equity considerations throughout the NESR systematic review process. The Committee's Scientific Report[*] includes a more detailed discussion of their approach to applying a health equity lens to their review of evidence, but examples include consideration of key confounders relevant to health equity and assessment of generalizability of the evidence.

Results

Literature search and screening results

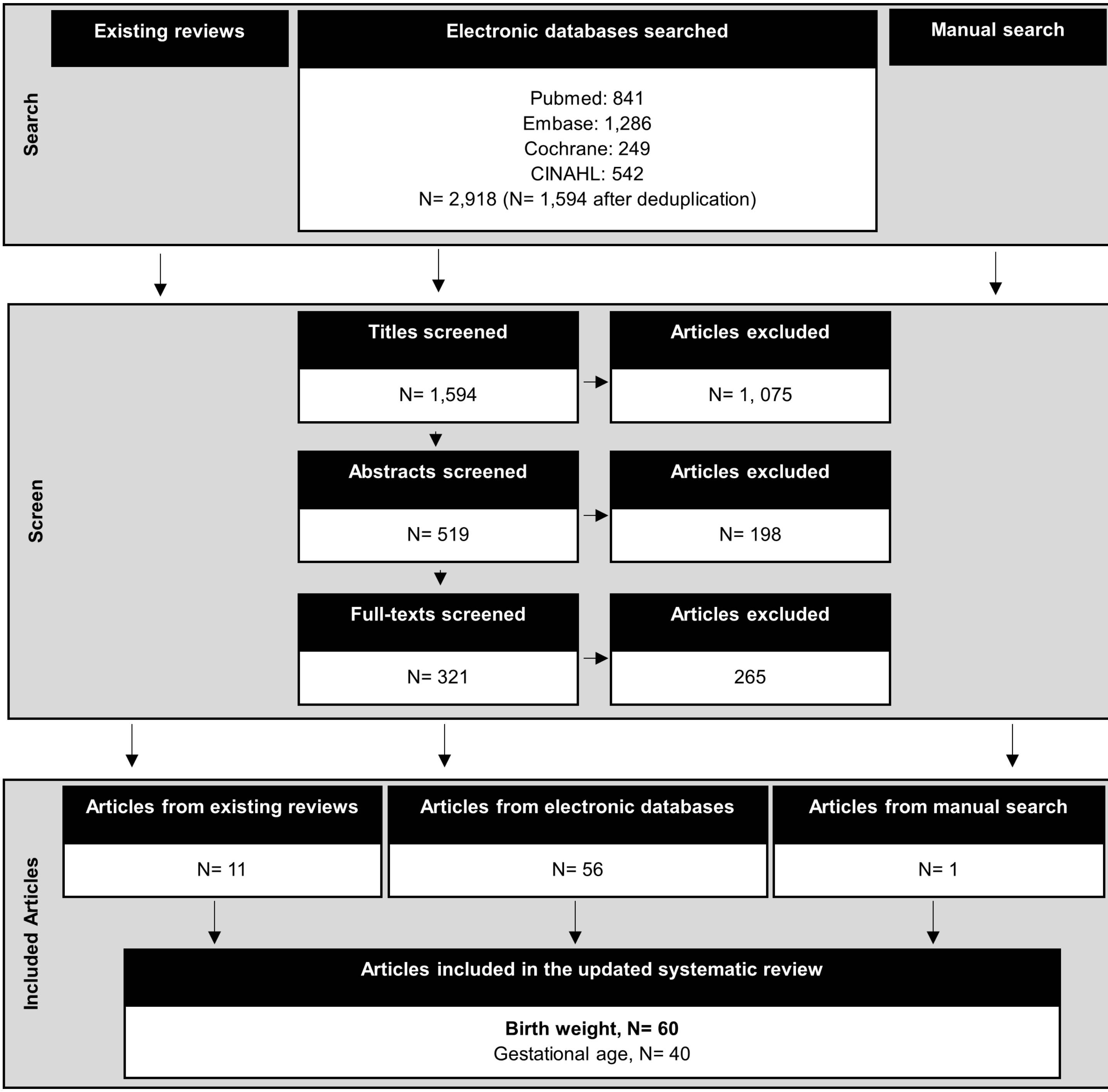
Articles included in this systematic review were identified from literature searches conducted to identify all potentially relevant articles for 2 systematic reviews assessing the relationship between dietary patterns consumed during pregnancy and birth weight and gestational age.[†] The literature search (**Appendix 4**) yielded 1,594 search results after the removal of duplicates (see **Figure 2**). Dual-screening resulted in the exclusion of 1,075 titles, 198 abstracts, and 265 full-texts articles. Reasons for full-text exclusion are in **Appendix 5**. Eleven additional articles were identified from the existing review[‡] and 1 additional article was identified from the manual search. The body of evidence included 60 articles.

[*] 2025 Dietary Guidelines Advisory Committee. 2024. Scientific Report of the 2025 Dietary Guidelines Advisory Committee: Advisory Report to the Secretary of Health and Human Services and Secretary of Agriculture. U.S. Department of Health and Human Services. https://doi.org/10.52570/DGAC2025

[†] Abrams SA, Andres A, Byrd-Bredbenner C, et al. Dietary Patterns Consumed During Pregnancy and Gestational Age at Birth: A Systematic Review. U.S. Department of Agriculture, Food and Nutrition Service, Center for Nutrition Policy and Promotion, Nutrition Evidence Systematic Review; 2025. https://doi.org/10.52570/NESR.DGAC2025.SR26

[‡] Raghavan R, Dreibelbis C, Kingshipp BJ, et al. Dietary Patterns before and during Pregnancy and Gestational Age- and Sex-Specific Birth Weight: A Systematic Review. U.S. Department of Agriculture, Food and Nutrition Service, Center for Nutrition Policy and Promotion, Nutrition Evidence Systematic Review; 2019. https://doi.org/10.52570/NESR.PB242018.SR0104.

Figure 2. Literature search and screen flowchart



Description of the evidence

This systematic review included 60 articles from 59 studies, including 50 articles from 50 prospective cohort studies (PCS; 3 articles analyzed multiple PCS),[1-50] 10 articles from 8 randomized controlled trials (RCT),[51-60] and 1 article from a non-randomized controlled trial (NRCT),[58] that address the relationship between dietary patterns during pregnancy and birth weight (**Table 8**). The analytic sample sizes for the RCT and NRCT ranged from 196 to 1,095, with approximately half including ≥500 participants.[51-55,58,60] For the PCS, the analytic sample sizes ranged from 94 to 72,317, but only 9 studies had <500 participants.[1,3,15,24,27,34,35,37,42] The studies were conducted in: the United States (15 articles),[3,4,10,13,14,24,26,27,36,38,45,46,48,56,59] Spain (7 articles),[5,9,39,52-54,58] China (6 articles),[8,23,25,41,47,60] Norway (4 articles),[11,17,18,57] Brazil (4 articles),[1,28,40,42] the United Kingdom (3 articles),[6,12,51] Japan (3 articles),[32,33,44] Ireland (3 articles),[6,30,31] Australia (3 articles),[15,43,55] Iran (2 articles),[16,34] France (2 articles),[6,22] Mexico (2 articles),[37,50] Italy (2 articles),[2,35] and Singapore,[7] Poland,[6] the Netherlands,[6] Korea,[20] Iceland,[19] Greece,[5] Denmark,[21] Czechia,[29] and Canada[49] (1 article each).

Population

Age

Participant age generally ranged from the mid-twenties to early-thirties in the PCS.[1-50] The mean age of participants in the RCT or NRCT was slightly higher, ranging from 29 years to 37 years.[51-60]

Health status

Pre-pregnancy BMI

All but 2 articles[16,21] reported information regarding pre-pregnancy BMI. Approximately 70% of articles enrolled participants with a mean BMI or a majority of participants with BMI <25.[1,2,4-11,13,17-20,22,23,25,26,28-33,35,38,39,41-44,47,49,52-55,57,58,60] Among the remaining articles, 13 enrolled participants with a mean BMI or a majority of participants with BMI ≥25,[3,15,24,27,34,36,37,40,45,46,48,50,56] while 4 enrolled participants with a mean BMI or a majority of participants with BMI ≥30.[12,14,51,59]

Diabetes and gestational diabetes

Eighteen articles did not provide information on diabetes, including gestational diabetes mellitus (GDM), in the current pregnancy.[2,3,6,9,14-16,19,21,29-33,39,41,46,50] The percent of participants with GDM ranged from approximately 0% to 28% in the 26 articles that reported this information.[4,7,8,10,12,13,18,24,27,28,34-36,38,40,44,45,47-49,51-56] Additionally, 14 articles reported that no participants had chronic or pre-pregnancy diabetes[7,12,13,17,18,24-26,34,36,40,55-57] and 5 articles reported that approximately 1% to 7% of participants had chronic or pre-pregnancy diabetes.[5,10,27,45,54] One final article reported that 32% of participants had either diabetes or GDM.[43]

Hypertensive disorders of pregnancy

Thirty articles did not provide information on current hypertensive disorders of pregnancy (HDP).[1-3,6,9,11,14-17,19,21-24,27,29-34,36,39,40,43,46,49,50,56,60] Gestational hypertension ranged from approximately 0% to 5% of participants in the 7 articles that reported this information.[5,20,41,52-55] Pre-eclampsia, which was reported in 11 articles, ranged from approximately 1.5% to 8.5% of participants.[4,7,8,12,18,28,37,38,44,47,51-55] Additionally, 3 articles reported that none of the participants had chronic hypertension,[25,26,57] while 1 article noted that approximately 2% of participants had chronic hypertension.[45] Approximately 0% to 11% of participants in 7 articles had unspecified HDP,[7,13,35,37,44,47,48] while an eighth article reported that approximately 23% of participants had unspecified HDP.[45]

Race and/or ethnicity

Twenty-five articles did not provide information on the race and/or ethnicity of participants.[1,2,5,11,16,17,19-22,29-34,37,41-44,47,60] Across the remaining 35 articles, individuals of several races and/or ethnicities were represented, including participants who were White, Black or African American, Hispanic or Latino, Asian or Pacific Islander, and American Indian or Alaska Native.

White

White individuals made up approximately 15% to 100% of participants across 28 articles.[4,6,9,10,12-15,18,24,26,28,36,38,40,45,46,48,49,51-57,59] Of these, 20 articles reported having a study sample consisting predominantly of White participants.[4,6,9,10,12-15,18,24,26,36,38,45,49,52-55,57,59]

Black or African American

Fifteen articles reported that approximately 2% to 35% of participants were Black or African American,[4,9,12,13,24,26,38,45,46,48,49,51,54,56,59] with 1 additional article reporting that 70% of participants were Black.[14]

Hispanic or Latino

Thirteen articles reported that approximately 7% to 41% of participants were Hispanic or Latino,[4,9,13,24,26,27,45,46,48,52-54,56] with 3 additional articles reporting that >75% of participants were Hispanic or Latino.[3,39,58]

Asian or Pacific Islander

Next, 12 articles reported that approximately 1% to 44% of participants were Asian or Pacific Islander,[9,12,13,24,26,45,46,48,49,51,54,55] with 4 additional articles reporting that >95% of participants were Asian or Pacific Islander.[7,8,23,25]

Individuals of other races and/or ethnicities

Only 1 study specifically reported the inclusion of participants who were American Indian or Alaska Native (0.3%).[24] Seventeen articles reported an "other" category with proportions ranging from 0.3% to 17%.[4,12-14,24,26,38,39,45,48,49,51-53,55,56,59] One article reported that 57% of participants were non-White.[40]

Socioeconomic position

All but 3 articles[16,21,51] reported information on measures of participant socioeconomic position (SEP). The most common metrics included education, income, and occupation or employment.

Education

Forty-nine articles reported on participant education.[1-14,17-20,22-33,36-50,52,53,56-58] Of these, the majority of participants had at least some tertiary, college, or university education.[3,4,6-12,14,17-20,22-26,30-33,36-38,41-46,48,49,52,53,56,57] However, in 11 articles most participants had a high school education (or equivalent) or less.[1,2,5,13,27-29,39,47,50,58]

Income, occupation or employment, and other measures

Twenty-six articles reported on participant income.[1,8,11,13,14,18,20,22-25,27,28,30-32,36,38,43-46,48,49,56,59] While 4 articles had a majority of participants with less than a "middle" class income,[1,14,27,28] 22 articles had a majority of participants with a "middle" class income or higher, or the level of income was unclear.[8,11,13,18,20,22-25,30-32,36,38,43-46,48,49,56,59]

Eighteen articles reported on participant occupation or employment.[2-4,18,22,24,28,32,34,35,37,39,43,46,53,58,60] Eleven of these articles reported that the majority of participants were employed outside of the home.[2,4,18,22,28,35,39,43,46,53,60]

Ten articles used other measures to assess SEP among participants.[4,9,12,15,40,41,45,46,54,55] The most common of these included assessments of socioeconomic index or level, with 5 articles reporting that the majority of participants had moderate or higher SEP[9,40,41,54,55] and 2 articles reporting that the majority of participants had lower SEP.[12,15] Three articles reported the type of health insurance utilized by participants; all noted that the majority of participants had private health insurance.[4,45,46]

Smoking

Thirteen articles did not provide information on smoking.[3,8,12,20,24,28,34,37,38,41,47,50,51] Among the 40 articles that reported on smoking during pregnancy, 4 did not include any current smokers,[16,56,57,59] 22 reported that <10% of participants smoked during pregnancy,[1,2,7,10,11,17-19,27,29,33,36,43,46,48,49,52-55,58,60] and 14 reported that approximately 11% to 42% of participants smoked during pregnancy.[5,6,9,13-15,22,30-32,35,39,40,44] Additionally, 1 article noted that 30% of participants were exposed to passive smoking during pregnancy.[25] Smoking ever or before pregnancy was examined in several articles, with 11 reporting that approximately 4% to 37% of participants were former smokers[4,10,19,23,29,32,33,40,42,44,49] and 3 reporting that approximately 23% to 44% of participants had ever smoked.[21,26,45]

Interventions/exposures and comparators

Dietary pattern methodology

Dietary patterns were assessed primarily using an experimental diet, index/score analysis, and factor/cluster analysis, with few studies using reduced rank regression or other methods. Specifically, 10 articles from 8 RCT and 1 NRCT assigned participants to an experimental diet,[51-60] 26 articles used at least 1 index or score to assess dietary patterns,[3,5,6,9,10,13,14,17-19,24,26,30,31,33,35-41,43,45,46,48,50] 23 articles used factor or cluster analysis,[2-4,7,8,11,12,15,16,21,23,25,27-29,32,34,42,44,46,47,49,50] and 4 articles used reduced rank.[1,20,22,44] Additionally, 1 article assessed dietary patterns based on a partial least squares method.[44] The dietary pattern components are detailed in **Table 5** and visualized in **Appendix 6**.

Table 5. Dietary pattern components*

Reference	Dietary pattern	Dietary pattern components
Al Wattar, 2019[51]	Mediterranean-style supplemented w/ mixed nuts and EVOO	Positive: Olive oil (as main fat and svg/d); Nuts (including peanuts) Vegetables; Fruit (including juice); Pulses; Fish or shellfish; White meat over red meat Negative: Red or processed meat; Butter, margarine, or cream; SSB; Commercial sweets or pastries
Assaf-Balut, 2017[52] Assaf- Balut, 2019[53]	Mediterranean-style supplemented w/ pistachios and EVOO	Positive: Olive oil (as main fat and svg/d); Vegetables; Fruit (including juice); Red wine; Pulses; Fish/seafood; Nuts; White over red meat; Traditional sauce of tomatoes, garlic, onion, or leeks sautéed in olive oil Negative: Red or processed meat; Butter, margarine, or cream; SSB; Commercial pastries
Crovetto, 2021[54]	Mediterranean-style	Positive: EVOO; walnuts; vegetables; fresh fruit; dairy products; whole grains; sofrito; legumes; fish; fatty fish; white meat Negative: Refined grains; red meat; processed meat; soda drinks; commercial bakery foods, sweets, and pastries; butter, margarine, or cream
Dodd, 2019[55]	HEI	Positive: Vegetables; fruit; dairy
Gallagher, 2018[56]	HEI-2010	Positive: Vegetables; fruits; whole grains; total protein foods; plant proteins; seafood; dairy; fatty acids Negative: Refined grains; energy from added sugars, solid fats, alcohol; sodium
Khoury, 2005[57]	Cholesterol-lowering diet advice	Positive: Fish and fish products; fatty fish and fish products; rapeseed-based margarine; oils; olive oil; rapeseed oil; nuts, olives, and seeds; vegetables; fruits Negative: Fatty milk; meat and meat products; fatty minced meat; butter; hard margarines
Melero, 2020[58]	Mediterranean-style supplemented w/ pistachios and EVOO	Positive: Vegetables; dishes with tomato sauce (tomato, garlic, onion, leek, olive oil); pulses; nuts; fish; white meat over red meat; olive oil; olive oil as principal cooking fat. Negative: Commercial pastries; red meat or sausages; animal fat; SSB Alcohol and fruit (including juice) components excluded
Van Horn, 2018[59]	DASH-style	Positive: Vegetables (not potatoes); nuts and legumes; fruit (including fruit juice); whole grains; low-fat dairy Negative: Red and processed meat; sweetened beverages; sodium
Zhao, 2022[60]	Mediterranean-style w/ recommended additional pistachios and EVOO	Positive: Olive oil (as main fat and svg/d); Vegetables; Fruit (including juice); Red wine; Pulses; Fish/seafood; Nuts; White over red meat; Traditional sauce of tomatoes, garlic, onion, or leeks sautéed in olive oil Negative: Red or processed meat; Butter, margarine, or cream; SSB; Commercial pastries
Index/Score Analysis		
Ancira-Moreno, 2020[50]	Maternal Diet Quality Score	Positive components: fruits and vegetables (≥400/d), PUFA (≥6% of total energy), low fat dairy products (2 svg/d), legumes (2 svg/d) Negative components: red meat (≤500 g/wk), saturated fat and/or added sugars (<10% of energy)
Berube, 2023[3]	HEI-2015	Positive components: total fruits, whole fruits, total vegetables, greens and beans, whole grains, dairy, total protein, seafood and plant protein, fatty acids. Negative components: refined grains, sodium, saturated fat, added sugars.

*Abbreviations: AHEI: Alternative Healthy Eating Index; d: day; DASH: Dietary Approaches to Stop Hypertension; DHA: docosahexaenoic acid; DP: dietary pattern(s); EPA: eicosapentaenoic acid; EVOO: extra virgin olive oil; FIGO: International Federation of Gynecology and Obstetrics; g: gram(s); HEI: Healthy Eating Index; kcal: kilocalorie(s); mg: milligram(s); MUFA: monounsaturated fatty acids; OMNI: Optimal Macronutrient Intake; PCA: principal component analysis; PLS: partial least squares; PUFA: polyunsaturated fatty acids; SFA: saturated fatty acids; SSB: sugar-sweetened beverages; svg: serving; T#: Trimester; ug: microgram(s); w/: with; wk: week

Reference	Dietary pattern	Dietary pattern components
Chatzi, 2012[5]	Mediterranean Diet	Positive components: vegetables, legumes, fruits and nuts, cereals, fish and seafood, dairy products, and the ratio of MUFA:SFA Negative components: all types of meat
Chen, 2021[6]	DASH	Positive components: fruits, vegetables excluding potatoes, total grains, non-full-fat dairy products, nuts/seeds/legumes. Negative components: red and processed meats, SSB/sweets/added sugars, sodium.
Díaz-López, 2022[9]	Relative Mediterranean Diet	Positive components: fruits, vegetables, legumes, cereals, fresh fish and olive oil Negative components: meat, dairy, alcohol
Emond, 2018[10]	AHEI-2010	Positive components: fruits, vegetables, whole grains, nuts and legumes, long-chain omega-3 fatty acids (EPA+DHA), PUFA Negative components: sugary beverages, red and processed meats, trans fatty acids, sodium. Modified to exclude moderate alcohol component.
Fulay, 2018[13]	DASH	Positive components: fruits; vegetables; whole grains; nuts/legumes; low-fat dairy Negative components: sodium; SSB; red and/or processed meats
	DASH OMNI	Positive components: fruits; vegetables; whole grains; nuts/legumes; low-fat dairy; MUFA and PUFA Negative components: sodium; SSB; red and/or processed meats
Gonzalez-Nahm, 2019[14]	AHEI-2010	Positive components: vegetables, fruit, whole grains, nuts and legumes, long-chain omega-3 fatty acids (DHA and EPA), PUFA Negative components: SSBs, red/processed meat, trans fat, sodium Modified to exclude alcohol component
Hillesund, 2014[17]	New Nordic Diet	Positive components: (i) eating ≥24 main meals/wk; (ii) eating Nordic fruits ≥5 times/wk; (iii) eating root vegetables ≥5 times/wk; (iv) eating cabbage ≥2 times/wk; (v) eating potatoes ≥one-third of total occasions of eating potatoes, rice or pasta; (vi) choosing whole grain bread more often than refined bread; (vii) eating oatmeal ≥monthly; (viii) eating fish/game/berries about 2 times/wk; (ix) drinking milk more often than juice; and (x) drinking ≥6 times as much water as SSB
Hillesund, 2018[18]	Norwegian Fit For Delivery	Positive components: regular meals; drinking water when thirsty; vegetables w/ dinner; fruits and vegetables between meals; reading nutrition labels before buying Negative components: sweets and snacks without appreciation; large portion sizes of unhealthy foods; added sugar; salt; eating beyond satiety
Hrolfsdottir, 2019[19]	Dietary risk score	Negative components: Not eating a varied diet (excluded/avoided any of the main food groups: cereal, vegetables/fruits, fish, meat, eggs, high-fat foods, or dairy), fruits/vegetables <5/d, dairy <2/d, whole grain products <2/d, sugar/artificially sweetened beverages ≥5/d, dairy ≥5/d
Lipsky, 2023[24]	HEI-2015	Positive components: total fruit, whole fruit, total vegetables, greens and beans, whole grains, dairy, total protein, seafood and plant proteins, fatty acids. Negative components: refined grains, sodium, added sugars, saturated fats.
Makarem, 2022[26]	Alternative Mediterranean Diet	Positive components: Vegetables (not potatoes); Legumes; Fruit; Nuts; Whole Grains; Fish; MUFA:SFA Negative component: Red and Processed Meat Moderate component: Alcohol
Navarro, 2019[31]	HEI-2015	Positive components: total fruits, whole fruits, total vegetables, greens and beans, total protein containing foods, seafood and plant proteins, whole grains, dairy, ratio of PUFAs and MUFAs to SFAs Negative components: refined grains, sodium, added sugars, saturated fats
Navarro, 2020[30]	HEI-2015	Positive components: total fruit, whole fruit, total vegetables, greens and beans, whole grains, dairy, total protein, seafood and plant proteins, fatty acids. Negative components: refined grains, sodium, added sugars, saturated fats.

Reference	Dietary pattern	Dietary pattern components
Okubo, 2023[33]	Balanced diet score	Positive components: Grain dishes, vegetable dishes, fish and meat dishes, milk, fruits. Negative components: snacks and alcoholic beverages, sodium from seasonings
Parisi, 2020[35]	FIGO Recommendations	Positive components: meat, fruit and vegetables, fish, dairy products, whole cereals, hemoglobin concentration, folic acid supplementation, iodized salt, sun exposure. Negative components: sweets and snacks.
Poon, 2013[36]	AHEI Pregnancy	Positive components: vegetables, whole fruit, whole grains, nuts and legumes, long-chain omega-3 fats (EPA+DHA), PUFA, calcium, folate, iron. Negative components: SSB, red/processed meat, trans fat, sodium.
	Alternative Mediterranean Diet	Positive components: vegetables, legumes, fruits, nuts, whole grains, fish, MUFA:SFA Negative component: red and processed meat
Reyes-López, 2021[37]	AHEI-2010 Pregnancy	Positive components: vegetables, fruit, whole grains, nuts and legumes, fish, PUFA, calcium, iron, folate. Negative components: SSBs and fruit juice, red/processed meat, trans fat.
Rifas-Shiman, 2009[38]	AHEI Pregnancy	Positive components: vegetables, fruit, ratio of white to red meat, fiber, ratio of PUFA to SFA, and folate, calcium, and iron from foods Negative component: trans fat
Rodríguez-Bernal, 2010[39]	AHEI Pregnancy	Positive components: vegetables (5 svg/d), fruit (4 svg/d), nuts and soy (1 svg/d), ratio of white meat (fish and poultry) to red meat (≥4:1), cereal fiber (15g/d), ratio of polyunsaturated to saturated fat (≥1), and folate (≥600g/d), calcium (≥1000mg/d), and iron (≥27mg/d) from foods Negative components: trans fat
Santos, 2021[40]	Diet Quality Index Adapted for Pregnant Women	Positive components: (/1000 kcal): vegetables ≥1.5 svg; legumes ≥0.05 svg; fresh fruits ≥1.5 svg; fibers ≥28.0 g; omega-3 ≥1.4 g; calcium ≥800 mg; folate ≥520 ug; iron ≥22 mg Negative components: ultra-processed foods ≥45% of kcal
Sun, 2023[41]	Dietary diversity score	Positive components: starchy staples, beans and peas, nuts and seeds, dairy, flesh foods (meat, fish), eggs, vitamin A-rich dark green vegetables, other vitamin A-rich fruits and vegetables, other vegetables, other fruits
Xu, 2023[43]	Dietary behaviour score	Positive components: fruit, vegetables. Negative components: processed meat, fast food, chips, soft drink
	Junk food score	Positive components: processed meat, fast food, chips, soft drink
Yee, 2020[45]	HEI-2010	Positive components: Total Vegetables; Greens and Beans; Total Fruit; Whole Fruit; Whole Grains; Seafood and Plant Proteins; Total Protein Foods; Dairy; Fatty Acids Negative components: Refined Grains; Empty Calories (i.e., energy from solid fats, alcohol, and added sugars); Sodium
Yisahak, 2021[46]	AHEI-2010	Positive components: vegetables, fruits, whole grains, nuts and legumes, long-chain omega-3 fatty acids (EPA and DHA), PUFAs. Negative components: SSB red/processed meats, trans fat, sodium. Modified to eliminate alcohol component.
	Alternative Mediterranean Diet	Positive components: vegetables excluding potatoes, legumes, fruit, nuts, whole grains, fish, ratio of MUFA:SFA. Negative components: red and processed meats. Modified to eliminate alcohol component.
	DASH	Positive components: vegetables, fruits, whole grains, low-fat dairy, nuts, seeds, legumes. Negative components: red and processed meat, SSB, sodium.

Reference	Dietary pattern	Dietary pattern components
Zhu, 2019[48]	HEI-2010	Positive components: total fruit, whole fruit, total vegetables, greens and beans, whole grains, dairy, total protein foods, seafood and plant proteins, fatty acids. Negative components: refined grains, sodium, empty calories from solid fats and added sugars. Alcohol component excluded from empty calories
Factor/Cluster Analysis		
Ancira-Moreno, 2020[50]	Healthier DP	Higher intake of white meat and eggs, low fat dairy products, cereals and tubers, fruits and vegetables. Lower intake of high saturated fat and/or added sugar foods, SSB, legumes.
	Mixed DP	Higher intake of SSB, red and processed meat, cereals and tubers, supplements. Lower intake of oils and fats, high saturated fat and/or added sugar foods, white meat and eggs, low fat dairy products.
Barchitta, 2023[2]	Cluster 1 (reference group)	Higher intake of potatoes, cooked and raw vegetables, legumes, fruits, nuts, yogurt, rice, wholemeal bread, white meat, offal, fish, eggs, butter and margarine, coffee, tea, soup.
	Cluster 2	Higher intake of milk, pasta, white bread, shellfish, vegetable and olive oils, sweets, fruit juices, dipping sauces, salty snacks, fries.
Berube, 2023[3]	Western	Higher intake of cakes, pies, and cookies, processed meats, American dishes, candy, sweetened beverages, salty snacks.
	Fruits and vegetables	Higher intake of nonstarchy vegetables, starchy vegetables, beans and peas, meat/vegetable soups, whole fresh fruit.
Bodnar, 2024[4]	High fruits, vegetables, whole grains, and plant proteins	Higher intake of vegetable medley/other vegetables, apples/pears, tomatoes, lettuce, broccoli, bananas, spinach/greens, strawberries/ other berries, avocado, citrus fruits, tofu/meat substitutes, peaches/plums/apricots/nectarines, yogurt, salad dressing, peas/string beans, nuts/ seeds/nut or seed mixed dishes, sweet potatoes, other fruit/fruit salad, melon, coffee.
	Sandwiches and snacks	Higher intake of coffee, alcoholic beverages, whole wheat bread, cold cuts, skim milk, diet soda/diet fruit drinks, pretzels/fat-free crackers/rice cakes, nuts/seeds/nut or seed mixed dishes, condiments, salad dressing, cream, unfried chicken or turkey/ mixed dishes, crackers, reduced fat cheese, jam/ jelly, white breads, sugars/honey, regular cheese, mayonnaise, nondairy creamer/cream substitutes.
	Beverages, refined grains, and mixed dishes	Higher intake of reduced fat milk, 100% juice (not orange or grapefruit), rice/rice mixed dishes, 100% orange or grapefruit juice, Mexican mixed dishes, dried beans, soup, liver/other organ meats, whole milk, cold cereals, hot cereal, oils, vegetable juice, other white potatoes, vegetable mixed dishes, other meat/other meat mixed dishes, syrups/ toppings, eggs/egg mixed dishes, pancakes/ waffles/French toast/Pop Tarts, coleslaw.
	High fat, sugar, and sodium	Higher intake of regular soda, fried chicken or fried turkey, fried white potatoes, burgers, sausage/ franks/bacon/ribs, fruit drinks, chips/popcorn/other salty snacks, candy, pizza, grain desserts, other meat/other meat mixed dishes, white yeast breads, pancakes/waffles/French toast/Pop Tarts, dairy desserts, margarine, quick breads, beef/beef mixed dishes, crackers, other white potatoes, mayonnaise.
Chia, 2016[7]	Vegetable, fruit, and white rice	Higher intakes of vegetables, fruits, plain white rice, whole-grain bread, fish, and nuts and seeds. Lower intakes of fried potatoes, burgers, carbonated and sweetened drinks, and flavored rice.
	Seafood and noodle	Higher intakes of soup, seafood, fish and seafood products, noodles (flavored and in soup), and low-fat red meat. Lower intakes of legumes, ethnic bread, white rice, and curry-based gravies.

Reference	Dietary pattern	Dietary pattern components
Chia, 2016[7] (continued)	Pasta, cheese, and processed meat	Higher intake of pasta-, tomato-, and cream-based gravies, cheese, and processed meat.
de Seymour, 2022[8]	Fish, poultry and vegetables	Higher in fish; poultry; legumes and bean products; green leafy vegetables; root vegetables; other vegetables; seafood; fruits; eggs; organ meats; beverages; bread; dairy; soup; nuts.
	Pasta, sweetened beverages, oils and condiments	Higher in pasta; sweetened beverages; oils and condiments; fast food.
Englund-Ogge, 2019[11]	High prudent	Higher intake of raw and cooked vegetables, salad, onion/leek/garlic, fruit and berries, nuts, vegetable oils, water as beverage, whole grain cereals, poultry, and fibre rich bread. Lower intake of processed meat products, white bread, pizza/tacos. Individuals in high prudent were in highest tertile of high prudent and in lowest or middle tertile of high western and high traditional.
	High western (reference group)	Higher intake of salty snacks, chocolate and sweets, cakes, French fries, white bread, ketchup, sugar sweetened drinks, processed meat products, pasta. Lower intake of lean fish, fibre rich bread. Individuals in high western were in highest tertile of high western and in lowest or middle tertile of high prudent and high traditional.
	High traditional	Higher intake of boiled potatoes, fish products, gravy, lean fish, margarine, rice pudding, low fat milk, cooked vegetables. Lower intake of poultry, pizza/tacos. Individuals in high traditional were in highest tertile of high traditional and in lowest or middle tertile of high prudent and high western.
Flynn, 2016[12]	Fruit and vegetable	Higher intake of bananas, citrus fruit, dried fruit, fresh fruit, green vegetables, pulses, root vegetables, salad vegetables, tropical fruit, yoghurt.
	African/Caribbean	Higher intake of red meat, cassava, white meat, pilau/fried/jollof rice, plantain, white/brown/basmati rice, fish.
	Processed	Higher intake of chocolate, crisps, green vegetables, potatoes, processed/meat products, root vegetables, squash/fizzy drinks, sugar free drinks, takeaway/oven chips.
	Snacks	Higher intake of biscuits/cookies, cakes/pastries, chocolate, full fat cheese, sweets.
Grieger, 2014[15]	High-protein/fruit	Higher intake of fish, meat, chicken, fruit, whole grains.
	High-fat/sugar/takeaway	Higher intake of takeaway foods, potato chips, refined grains, added sugar.
	Vegetarian-type	Higher intake of vegetables, whole grains, legumes.
Hajianfar, 2018[16]	Healthy	Higher intake of green vegetables, leafy vegetables, colored vegetables, fruit, dairy low fat, poultry, bulky vegetables, red meat, citrus, nuts, fish, olive, marinades, sweat fruit, egg, unsaturated fat.
	Western	Higher intake of fruit, citrus, nuts, fish, fruit juice, sweets and dessert, sugar, saturated fat, sweet fruit, potato, legumes, coffee, egg, pizza, high fat dairy, soft drink, whole grain, processed meat. Lower intake of refined grain.
	Traditional	Higher intake of colored vegetables, olive, sugar, salt, spices, unsaturated fat, garlic onion, tea, refined grain.
Knudsen, 2008[21]	Western (reference group)	Highest intake of high-fat dairy, refined grains, processed and red meat, animal fat (butter and lard), potatoes, sweets, beer, coffee, and high-energy drinks. Lowest intake of fruits and vegetables (35% of energy intake from fat)
	Health conscious	Higher intakes of fruits, vegetables, fish, poultry, breakfast cereals, vegetable juice, and water. Lowest intakes of meat and fat of animal origin (25% of energy intake from fat).

Reference	Dietary pattern	Dietary pattern components
Knudsen, 2008[21] (continued)	Intermediate	Higher intakes of low-fat dairy and fruit juice; consumption of the remaining food groups in between Western and Health conscious DPs (30% of energy intake from fat).
Li, 2021[23]	Beans-vegetables	Higher intake of root vegetables, mushrooms and algae, melon and solanaceous vegetables, beans and bean products (i.e., soybean, mung bean, soybean milk, bean curd, and so on), leafy and cruciferous vegetables.
	Fish-meat-eggs	Higher intake of red meat, freshwater fishes, eggs.
	Nuts-whole grains	Higher intake of nuts, whole grains, dairy products (i.e., milk, milk powder, and yogurt).
	Organ-poultry-seafood	Higher intake of animal organ and blood, seafood, poultry.
	Rice-wheat-fruits	Higher intake of rice and wheat products, fruits.
Lu, 2016[25]	Varied	Higher intakes of mixed foods, including noodles, bread, root vegetables, melon vegetables, mushrooms, sea vegetables, bean vegetables, processed vegetables, poultry, animal organ meat, fish, other seafood, bean products, yoghurt, sweet beverages, puffed food, confectioneries, and snacks.
	Dairy	Higher intakes of milk products (including fresh milk, pasteurized milk, milk powder, and formula for pregnant women) and lower intakes of whole vegetables.
	Meats	Higher intakes of red and processed meat.
	Fruits, nuts, and Cantonese desserts	Higher intakes of fruits, nuts, and Cantonese desserts.
	Vegetables	Higher intakes of leafy and cruciferous vegetables.
	Cereals, eggs, and Cantonese soups (reference group)	Higher intakes of rice, pasta, porridge, eggs, and Cantonese soups.
Maldonado, 2022[27]	Solid fat, refined grain, and cheese	Higher intake of milk, cheese, fruit juices, tomatoes, other vegetables, white potatoes, legumes, seafood, refined grains, meat, processed meats, poultry, eggs, soy protein, nuts and seeds, oils, solid fats, added sugar. Lower intake of yogurt, citrus, melons, berries, other fruits, dark green vegetables, other red and orange vegetables, other starchy vegetables, whole grains.
	Vegetables, oils, and fruit	Higher intake of milk, yogurt, cheese, citrus, melons, berries, other fruits, fruit juices, dark green vegetables, tomatoes, other red and orange vegetables, other vegetables, white potatoes, other starchy vegetables, legumes, seafood, whole grains, meat, processed meats, poultry, eggs, soy protein, nuts and seeds, oils, added sugar. Lower intake of refined grains, solid fats.
Miele, 2021[28]	Obesogenic	Higher in ultra-processed and processed foods using NOVA classification (refined carbohydrate; fats; sweets).
	Intermediate	Lower consumption of same food groups as "Obesogenic DP".
	Vegetarian	Higher in dairy; fruits; vegetables.
	Protein	Higher in fatty meats; eggs; beans; very low quantity of natural foods (using NOVA classification).
	Traditional (reference group)	Higher in beans; meats; eggs; natural or minimally processed foods (using NOVA classification).
Mikeš, 2022[29]	Unhealthy	Higher intake of fried potatoes, offal, fish and fish products, pizza, doughnuts and omelettes, fried food, poultry, cake and pies, processed meat, pasta, cola drinks, wafers, chocolates and sweets, red meat, sweet drinks.
	Healthy/traditional	Higher intake of root vegetables, cheese, milk, dairy products, fresh fruits, leafy vegetables, salads, wholemeal bread, boiled potatoes, juice, herbal tea, honey, white bread.
Okubo, 2012[32]	Meat and eggs	Higher intakes of beef & pork, processed meat, chicken, eggs, butter, & dairy products.
	Wheat products	Higher intakes of bread, confectioneries, fruit & vegetable juice, & soft drinks.

Reference	Dietary pattern	Dietary pattern components
Okubo, 2012[32] (continued)	Rice, fish, and vegetables (reference group)	Higher intakes of rice, potatoes, nuts, pulses, fruits, green & yellow vegetables, white vegetables, mushrooms, seaweeds, Japanese & Chinese tea, fish, shellfish, sea products, miso soup & salt-containing seasoning.
Paknahad, 2019[34]	High carbohydrate-lower fat	High intake of potato; fried potato; flour; egg; cooked carrots; pickles; noodle soup; beans; pomegranate; corn and maize; lentils; low-fat milk; lettuce; and raw carrot
	High carbohydrate-higher fat	High intake of pea; soybean; fish; cabbage; cooked spinach; vegetable; high-fat milk; butter; tomato; cucumber; soup; cooked beans; and diluted yogurt.
	High fiber (reference group)	High intake of cantaloupe; melon; peach; nectarine; green tomatoes; plums; watermelons; pears; apricots.
Teixeira, 2021[42]	Lentils, whole grains, and soups	Higher intake of lentils, wheat bread and brown rice, soups, popcorn, cereal ready to eat and oats, white cheese, desserts with fruits and jelly, simple cakes, soya beverages, beef jerky, nuts, crackers, soya sauce, tea (sweetened), beef, stuffed pasta, feijoada, fruits, yogurt (whole milk). Lower intake of French bread and white rice.
	Snacks, sandwiches, sweets and soft drinks	Higher intake of processed meats, sandwiches and snacks, sandwich sauces, desserts and sweets, soft drinks, pasta with meat sauce, stuffed pasta, yogurt with flavor, pork and frankfurters, bakery with filling, fried beef and fried chicken, fried egg or omelette, potato salad, with vegetables and mayonnaise, alcoholic beverages, chocolate milk, feijoada, potato or cassava, mozzarella cheese. Lower intake of yogurt.
	Seasoned vegetables and lean meats	Higher intake of potato salad, with vegetables and mayonnaise, vegetables, oil (for salad dressing), salt, lean meats and fish, potato or cassava, fruits, French bread and white rice, and unsweetened juices (natural or artificial).
	Sweetened juices, bread and butter, rice and beans	Higher intake of sweetened juices (natural or artificial), butter or margarine, French bread and white rice, beans, whole milk, yogurt, fried egg or omelette, potato or cassava (fried). Lower intake of unsweetened juices (natural or artificial), alcoholic beverages.
Yamashita, 2022[44]	PCA1 – pre- to early-pregnancy	Higher intake of pulses, vegetables, fruits, mushroom, fish and shellfish. Lower intake of milk and dairy products.
	PCA1 – early- to mid-pregnancy	Higher intake of pulses, vegetables, fruits, mushroom, fish and shellfish. Lower intake of milk and dairy products, alcohol beverage.
	PCA2 – pre- to early-pregnancy	Higher intake of vegetables, eggs, milk and dairy products. Lower intake of cereals, meat.
	PCA2 – early- to mid-pregnancy	Higher intake of pulses, vegetables, eggs, milk and dairy products. Lower intake of cereals, meat.
Yisahak, 2021[46]	PCA pattern 1	Higher intake of solid fat, nonwhole grains, white potatoes, meat (from beef, pork, veal, lamb, and game), cheese.
	PCA pattern 2	Higher intake of other vegetables (not potatoes, starchy, orange, or dark-green vegetables), dark-green vegetables, orange vegetables, seafood high in omega-3 fatty acids, seafood low in omega-3 fatty acids.
Zhang, 2023[47]	Cereals-vegetables-fruits	Higher intake of cereals, tubers and their products, dark vegetables, light vegetables, fruits.
	Vegetables-poultry-aquatic products	Higher intake of dark vegetables, light vegetables, mushroom and algae, poultry, meat products, fish, shrimp, and other aquatic products.
	Milk-meat-eggs	Higher intake of milk, red meat (pork), meat products, eggs.
	Nuts-aquatic products-snacks	Fish, shrimp, and other aquatic products, eggs, bread, biscuits, chocolate, and other snacks, nuts.

Reference	Dietary pattern	Dietary pattern components
Zulyniak, 2017[49]	Plant-based	Higher intake of low fat dairy, fermented dairy, legumes, fresh seasonings, vegetable medley, other vegetables, whole grains, non-meat dishes, tea. Lower intake of meat.
Reduced Rank Regression Analysis		
Alves-Santos, 2019[1]	Fast food and candies	High intakes of fast food and snacks; cakes, cookies, or crackers; and candies or desserts. Low intakes of rice, beans, vegetables spices, and green vegetables or legumes.
	Vegetables and dairy	High intakes of green vegetables or legumes, dairy products, fish, tea, fruits or fruit juices, and candies or desserts. Low intakes of bread, sweetened and diet soda, and table sugar.
	Beans, bread, and fat	High intakes of beans; cakes, or cookies, or crackers; bread and fats used as spreads. Low intakes of fish, fruit or fruit juices, and noodles, pasta, roots, or tubers.
Hwang, 2022[20]	DP 1	Higher intakes of grains, green/yellow and light-colored vegetables, kimchi, legumes, fruits, meat, eggs, fish, seaweeds, tofu/soymilk, yogurt, nuts.
	DP 2	Higher intakes of green/yellow and light-colored vegetables, kimchi, seaweed. Lower intakes of white rice, poultry, meat, red meat by-products.
	DP 3	Higher intakes of grains, milk, yogurt. Lower intakes of rice cake, legumes, snacks, bony fish, tofu/soy milk.
Lecorguillé, 2020[22]	Varied and balanced	Higher intake of low-fat milk, other vegetables, fish, meat, chicory, leek, cabbage, eggs and egg dishes, cereals, broccoli, liver. Lower intake of snacks and confectionary, SSB.
	Vegetarian tendency	Higher intake of other vegetables, chicory, cereals, fruits, bread. Lower intake of meat, liver.
	Bread and starchy food	Higher intake of bread, rice, pasta, and others, sandwich. Lower intake of low-fat milk, fruits, fruit juice, SSB.
Yamashita, 2022[44]	RRR – pre- to early-pregnancy	Higher intake of cereals, fruits. Lower intake of alcohol beverage, non-alcohol beverage.
	RRR – early- to mid-pregnancy	Higher intake of cereals, fruits, milk and dairy products. Lower intake of alcohol beverage, non-alcohol beverage.
Other Method		
Yamashita, 2022[44]	PLS – pre- to early-pregnancy	Higher intake of cereals, fruits. Lower intake of alcohol beverage, non-alcohol beverage.
	PLS – early- to mid-pregnancy	Higher intake of cereals, fruits, mushroom, milk and dairy products. Lower intake of alcohol beverage, non-alcohol beverage.

Timing of intervention or exposure assessment

Among the PCS, 13 articles assessed diet during the first trimester of pregnancy,[1,2,4,13,26,34,35,39,42,45-48] 19 articles assessed diet during the second trimester of pregnancy,[5,8,10-12,15,17-23,25,28,30-32,49] and 6 articles assessed diet during the third trimester of pregnancy.[3,7,27,29,36,43] An additional 4 articles assessed diet a single time but the timing of the assessment occurred across multiple trimesters among participants,[14,16,40,41] while 8 articles conducted multiple dietary assessments throughout pregnancy.[6,9,24,33,37,38,44,50] Among trials, baseline occurred during the first trimester of pregnancy in 4 articles,[52,53,58,60] during the second trimester in 5 articles,[51,54,56,57,59] and in either the first or second trimester in 1 article.[55]

Outcomes

Small-for-gestational age

Forty-nine articles reported SGA as an outcome.[2-15,17,18,20-23,25-29,32,35-42,44-46,48,49,51-60] Most studies defined SGA based on birth weight ≤10th percentile,[3-15,17,18,20,22,23,25,27-29,32,35,36,38,40-42,44-46,48,49,51-60] although 4 articles examined more stringent cut-offs, including below the fifth,[26] the third,[51,54] and the 2.5th percentile.[21,26,51,54] Additionally, 1 article defined SGA based on birth weight below negative 2 standard deviations based on ultrasound-derived curves,[11] 1 article defined SGA based on birth weight less than the 80% confidence interval lower limit for customized models of predicted birth weight,[39] and 2 articles did not describe how SGA was defined.[2,37]

Large-for-gestational age

Thirty-four articles reported LGA as an outcome.[1-3,7,8,10-14,17,18,22-25,27,35,36,38,40,46-49,51-56,58-60] Nearly all studies defined LGA based on birth weight ≥90th percentile,[1,3,7,8,10-14,17,18,22-25,27,35,36,38,40,46-49,51-56,58-60] although 1 article additionally used birth weight greater than 2 standard deviations based on ultrasound-derived curves to define LGA[11] and 1 article did not define LGA.[2]

Low birth weight

Sixteen articles reported LBW as an outcome.[10,14-16,18,30,31,33,34,37,40,43,45,46,50,55] All studies defined LBW based on a birth weight cut-off of 2,500 g.

Macrosomia

Fifteen articles reported macrosomia as an outcome.[8,10,12,14,18,19,30,31,34,40,43,45-47,55] Fourteen articles defined macrosomia as birth weight greater than 4,000 g,[8,10,12,14,18,30,31,34,40,43,45-47,55] while 2 articles defined macrosomia as birth weight greater than 4,500 g.[18,19]

Synthesis of the evidence

Small-for-gestational age

Twenty-six dietary patterns reported in 21 articles from 18 unique trials or cohorts significantly affected or were significantly associated with lower risk of SGA. Although the foods and food groups varied between dietary patterns, they were commonly characterized by higher intakes of vegetables, fruits, legumes, nuts and seeds, grains, fish/seafood, dairy, and unsaturated fats, as well as lower intakes of red and processed meat, added sugars, and saturated fats. Five dietary patterns reported in 4 articles from 7 unique cohorts were significantly associated with higher risk of SGA. The foods and food groups included were variable, but these dietary patterns were most commonly characterized by higher intakes of vegetables, grains, dairy, and added sugars. Seventy-nine dietary patterns reported in 38 articles from 42 unique trials or cohorts did not significantly affect or were not significantly associated with risk of SGA. A summary of the findings is included below, with detailed information presented in **Table 8**.

Intervention studies

Ten articles from 8 RCT[51-60] and 1 article from 1 NRCT[58] examined the relationship between dietary patterns consumed during pregnancy and risk of SGA.

Of these, 4 trials detected a significant effect of dietary patterns on lower risk of SGA, either overall or in a sub-group of the full sample[51-54,58,60]; no trials detected a statistically significant effect of dietary patterns on higher risk of SGA. Across these trials, the tested dietary patterns most commonly emphasized relatively higher consumption of vegetables, fruit, legumes, white meat, fish and seafood, nuts, and unsaturated fats and limiting consumption of red and processed meats, sugar sweetened beverages (SSB), and saturated fats.

First, in the Spanish St. Carlos GDM Prevention Study, participants were randomized to a Mediterranean-style diet with or without study provided extra virgin olive oil (EVOO) and pistachios; the risk of SGA was lower among those consuming EVOO and pistachios, an effect seen in the full sample[52,58] and in a sample restricted to normoglycemic participants.[53] A non-randomized comparison group received the same advice to consume a Mediterranean-style diet with EVOO and pistachios, but were not provided with these foods by the study; this group had a lower percent of infants born SGA than the control group, but these differences were small and statistically non-significant.[58] A second RCT from Spain (IMPACT BCN) found that individuals randomized to a Mediterranean-style diet, along with provision of EVOO and walnuts, had lower odds of SGA and severe SGA (below the third percentile) compared to individuals receiving usual care.[54] Another RCT, conducted in China, randomized participants to a Mediterranean-style diet, either with recommendation to consume EVOO and pistachios or with recommendation to restrict dietary fat, finding that participants randomized to consume a dietary pattern with EVOO and pistachios had a reduced risk of SGA.[60] Finally, in the U.K.-based ESTEEM RCT, participants randomized to a Mediterranean-style diet with study-provided mixed nuts and EVOO had lower odds of SGA compared to participants randomized to usual care and antenatal dietary advice, but only among participants without chronic hypertension.[51] Analysis of the overall sample, in addition to other sub-groups (BMI ≥30, normal triglyceride level) trended in the same direction but the confidence intervals included both higher and lower odds of SGA.[51]

The remaining trials did not detect a significant, overall or sub-group effect of dietary patterns consumed during pregnancy and risk of SGA.[55-57,59] These trials included: the OPTIMISE RCT conducted in Australia;[55] the U.S.-based LIFT RCT[56]; the CARRDIP RCT conducted in Norway[57]; and the U.S.-based MOMFIT RCT.[59] The studies predominantly trended towards lower risk of SGA, with none trending towards higher risk of SGA, with randomization to dietary patterns that most commonly emphasized higher consumption of vegetables, fruit, legumes, fish and seafood, dairy, nuts and seeds, and unsaturated fats and lower consumption of red and processed meat, SSB, and saturated fats.

Observational studies

Thirty-nine articles that included data from 42 PCS examined the relationship between dietary patterns consumed during pregnancy and risk of SGA.[2-15,17,18,20-23,25-29,32,35-42,44-46,48,49]

Of these, 14 articles from 12 PCS detected a significant association between alignment with a dietary pattern and lower risk of SGA.[4-6,9,10,17,20-22,27,37,39,41,44] Indices and scores among these studies included: Alternative Healthy Eating Index[10,37,39]; Dietary Approaches to Stop Hypertension[6]; Mediterranean-style diets[5,9]; New Nordic Diet[17]; and a dietary diversity score based on Food and Agriculture Organization guidelines.[41] These indices and scores all or predominantly emphasized consumption of vegetables, fruits, grains, legumes, fish and seafood, dairy, nuts and seeds, and unsaturated fats, and limiting consumption of red and processed meat, added sugars, and saturated fats. Dietary patterns derived by factor or cluster analysis,[4,21,27] reduced rank regression,[20,22,44] or other methods[44] tended to include several positive components consistent with those highlighted across the indices and scores, including vegetables, fruits, grains, and dairy. A range of other foods and beverages were emphasized across these dietary patterns but were less common or were more variable.

Few articles (4, which included data from 7 PCS) detected a significant association between alignment with a dietary pattern and higher risk of SGA.[11,32,42,49] These dietary patterns were developed via factor/cluster analysis, and included a range of dietary patterns: “high prudent” and “high traditional” (compared to “western”),[11] “wheat products”,[32] “snacks, sandwiches, sweets, and soft drinks”,[42] and “plant-based”.[49] The components in these dietary patterns varied, but the most common positive components included vegetables, grains, dairy, and added sugars.

Twenty-one articles which included data from 24 PCS reported that 1 or more dietary patterns were not significantly associated with risk of SGA.[2-4,7,8,11,12,15,20,22,23,25,28,29,32,35,40,42,44,46,49] Among studies utilizing indices and scores, although results were statistically null, most trended in the direction of lower SGA risk[3,6,13,36,38,41,45,46] or the results were more neutral or unclear[5,6,14,26,35,38,40]; few trended clearly in the direction of higher SGA risk.[5,18,48] The indices and scores generally emphasized similar components, with most including vegetables, fruits, grains (or whole grains specifically), legumes, dairy (or non-full-fat dairy specifically), nuts and seeds, and unsaturated fats as positive components, and red and processed meats, added sugars, saturated fats, and sodium as negative components. A larger proportion of the dietary patterns with non-significant associations were determined via *a posteriori* methods including factor/cluster analysis[2-4,7,8,11,12,15,23,25,28,29,32,42,44,46,49] and reduced rank regression.[20,22] These dietary patterns were more varied in their composition than those assessed with indices and scores. Similarly, non-significant trends for the risk of SGA were mixed and did not show a clear pattern among these dietary patterns, with some trending towards lower risk of SGA,[2-4,8,12,15,20,25,28,42,44,46,49] others trending toward higher risk of SGA,[7,8,11,12,15,28,29,32,42,46] and others still with more neutral or unclear trends.[11,12,22,29,44]

Large-for-gestational age

Nine dietary patterns reported in 8 articles from 9 unique trials or cohorts significantly affected or were significantly associated with lower risk of LGA. Although the foods and food groups varied between dietary patterns, they were commonly characterized by higher intakes of vegetables, fruits, legumes, nuts and seeds, grains, and unsaturated fats, as well as lower intakes of red and processed meat and added sugars. Ten dietary patterns reported in 10 articles from 9 unique cohorts were significantly associated with higher risk of LGA. The foods and food groups included were variable, but these dietary patterns were most commonly characterized by higher intakes of vegetables, grains, and fish and seafood. Fifty-five dietary patterns reported in 28 articles from 30 unique trials or cohorts did not significantly affect or were not significantly associated with risk of LGA. A summary of the findings is included below, with detailed information presented in **Table 8**.

Intervention studies

Nine articles from 7 RCT[51-56,58-60] and 1 article from 1 NRCT[58] examined the relationship between dietary patterns consumed during pregnancy and risk of LGA. The trials all or predominantly emphasized consumption of vegetables, fruits, legumes, white meat, fish and seafood, nuts, and unsaturated fats, and limiting consumption of red and processed meat, SSB, and saturated fats.

Of these, only 1 trial detected a statistically significant effect of dietary patterns on risk of LGA.[52,53,58] Specifically, in the previously described Spanish St. Carlos GDM Prevention Study, the risk of LGA was lower among those recommended a Mediterranean-style diet and provided EVOO and pistachios compared to those just receiving the dietary advice, an effect seen in the full sample[52,58] and in a sample restricted to normoglycemic participants.[53] The non-randomized comparison group, which received advice to consume a Mediterranean-style diet with EVOO and pistachios, had a lower percent of infants born LGA than the control group, but these differences were small and statistically non-significant.[58]

The remaining trials did not detect a significant, overall effect of dietary patterns consumed during pregnancy and risk of LGA.[51,54-56,59] Further, the directionality of the trends was not consistent across these studies. While some trials tended toward reduced risk of LGA with the intervention diet (Chinese RCT,[60] MOMFIT,[59] OPTIMISE),[55] others tended towards increased risk of LGA with the intervention diet (ESTEEM,[51] LIFT),[56] and 1 trial reported effectively no difference in LGA between groups (IMPACT BCN).[54]

Observational studies

Twenty-five articles that included data from 26 PCS examined the relationship between dietary patterns consumed during pregnancy and risk of LGA.[1-3,7,8,10-14,17,18,22-25,27,35,36,38,40,46-49]

Of these, 5 articles that included data from 8 PCS detected a significant association between alignment with a dietary pattern and lower risk of LGA.[11,13,24,40,49] Three articles used indices and scores, examining alignment with a Dietary Approaches to Stop Hypertension-style diet,[13] the Healthy Eating Index (HEI) 2015,[24] and the

Diet Quality Index Adapted for Pregnant Women,[40] while the other 2 articles analyzed dietary patterns identified via factor/cluster analysis including a "high prudent"[11] and a "plant-based" dietary pattern.[49] These dietary patterns, regardless of methodology, predominantly emphasized similar foods and beverages including vegetables, fruits, whole grains, legumes, and nuts as positive components and red and processed meats as a negative component.

In contrast, 10 articles from 9 PCS detected a significant association between alignment with a dietary pattern and higher risk of LGA.[1,2,7,8,11,17,22,23,47,48] Two articles used indices and scores, examining alignment with the New Nordic Diet[17] and the HEI-2010,[48] which both emphasize several similar food and beverage groups including vegetables, fruits, whole grains, and dairy as positive components, and refined grains and added sugars as negative components. The remaining 8 articles used factor/cluster analysis[2,7,8,11,23,47] or reduced rank regression[1,22] to identify a range of dietary patterns, including: "varied and balanced,"[22] "fast food and candies,"[1] "cereals, vegetables, fruits,"[47] "fish, meat, eggs,"[23] "high traditional,"[11] "fish, poultry, and vegetables based,"[8] "vegetable, fruit, and white rice,"[7] and "milk, pasta, white bread, shellfish, vegetable and olive oils, sweets, fruit juices, dipping sauces, salty snacks, fries."[2] The most common components included vegetables, grains, and fish and seafood; however, the inclusion of other foods and beverages, such as fruits, meats, eggs, dairy, added sugars, were more variable across the dietary patterns. Additionally, some of the dietary patterns were difficult to interpret due to the description of few components.[23,47]

Most of the observational studies (21 articles that included data from 23 PCS) reported that 1 or more dietary patterns were not significantly associated with risk of LGA.[1,3,7,8,10-14,18,22,23,25,27,35,36,38,46-49] The indices and scores predominantly emphasized similar foods and beverages, including vegetables, fruits, whole grains, legumes, nuts, and unsaturated fatty acids as positive components and red and processed meats, added sugars, saturated fats, and sodium as negative components.[3,10,13,14,18,35,36,38,46,48] Despite the similarities of the dietary patterns assessed in these studies, there were not consistent trends in the direction of the non-significant associations, with some studies trending towards lower risk of LGA,[10,13,18,36,38,48] some trending towards higher risk of LGA,[3,46] and others without a clear directional trend or minimal differences in risk.[14,35,38,46] A larger proportion of the dietary patterns with non-significant associations were determined via *a posteriori* methods including factor/cluster analysis[3,7,8,11,12,23,25,27,46,47,49] and reduced rank regression.[1,22] These dietary patterns were more varied than those described by indices and scores. But, similarly, trends in the directionality of the non-significant associations were also variable among these studies, with some dietary patterns trending towards lower risk of LGA,[1,8,11,12,22,25,46,47] some towards higher risk of LGA,[7,8,11,12,23,25,27,47,49] and some without a clear directional trend or minimal differences in risk.[1,3,22,23,25,46,47] Additionally, the limited description of or limited components in some of the dietary patterns made the interpretability of some dietary patterns difficult.[12,23,25,46,47]

Low birth weight

Six dietary patterns reported in 6 articles from 5 unique cohorts were significantly associated with lower risk of LBW. Although the foods and food groups varied between dietary patterns, they were commonly characterized by higher intakes of vegetables, fruits, legumes, whole grains, fish/seafood, dairy, and unsaturated fats, as well as lower intakes of added sugars and saturated fats. One dietary pattern reported in 1 article was significantly associated with higher risk of LBW. Twenty-one dietary patterns reported in 12 articles from 12 unique trials or cohorts did not significantly affect or were not significantly associated with risk of LBW. A summary of the findings is included below, with detailed information presented in **Table 8**.

Intervention studies

Only 1 RCT examined the effect of dietary patterns consumed during pregnancy and risk of LBW: the OPTIMISE RCT conducted in Australia.[55] In this trial, a lifestyle intervention that provided dietary advice consistent with current Australian dietary standards did not have a significant effect on risk of LBW relative to participants who received standard antenatal care. Although the results trended in the direction of higher risk of LBW in the intervention group, the confidence interval was imprecise.

Observational studies

Fifteen articles from 14 PCS examined the relationship between dietary patterns consumed during pregnancy and risk of LBW.[10,14-16,18,30,31,33,34,37,40,43,45,46,50]

Of these, 6 articles from 5 PCS detected a significant association between alignment with a dietary pattern and lower risk of LBW. All 5 articles used an index or score to define the dietary pattern. These scores included: HEI-2015[30,31]; Alternative Healthy Eating Index[37]; a Mediterranean-style diet[46]; the Maternal Diet Quality Score[50]; and a balanced diet score based on recommendations from Japanese dietary guidelines.[33] The dietary components emphasized across these patterns were relatively similar, with all or most studies emphasizing vegetables, fruits, whole grains, legumes, fish and seafood, and unsaturated fats as positive components, as well as saturated fats as negative components.

In contrast, 1 article from 1 PCS detected a significant association between alignment with a "western" dietary pattern, derived from factor/cluster analysis, and higher odds of LBW.[16] This dietary pattern was characterized by higher intakes of juice, processed meats, high-fat dairy, added sugars, and saturated fats, but was also characterized by higher intakes of vegetables (specifically potatoes), fruits, whole grains, legumes, fish, eggs, and nuts, and lower intakes of refined grains.

Eleven articles from 11 PCS reported that 1 or more dietary patterns were not significantly associated with risk of LBW.[10,14-16,18,34,40,43,45,46,50] Seven studies assessed dietary patterns via indices or scores, primarily emphasizing similar dietary components, including vegetables, fruits, whole grains, legumes, nuts and seeds, and unsaturated fats as positive components and red and processed meat, added sugars, saturated fats, and sodium as negative components[10,14,18,40,43,45,46]; however 1 study also examined a "junk food score" which included processed meat, soft drinks, fast food, and chips as positive components.[43] The trends across these studies were variable, with some dietary patterns trending towards higher risk of LBW,[18,43] some dietary patterns trending towards lower risk,[40,45,46] and some dietary patterns with minimal differences or mixed results across levels of alignment.[10,14,43] Five studies assessed dietary patterns via factor/cluster analysis; the foods and beverages emphasized across the dietary patterns analyzed were variable, with the most common components being vegetables, followed by grains, fruits, meats, and fish and seafood.[15,16,34,46,50] Among these, the dietary patterns that trended towards lower risk of LBW most commonly emphasized higher intakes of vegetables, fruits, whole grains, white and lean meat, and fish and seafood,[15,46,50] while the dietary patterns that trended towards higher risk of LBW most commonly emphasized higher intakes of vegetables, refined grains, red and processed meats, and added sugars.[15,16,46,50] One study directly compared dietary patterns to each other, limiting comparability to the other studies that identified dietary patterns via factor/cluster analysis.[34]

Macrosomia

Four dietary patterns reported in 4 articles from 4 unique cohorts were significantly associated with lower risk of macrosomia. Although the foods and food groups varied between dietary patterns, most were characterized by higher intakes of vegetables and fruits, and lower intakes of added sugars. Three dietary patterns reported in 3 articles from 3 unique cohorts were significantly associated with higher risk of macrosomia. Twenty-four dietary patterns reported in 13 articles from 12 unique trials or cohorts were not significantly affected or significantly associated with risk of macrosomia. A summary of the findings is included below, with detailed information presented in **Table 8**.

Intervention studies

Only 1 RCT examined the effect of dietary patterns consumed during pregnancy and risk of macrosomia: the OPTIMISE RCT conducted in Australia and described previously.[55] In this trial, the lifestyle intervention did not have a significant effect on risk of macrosomia relative to standard antenatal care. Although the results trended in the direction of lower risk of macrosomia, the confidence interval was imprecise.

Observational studies

Fourteen articles from 13 PCS examined the relationship between dietary patterns consumed during pregnancy and risk of macrosomia.[8,10,12,14,18,19,30,31,34,40,43,45-47]

Of these, 4 articles from 4 PCS detected a significant association between alignment with a dietary pattern and lower risk of macrosomia.[18,43,45,47] Three utilized indices or scores, which included: the HEI-2010[45]; the Norwegian Fit for Delivery diet[18]; and a dietary behavior score based on meeting Australian dietary recommendations.[43] Among these dietary patterns, 2 were associated with lower risk of birth weight greater than 4,000 g,[43,45] and the other was associated with lower risk of birth weight greater than 4,500 g and prior to statistical adjustment for physical activity[18]; after adjustment for physical activity, as well as for analyses using a cut-off of 4,000 g, associations were no longer statistically significant.[18] Components of the indices/scores that were consistent across studies included vegetables and fruits as positive components as well as added sugars and sodium as negative components. The fourth PCS used factor/cluster analysis to derive the dietary pattern and found that alignment with a “nuts, aquatic products, snacks” dietary pattern was associated with lower risk of birth weight greater than 4,000 g.[47]

Three articles from 3 PCS detected a significant association between alignment with a dietary pattern and higher risk of macrosomia.[19,43,47] The first comprised a “dietary risk score,” which was based on not following Icelandic and Nordic dietary recommendations, and was associated with higher risk of birth weight greater than 4,500 g overall and among participants with pre-pregnancy BMI less than 25.[19] The second comprised a “junk food score,” which was based on consumption of processed meat, soft drinks, fast food, and chips, and was associated with higher risk of birth weight greater than 4,000 g, consistent with analyses from the same study relating a dietary behavior score based on Australian dietary recommendations and risk of macrosomia.[43] These 2 studies emphasized some similar components to those reporting a significant association between dietary patterns and lower risk of macrosomia, however with reversed directionality such that the results are consistent with each other. Specifically, these studies both included processed meat and added sugars as positive components,[19,43] while 1 included vegetables and fruits (among other food groups) as negative components.[43] In contrast, the final study used factor/cluster analysis to derive a “cereals, vegetables, fruits” dietary pattern which was associated with higher risk of birth weight greater than 4,000 g.[47]

Twelve articles from 11 PCS reported that 1 or more dietary patterns were not significantly associated with risk of macrosomia.[8,10,12,14,18,19,30,31,34,46,47] Among studies utilizing indices or scores, most emphasized vegetables, fruits, whole grains, legumes, and unsaturated fats as positive components and red and processed meats, added sugars, saturated fats, and sodium as negative components[10,14,18,30,31,46]; 1 used a score that, broadly, reversed the directionality of these components.[19] The direction of trends varied among these dietary patterns, despite emphasizing similar components, with some associated with lower risk of macrosomia[10,18,19] and others associated with higher risk of macrosomia.[14,30,31,46] Studies that identified dietary patterns via factor/cluster analysis varied in regards to the components included in each dietary pattern.[15,16,34,46] Additionally, there were not consistent trends among the dietary patterns, with associations trending both toward lower[8,12,47] and higher[8,12,34,46,47] risk of macrosomia regardless of the general composition of the dietary pattern.

Conclusion statements and grades

The 2025 Dietary Guidelines Advisory Committee developed 2 conclusion statements to answer the question, “What is the relationship between dietary patterns consumed during pregnancy and birth weight?” based on their review of the body of evidence. A conclusion statement was drawn regarding the risk of SGA (**Table 6**), while a conclusion statement was not drawn regarding the risk of LGA, LBW, and macrosomia (**Table 7**).

Small-for-gestational age

The Committee's conclusion statement regarding the relationship between dietary patterns consumed during pregnancy and risk of SGA is presented in **Table 6**. The risk of bias assessments for all studies are documented in **Table 9**, **Table 10**, and **Table 11**, for RCT, NRCT, and PCS, respectively.

Table 6. Conclusion statement, grade for dietary patterns consumed during pregnancy and small-for-gestational age

Conclusion Statement	**Dietary patterns consumed during pregnancy that are characterized by higher intakes of vegetables, fruits, legumes, nuts and seeds, grains, fish/seafood, dairy, and unsaturated fats, and lower intakes of red and processed meat, added sugars, and saturated fats may be associated with lower risk of small-for-gestational age in infants. This conclusion statement is based on evidence graded as limited.**
Grade	Limited
Body of Evidence	49 articles: 8 randomized controlled trials, 1 non-randomized controlled trial, 42 prospective cohort studies
Consistency	The results showed some inconsistency in the direction and magnitude of effects and associations across both significant and non-significant results. Inconsistencies were most prominent for prospective cohort studies, particularly those that analyzed dietary patterns identified via *a posteriori* methods.
Precision	There were concerns regarding precision in this body of evidence. Few studies were specifically powered to detect differences in small-for-gestational age and most prospective cohort studies did not report power. Variance around the effect estimates were variable, including some studies with relatively wide confidence intervals.
Risk of bias	Most prospective cohort studies had an overall high risk of bias due to confounding, missing data, selection of participants, exposure measurement, and selection of the reported result. Half of the trials had some concerns or high overall risk of bias due to deviations from intended interventions and selection of the reported result.
Directness	The body of evidence had substantial concerns with directness. Most studies were not designed to directly examine the relationship between dietary patterns and risk of small-for-gestational age.
Generalizability	There was limited generalizability of the studies to the U.S. population when considering study and participant characteristics including country, socioeconomic position, and dietary patterns. However, among studies conducted in the United States, there was more diversity in race and/or ethnicity.

Assessment of the evidence

The body of evidence underlying the graded conclusion statement on risk of SGA includes 49 articles from 8 RCT, 1 NRCT, 42 PCS. The evidence was graded based on an assessment of 5 grading elements, as described below. Publication bias was also a consideration; however, this was not assessed as a serious concern because the body of evidence included studies that reported only non-significant findings, only significant findings, and a mix of both significant and non-significant results, across a range of analytic sample sizes. However, while the literature search was comprehensive, a search of the gray literature was not done, which could increase the possibility of publication bias.

Consistency

Among the trials, there was inconsistency in results, with approximately half detecting no significant effect of dietary patterns consumed during pregnancy on risk of SGA and half detecting an effect of dietary patterns consumed during pregnancy on reduced risk of SGA, either overall or in a sub-group of the full study sample.

However, those trials that did not detect a significant effect of dietary patterns mostly trended toward a beneficial effect on SGA, with none clearly trending toward higher risk of SGA. These dietary patterns tended to emphasize similar foods: vegetables, fruits, legumes, fish/seafood, nuts and seeds, unsaturated fats as positive components and red and processed meats, added sugars, and saturated fats as negative components. But, most trials focused on EVOO and nuts as the dietary intervention, which may have driven the differences in dietary pattern adherence between groups.

The pattern of results for the PCS were similar to the trials, however, inconsistency was more pronounced. The PCS that used indices or scores to evaluate dietary patterns showed some inconsistency in magnitude of association, but the directionality of both significant and non-significant associations, as well as the food and beverages emphasized across the patterns, were relatively consistent. Specifically, most of these dietary patterns were significantly associated with or trended towards lower risk of SGA and emphasized vegetables, fruits, grains, legumes, fish/seafood, dairy, and nuts and seeds as positive components and red and processed meat, added sugars, and saturated fats as negative components. Among the dietary patterns identified via *a posteriori* methods, alignment with some patterns were associated with lower risk of SGA, while few studies detected a statistically significant association between *a posteriori* identified dietary patterns and higher risk of SGA. However most dietary patterns identified via *a posteriori* methods were not significantly associated with the risk of SGA; a range of individual food and beverage components were represented across these dietary patterns, and the trends were mixed.

Precision

Relatively few intervention studies were included in the body of evidence. Although 1 trial was specifically powered to detect between-group differences in SGA,[54] the other included trials were powered for a different infant or pregnancy-related outcome. Among the trials, analytic sample sizes ranged from 196 to 1,095 participants, with over half including at least 500 participants. A larger pool of PCS that assessed SGA were identified compared to trials. Power analyses were not typically reported for the PCS, and when they were provided, they were not specific to SGA. Analytic sample sizes ranged widely from 94 to 72,317 participants, but over half included at least 1,000 participants. Across both intervention and observational studies, approximately 2.5% to 30.5% of infants were born SGA, with most studies reporting that ≤15% were born SGA.

Risk of bias

Among the RCT, approximately half had concerns in regard to selection of the reported result and deviations from the intended intervention. Risk of bias due to randomization, missing outcome data, and outcome measurement was predominantly assessed as low. The NRCT had several risk of bias concerns including from confounding, classification of interventions, deviations from intended interventions, and selection of the reported result.

Among the PCS, most studies had high risk of bias due to missing data and some concerns due to selection of the reported result, confounding, and selection of participants. Approximately half of the PCS had concerns regarding risk of bias due to post-exposure interventions. Risk of bias due to exposure measurement among the PCS varied, with some studies using validated dietary assessment early or throughout in pregnancy and others using unvalidated or non-standard assessments later in pregnancy. Risk of bias due to outcome measurement across all PCS was low.

Directness

Across both trials and cohort studies, SGA was predominantly not the primary outcome of interest. However, most studies were designed to assess a variety of pregnancy-related outcomes and/or infant outcomes at birth. The RCT and NRCT were directly designed to assess the effect of dietary patterns during pregnancy on these outcomes. But, in 2 trials, dietary advice to consume a Mediterranean-style diet was given to both the intervention and control groups, with the primary difference between groups being the provision of and/or recommendation to consume EVOO and nuts to the intervention group, rather than a more meaningful difference in dietary patterns between groups.[52,53,58,60] The observational studies were generally designed to examine a variety of exposures during pregnancy, although not specifically dietary patterns.

Generalizability

Only 2 trials were conducted in the United States,[56,59] with the majority of the other trials conducted in Western Europe. Participants in these trials predominantly had some college education, were employed, had at least a “middle class” income, and/or had a pre-pregnancy BMI less than 25. Participants were predominantly White, but individuals of some other races and/or ethnicities were represented across the trials. The generalizability of some trials was limited by the type of dietary pattern tested. As noted previously, half of the trials focused on a Mediterranean-style diet, and specifically on EVOO and nuts.[51-54,58,60]

Ten articles from 9 PCS were conducted in the United States,[3,10,13,14,24,27,36,38,46,48] while the remaining studies were predominantly conducted in Western Europe and Asia. Although the majority of PCS reported that participants predominantly had some college education, were employed, had at least a “middle class” income, and/or had a pre-pregnancy BMI less than 25, there was variation across the studies in regard to these characteristics. Similarly, although the most commonly represented racial and/or ethnic group was White, participants who were Hispanic and/or Latino, Black and/or African American, or Asian were also represented across the PCS. American Indian, Alaska Native and Native Hawaiian participants were not well represented across the PCS. Finally, a variety of dietary patterns were assessed across the studies, using both *a priori* and *a posteriori* methods.

Large-for-gestational age, low birth weight, and macrosomia

The Committee did not draw a conclusion statement about the relationship between consumption of dietary patterns during pregnancy and risk of LGA, LBW, and macrosomia (**Table 7**). The risk of bias assessments for all studies are documented in **Table 9**, **Table 10**, and **Table 11**, for RCT, NRCT, and PCS, respectively.

Table 7. Conclusion statement, grade for dietary patterns consumed during pregnancy and large-for-gestational age, low birth weight, and macrosomia

Conclusion Statement	**A conclusion statement cannot be drawn about the relationship between dietary patterns consumed during pregnancy and risk of large-for-gestational age, low birth weight, and macrosomia in infants because of substantial concerns with consistency, risk of bias, and generalizability in the body of evidence.**
Grade	Grade Not Assignable
Body of Evidence	45 articles: 8 randomized controlled trials, 1 non-randomized controlled trials, 36 prospective cohort studies
Rationale	The direction and magnitude of results were inconsistent; additionally, there was variability in the dietary patterns assessed, particularly those identified via *a posteriori* methods. Most studies had multiple risk of bias concerns, as well as high overall risk of bias. Generalizability of the body of evidence to the U.S. population, both in terms of participant characteristics and the dietary patterns, was limited.

This was due to substantial concerns with consistency, risk of bias, and generalizability in the body of evidence. Additionally, only 1 trial examined LBW and macrosomia, further limiting the ability to draw a conclusion statement. Publication bias was also a consideration; however, this was not assessed as a serious concern because the body of evidence included studies that reported only non-significant findings, only significant findings, and a mix of both significant and non-significant results, across a range of analytic sample sizes. However, while the literature search was comprehensive, a search of the gray literature was not done, which could increase the possibility of publication bias.

Summary of conclusion statements and grades

The Committee answered the systematic review question, "What is the relationship between dietary patterns consumed during pregnancy and birth weight?", with the following conclusion statements.[*] The grades reflect the strength of the evidence underlying the conclusion statements.

Small-for-gestational age

Dietary patterns consumed during pregnancy that are characterized by higher intakes of vegetables, fruits, legumes, nuts and seeds, grains, fish/seafood, dairy, and unsaturated fats, and lower intakes of red and processed meat, added sugars, and saturated fats may be associated with lower risk of small-for-gestational age in infants. This conclusion statement is based on evidence graded as limited. (Grade: Limited)

Large-for-gestational age, low birth weight, and macrosomia

A conclusion statement cannot be drawn about the relationship between dietary patterns consumed during pregnancy and risk of large-for-gestational age, low birth weight, and macrosomia in infants because of substantial concerns with consistency, risk of bias, and generalizability in the body of evidence. (Grade: Grade Not Assignable)

Research recommendations

To more adequately assess the relationship between dietary patterns during pregnancy and birth weight, additional research is needed that should:

1. Include populations representative of all Americans, such as diversity in race and/or ethnicity, socioeconomic position, disability status, and gender identity. Of note, only 1 of the included studies reported including participants who were American Indian or Alaska Native.
2. Clearly describe characteristics related to health disparities (e.g., racial or ethnic group, religion, SEP, gender, age, or mental health; cognitive, sensory, or physical disability; sexual orientation or gender identity; geographic location; substance use; or other characteristics historically linked to discrimination or exclusion).
3. Conduct well-designed and sufficiently powered trials where the isolated effect of the dietary pattern on the outcome can be determined and where the dietary patterns and comparator patterns are fully described. Include details pertaining to the food groups to enhance ability to make comparisons with other studies.
4. Consider stratifying analyses by race and/or ethnicity or SEP (or other social determinants of health) or account for these and other key confounders in methods and/or analyses.
5. Examine LGA and SGA using cut-offs that are clinically relevant for the U.S. population.
6. Include strong justification when controlling for variables that occur after the start of the exposure period (i.e., pregnancy) that could have been affected by the exposure, such as gestational weight gain.
7. Administer dietary assessments as early as possible in and multiple times throughout pregnancy, use validated and reliable assessment methods, such as multiple 24 hour recalls and food frequency questionnaires validated for the population, and provide clear information on the period of time captured by the assessments.

[*] A conclusion statement is carefully constructed, based on the evidence reviewed, to answer the systematic review question. A conclusion statement does not draw implications and should not be interpreted as dietary guidance.

8. In addition to other planned analyses, evaluate the dietary pattern against existing indices of dietary quality (e.g., HEI) to facilitate comparison across studies.
9. Collect information on prenatal supplementation and consider supplementation in study design and/or analytic plan.

Table 8. Evidence examining the relationship between dietary patterns consumed during pregnancy and birth weight [a]

Study Characteristics	Intervention or Exposure, Outcome	Results	Confounders, Funding, Summary
RCT			
Al Wattar, 2019[51] **RCT, Parallel-arm, United Kingdom, ESTEEM (Effect of Simple Targeted Diet in Pregnant Women With Metabolic Risk Factors on Pregnancy Outcomes)** Baseline N=1,252; Analytic N= 1,137 (Attrition: 9%) • Age (y): IG: 31.4±5.2, CG: 30.9±5.2; >40 (%): IG: 3.9, CG: 3.1 • Race/Ethnicity (%): White: IG: 36.6, CG: 35.5; Asian: IG: 43.4, CG: 44.1; Black: IG: 16.4, CG: 17.2; Other: IG: 3.7; CG: 3.3 • Baseline BMI (%): 25-29.9: IG: 16.7, CG: 16.7; ≥30: IG: 69.1, CG: 69.6 • Current HDP (%): PE: IG: 6.2, CG: 4.6 • Current DM (%): GDM: IG: 17.6, CG: 24.9, p=0.01	**IG vs CG** 24 HR at baseline (~18 GW); ESTEEM Q at 20, 24, 28, 32, and 36 GW **DP Description:** • CG: Received usual care and antenatal dietary advice as per U.K. national recommendations • IG: High intake of nuts, extra virgin olive oil, fruit, vegetables, nonrefined grains, and legumes; moderate to high consumption of fish; low to moderate intake of poultry and dairy products; low consumption of red meat and processed meat; and avoidance of sugary drinks, fast food, and food rich in animal fat. Participants provided with 30 g/d of mixed nuts and 0.5 L/wk of EVOO. **Adherence:** ESTEEM Q score did not differ between groups at baseline but was significantly higher in IG vs CG after the intervention. • Positive components: Olive oil (as main fat and svg/d); Nuts (including peanuts) Vegetables; Fruit (including juice); Pulses; Fish or shellfish; White meat over red meat • Negative components: Red or processed meat; Butter, margarine, or cream; SSB; Commercial sweets or pastries **Outcomes:** • SGA: <10%ile, Customized and population based • Very SGA: Cut-off NR, Customized and population based • LGA: Cut-off NR, Customized and population based Customized: BW centile using customized charts adjusting for maternal height, weight, parity, gestation at delivery and ethnic origin Population based: Population based BW centile	**SGA** Multivariable logistic regression OR (95% CI) <u>All participants</u> Customized: NR Population based: 0.73 (0.51, 1.04), p=0.08 <u>BMI ≥30</u>: 0.65 (0.41, 1.03), p≥0.05 <u>BMI <30</u>: 1.02 (0.52, 2.00), p≥0.05 p for interaction=0.28 <u>Raised TG</u>: 1.00 (0.53, 1.91), p≥0.05 <u>Normal TG</u>: 0.60 (0.35, 1.02), p≥0.05 p for interaction=0.22 <u>Chronic HTN</u>: 2.02 (0.58, 7.02), p≥0.05 <u>No chronic HTN:</u> 0.66 (0.43, 0.99), p<0.05 p for interaction=0.09 **Very SGA** Multivariable logistic regression OR (95% CI) <u>All participants</u> Customized: 0.84 (0.43, 1.63), p=0.60 Population based: 0.96 (0.57, 1.61), p=0.87 **LGA** Multivariable logistic regression OR (95% CI) <u>All participants</u> Customized: 1.23 (0.86, 1.78), p=0.26 Population based: 1.01 (0.69, 1.49), p=0.94	**Key confounders accounted for:** Parity, Smoking, Race and/or ethnicity, Age, SEP, Pre-pregnancy BMI, Current HDP **Other covariates:** Personal history of GDM; Family history of hypertensive disorders; Family history of DM; Personal history of stillbirth; Recruitment center **Funding:** Barts Charity; California Walnut Commission and Blue Diamond Growers donated walnuts and almonds, respectively **Summary:** A simple, individualized, Mediterranean-style DP supplemented with mixed nuts and EVOO reduced risk of SGA in participants without chronic HTN compared to usual care. Results neared statistical significance for a reduction of risk of SGA in all metabolically at risk participants, but there was no effect seen in participants with BMI ≥30, BMI <30, normal TG, raised TG, or chronic HTN. There was no effect of the intervention on LGA.

Study Characteristics	Intervention or Exposure, Outcome	Results	Confounders, Funding, Summary
Assaf-Balut, 2017[52] **RCT, Parallel-arm, Spain, The St. Carlos GDM Prevention Study** Analytic N= 874 (Attrition: 13%) • Age (y): CG: 32.7±5.3; IG: 33.2±5.0 • Race/Ethnicity (%): White: CG: 67.8, IG: 69.0; Hispanic: CG: 28.4, IG: 28.6; Other: CG: 3.8, IG: 2.4 • SEP: ○ Education (%): Elementary: CG: 10.8, IG: 6.8; University: CG: 50.2, IG: 50.4 ○ Employment (%): CG: 75.2, IG: 78.0 • Pre-pregnancy BMI: CG: 23.3±4.0; IG: 22.9±3.6 • Current HDP (%): ○ GHTN: CG: 4.3, IG: 3.0 ○ PE: CG: 2.5; IG: 1.6 • Current DM (%): GDM: CG: 23.4, IG: 17.1, p=0.012 • Smoking (%): CG: 8.0, IG: 8.6	**IG vs CG** FFQ at: 8-12 GW, 24-28 GW, and 36-38 GW **DP Description:** • Both the IG and CG given the same basic MedDiet recommendations: ≥2 svg/d vegetables, ≥3 svg/d fruit (avoiding juices), 3 svg/d skimmed dairy products, wholegrain cereals, 2-3 svg/wk legumes, moderate to high consumption of fish; low consumption of red and processed meat, avoidance of refined grains, processed baked goods, pre-sliced bread, soft drinks and fresh juices, fast foods and precooked meals. They were also instructed to be physically active and walk >30 min/d. • IG recommended to consume ≥40 mL/d of EVOO and a handful (25-30 g/d) of pistachios and were provided with 10 L EVOO and 2 kg roasted pistachios at 12-14 GW and 24-28 GW. • CG recommended to restrict dietary fat, including EVOO and nuts. **Adherence:** MEDAS scores did not differ between groups at baseline. Scores significantly increased over time in both groups, but scores remaining significantly higher in the IG compared to the CG at both 24-28 GW and 36-38 GW. Physical activity scores did not differ at either follow-up point. • Positive components: Olive oil (as main fat and svg/d); Vegetables; Fruit (including juice); Red wine; Pulses; Fish/seafood; Nuts; White over red meat; Traditional sauce of tomatoes, garlic, onion, or leeks sautéed in olive oil • Negative components: Red or processed meat; Butter, margarine, or cream; SSB; Commercial pastries **Outcomes:** • SGA: BW <10%ile according to national charts • LGA: BW >90%ile	**SGA** Logistic regression RR (95% CI) 0.21 (0.08, 0.54), p=0.001 **LGA** Logistic regression RR (95% CI) 0.19 (0.07, 0.57), p=0.003	**Key confounders accounted for:** Parity, Smoking, Race and/or ethnicity, Age, SEP, Pre-pregnancy BMI, Current HDP **Funding:** Fundación para Estudios Endocrinometabolicos, IdISSC Hospital Clínico San Carlos; the Instituto de Salud Carlos III of Spain; Fondo Europeo de Desarrollo Regiona **Summary:** A MedDiet supplemented with EVOO and pistachios reduced risk of LGA and SGA compared to lower alignment with a MedDiet. There was not sufficient data to assess the statistical significance of the effect on macrosomia.

Study Characteristics	Intervention or Exposure, Outcome	Results	Confounders, Funding, Summary
Assaf-Balut, 2019[53] **RCT, Spain, The St. Carlos GDM Prevention Study** Analytic N=697 (Attrition: 15%) • Age (y): CG: 32.54±5.29; IG: 32.92±4.92 • Race/Ethnicity (%): White: CG: 67.1, IG: 67.8; Hispanic: CG: 29.1, IG: 30.3; Other: CG: 3.9, IG: 1.9 • SEP: ○ Education (%): Elementary: CG: 7.6, IG: 6.1; University: CG: 50.1, IG: 51.4 ○ Employment (%): CG: 75.3, IG: 79.2 • Pre-pregnancy BMI: CG: 22.9±3.8, IG: 22.4±3.3 • Current HDP (%): ○ GHTN: CG: 3.3, IG: 3.6 ○ PE: CG: 1.2, IG: 1.9 • Current DM (%): GDM: 0.0 • Smoking (%): CG: 7.4; IG: 8.3	**IG vs CG** FFQ at: 8-12 GW, 24-28 GW, and 36-38 GW **DP Description:** • Both the IG and CG given the same basic MedDiet recommendations: ≥2 svg/d vegetables, ≥3 svg/d fruit (avoiding juices), 3 svg/d skimmed dairy products, wholegrain cereals, 2-3 svg/wk legumes, moderate to high consumption of fish; low consumption of red and processed meat, avoidance of refined grains, processed baked goods, pre-sliced bread, soft drinks and fresh juices, fast foods and precooked meals. They were also instructed to be physically active and walk >30 min/d. • IG recommended to consume ≥40 mL/d of EVOO and a handful (25-30 g/d) of pistachios and were provided with 10 L EVOO and 2 kg roasted pistachios at 12-14 GW and 24-28 GW. • CG recommended to restrict dietary fat, including EVOO and nuts. **Adherence:** MEDAS scores did not differ at baseline. Scores significantly increased over time in both groups, but scores remained significantly higher in the IG compared to the CG at both 24-28 GW and 36-38 GW. Physical activity scores did not differ at either follow-up point. • Positive components: Olive oil (as main fat and svg/d); Vegetables; Fruit (including juice); Red wine; Pulses; Fish/seafood; Nuts; White over red meat; Traditional sauce of tomatoes, garlic, onion, or leeks sautéed in olive oil • Negative components: Red or processed meat; Butter, margarine, or cream; SSB; Commercial pastries **Outcomes:** • SGA: BW <10%ile according to national charts • LGA: BW >90%ile	**SGA** Logistic regression RR (95% CI) 0.26 (0.08, 0.80), p=0.018 **LGA** Logistic regression RR (95% CI) 0.25 (0.07, 0.90), p=0.034	**Key confounders accounted for:** Parity, Smoking, Race and/or ethnicity, Age, SEP, Pre-pregnancy BMI, Current HDP, DM in current pregnancy **Funding:** Fundación para Estudios Endocrinometabolicos, IdISSC Hospital Clínico San Carlos; the Instituto de Salud Carlos III of Spain **Summary:** Among normoglycemic participants, a MedDiet supplemented with EVOO and pistachios reduced risk of LGA and SGA compared to lower alignment with a MedDiet.

Study Characteristics	Intervention or Exposure, Outcome	Results	Confounders, Funding, Summary
Crovetto, 2021[54] **RCT, Parallel-arm, Spain, IMPACT BCN (Improving Mothers for a Better Prenatal Care Trial Barcelona)** Baseline N=814; Analytic N=793 (Attrition: 3%) • Age (y): Median (IQR): IG: 37.2 (34.5-40.4); CG: 37 (33.2-40.5) • Race/Ethnicity (%): White: IG: 80.1, CG: 78.8; Latin American: IG: 13.8, CG: 15.2; Maghreb: IG: 2.0, CG: 2.2; Asian: IG: 2.0, CG: 2.0; Black: IG: 2.0, CG: 1.7 • SEP: ○ SES status (%): High: IG: 59.7; CG: 57.1; Low: IG: 5.1; CG: 7.2 • Pre-pregnancy BMI: IG: 24±4.8; CG: 23.9±4.8 • Current HDP (%): ○ GHTN: IG: 2.0; CG: 2.3 ○ PE: IG: 5.6; CG: 9.3, p=0.05 ○ Eclampsia: IG: 0.3; CG: 0.0 • Current DM (%): ○ DM: IG: 5.4; CG: 4.0 ○ GDM: IG: 12.2; CG: 7.5, p=0.03 • Smoking (%): IG: 6.9; CG: 9.5	**IG vs CG** FFQ and 7d diet journal at: 19-23.6 GW and 34-36 GW **DP Description:** • IG: Participants received dietary training and personalized advice to increase adherence to the Mediterranean diet, including increasing intake of whole grain cereals (≥5 svg/d); vegetables and dairy products (≥3 svg/d); fresh fruit (≥2 svg/d) including natural fruit juices; and legumes, nuts, fish, and white meat (≥3 svg/wk), as well as olive oil use for cooking and dressings. They also received olive oil (2 L/mo) and walnuts (450 g/mo). • CG: Participants received usual care per institutional protocols. **Adherence:** Mediterranean diet scores were similar between groups at baseline, but significantly increased in the IG at follow-up compared to the CG. • Positive components: EVOO; walnuts; vegetables; fresh fruit; dairy products; whole grains; sofrito; legumes; fish; fatty fish; white meat • Negative components: Refined grains; red meat; processed meat; soda drinks; commercial bakery foods, sweets, and pastries; butter, margarine, or cream **Outcomes:** • SGA: BW <10%ile according to local standards • Severe SGA: BW <3%ile • LGA: BW >90%ile	**SGA** Logistic regression Risk difference (95% CI); OR (95% CI) according to intention-to-treat (ITT) analysis -7.9 (-13.6, -2.6); 0.58 (0.40, 0.84), p=0.004 OR (95% CI) according to per-protocol (PP) analysis IG: Participants with high dietary adherence (3 point increase in diet score) 0.56 (0.36, 0.86), p=0.009 **Severe SGA** Logistic regression Risk difference (95% CI); OR (95% CI) according to ITT analysis -4.7 (-8.3, -1.0); 0.50 (0.28, 0.87), p=0.01 OR (95% CI) according to PP analysis IG: Participants with high dietary adherence (3 point increase in diet score) 0.36 (0.17, 0.75), p=0.01 **LGA** Chi-squared, % IG: 9.4; CG: 9.5, p=0.98	**Key confounders accounted for:** Parity, Smoking, Race and/or ethnicity, Age, SEP, Pre-pregnancy BMI, Current HDP **Funding:** “La Caixa” Foundation; Cerebra Foundation for the Brain Injured Child; The Agency for Management of University and Research Grants; Centro de Investigaciones Biomédicas en Red sobre Enfermedades Raras **Summary:** In participants at high risk for SGA, a Mediterranean-style DP supplemented with walnuts and EVOO reduced risk of SGA and severe SGA compared to usual care in both the (ITT) and the (PP) analyses. There was no statistically significant difference between groups in risk of LGA.

Study Characteristics	Intervention or Exposure, Outcome	Results	Confounders, Funding, Summary
Dodd, 2019[55] **RCT, Parallel-arm, Australia, OPTIMISE** Analytic N=633 (Attrition: 1%) • Age (y): 31.53±4.76 • Race/Ethnicity (%): White: 67.46; Asian: 15.01; Indian, Pakistani, Sri Lankan: 8.06; Other: 9.47 • SEP: ○ SEIFA IRSD (%): Quintile 1 (most disadvantaged): 16.75; Quintile 5: 17.85 • Baseline BMI: Median (IQR): 22.20 (20.87, 23.60) • Current HDP (%): ○ GHTN: ~1.4 ○ PE/Eclampsia: ~2.5 • Current DM (%): ○ GDM: 12.4 ○ T1 or T2 DM: 0.0 • Smoking (%): Smoker: 4.42	**LI vs SC** FFQ at: Trial entry (10-20 GW), 28 GW, and 36 GW **DP Description:** • LI: Received 3 in-person visits and 3 phone calls with dietitian or research assistant at trial entry, and 20, 24, 28, 32, and 36 GW. Dietary advice was consistent with current Australian dietary standards, maintaining a balance of carbohydrates, fat, and protein, and encouraging reduced intake of energy dense and non-core foods high in refined carbohydrates and saturated fats. Participants were advised to increase their intake of fibre, and to consume 2 svg/d fruit, 5 svg/d vegetables and 3 svg/d dairy. • SC: Received antenatal care according to hospital guidelines, which did not include information relating to dietary intake, physical activity or weight gain during pregnancy. **Adherence:** HEI scores from FFQ did not differ at baseline, but were higher in LI at 28 GW and 36 GW. Physical activity scores did not differ at either follow-up. **Outcomes:** • SGA: <10%ile according to local standards • LGA: BW >90%ile • LBW: <2500g • Macrosomia: >4000g	**SGA** Log binomial regression, OR (95% CI) All: LA vs SC (Ref): 0.84 (0.48, 1.47), p=0.545 Pre-pregnancy BMI, p-value for interaction=0.565 LA vs SC (Ref): 0.95 (0.48, 1.89), p=0.878 **LGA** Log binomial regression OR (95% CI) All: LA vs SC (Ref): 0.88 (0.51, 1.52), p=0.641 Pre-pregnancy BMI, p-value for interaction=0.200 LA vs SC (Ref) per 1 BMI unit: 0.72 (0.38, 1.36), p=0.317 **LBW** Log binomial regression, OR (95% CI) All: LA: 1.32 vs SC (Ref): (0.69, 2.54), p=0.399 Pre-pregnancy BMI, p-value for interaction=0.328 LA vs SC (Ref): 1.62 (0.74, 3.56), p=0.227 **Macrosomia** Log binomial regression, RR (95% CI) All: LA vs SC (Ref): 0.91 (0.54, 1.55), p=0.732 Pre-pregnancy BMI, p-value for interaction=0.263 LA vs SC (Ref): 0.79 (0.44, 1.43), p=0.434	**Key confounders accounted for:** Parity, Smoking, Race and/or ethnicity, Age, SEP, Pre-pregnancy BMI, DM in current pregnancy **Funding:** The University of Adelaide; Lloyd Cox Strategic Research Excellence Award; NHMRC Practitioner Fellowship **Summary:** Randomization to a dietitian-led dietary and lifestyle intervention based on the Australian Guide to Healthy Eating, compared to standard antenatal care, did not affect risk of LGA, AGA, LBW, or BW >4.0 kg.

Study Characteristics	Intervention or Exposure, Outcome	Results	Confounders, Funding, Summary
Gallagher, 2018[56] **RCT, United States, LIFT (Lifestyle Intervention For Two)** Analytic N=196 (Attrition: 7%) • Age (y): LI: 33.8±4.0; UC: 33.8±4.7 • Race/Ethnicity (%): ○ LI: Not Hispanic/Latina: 69; Hispanic: 30; White: 46; Other: 25; Black: 24; >1 Race: 5; Unknown: 1 ○ UC: Not Hispanic/Latina: 76; Hispanic: 24; White: 48; Black: 24; Other: 21; >1 Race: 8; Unknown: 0 • SEP: ○ Education (%): ≤HS diploma: LI: 4.0; UC: 3.0; College degree: LI: 44; UC: 37; Postgraduate work: LI: 37; UC: 49 ○ Annual family income (%): ≤24,999: LI: 3.0; UC: 7.0; 75k-149k: LI: 36; UC: 33; ≥150k: LI: 29; UC: 32 • Pre-pregnancy BMI: ○ LI: 30.1±4.1, UC: 30.7±5.0 ○ (%): 25-29.9: LI: 62, UC: 57; >30: LI: 38, UC: 43 • Current DM (%): ○ T1 or T2 DM: 0.0 ○ GDM: LI: 10.3; UC: 6.1 • Smoking (%): 0.0	**LI vs UC** 24 HR at: 12-15.6, 36 GW **DP Description:** • LI: Diet modification and increased physical activity, along with behavioral and social support strategies delivered in individual sessions by study counselors. Focus was on GWG control as recommended by 2009 IOM guidelines. • UC: A single 20-30 minute 'Introduction' immediately following randomization. Participants were invited to attend UC group meetings once every 8 wk through delivery **Adherence**: No differences in HEI-2010 scores between groups at baseline. HEI-2010 was significantly higher in the LI group compared to the UC group at 36 GW. Between group change from baseline was also statistically significantly higher in the LI group compared to the UC group. **Outcomes:** • SGA: <10%ile according to local standards • LGA: BW >90%ile	**SGA** Chi-squared test, n (%) LI: 8 (8); UC: 13 (14) p=0.26 **LGA** Chi-squared test, n (%) LI: 10 (10); UC: 6 (6) p=0.28	**Key confounders accounted for:** Parity, Smoking, Race and/or ethnicity, Age, SEP, Pre-pregnancy BMI, DM in current pregnancy **Funding:** NIH; NIDDK; NHLBI; NICHD; NCCIH; ORWH; OBSSR; The Indian Health Service **Summary:** A GWG control intervention with higher alignment with HEI-2010 did not have an effect on risk of SGA or LGA when compared to a control group with lower alignment with HEI-2010.

Study Characteristics	Intervention or Exposure, Outcome	Results	Confounders, Funding, Summary
Khoury, 2005[57] **RCT, Norway, CARRDIP (Cardiovascular Risk Reduction Diet in Pregnancy)** Analytic N=290 (Attrition: 0%) • Age (y): ~29.7; Range: 21-38 • Race/Ethnicity (%): White: 100 • SEP: Education: ~82.1% >12 y • Pre-pregnancy BMI: TM2: ~24.3±2.8 • Current HDP (%): Chronic HTN: 0.0 • Current DM (%): Pre-existing DM: 0.0 • Smoking (%): Nonsmokers: 100 (Previous smokers had to have quit ≥5y before inclusion)	**IG vs CG** At: BL, 24 GW, 30 GW, and 36 GW **DP Description:** Women randomly allocated to usual or intervention diet and asked to follow assigned diet until delivery Intervention group received cooking lessons to implement special foods (e.g., legumes, olive oil) • IG: dietician encouraged intake of fatty fish, vegetable oils, especially olive oil and rapeseed oil, nuts, nut butters, margarine based on olive- or rapeseed oil, and avocado to replace meat, butter, cream, and fatty dairy products; ≥6/d fresh fruits and vegetables; intake of dairy products in the form of skimmed or low-fat products (skimmed milk, fat-reduced cheese, and yogurt) in place of full fat products; 2/wk meat for a main meal and legumes, vegetable main dishes, fatty fish, or poultry with the fat trimmed off on the other days; ≤2 cups/d coffee • CG: subjects asked to consume their usual diet based on Norwegian foodstuffs, and not to introduce more oils or low-fat meat and dairy products than usual **Adherence**: assessed by weighed dietary records: • Intervention diet: included significantly more fish and fish products; fatty fish and fish products; rapeseed-based margarine; oils; olive oil; rapeseed oil; nuts, olives, and seeds; vegetables; and fruits, when compared to the control diet • Control diet: included significantly more fatty milk, meat and meat products, fatty minced meat, butter, and hard margarines, when compared to the intervention diet **Outcomes:** • SGA: <10%ile	**SGA** Fisher Exact Test OR (95% CI) IG: 1.0 (0.4, 2.5) CG: Ref p=1.0	**Key confounders accounted for:** Parity, Smoking, Race and/or ethnicity, Age, SEP, Pre-pregnancy BMI, Current HDP, DM in current pregnancy **Funding:** The Norwegian Council on Cardiovascular Disease **Summary:** There was no association between the experimental diets and SGA.

Study Characteristics	Intervention or Exposure, Outcome	Results	Confounders, Funding, Summary
Melero, 2020[58] **Non-RCT, Spain, St. Carlos GDM prevention study** Analytic N=544 (Attrition: 9%) • Age (y): CG: 31.3±5.6, IG: 31.7±5.4 • Race/Ethnicity (%): Hispanic: 100 • SEP: ○ Education (%): Elementary: CG: 19.7, IG: 12.6; Secondary: CG: 47.2, IG: 46.2; University: CG: 31.7, IG: 40.6; Unknown: CG: 1.4, IG: 0.7 ○ Unemployed (%): CG: 69.0, IG: 67.8 • Pre-pregnancy BMI: CG: 24.4±4.0, IG: 24.1±3.4 • Current HDP (%): CG: 4.9, IG: 2.8 • Current DM (%): CG: 34 (25.8), IG:19 (14.8); CG vs IG: p=0.021 • Smoking (%): CG: 0.7, IG: 0.7	**IG vs CG** FFQ at: 8-12 GW, 24-28 GW, and 36-38 GW **DP Description:** The IG, CG, and real world group (RW) all given the same basic MedDiet recommendations: ≥2 svg/d vegetables, ≥3 svg/d fruit (avoiding juices), 3 svg/d skimmed dairy products, wholegrain cereals, 2-3 svg legumes/wk, moderate to high consumption of fish; low consumption of red and processed meat, avoidance of refined grains, processed baked goods, pre-sliced bread, soft drinks and fresh juices, fast foods and precooked meals. • IG and RW also recommended to consume ≥40 mL/d of EVOO and nuts ≥3d/wk. IG was provided with 10 L EVOO and 2 kg roasted pistachios at 12-14 GW and 24-28 GW. RW was not provided with EVOO or pistachios. • CG recommended to restrict dietary fat, including EVOO and nuts. **Adherence**: MEDAS scores did not differ between the groups at baseline. Scores significantly increased over time in the IG and RW, while no changes in the CG were observed. Scores remaining significantly higher in the IG and RW compared to the CG at both 24-28 GW and 36-38 GW. Physical activity scores did not differ at either follow-up point. • Positive components: vegetables; dishes with tomato sauce (tomato, garlic, onion, leek, olive oil); pulses; nuts; fish; white meat over red meat; olive oil; olive oil as principal cooking fat. • Negative components: commercial pastries; red meat or sausages; animal fat; sugar-sweetened beverages • Alcohol and fruit (including juice) component excluded **Outcomes:** • SGA: <10%ile by national charts • LGA: >90%ile	**SGA** Chi-square test n (%) IG vs CG: 1 (0.8) vs 7 (5.3), p=0.036 **LGA** Chi-square test n (%) IG vs CG: 1 (0.8) vs 8 (6.1), p=0.020	**Key confounders accounted for:** Parity, Smoking, Race and/or ethnicity, Age, SEP **Funding:** Fundación para Estudios Endocrinometabolicos, IdISSC Hospital Clínico San Carlos; the Instituto de Salud Carlos III of Spain **Summary:** Greater alignment with a MedDiet supplemented with EVOO and pistachios in a trial (IG) reduced the risk of both SGA and LGA compared to lower alignment with a MedDiet in a trial setting (CG).

Study Characteristics	Intervention or Exposure, Outcome	Results	Confounders, Funding, Summary
Van Horn, 2018[59] **RCT, United States, MOMFIT (Maternal Offspring Metabolics Family Intervention Trial)** Analytic N=251 (Attrition: 11%) • Age (y): IG: 33±4; UC: 34±4 • Race/Ethnicity (%): White: IG: 56.4, UC: 70.2; Black or African American: IG: 24.3, UC: 14.2; Other: IG: 19.3; UC: 15.6 • SEP: ○ Total family income (%): <\$20k: IG: 3.6, UC: 5.7; \$20k−<\$50k: IG: 12.4, UC: 13.5; \$50k−<\$75k: IG: 12.4, UC: 13.5; \$75k−<\$100k: IG: 13.9, UC: 9.9; \$100k−<\$150k: IG: 24.8, UC: 27.7; \$150k−<\$200k: IG: 16.8, UC: 10.6;≥\$200k: IG: 16.1; UC: 19.2 • Pre-pregnancy BMI: IG: 31±4, UC: 31±4 • Current HDP (%): Family history of high blood pressure: IG: 67.9, UC: 75.2 • Current DM (%): 0% prior diagnosis of diabetes of HbA1c >6.5% • Family history of diabetes: IG: 51.4, UC: 59.6 • Smoking (%): 0%	**IG vs UC** 24 HR at: 15 GW, 36 GW **DP Description:** MAMA-DASH: Higher low-fat milk and dairy products, fish, skinless poultry, lean meat and vegetable protein, unsaturated fats, fiber-rich whole grains, fruits, vegetables, and legumes. Lower sugar-sweetened beverages, other sweets, and non-nutrient-dense snack foods was discouraged. Caloric restriction to meet GWG, following nutrition guidelines for pregnant women, including avoidance of fish considered higher in mercury, inclusion of calcium-rich, vitamin D−enriched dairy, or calcium-fortified non-dairy products **Adherence**: at 36 GW Median (IQR) • Dixon DASH: Intervention group (IG): 4(3, 4); Usual care (UC): 3(3, 4), p=0.01 • Fung DASH: IG: 27(25, 30); UC: 26(22, 29), p=0.005 • HEI-2010: IG: 70(62, 77); UC: 63(56, 75), p=0.002 **Outcomes:** • SGA: <10%ile • LGA: >90%ile	**SGA** IG: 25 (18.0), p=0.61 UC: 27 (19.9) **LGA** Logistic regression model, n (%) IG: 8 (5.8), p=0.51 UC: 12 (8.8)	**Key confounders accounted for:** Parity, Smoking, Race and/or ethnicity, Age, SEP, Pre-pregnancy BMI, Current HDP, DM in current pregnancy **Funding:** NIDDK, NHLBI; NICHD; NCCIH; ORWH; OBSSR; the Indian Health Service **Summary:** Randomization to DASH and physical activity coaching compared to usual care was not associated with SGA or LGA.

Study Characteristics	Intervention or Exposure, Outcome	Results	Confounders, Funding, Summary
Zhao, 2022[60] **RCT, Parallel-arm, China, People's Hospital of Zhengzhou University** Baseline N=560; Analytic N= 500 (Attrition: 11%) • Age (y): CG: 28±5.2, IG: 29.4±5.6 • SEP: ○ Employed (%): CG: 75.2, IG: 46.4 ○ Education (%) HS: CG: 10.0, IG: 10.8; University: CG: 37.2, IG: 38.8; Unknown: CG: 6.4, IG: 1.2 • Pre-pregnancy BMI: CG: 23.3±3.9, IG: 22.8±3.4 • Current DM (%): GDM: CG: 20.4, IG: 13.6, p=0.042 • Smoking (%): Current: CG: 2.4, IG: 2	**CG vs IG** FFQ at: 8-12 GW, 24-28 GW, 36-38 GW **DP Description:** • Both groups: MedDiet (vegetables, fruits, skimmed dairy foods, whole grain cereals, legumes, fish; avoid refined grains, baked goods, soft drinks, juices, junk food, precooked meat, pre-sliced slices of bread) and walking 30 min/d recommended • IG: Recommended to consume ≥40 ml/d EVOO and 25-30 g/d roasted pistachios recommended; Weekly visits with a dietitian • CG: Recommended to restrict dietary fat, including extra virgin coconut oil and dry fruits, by the midwives. **Adherence:** MEDAS scores did not differ at baseline. Scores significantly increased over time in both groups, but the IG had significantly higher scores than the CG at both 24-28 GW and 36-38 GW. Physical activity scores did not differ at either follow-up point. • Positive components: Olive oil (as main fat and svg/d); Vegetables; Fruit (including juice); Red wine; Pulses; Fish/seafood; Nuts; White over red meat; Traditional sauce of tomatoes, garlic, onion, or leeks sautéed in olive oil • Negative components: Red or processed meat; Butter, margarine, or cream; SSB; Commercial pastries **Outcomes:** • SGA: <10%ile • LGA: >90%ile	**SGA** Chi-square IG: 5.2, p=0.01 CG: 1.2 RR (95% CI) 0.23 (0.06, 0.79), p=0.020 **LGA** Chi-square IG: 3.6, p=0.03 CG: 0.8 RR (95% CI) 0.22 (0.04, 1.01), p=0.052	**Key confounders accounted for:** Parity, Smoking, Race and/or ethnicity, Age, Pre-pregnancy BMI, Current HDP **Funding:** No funding received **Summary:** A MedDiet with recommended additional EVOO and pistachios lowers the risk of SGA and trended towards lowering risk of LGA.

Study Characteristics	Intervention or Exposure, Outcome	Results	Confounders, Funding, Summary
NRCT			
Melero, 2020[58] **Non-RCT, Spain, St. Carlos GDM prevention study** Analytic N=544 (Attrition: 9%) • Age (y): CG: 31.3±5.6, RW: 31.4±5.7 • Race/Ethnicity (%): Hispanic: 100 • SEP: ○ Education (%): Elementary: CG: 19.7, RW: 11.2; Secondary: CG: 47.2, RW: 50.8; University: CG: 31.7, RW: 35.5; Unknown: CG: 1.4, RW: 2.5 ○ Unemployed (%): CG: 69.0, RW: 73.3 • Pre-pregnancy BMI: CG: 24.4±4.0, RW: 23.4±3.6; RW vs. CG, p=0.033 • Current HDP (%): CG: 4.9, RW: 2.5 • Current DM (%): CG: 34 (25.8); RW: 38 (13.4); RW vs CG: p=0.011 • Smoking (%): CG: 0.7, RW: 1.6	**RW vs CG** FFQ at: 8-12 GW, 24-28 GW, and 36-38 GW **DP Description:** The IG, CG, and real world group (RW) all given the same basic MedDiet recommendations: ≥2 svg/d vegetables, ≥3 svg/d fruit (avoiding juices), 3 svg/d skimmed dairy products, wholegrain cereals, 2-3 svg legumes/wk, moderate to high consumption of fish; low consumption of red and processed meat, avoidance of refined grains, processed baked goods, pre-sliced bread, soft drinks and fresh juices, fast foods and precooked meals. • IG and RW also recommended to consume ≥40 mL/d of EVOO and nuts ≥3d/wk. IG was provided with 10 L EVOO and 2 kg roasted pistachios at 12-14 GW and 24-28 GW. RW was not provided with EVOO or pistachios. • CG recommended to restrict dietary fat, including EVOO and nuts. **Adherence**: MEDAS scores did not differ between the groups at baseline. Scores significantly increased over time in the IG and RW, while no changes in the CG were observed. Scores remaining significantly higher in the IG and RW compared to the CG at both 24-28 GW and 36-38 GW. Physical activity scores did not differ at either follow-up point. • Positive components: vegetables; dishes with tomato sauce (tomato, garlic, onion, leek, olive oil); pulses; nuts; fish; white meat over red meat; olive oil; olive oil as principal cooking fat. • Negative components: commercial pastries; red meat or sausages; animal fat; sugar-sweetened beverages Alcohol and fruit (including juice) component excluded **Outcomes:** • SGA: <10%ile by national charts • LGA: >90%ile	**SGA** Chi-square test n (%) RW vs CG: 9 (3.2) vs 7 (5.3), p=0.307 **LGA** Chi-square test n (%) RW vs CG: 11 (3.9) vs 8 (6.1), p=0.457	**Key confounders accounted for:** Parity, Smoking, Race and/or ethnicity, Age, SEP **Funding:** Fundación para Estudios Endocrinometabolicos, IdISSC Hospital Clínico San Carlos; the Instituto de Salud Carlos III of Spain **Summary:** Greater alignment with a MedDiet supplemented with EVOO and pistachios in a real-world (RW) setting did not impact risk of SGA or LGA compared to CG.

Study Characteristics	Intervention or Exposure, Outcome	Results	Confounders, Funding, Summary
Cohort Studies			
Index/Score			
Ancira-Moreno, 2020[50] **PCS, Mexico, PRINCESA (Pregnancy Research on Inflammation, Nutrition & City Environment: Systematic Analyses)** Analytic N=660 • Age (y): 25.08±5.8 • SEP (%): Education ≤9 y: 56.0 • Pre-pregnancy BMI: ○ 25.72±5.2 ○ (%): BMI ≥25 to <30: 32.5; ≥30 to <35: 12.4; ≥35: 5.0	**MDQS** (Continuous alignment (per SD); Medium (3-4 pts), and high (≥5 pts) vs low (0-2 pts) alignment) 24HR at: TM2 and TM3 **DP Description:** • Positive components: Fruits and vegetables (≥400 g per day), PUFA (≥6% of total energy), low fat dairy products (2 svg per day), legumes (2 svg per day) • Negative components: Red meat (≤500 g per wk), saturated fat and/or added sugars (<10% of energy). **Outcomes:** • LBW: <2,500 g	**LBW** Logistic regression OR (95% CI) Continuous (per SD): 0.53 (0.46, 0.82), p<0.001 Medium vs Low (Ref): 0.36 (0.17, 0.75), p=0.006 High vs Low (Ref): 0.22 (0.06, 0.75), p=0.016	**Key confounders accounted for:** Parity, Age, SEP, Pre-pregnancy BMI **Other covariates:** Energy intake, GWG, maternal height, marital status, term of gestation, baby's sex **Funding:** NIEHS **Summary:** Alignment with the MDQS was associated with lower risk of LBW.
Berube, 2023[3] **PCS, United States, StEP Trial (Starting Early Program Trial)** Analytic N=498 • Age (y): 28±6 • Race/Ethnicity (%): Hispanic/Latina: 100 • SEP: ○ ≥HS education: 66.4 ○ Employed: 24.8 • Pre-pregnancy BMI: 27.5±5.5	**HEI-2015** (tertiles of alignment) FFQ at: 28-32 GW **DP Description:** • Positive components: total fruits, whole fruits, total vegetables, greens and beans, whole grains, dairy, total protein, seafood and plant protein, fatty acids. • Negative components: refined grains, sodium, saturated fat, added sugars. **Outcomes:** • SGA: ≤10%ile based on Fenton growth curves • LGA: ≥90%ile	**SGA** Logistic regression OR (95% CI) T2 vs T1 (Ref): 0.8 (0.3, 1.8) T3 vs T1 (Ref): 0.6 (0.3, 1.6) **LGA** Logistic regression OR (95% CI) T2 vs T1 (Ref): 1.3 (0.6, 3.3) T3 vs T1 (Ref): 1.1 (0.4, 2.7)	**Key confounders accounted for:** Parity, Race and/or ethnicity, Age, SEP, Pre-pregnancy BMI **Other covariates:** Marital status, physical activity, total energy **Funding:** NIFA; NICHD **Summary:** Alignment with Western DP, Fruits and vegetables DP, and the HEI-2015 was not associated with risk of SGA or LGA.

Study Characteristics	Intervention or Exposure, Outcome	Results	Confounders, Funding, Summary
Chatzi, 2012[5] **PCS, Greece, Spain, INMA (*Infancia y medio Ambiente*), RHEA** Analytic N: INMA-Atlantic: 1,074; INMA-Mediterranean: 1,386; RHEA: 824 (INMA-Atlantic, INMA-Mediterranean, RHEA) • Age (y): ~31.5; ~30.2, p<0.001; ~29.5, p=0.006 • SEP: ○ Maternal education (%): ≤Primary: ~16, ~30.5, ~18.4; Secondary: ~38.3, ~43.7, ~51.2; University: ~45.7, ~25.8, ~30.4, p=0.003 ○ Paternal education (%): ≤Primary: ~26.1, ~40.5, ~35.9; Secondary: ~49.5, ~41.4, ~42.4; University: ~24.5, ~18.1, ~21.7 ○ Maternal social class (%): Professional-managerial: ~28, ~18.3; Skilled: ~23.7, ~27.0; Partly skilled, unskilled, or homemaker: ~48.2, ~54.7 ○ Paternal social class (%): Professional-managerial: ~23.9, ~17.3; Skilled: ~14.6, ~19.4; Partly skilled, unskilled, or homemaker: ~61.5, ~63.3 • Pre-pregnancy BMI: ~23.5, ~23.7, ~24.3 • Current HDP (%): GHTN: ~2.1; ~2.4; ~3.1 • Current DM (%): DM before pregnancy: ~0.2, ~0.3, ~2.1 • Smoking (%): During pregnancy: ~15.9, ~19.5, p=0.049, ~23	**MD** (High (6-8 pt); Medium (4-5 pt) vs Low (≤3 pt) alignment) FFQ at: INMA: ~13.8±2 GW; RHEA: 14-18 GW **DP Description:** <u>Mediterranean Diet (MD)</u> • Positive components: vegetables, legumes, fruits and nuts, cereals, fish and seafood, dairy products, and the ratio of MUFA:SFA • Negative components: all types of meat **Outcomes:** • SGA <10%ile	**SGA** Multiple log-binomial regression RR (95% CI) <u>INMA-Mediterranean</u> Medium vs Low (Ref): 0.76 (0.54, 1.06) High vs Low (Ref): 0.50 (0.28, 0.90) <u>INMA-Atlantic</u> Medium vs Low (Ref): 1.24 (0.81, 1.89) High vs Low (Ref): 0.97 (0.42, 2.26) <u>RHEA</u> Medium vs Low (Ref): 1.82 (0.95, 3.49) High vs Low (Ref): 1.96 (0.90, 4.25)	**Key confounders accounted for:** Parity, Smoking, Age, SEP, Pre-pregnancy BMI, Current HDP, DM in current pregnancy **Other covariates:** TEI INMA-Atlantic: maternal social class; INMA-Mediterranean: maternal BMI and maternal social class; RHEA: paternal age and maternal education. **Funding:** INMA: Instituto de Salud Carlos III; the Conselleria de Sanitat Generalitat Valenciana; Universidad de Oviedo; Department of Health of the Basque Government; Provincial Government of Gipuzkoa RHEA: Flight Attendant Medical Research Institute; EU Integrated Projects; HiWATE **Summary:** Higher MD adherence in INMA-Mediterranean was associated with a lower risk of SGA. In the other 2 cohorts, there was no association between MD adherence and SGA.

Chen, 2021[6] **PCS, France, Ireland, Netherlands, Poland, United Kingdom, ALPHABET consortium: Lifeways, EDEN, ALSPAC (Avon Longitudinal Study of Parents and Children), SWS (Southampton Women's Survey), REPRO_PL (Polish Mother and Child Cohort Study), Generation R** Analytic N=ALSPAC: 11,571; EDEN: 1,641; Generation R: 6,184; Lifeways: 832; REPRO_PL: 1,139; SWS: 1,851 • Age (y): 29.5 ± 4.9 • Race/Ethnicity (%): European-born/White: 89.9%; Non-European-born/non-White: 10.1% • SEP: Education level: Low: 16.9%, Medium: 51.6%, High: 31.5% • Pre-pregnancy BMI: 23.3 ± 4.2 • Smoking (%): ○ Never: 57.7% ○ Ever: 23.0% ○ Current: 19.3%	**DASH** (continuous alignment, per 1 SD increase) FFQ at: First/early second trimester (5 cohorts); Third trimester (3 cohorts) **DP Description:** • Positive components: fruits, vegetables excluding potatoes, total grains, non-full-fat dairy products, nuts/seeds/legumes. • Negative components: red and processed meats, sugar-sweetened beverages/sweets/added sugars, sodium. **Outcomes:** • SGA <10%ile, based on INTERGROWTH-21st GA- and sex-specific reference growth curves	**SGA** Logistic regression OR (95% CI) ALSPAC: 0.93 (0.85, 1.02) EDEN: 0.88 (0.71, 1.09) Generation R: 0.78 (0.69, 0.88) Lifeways: 1.00 (0.68, 1.46) REPRO_PL: 0.94 (0.70, 1.27) SWS: 0.79 (0.61, 1.02)	**Key confounders accounted for:** Parity, Smoking, Race and/or ethnicity, SEP, Pre-pregnancy BMI **Other covariates:** maternal height, energy intake, alcohol consumption during pregnancy, child sex **Funding:** ALSPAC: UK Medical Research Council; Wellcome; University of Bristol; EDEN: Foundation for Medical Research; National Agency for Research; National Institute for Research in Public Health; French Ministry of Health; French Ministry of Research; INSERM Bone and Joint Diseases National Research and Human Nutrition National Research Programs; Paris-Sud University; Nestlé; French National Institute for Population Health Surveillance; French National Institute for Health Education; the EU FP7 programmes; Diabetes National Research Program; French Agency for Environmental Health Safety; Mutuelle Générale de l'Education Nationale; French national agency for food security; French-speaking association for the study of diabetes and metabolism; Generation R: Erasmus Medical Centre; Erasmus University Rotterdam; Netherlands Organization for Health Research and Development; EU Horizon 2020 Research and Innovation Programme; Lifeways: Irish Health Research Board; REPRO_PL: Ministry of Science and Higher Education Poland; Polish-Norwegian Research Fund; National Science Centre, Poland; SWS: Medical Research Council; British Heart Foundation; Arthritis Research UK; Food Standards Agency; EU Seventh Framework **Summary:** Greater alignment with the DASH DP was associated with lower risk of SGA in 1 cohort (Generation R) but was not associated with risk of SGA in the remaining 5 cohorts.

Study Characteristics	Intervention or Exposure, Outcome	Results	Confounders, Funding, Summary

Díaz-López, 2022[9]
PCS, Spain, ECLIPSES
Analytic N=614
• Age (y): 30.5±5.1
• Race/Ethnicity (%): NR for this sample, but from baseline of parent RCT: Maternal ethnic origin: Caucasian: 80.4; Latin American: 10.7; Arab: 6.3; Black: 2.0; Asian: 0.6
• SEP:
  ○ Social class, %, p=0.001: Low: T1: 20; T2: 22; T3: 10; Middle: T1: 67; T2: 54; T3: 65; High: T1: 13; T2: 24; T3: 25
  ○ Educational level, %, p=0.001: Primary or less: 33, 33, 27; Secondary: 44, 35, 30; University: 23, 32, 43
• Pre-pregnancy BMI:
  ○ 25.1±4.5
  ○ (%): BMI <25: 58; BMI ≥25: 42
• Smoking (%): No: 83; Yes: 17
	Relative MedDiet (tertiles of adherence)
	FFQ at: 12, 24, 36 GW
	
	DP Description:
	• Positive components: fruits, vegetables, legumes, cereals, fresh fish and olive oil
	• Negative components: meat, dairy, alcohol
	
	Outcomes:
	• SGA: <10%ile according to INTERGROWTH-21st GA- and sex-specific reference growth curves.
		SGA
		Multivariable logistic regression OR (95% CI)
		T3 vs T1 (Ref): 0.36 (0.16, 0.79), p<0.05
		T2 vs T1 (Ref): 0.42 (0.22, 0.81), p<0.05
		p-trend=0.005
		
		Multivariable logistic regression OR (95% CI), per 1 pt increase
		0.74 (0.64, 0.85), p<0.05
		
		No change in the results after excluding newborns with GA <37 GW (data NR).
			Key confounders accounted for: Parity, Smoking, Age, SEP, Pre-pregnancy BMI
			Other covariates: PA, planned pregnancy, energy intake
			
			Funding: Health Research Fund of the Ministry of Health and Consumption; European Union
			
			Summary: Higher alignment with a relative MedDiet was associated with lower risk of SGA.

Study Characteristics	Intervention or Exposure, Outcome	Results	Confounders, Funding, Summary

Emond, 2018[10]
PCS, United States, New Hampshire Birth Cohort Study
Analytic N=862 (nonsmokers: n=756)
 	
AHEI-2010 Q1, Q4
• Age (y): 28.9±5.0, 33.2±4.4, p<0.001
• Race/Ethnicity (%): NHW: 94.9, 98.2
• SEP: Education, p<0.001: ≤HS graduate: 41.9, 15.3; Some college: 23.3, 23.2; ≥College graduate: 34.9, 61.6
• Pre-pregnancy BMI (%): p=0.05: 18.5-24.9: 46.5, 58.3; 25.0-29.9: 27.4, 27.8; ≥30: 26.1, 13.9
• Current HDP (%): Preeclampsia: 1.9, 2.8
• Current DM (%):
  ○ Any past DM: 7.0, 4.2
  ○ GDM: 5.6, 7.5
• Smoking (%): p<0.001
  ○ Nonsmoker: 79.5, 93.5
  ○ Former smoker: 8.8, 4.6
  ○ Smoker: 11.6, 1.9
	AHEI-2010 (quartiles of alignment)
	FFQ at: 24-28 GW
	
	DP Description:
	• Positive components: fruits, vegetables, whole grains, nuts and legumes, long-chain omega-3 fatty acids (EPA+DHA), PUFA
	• Negative components: sugary beverages, red and processed meats, trans fatty acids, sodium.
	• Modified to exclude moderate alcohol component.
	
	Outcomes:
	• SGA: <10%ile based on age- and sex-adjusted Fenton growth curves
	• Macrosomia: >4000 g
	• LGA: >90%ile based on age- and sex-adjusted Fenton growth curves
	• LBW: <2500 g
		SGA
		Logistic regression
		OR (95% CI)
		Overall
		Q2 vs Q1 (Ref): 0.89 (0.37, 2.15)
		Q3 vs Q1 (Ref): 0.73 (0.28, 1.89)
		Q4 vs Q1 (Ref): 0.35 (0.11, 1.08)
		p trend: 0.03
		Nonsmokers
		Q2 vs Q1 (Ref): 0.78 (0.28, 2.14)
		Q3 vs Q1 (Ref): 0.78 (0.27, 2.27)
		Q4 vs Q1 (Ref): 0.44 (0.13, 1.47)
		p trend: 0.04
		
		LGA
		Logistic regression
		OR (95% CI)
		Overall
		Q2 vs Q1 (Ref): 1.20 (0.62, 2.33)
		Q3 vs Q1 (Ref): 0.86 (0.42, 1.79)
		Q4 vs Q1 (Ref): 0.71 (0.32, 1.57)
		p trend: 0.28
		Nonsmokers
		Q2 vs Q1 (Ref): 1.24 (0.62, 2.49)
		Q3 vs Q1 (Ref): 0.79 (0.36, 1.70)
		Q4 vs Q1 (Ref): 0.60 (0.26, 1.38)
		p trend: 0.25
		
		LBW
		Logistic regression
		OR (95% CI)
		Overall
		Q2 vs Q1 (Ref): 1.15 (0.38, 3.49)
		Q3 vs Q1 (Ref): 0.54 (0.14, 2.11)
		Q4 vs Q1 (Ref): 1.20 (0.34, 4.24)
		p trend: 0.95
		Nonsmokers
		Q2 vs Q1 (Ref): 1.14 (0.35, 3.73)
		Q3 vs Q1 (Ref): 0.79 (0.2, 3.22)
		Q4 vs Q1 (Ref): 1.27 (0.32, 4.97)
		p trend: 0.66
			Key confounders accounted for: Parity, Smoking, Race and/or ethnicity, Age, SEP, Pre-pregnancy BMI, Current HDP, DM in current pregnancy
			Other covariates: infant sex, GWG, PA during pregnancy, maternal urinary arsenic, total daily caloric intake
			
			Funding: NIEHS; NIGMS; Environmental Protection Agency
			
			Summary: Greater alignment with the AHEI-2010 was associated with lower risk of SGA. Greater alignment trended toward lower risk of macrosomia among nonsmokers but did not reach statistical significance. Alignment with the AHEI-2010 was not associated with LBW or LGA.

Study Characteristics	Intervention or Exposure, Outcome	Results	Confounders, Funding, Summary
Emond, 2018[10] (Continued) **PCS, United States, New Hampshire Birth Cohort Study** Analytic N=862 (nonsmokers: n=756) AHEI-2010 Q1, Q4 • Age (y): 28.9±5.0, 33.2±4.4, p<0.001 • Race/Ethnicity (%): NHW: 94.9, 98.2 • SEP: Education, p<0.001: ≤HS graduate: 41.9, 15.3; Some college: 23.3, 23.2; ≥College graduate: 34.9, 61.6 • Pre-pregnancy BMI (%): p=0.05: 18.5-24.9: 46.5, 58.3; 25.0-29.9: 27.4, 27.8; ≥30: 26.1, 13.9 • Current HDP (%): Preeclampsia: 1.9, 2.8 • Current DM (%): ○ Any past DM: 7.0, 4.2 ○ GDM: 5.6, 7.5 • Smoking (%): p<0.001 ○ Nonsmoker: 79.5, 93.5 ○ Former smoker: 8.8, 4.6 ○ Smoker: 11.6, 1.9	**AHEI-2010** (quartiles of alignment) FFQ at: 24-28 GW **DP Description:** • Positive components: fruits, vegetables, whole grains, nuts and legumes, long-chain omega-3 fatty acids (EPA+DHA), PUFA • Negative components: sugary beverages, red and processed meats, trans fatty acids, sodium. • Modified to exclude moderate alcohol component. **Outcomes:** • SGA: <10%ile based on age- and sex-adjusted Fenton growth curves • Macrosomia: >4000 g • LGA: >90%ile based on age- and sex-adjusted Fenton growth curves LBW: <2500 g	**Macrosomia** Logistic regression OR (95% CI) Overall Q2 vs Q1 (Ref): 0.79 (0.43, 1.46) Q3 vs Q1 (Ref): 0.88 (0.48, 1.63) Q4 vs Q1 (Ref): 0.76 (0.39, 1.46) p trend: 0.21 Nonsmokers Q2 vs Q1 (Ref): 0.78 (0.41, 1.48) Q3 vs Q1 (Ref): 0.67 (0.34, 1.30) Q4 vs Q1 (Ref): 0.65 (0.32, 1.29) p trend: 0.07	**Key confounders accounted for:** Parity, Smoking, Race and/or ethnicity, Age, SEP, Pre-pregnancy BMI, Current HDP, DM in current pregnancy **Other covariates:** infant sex, GWG, PA during pregnancy, maternal urinary arsenic, total daily caloric intake **Funding:** NIEHS; NIGMS; Environmental Protection Agency **Summary:** Greater alignment with the AHEI-2010 was associated with lower risk of SGA. Greater alignment trended toward lower risk of macrosomia among nonsmokers but did not reach statistical significance. Alignment with the AHEI-2010 was not associated with LBW or LGA.

Study Characteristics	Intervention or Exposure, Outcome	Results	Confounders, Funding, Summary

Fulay, 2018[13]
PCS, United States, Project Viva
Analytic N=1743
• Age (y): 32.2±4.9
• Race/Ethnicity (%): White: 71.9; Black: 12.3; Hispanic: 6.5; Asian: 5.6; Other: 3.6
• SEP:
  ○ Household income (%): <\$20k/y: 3.1; >\$70k/y: 60.1
  ○ Education (%): Primary: 9.4; ≥College: 32.0
• Pre-pregnancy BMI: 25-<30: 21.7; ≥30: 12.9
• Current HDP (%): HDP: 10.7
• Current DM (%):
  ○ Current GDM: 5.2
  ○ Current T1 or T2 DM: 0.0
• Smoking (%): 10.9
	DASH & DASH OMNI (continuous alignment)
	FFQ at: ~11 GW
	
	DP Description:
	DASH
	• Positive components: fruits; vegetables; whole grains; nuts/legumes; low-fat dairy
	• Negative components: sodium; SSB; red and/or processed meats
	DASH OMNI
	• Positive components: fruits; vegetables; whole grains; nuts/legumes; low-fat dairy; MUFA and PUFA
	• Negative components: sodium; SSB; red and/or processed meats
	Outcomes:
	• SGA: BW <10%ile, by GA- and sex-specific Oken reference
	• LGA: BW ≥90%ile
	• AGA: BW 10-90%ile
		SGA vs. AGA
		Logistic regression
		OR (95% CI)
		DASH: 0.97 (0.93, 1.02), p≥0.05
		DASH OMNI: 0.97 (0.93, 1.02), p≥0.05
		
		Additionally adjusting for Western and Prudent DP did not substantially alter the results
		
		LGA vs. AGA
		Logistic regression
		OR (95% CI)
		DASH: 0.99 (0.96, 1.02), p≥0.05
		DASH OMNI: 0.99 (0.96, 1.02), p≥0.05
		
		Additionally adjusting for Western and Prudent DP
		DASH: 0.94 (0.90, 0.99), p<0.05
		DASH OMNI: 0.94 (0.89, 0.99), p<0.05
			Key confounders accounted for: Parity, magnitude, or precision of the results, Smoking, Race and/or ethnicity, Age, SEP, Pre-pregnancy BMI, Current HDP, DM in current pregnancy
			Other covariates: GWG until FFQ; TEI
			
			Funding: NIH
			
			Summary: Alignment with DASH or DASH OMNI was not associated with SGA or LGA when not adjusting for Western or Prudent DP. When additionally adjusting for these DP, greater alignment with DASH and DASH OMNI was associated with reduced risk of LGA, but not risk of SGA.

Gonzalez-Nahm, 2019[14]
PCS, United States, Nurture
Analytic N=817
• Age (y): 27.4±5.8
• Race/Ethnicity (%): Black: 70.2; White: 20.9; Other: 8.9
• SEP:
  ○ Household income (%): <\$20k: 58.9; \$20k-40k: 22.4; >\$70k: 8.0
  ○ Education (%): ≤HS graduate: 45.2; Some college/college or higher: 54.8
• Pre-pregnancy BMI: 30.1±9.3
• Current HDP (%): NR
• Current DM (%): NR
• Smoking (%): 14.8
	AHEI-2010 (continuous alignment)
	FFQ at: 20-36 GW
	
	DP Description:
	• Positive components: vegetables, fruit, whole grains, nuts and legumes, long-chain omega-3 fatty acids (DHA and DPA), PUFA
	• Negative components: SSBs, red/processed meat, trans fat, sodium
	• Modified to exclude alcohol component
	Outcomes:
	• SGA: BW <10%ile, based on INTERGROWTH-21st reference growth curves
	• LGA: BW >90%ile
	• LBW: BW <2500 g
	• Macrosomia: BW >4000 g
		SGA
		Logistic regression
		OR (95% CI)
		0.98 (0.94, 1.01), p=0.16
		
		LGA
		Logistic regression
		OR (95% CI)
		1.02 (0.98, 1.05), p=0.33
		
		LBW
		Logistic regression
		OR (95% CI)
		0.99 (0.95, 1.03), p=0.60
		
		Macrosomia
		Logistic regression
		OR (95% CI)
		1.04 (0.98, 1.90), p=0.07
		
		Similar results in analyses restricted to Black women and infants or excluding PTB
			Key confounders accounted for: Parity, Smoking, Race and/or ethnicity, Age, SEP, Pre-pregnancy BMI
			Other covariates: daily kcal intake; infant sex
			
			Funding: NIH
			
			Summary: Alignment with the AHEI-2010 was not associated with risk of SGA, LGA, LBW, or macrosomia.

Study Characteristics	Intervention or Exposure, Outcome	Results	Confounders, Funding, Summary
Hillesund, 2014[17] **PCS, Norway, MoBa (Norwegian Mother and Child Cohort Study)** Exposure N=High: 25,237; Medium: 23,558, Comparator N=17,802 • Age (y): ○ 30.1±4.6, p<0.001 ○ (%) ≤19: 0.9; 20-34: 82.2; ≥35: 16.9, p<0.001 • SEP: Education (%): 31.2; 13-16: 42.7; ≥17: 26.2, p<0.001 • Pre-pregnancy BMI: ○ 24.0±4.2, p<0.001 ○ (%): <25: 69.2; 25–29: 21.6; ≥30: 9.3, p<0.001 • Current DM (%): Pre-existing DM: 0.0 • Smoking Yes: 7.8, p<0.001	**NND** High (score: 6-10) or Medium (score: 4-5) vs Low (score: 0-3) alignment FFQ at: ~22 GW **DP Description:** New Nordic Diet (NND) Positive components: (i) eating ≥24 main meals/wk; (ii) eating Nordic fruits ≥5 times/week; (iii) eating root vegetables ≥5 times/week; (iv) eating cabbage ≥2 times/week; (v) eating potatoes ≥one-third of total occasions of eating potatoes, rice or pasta; (vi) choosing whole grain bread more often than refined bread; (vii) eating oatmeal ≥monthly; (viii) eating fish/game/berries about 2 times/week; (ix) drinking milk more often than juice; and (x) drinking ≥6 times as much water as sugar-sweetened beverages **Outcomes:** • SGA: <10%ile, by "gender-specific" reference from MoBa cohort • LGA: >90%ile	**SGA vs AGA** Multinomial logistic regression OR (95% CI) Medium vs Low (Ref): 0.95 (0.89, 1.02) High vs Low (Ref): 0.92 (0.86, 0.99) **LGA vs AGA** Multinomial logistic regression OR (95% CI) Medium vs Low (Ref): 1.04 (0.97, 1.12) High vs Low (Ref): 1.07 (1.00, 1.15)	**Key confounders accounted for:** Parity, Smoking, Age, SEP, Pre-pregnancy BMI, DM in current pregnancy **Other covariates:** maternal height, exercise, energy intake **Funding:** Norwegian Ministry of Health and the Ministry of Education and Research; NIH; the Norwegian Research Council/FUGE; University of Agder. **Summary:** High alignment with the NND, compared to low alignment, was associated with lower odds of SGA and greater odds LGA. Medium alignment with the NND was not statistically significantly associated with SGA or LGA but trended in the same direction as high alignment.

Study Characteristics	Intervention or Exposure, Outcome	Results	Confounders, Funding, Summary
Hillesund, 2018[18] **PCS, Norway, NFFD (Norwegian Fit for Delivery)** Analytic N=587 • Age (y): 28.0±4.4 ○ (%): ≥35: 6.8 • Race/Ethnicity (%): "Predominantly White" • SEP: ○ Education (%): ≤12y: 31.8; ≥16y: 35.5 ○ Occupation (%): Work outside home: 84.2; Student: 8.7; Unemployed: 3.9; Sick leave/disabled: 1.9; Homemaker: 1.4 ○ Income (%): ≤400k NOK: 31.2; >700k NOK: 34.4; NR: 6.6 • Pre-pregnancy BMI: (%) 25-29.9: 20.2; ≥30: 7.6 • Current HDP (%): ○ PE: 4.3 ○ Severe PE: 2.6 • Current DM (%): ○ Pre-existing DM: 0.0 ○ GDM: 9.1 • Smoking (%): 3.9	**NFFD diet** (continuous alignment) FFQ at: ~15 GW **DP Description:** • Positive components: regular meals; drinking water when thirsty; vegetables w/ dinner; fruits and vegetables between meals; reading nutrition labels before buying • Negative components: sweets and snacks without appreciation; large portion sizes of unhealthy foods; added sugar; salt; eating beyond satiety **Outcomes:** • SGA: BW <10%ile based on sex- and GA-specific references from Medical Birth Registry of Norway • LGA: BW ≥90%ile • LBW: BW <2,500 g • Macrosomia: BW ≥4,000 g and ≥4,500 g	**SGA** Multivariate logistic regression OR (95% CI) 1.13 (0.98, 1.29), p=0.089 Additionally adjusted for PA: 1.10 (0.94, 1.28), p=0.225 **LGA** Multivariate logistic regression OR (95% CI) 0.79 (0.62, 1.01), p=0.062 Additionally adjusted for PA: 0.80 (0.60, 1.09), p=0.166 **LBW** (n=552) Multivariate logistic regression OR (95% CI) 1.25 (0.84, 1.86), p=0.267 Additionally adjusted for PA: 1.20 (0.79, 1.83), p=0.387 **Macrosomia** (n=552) Multivariate logistic regression OR (95% CI) BW >4,000 g 0.89 (0.78, 1.01), p=0.061 Additionally adjusted for PA: 0.91 (0.79, 1.05), p=0.185 BW >4,500 g 0.54 (0.35, 0.84), p=0.006 Additionally adjusted for PA: 0.60 (0.33, 1.10), p=0.097 Sensitivity analysis confined to the control group in the original trial did not materially impact the results	**Key confounders accounted for:** Parity, Smoking, Age, SEP, Pre-pregnancy BMI, Current HDP, DM in current pregnancy **Other covariates:** Marital status; Randomization assignment **Funding:** South-Eastern Norway Regional Health Authority; The municipalities of southern Norway; The University of Agder **Summary:** Greater alignment with the NFFD diet was associated with reduced risk of BW >4,500 g and the association trended toward statistical significance for reduced risk of BW >4,000 g and LGA. Statistical significance of the associations was attenuated when additionally adjusting for physical activity. Alignment with the NFFD diet was not associated with risk of SGA or LBW.

Study Characteristics	Intervention or Exposure, Outcome	Results	Confounders, Funding, Summary

Hrolfsdottir, 2019[19]
PCS, Iceland, PREWICE (PREgnant Women of ICEland)
Exposure N=1651; Medium scores: n=766, High scores: n=508, Comparator N=Low scores: n=377
 	
• Age (y): 30.2±5.2
• SEP: Education (%): Elementary schooling: 13, HS and technical school: 29, University: 35, Higher academic: 24
• Pre-pregnancy BMI:
  ○ Median (IQR): 24.1 (6.5)
  ○ (%) BMI ≥25: 24, BMI ≥30: 18
• Smoking (%): Before pregnancy: 16, During pregnancy: 7
	Dietary risk score (low scores ≤2, medium scores 3, high scores ≥4; continuous)
	FFQ at: 11-14 GW
	
	DP Description:
	Dietary risk score based on Icelandic Food-Based Dietary Recommendations and Nordic Nutrition Recommendations
	• Negative components: Not eating a varied diet (excluded/avoided any of the main food groups: cereal, vegetables/fruits, fish, meat, eggs, high-fat foods, or dairy), fruits/vegetables <5/d, dairy <2/d, whole grain products <2/d, sugar/artificially sweetened beverages ≥5/d, dairy ≥5/d
	
	Outcomes:
	• Macrosomia: >4500 g
		Macrosomia
		Logistic regression
		OR (95% CI)
		
		Medium vs Low (Ref): 1.39 (0.73, 2.62)
		High vs Low (Ref): 2.20 (1.14, 4.25)
		
		Continuous: 1.41 (1.09, 1.83)
		
		Continuous, stratified by prepregnancy BMI
		<25: 1.62 (1.10, 2.40)
		25-30: 1.53 (0.95, 2.48)
		U: 0.82 (0.43, 1.56)
		Dietary risk score by BMI interaction: p=0.03
			Key confounders accounted for: Parity, Smoking, Age, SEP, Pre-pregnancy BMI, DM in current pregnancy
			Other covariates: total gestational length, offspring sex
			
			Funding: University of Iceland Research Fund; The Technology Development Fund/The Icelandic Centre for Research
			
			Summary: Alignment with a dietary risk score was associated with higher risk of macrosomia. This association varied by prepregnancy BMI (dietary risk score among participants with BMI <25 was associated with higher risk of macrosomia).

Lipsky, 2023[24]
PCS, United States, PEAS (Pregnancy Eating Attributes Study)
Analytic N=313
• Age (y): 30.6±4.5
  ○ Race/Ethnicity (%): NHW: 71; NHB or NH African American: 17; Hispanic or Latino: 7; NH Asian: 5; NH American Indian/Alaska Native: 0.3; NH Native Hawaiian/Pacific Islander: 0.3; Other race: 0.3
• SEP:
  ○ Education (%): ≥Bachelor's degree: 73, ≤bachelor's degree: 27
  ○ Employment (%): Full-time: 63, Part-time: 15, Student: 5, Not working: 17
  ○ Income-poverty ratio: 3.9±2.0
• Pre-pregnancy BMI (%):
  ○ Overweight: 27
  ○ Obesity: 24
• Current DM (%):
  ○ Preexisting DM: 0.0
  ○ GDM: 7.2
	HEI-2015 (continuous, per 1 point increase)
	24 HR at: ≤15 GW, 16-27 GW, 28-36 GW
	
	DP Description:
	Positive components: total fruit, whole fruit, total vegetables, greens and beans, whole grains, dairy, total protein, seafood and plant proteins, fatty acids. Negative components: refined grains, sodium, added sugars, saturated fats.
	
	Outcomes:
	• LGA: >90%ile, per American College of Obstetricians and Gynecologists recommendations
		LGA
		Logistic regression
		OR (95% CI)
		HEI-2015 total score: 0.95 (0.92, 0.98), p=0.003
		HEI-2015 adequacy score (positive components): 0.95 (0.91, 0.998), p=0.04
		HEI-2015 moderation score (negative components): 0.86 (0.79, 0.94), p<0.001
			Key confounders accounted for: Age, SEP, DM in current pregnancy
			Other covariates: None
			
			Funding: NICHD
			
			Summary: Alignment with the HEI-2015 was associated with lower risk of LGA

Study Characteristics	Intervention or Exposure, Outcome	Results	Confounders, Funding, Summary

Makarem, 2022[26]
PCS, United States, nuMoM2b (Nulliparous Pregnancy Outcomes Study: Monitoring Mothers-to-Be)
Analytic N =7,798
• Age (y): 27.4±5.5
  ○ (%): ≥35: 9.7
• Race/Ethnicity (%): NHW: 63.9; Hispanic: 16.6; NHB: 10.5; Asian: 4.3; Other: 4.6
• SEP:
  ○ Education (%): <HS: 5.7; ≥Bachelor's: 55.6
• Baseline BMI ≥30 (%): 19.5
• Current HDP (%):
  ○ Chronic HTN: 0.0
  ○ GHTN: ~14%
• Current DM (%): 3.8
• Smoking (%): Ever: 41.4
	aMED (categorical alignment, quintiles of alignment)
	FFQ at: 6-<14 GW
	
	DP Description:
	• Positive components: Vegetables (not potatoes); Legumes; Fruit; Nuts; Whole Grains; Fish; MUFA:SFA
	• Moderate component: Alcohol
	• Negative component: Red and Processed Meat
	Outcomes:
	• SGA: <5%ile by Alexander criteria
		SGA
		Multivariable logistic regression
		OR (95% CI)
		Moderate vs. Low (Ref): 1.00 (0.81, 1.23) p=0.99
		High vs. Low (Ref): 1.03 (0.81, 1.31) p=0.79
		
		Quintile 2 vs. Quintile 1 (Ref): 1.03 (0.83, 1.29) p=0.77
		Quintile 3 vs. Quintile 1 (Ref): 0.84 (0.61, 1.13) p=0.25
		Quintile 4 vs. Quintile 1 (Ref): 1.20 (0.89, 1.61) p=0.23
		Quintile 5 vs. Quintile 1 (Ref): 0.81 (0.58, 1.11) p=0.19
		p for trend=0.07
			Key confounders accounted for: Parity, Smoking, Race and/or ethnicity, Age, SEP, Pre-pregnancy BMI
			Other covariates: Marital status; Family history of CVD
			
			Funding: NIH/ORWH BIRCWH; NIH/NHLBI; NIH/NICHD; OBSSR; NCATS; NIH/NIA; the Barbra Streisand Women's Cardiovascular Research and Education Program; the Erika J. Glazer Women's Heart Research Initiative; AHA; NIH/NINDS; the Gerstner Family Foundation
			
			Summary: Alignment with aMed was not associated with risk of SGA.

Navarro, 2019[31]
PCS, Ireland, Lifeways Cross-Generation Cohort Study
Analytic N=958
• Age (y): 30.1 ± 5.9
• SEP:
  ○ Education (%): <Tertiary: 51, ≥Tertiary: 49
  ○ Household income (£/wk, %): <200: 14, >600£: 36
• Pre-pregnancy BMI: 23.8 ± 4.2
• Smoking (%): During pregnancy: 25
	HEI-2015 (tertiles of alignment; per 10pt increase)
	FFQ at: 12-16 GW
	
	DP Description:
	• Positive components: total fruits, whole fruits, total vegetables, greens and beans, total protein containing foods, seafood and plant proteins, whole grains, dairy, ratio of PUFAs and MUFAs to SFAs
	• Negative components: refined grains, sodium, added sugars, saturated fats
	Outcomes:
	• LBW: <2500 g
	• Macrosomia: >4000 g
		LBW
		Logistic regression
		OR (95% CI)
		T2 vs T1 (Ref): 0.82 (0.37, 1.82)
		T3 vs T1 (Ref): 0.53 (0.19, 1.02)
		p trend: 0.04
		
		Continuous (per 10-point increment): 0.72 (0.50, 0.99), p<0.05
		
		Macrosomia
		Logistic regression
		OR (95% CI)
		T2 vs T1 (Ref): 1.15 (0.73, 1.76)
		T3 vs T1 (Ref): 1.21 (0.54, 1.74)
		p trend: 0.45
		
		Continuous (per 10-point increment): 1.02 (0.89, 1.14)
			Key confounders accounted for: Parity, Smoking, Age, SEP, household income, Pre-pregnancy BMI
			Other covariates: marital status, alcohol consumption, energy intake, sex
			
			Funding: Irish Health Research Board
			
			Summary: Greater alignment with HEI-2015 was associated with lower risk of LBW. Alignment with HEI-2015 was not associated with risk of macrosomia.

Study Characteristics	Intervention or Exposure, Outcome	Results	Confounders, Funding, Summary
Navarro, 2020[30] **PCS, Ireland, Lifeways Cross-Generation Cohort Study** Analytic N=1,072 • Age (y): ~31, p=0.02 • SEP: ○ Higher (≥tertiary) education level (%): ~53, p=0.001 ○ Household weekly income, >600£ (%): ~34, p<0.001 • Pre-pregnancy BMI: ~23.8, p<0.001 • Smoking (%): Never or former smoker: ~79, p<0.001	**HEI-2015** (top 40%ile vs < top 40%ile) FFQ at: 12-16 GW **DP Description:** • Positive components: total fruit, whole fruit, total vegetables, greens and beans, whole grains, dairy, total protein, seafood and plant proteins, fatty acids. • Negative components: refined grains, sodium, added sugars, saturated fats. **Outcomes:** • LBW: <2500g • Macrosomia: >4000g	**LBW** Logistic regression OR (95% CI) <top 40%ile vs top 40%ile (Ref): 1.61 (1.01, 7.85), p=0.04 **Macrosomia** Logistic regression OR (95% CI) <top 40%ile vs top 40%ile (Ref): 0.61 (0.17, 2.09)	**Key confounders accounted for:** Smoking, Age, SEP, Pre-pregnancy BMI, DM in current pregnancy **Other covariates:** marital status, child sex, BMI, PA, alcohol intake **Funding:** Irish Health Research Board **Summary:** Alignment with HEI-2015 was associated with lower risk of LBW. Alignment with HEI-2015 was not associated with risk of macrosomia.
Okubo, 2023[33] **PCS, Japan, Japan Environment and Children's Study** Analytic N=72,317 • Age (y): 31.4±5.0 • SEP: Educational attainment (%): <13 y: 35.3, ≥15 y: 22.1 • Pre-pregnancy BMI: 21.2±3.3 • Smoking (%): Never: 59.2, Ex-smoker (quit before becoming pregnant): 36.3, Smoker during early pregnancy: 4.5	**Balanced diet score** (quartiles of alignment; continuous per 10-point increase) FFQ at: TM1 and TM2 **DP Description:** • Positive components: Grain dishes, vegetable dishes, fish and meat dishes, milk, fruits. • Negative components: snacks and alcoholic beverages, sodium from seasonings **Outcomes:** • LBW: <2,500 g	**LBW** Bayesian logistic regression OR (95% CI) Q2 vs Q1 (Ref): 0.96 (0.87, 1.04) Q3 vs Q1 (Ref): 0.91 (0.83, 1.00) Q4 vs Q1 (Ref): 0.87 (0.79, 0.96) Per 10-point increase: 0.92 (0.88, 0.96)	**Key confounders accounted for:** Parity, Smoking, Age, SEP, Pre-pregnancy BMI **Other covariates:** height, GWG, GA at birth, alcohol drinking habit, routine use of a folic acid supplement, physical activity, infant sex **Funding:** Ministry of the Environment, Japan **Summary:** Higher alignment with a balanced diet score was associated with a lower risk of LBW.
Parisi, 2020[35] **PCS, Italy, Luigi Sacco University Hospital** Analytic N=94 • Age (Median (range), y): 31 (18-43) • SEP: Employed (%): 75 • Pre-pregnancy BMI (Median (range): 21.9 (15.6-39.5) • Current HDP (%): 3.2 • Current DM (%): GDM: 11.7 • Smoking (%): Periconceptional: 11.6	**FIGO Recommendations** (<5 vs ≥5) Questionnaire at: 11-13 GW **DP Description:** • Positive components: Meat, fruit and vegetables, fish, dairy products, whole cereals, hemoglobin concentration, folic acid supplementation, iodized salt, sun exposure. • Negative components: Sweets and snacks. **Outcomes:** • SGA: ≤10%ile • LGA: ≥90%ile	**SGA** RR <5 vs ≥5: Data NR, p>0.05 **LGA** RR <5 vs ≥5: Data NR, p>0.05	**Key confounders accounted for:** Parity, Smoking, Age, Pre-pregnancy BMI, Current HDP, DM in current pregnancy **Other covariates:** GA at enrollment, fetal sex **Funding:** None **Summary:** Alignment with FIGO recommendations was not associated with SGA or LGA.

Study Characteristics	Intervention or Exposure, Outcome	Results	Confounders, Funding, Summary
Poon, 2013[36] **PCS, United States, IFPS II (Infant Feeding Practices Study II)** Analytic N=755 (SGA), 775 (LGA) • Age (y): 29.1±5.4, p<0.001 • Race/Ethnicity (%): White: 87.4 • SEP: ○ Education (%): ≤HS: 18.0; Some College: 39.3; Associate or BA: 31.7; ≥Master: 10.9, p<0.001 ○ Poverty index ratio (%): <185%: 37.5; 185 to 350%: 38.8; ≥350%: 23.7, p<0.0001 • Pre-pregnancy BMI: 26.1±6.4, p<0.0001 • Current DM (%): ○ T1 or T2 DM: 0.0 ○ GDM: n=46 • Smoking (%): 8.3	**AHEI-P; aMed** (tertiles of alignment) FFQ at: 28-36 GW **DP Description:** <u>AHEI-P</u> • Positive components: vegetables, whole fruit, whole grains, nuts and legumes, long-chain omega-3 fats (EPA+DHA), PUFA, calcium, folate, iron. • Negative components: SSB, red/processed meat, trans fat, sodium. <u>aMed</u> • Positive components: vegetables, legumes, fruits, nuts, whole grains, fish, MUFA:SFA • Negative component: red and processed meat **Outcomes:** • SGA: ≤10%ile, sex- and GA-specific Canadian growth reference • LGA: ≥90%ile	**SGA** Poisson regression RR (95% CI) <u>AHEI-P</u> T2 vs T1 (Ref): 0.73 (0.41, 1.31) T3 vs T1 (Ref): 0.93 (0.49, 1.75) <u>aMed</u> T2 vs T1 (Ref): 0.75 (0.44, 1.29) T3 vs T1 (Ref): 0.94 (0.48, 1.81) **LGA** Poisson regression RR (95% CI) <u>AHEI-P</u> T2 vs T1 (Ref): 0.74 (0.43, 1.26) T3 vs T1 (Ref): 0.92 (0.50, 1.69) <u>aMed</u> T2 vs T1 (Ref): 0.71 (0.44, 1.14) T3 vs T1 (Ref): 0.71 (0.37, 1.35)	**Key confounders accounted for:** Smoking, Race and/or ethnicity, Age, SEP, Pre-pregnancy BMI, DM in current pregnancy **Other covariates:** TEI, alcohol consumption during pregnancy **Funding:** Eunice Kennedy Shriver NICHD; FDA; CDC; Office of Women's Health, NIH; Maternal and Child Health Bureau, HHS **Summary:** Alignment with the AHEI-P or aMED was not associated with risk of SGA or LGA.

Study Characteristics	Intervention or Exposure, Outcome	Results	Confounders, Funding, Summary

Reyes-López, 2021[37]
PCS, Mexico, OBESO (*Origen bioquímico y epigenético del sobrepeso y la obesidad*)
Analytic N=211
• Age (y): 28.8±8.1
  ○ ≥19y: 84.5%
• SEP (%):
  ○ Occupation: Homemaker: 66.4; Employed: 23.9; Students: 9.7%
  ○ Educational level: High: 65.2; Medium: 28.5; Low: 6.3
• Pre-pregnancy BMI: 26.1±5.2
  ○ Overweight: 32.7%
  ○ Obesity: 20.8%
• Current HDP: No HDP
• Current DM: No DM
	AHEI-10P (continuous alignment; per 5-unit increase)
	24 HR averaged across: 20-24 GW, 24.1-28 GW, 28.1-34 GW, ≥34 GW
	
	DP Description:
	• Positive components: vegetables, fruit, whole grains, nuts and legumes, fish, PUFA, calcium, iron, folate.
	• Negative components: SSBs and fruit juice, red/processed meat, trans fat.
	
	Outcomes:
	• SGA: Cut-off not defined
	• LBW: Cut-off in g NR
		SGA
		<u>Overall Sample</u>
		Multiple logistic regression
		β, OR (95% CI)
		−0.63, 0.52 (0.34, 0.82), p=0.00
		Note: p<0.05 for interaction of diet quality and energy intake
		
		<u>Women without PE or GDM</u> (n=190)
		Multiple logistic regression
		β, OR (95% CI)
		−0.96, 0.38 (0.22, 0.64), p=0.00
		Note: p<0.05 for interaction of diet quality and energy intake
		
		LBW
		<u>Overall Sample</u> (excludes PTB)
		Multiple logistic regression
		β, OR (95% CI)
		−0.79, 0.45 (0.25, 0.79), p=0.00
		Note: p<0.05 for interaction of diet quality and energy intake
		
		<u>Women without PE or GDM</u> (excludes PTB, n=NR)
		Multiple logistic regression
		β, OR (95% CI)
		−0.82, 0.44 (0.24, 0.79), p=0.00
		Note: p<0.05 for interaction of diet quality and energy intake
			Key confounders accounted for:
			Parity, Age, SEP, Pre-pregnancy BMI, Current HDP, DM in current pregnancy
			Other covariates: TEI, interaction of diet quality and energy intake, GWG, sex, multivitamin use
			
			Funding: Instituto Nacional de Perinatología; FOSISS-CONACyT
			
			Summary: Higher alignment with AHEI-10P was associated with lower risk of LBW and SGA.

Study Characteristics	Intervention or Exposure, Outcome	Results	Confounders, Funding, Summary
Rifas-Shiman, 2009[38] **PCS, United States, Project Viva** Analytic N=TM1: 1,777; TM2: 1,666 • Age (y): 32.4±4.9 • Race/Ethnicity (%): White: 72; Other, ≥1 race: 16; Black/African American: 12 • SEP (%): ○ Education: ≤HS diploma: 9; College graduate: 69 ○ Household income <$40K: 13 • Pre-pregnancy BMI: (%): 25-29.9: 21; ≥30: 14 • Current HDP (%): PE: 3.4 • Current DM (%): GDM: 5	**AHEI-P** (continuous; per 5 pt score increase) FFQ at: TM1 (11.7±3.1 GW), TM2 (26-28 GW) **DP Description:** AHEI-P • Positive components: vegetables, fruit, ratio of white to red meat, fiber, ratio of PUFA to SFA, and folate, calcium, and iron from foods • Negative component: trans fat **Outcomes:** • SGA: <10th%ile, by GA- and sex-specific Oken reference • LGA: >90%ile	**SGA vs AGA**: Multinomial Logistic Regression OR (95% CI) TM1: 0.92 (0.82, 1.02) TM2: 1.00 (0.90, 1.10) **LGA vs AGA** Multinomial Logistic Regression OR (95% CI) TM1: 0.95 (0.89, 1.02) TM2: 0.99 (0.92, 1.07)	**Key confounders accounted for:** Parity, Race and/or ethnicity, Age, SEP, Pre-pregnancy BMI, Current HDP, DM in current pregnancy **Other covariates:** None **Funding:** NIH; Harvard Medical School; Harvard Pilgrim Health Care Foundation **Summary:** Greater alignment with the AHEI-P during the first or second trimester of pregnancy was not associated with risk of SGA or LGA.
Rodríguez-Bernal, 2010[39] **PCS, Spain, INMA-Valencia (*Infancia y medio Ambiente* – Valencia)** Analytic N=782 • Age (y): (%): <25: 11; 25-29: 35; 30-34: 38; ≥35: 16 • Race/Ethnicity (%): Country of origin: Spain: 88; Latin American: 8; Other 3 • SEP (%): ○ Educational level: Primary school: 33; Secondary school: 43; University degree: 24 ○ SES: Managerial and senior professionals & intermediate occupations: 16; Skilled, nonmanual workers: 24; Skilled and unskilled manual workers: 61 ○ Working during pregnancy: 83 • Pre-pregnancy BMI: (%): <18.5: 4; >25: 28 • Smoking (%): ○ TM1: 18 ○ All pregnancy: 24	**AHEI-P** (quintiles of alignment) FFQ at: 10-13 GW **DP Description:** • Positive components: vegetables (5 svg/d), fruit (4 svg/d), nuts and soy (1 svg/d), ratio of white meat (fish and poultry) to red meat (≥4:1), cereal fiber (15g/d), ratio of polyunsaturated to saturated fat (≥1), and folate (≥600g/d), calcium (≥1000mg/d), and iron (≥27mg/d) from foods • Negative components: trans fat **Outcomes:** • SGA - Fetal growth restriction by weight: <80% CI lower limit of prediction intervals. Predicted BW using a customized model, taking into account maternal preconception weight, height, and parity, paternal height, and infant sex and GA.	**Fetal Growth Restriction by Weight** Multiple logistic regression OR (95% CI) Quintile 2 vs Quintile 1 (Ref): 0.55 (0.28, 1.08) Quintile 3 vs Quintile 1 (Ref): 0.35 (0.16, 0.76) Quintile 4 vs Quintile 1 (Ref): 0.51 (0.26, 0.99) Quintile 5 vs Quintile 1 (Ref): 0.24 (0.10, 0.55)	**Key confounders accounted for:** Parity, Smoking, Race and/or ethnicity, Age, SEP, Pre-pregnancy BMI **Other covariates:** GWG during TM1, folic acid supplement use **Funding:** Instituto de Salud Carlos III, FISFEDER, and Conselleria de Sanitat Generalitat Valenciana **Summary:** Higher alignment with the AHEI-P was associated with lower risk of fetal growth restriction by weight.

Study Characteristics	Intervention or Exposure, Outcome	Results	Confounders, Funding, Summary
Santos, 2021[40] **PCS, Brazil, Brazilian Unified Health System of Ribeirão Preto** Analytic N=547 • Age (y): 27.2±5.3 • Race/Ethnicity (%): Non-White: 57.4; White: 42.6 • SEP: ○ Socioeconomic stratum (Brazil Economic Classification Criterion, %): A+B (Highest): 19.2; D+E (Lowest): 13.2 ○ Education (y, %): <4: 2.4; ≥9: 67.3 • Pre-pregnancy BMI (%):T1: 26.4±5.2; T2: 25.7±5.0; T3: 24.5±4.2, p=0.001 • Current DM or GDM (%): 0.0 • Smoking (%): ○ Never: 79.5 ○ Ex-smoker: 10.1 ○ Current: 10.4	**IQDAG** (tertiles of alignment) 24 HR at: 24-39 GW (2, 10 d apart) **DP Description:** • Positive components: (/1000 kcal): vegetables ≥1.5 svg; legumes ≥0.05 svg; fresh fruits ≥1.5 svg; fibers ≥28.0 g; omega-3 ≥1.4 g; calcium ≥800 mg; folate ≥520 ug; iron ≥22 mg • Negative components: ultra-processed foods ≥45% of kcal **Outcomes:** • SGA: <10%ile based on INTERGROWTH-21st reference growth curves • LGA: ≥90%ile • LBW: <2,500 g • Macrosomia: ≥4,000 g	**SGA** Logistic Regression OR (95% CI) n=486 T2 vs T1: 1.27 (0.62, 2.62) T3 vs T1: 0.85 (0.39, 1.84) p-trend: 0.67 **LGA** Logistic Regression OR (95% CI), n=491 T2 vs T1: 0.55 (0.28, 1.06) T3 vs T1: 0.44 (0.22, 0.90) p-trend: 0.02 **LBW** Logistic Regression OR (95% CI), n=514 T2 vs T1: 0.75 (0.22, 2.59) T3 vs T1: 0.71 (0.20, 2.49) p-trend: 0.64 **Macrosomia** Logistic Regression OR (95% CI), n=526 T2 vs T1: 0.66 (0.26, 1.70) T3 vs T1: 0.87 (0.33, 2.29) p-trend: 0.76	**Key confounders accounted for:** Parity, Smoking, Race and/or ethnicity, Age, SEP, Pre-pregnancy BMI, Current HDP, DM in current pregnancy **Other covariates:** Infant sex, maternal height (meters), physical activity, mean weekly GWG, GW at birth, mode of delivery, TEI, and energy underreporting (yes/no) **Funding:** São Paulo Research Foundation, National Council for Scientific and Technological Development **Summary:** Alignment with the IQDAG was associated with lower risk of LGA, but was not associated with risk of SGA, LBW, or macrosomia.

Study Characteristics	Intervention or Exposure, Outcome	Results	Confounders, Funding, Summary
Sun, 2023[41] **PCS, China, Nanchong Prefecture of Sichuan Province** Analytic N=560 • Age (y): 28.17±4.69 • SEP: SES (%; based on maternal education, annual per capita income of family, and household assets): Low: 32.86; Medium: 32.14; High: 35.00 • Pre-pregnancy BMI (%): ○ Underweight: 6.43 ○ Overweight/obesity: 37.86 • Current HDP (%): GHTN: 5.18	**Dietary diversity score** (continuous, per 1 unit increase) **MDD** (dichotomous, 5 or more vs 4 or less) 24 HR at: ≥14 GW **DP Description:** <u>Dietary diversity score and Minimum dietary diversity (MDD)</u> • Positive components: starchy staples, beans and peas, nuts and seeds, dairy, flesh foods (meat, fish), eggs, vitamin A-rich dark green vegetables, other vitamin A-rich fruits and vegetables, other vegetables, other fruits **Outcomes:** • SGA: <10%ile, by GA- and sex-specific national growth standards	**SGA** Poisson regression RR (95% CI) Per 1 unit increase: 0.77 (0.61, 0.97), p=0.03 MDD, GWG interaction Adequate GWG and MDD 5 or higher (Ref) Inadequate GWG and MDD 5 or higher: 2.21 (1.16, 4.19), p<0.001 Adequate GWG and MDD <5: 1.59 (0.45, 5.61) Inadequate GWG and MDD <5: 6.13 (2.89, 12.99), p<0.001 MDD, PPBMI interaction Not underweight and MDD 5 or higher (Ref) Underweight and MDD 5 or higher: 0.85 (0.55, 1.32) Not underweight and MDD <5: 1.78 (0.92, 3.43) Underweight and MDD <5: 9.02 (7.71, 10.55), p<0.001	**Key confounders accounted for:** Parity, Age, SEP, Pre-pregnancy BMI, Current HDP **Other covariates:** GWG, folic acid supplementation **Funding:** Enlight Foundation; Science and Technology Department of Sichuan Province **Summary:** Higher alignment with a dietary diversity score was associated with lower risk of SGA. MDD interacted with both GWG and PPBMI, with higher risk of SGA with inadequate MDD and inadequate GWG or underweight PPBMI.

Study Characteristics	Intervention or Exposure, Outcome	Results	Confounders, Funding, Summary
Xu, 2023[43] **PCS, Australia, CHAT (Communicating Healthy Beginnings Advice by Telephone trial)** Analytic N=1132 • Age (y): (%): <30: 32, ≥30: 68 • SEP (%): o Household income: <$80k: 38, ≥$80k: 62 o Employed: 62 o Education: ≥HS to technical and further education/diploma: 34, University/tertiary: 66 • Pre-pregnancy BMI (%): o Underweight: 4 o Overweight: 21 o Obesity: 14 • Current DM (%): DM (including GDM): 32 • Smoking (%): Yes: 3	**Dietary behaviour score; Junk food score** (continuous, per 1 unit increase) Survey at: 28-34 GW **DP Description:** Dietary behaviour score • Positive components: fruit, vegetables. • Negative components: processed meat, fast food, chips, soft drink Junk food score • Positive components: processed meat, fast food, chips, soft drink **Outcomes:** • LBW: <2500 g • Macrosomia: ≥4000 g	**LBW** Logistic regression Dietary behaviour score: 1.02 (0.78, 1.33), p=0.895 Junk food score: 1.00 (0.75, 1.34), p=0.994 **Macrosomia** Logistic regression RR (95% CI) Dietary behaviour score: 0.84 (0.71, 0.99), p=0.047 Junk food score: 1.31 (1.07, 1.60), p=0.009	**Key confounders accounted for:** Smoking, Age, SEP, Pre-pregnancy BMI, DM in current pregnancy **Other covariates:** Language spoken at home, gestational age, infant sex, intervention allocations **Funding:** NSW Health Translational Research Grant Scheme **Summary:** Higher alignment with the dietary behaviour score was associated with lower risk of macrosomia and was not associated with LBW. Higher alignment with the junk food score was associated with higher risk of macrosomia and was not associated with LBW.

Study Characteristics	Intervention or Exposure, Outcome	Results	Confounders, Funding, Summary
Yee, 2020[45] **PCS, United States, nuMoM2b (Nulliparous Pregnancy Outcomes Study: Monitoring Mothers-to-Be)** Analytic N =8,259 (Q1, Q4) • Age (y): 23.9±5.2; 29.9±4.5, p<0.001 • Race/Ethnicity (%): NHW: 47.8; 74.4; NHB: 24.0; 2.8; Hispanic: 20.3; 11.9; Other: 6.3; 4.0; Asian: 1.5; 6.9, p<0.001 • SEP: ○ Public insurance (%): 50.7; 8.4, p<0.001 ○ Household income <200% FPL (%): 55.7; 12.4, p<0.001 ○ ≥Some college (%): 82.0; 98.8, p<0.001 • Pre-pregnancy BMI: 27.1±7.3; 24.9±4.9, p<0.001 • Current HDP (%): ○ Chronic HTN: 3.3; 1.2, p<0.001 ○ HDP: 25.9; 20.3, p<0.001 • Current DM (%): ○ Pregestational DM: 2.0; 0.8, p=0.018 ○ GDM: ~4.4 • Smoking (%): Ever used tobacco: 50.7; 36.6, p<0.001	**HEI-2010** (quartiles of alignment) FFQ at: 6-13 GW **DP Description:** • Positive components: Total Vegetables; Greens and Beans; Total Fruit; Whole Fruit; Whole Grains; Seafood and Plant Proteins; Total Protein Foods; Dairy; Fatty Acids • Negative components: Refined Grains; Empty Calories (i.e., energy from solid fats, alcohol, and added sugars); Sodium **Outcomes:** • SGA <10%ile, by Alexander criteria • LBW <2500g • Macrosomia >4000g	**SGA** Multivariable Poisson Regression RR (95% CI) Q1 vs. Q4 (Ref): 1.03 (0.83, 1.27), p≥0.05 Q2 vs. Q4 (Ref): 1.01 (0.83, 1.23), p≥0.05 Q3 vs. Q4 (Ref): 0.88 (0.72, 1.07), p≥0.05 **LBW** Multivariable Poisson Regression RR (95% CI) Q1 vs. Q4 (Ref): 1.09 (0.83, 1.44), p≥0.05 Q2 vs. Q4 (Ref): 1.01 (0.78, 1.31), p≥0.05 Q3 vs. Q4 (Ref): 0.86 (0.66, 1.13), p≥0.05 **Macrosomia** Multivariable Poisson Regression RR (95% CI) Q1 vs. Q4 (Ref): 0.63 (0.49, 0.81), p<0.05 Q2 vs. Q4 (Ref): 0.81 (0.65, 0.99), p<0.05 Q3 vs. Q4 (Ref): 0.85 (0.70, 1.04), p≥0.05	**Key confounders accounted for:** Parity, Smoking, Race and/or ethnicity, Age, SEP, Pre-pregnancy BMI, DM in current pregnancy **Other covariates:** Chronic HTN, Mental health disorder, Marital status **Funding:** NICHD; Clinical and Translational Science Institutes of Indiana University and UC Irvine **Summary:** Alignment with the HEI-2010 was not associated with risk of SGA or LBW. Lower alignment (Q1 or Q2) versus Q4 intake was statistically associated with lower risk of macrosomia. Q3 intake was not statistically significantly associated with risk of macrosomia.

Study Characteristics	Intervention or Exposure, Outcome	Results	Confounders, Funding, Summary
Yisahak, 2021[46] **PCS, United States, NICHD Fetal Growth Studies-Singletons** Analytic N=1,948 • Age (y): o PCA pattern 1: Q1: 29.5±5.4, Q4: 25.4±5.4, p<0.001 o Other DPs: Q1: ~26, Q4: ~30, p<0.001 • Race/Ethnicity (%): o PCA pattern 1 (%), p<0.001: NHW: Q1: 16, Q4: 13; NHB: Q1: 19, Q4: 50; Hispanic: Q1: 29, Q4: 29; AAPI: Q1: 36, Q4: 8 o Other DPs (%), p<0.001: NHW: Q1: ~15, Q4: ~28; NHB: Q1: ~49, Q4: ~18; Hispanic: Q1: ~26, Q4: ~26; AAPI: Q1: ~10, Q4: ~29 • SEP: • PCA pattern 1 (%): o Education <HS: Q1: 13, Q4: 15; HS or equivalent: Q1: 15, Q4: 29; Postgraduate: Q1: 19, Q4: 9, p<0.001 o Income ($) <30k: Q1: 28, Q4: 50; ≥100k: Q1: 24, Q4: 14, p<0.001 o Full-time school or work: Q1: 65, Q4: 68 o Insurance (private/managed care): Q1: 66, Q4: 43, p<0.001 • Other DPs (%): o Education <HS: Q1: ~15, Q4: ~9; HS or equivalent: Q1: ~27, Q4: ~13; Postgraduate: Q1: ~7, Q4: ~28, p<0.001 o Income ($) <30k: Q1: 47, Q4: 23; ≥100k: Q1: 11, Q4: 38, p<0.001 o Full-time school or work: Q1: 67, Q4: 71 o Insurance (private/managed care): Q1: 48, Q4: 72, p<0.001 • Pre-pregnancy BMI: Q1: ~26.1, Q4: 24.2, p<0.001 • Smoking (%): With obesity: n=17, Without obesity: 0.0	**AHEI-2010, aMed, DASH** (quartiles of alignment) FFQ at: 8-13 GW **DP Description:** AHEI-2010 • Positive components: vegetables, fruits, whole grains, nuts and legumes, long-chain omega-3 fatty acids (EPA and DHA), PUFAs. • Negative components: SSB red/processed meats, trans fat, sodium. Modified to eliminate alcohol component. aMed • Positive components: vegetables excluding potatoes, legumes, fruit, nuts, whole grains, fish, ratio of MUFA:SFA. • Negative components: red and processed meats. Modified to eliminate alcohol component. DASH • Positive components: vegetables, fruits, whole grains, low-fat dairy, nuts, seeds, legumes. • Negative components: red and processed meat, SSB, sodium. **Outcomes:** • SGA <10%ile, by sex-specific U.S. reference (Duryea) • LGA ≥90%ile • LBW <2500g • Macrosomia ≥4000g	**SGA** Logistic regression OR (95% CI) AHEI-2010 Q2 vs Q1 (Ref): 0.76 (0.47, 1.25) Q3 vs Q1 (Ref): 0.80 (0.48, 1.31) Q4 vs Q1 (Ref): 0.55 (0.30, 1.01) p trend: 0.11 aMED Q2 vs Q1 (Ref): 1.22 (0.71, 2.11) Q3 vs Q1 (Ref): 0.89 (0.53, 1.51) Q4 vs Q1 (Ref): 0.60 (0.29, 1.22) p trend: 0.12 DASH Q2 vs Q1 (Ref): 0.85 (0.50, 1.46) Q3 vs Q1 (Ref): 0.86 (0.51, 1.45) Q4 vs Q1 (Ref): 0.78 (0.43, 1.43) p trend: 0.43 **LGA** Logistic regression OR (95% CI) AHEI-2010 Q2 vs Q1 (Ref): 1.73 (1.02, 2.92) Q3 vs Q1 (Ref): 1.18 (0.67, 2.07) Q4 vs Q1 (Ref): 0.91 (0.48, 1.72) p trend: 0.85 aMED Q2 vs Q1 (Ref): 1.53 (0.84, 1.51) Q3 vs Q1 (Ref): 1.81 (1.03, 3.19) Q4 vs Q1 (Ref): 1.66 (0.85, 3.25) p trend: 0.14 DASH Q2 vs Q1 (Ref): 1.29 (0.68, 2.46) Q3 vs Q1 (Ref): 1.75 (0.95, 3.23) Q4 vs Q1 (Ref): 1.73 (0.88, 3.40) p trend: 0.094	**Key confounders accounted for:** Parity, Smoking, Race and/or ethnicity, Age, SEP, income, current job/student status, insurance coverage, Pre-pregnancy BMI **Other covariates:** height, marital status, study site, infant sex, total weekly physical activity, total daily energy intake **Funding:** NICHD; American Recovery and Reinvestment Act **Summary:** Greater alignment with the aMED was associated with lower risk of LBW, but not macrosomia, LGA, or SGA. Alignment with AHEI-2010 and DASH were not associated with risk of LBW, macrosomia, LGA, or SGA.

Study Characteristics	Intervention or Exposure, Outcome	Results	Confounders, Funding, Summary
Yisahak, 2021[46] (Continued) **PCS, United States, NICHD Fetal Growth Studies-Singletons** Analytic N=1,948 • Age (y): ○ PCA pattern 1: Q1: 29.5±5.4, Q4: 25.4±5.4, p<0.001 ○ Other DPs: Q1: ~26, Q4: ~30, p<0.001 • Race/Ethnicity (%): ○ PCA pattern 1 (%), p<0.001: NHW: Q1: 16, Q4: 13; NHB: Q1: 19, Q4: 50; Hispanic: Q1: 29, Q4: 29; AAPI: Q1: 36, Q4: 8 ○ Other DPs (%), p<0.001: NHW: Q1: ~15, Q4: ~28; NHB: Q1: ~49, Q4: ~18; Hispanic: Q1: ~26, Q4: ~26; AAPI: Q1: ~10, Q4: ~29 • SEP: • PCA pattern 1 (%): ○ Education <HS: Q1: 13, Q4: 15; HS or equivalent: Q1: 15, Q4: 29; Postgraduate: Q1: 19, Q4: 9, p<0.001 ○ Income ($) <30k: Q1: 28, Q4: 50; ≥100k: Q1: 24, Q4: 14, p<0.001 ○ Full-time school or work: Q1: 65, Q4: 68 ○ Insurance (private/managed care): Q1: 66, Q4: 43, p<0.001 • Other DPs (%): ○ Education <HS: Q1: ~15, Q4: ~9; HS or equivalent: Q1: ~27, Q4: ~13; Postgraduate: Q1: ~7, Q4: ~28, p<0.001 ○ Income ($) <30k: Q1: 47, Q4: 23; ≥100k: Q1: 11, Q4: 38, p<0.001 ○ Full-time school or work: Q1: 67, Q4: 71 ○ Insurance (private/managed care): Q1: 48, Q4: 72, p<0.001 • Pre-pregnancy BMI: Q1: ~26.1, Q4: 24.2, p<0.001 • Smoking (%): With obesity: n=17, Without obesity: 0.0	**AHEI-2010, aMed, DASH** (quartiles of alignment) FFQ at: 8-13 GW **DP Description:** AHEI-2010 • Positive components: vegetables, fruits, whole grains, nuts and legumes, long-chain omega-3 fatty acids (EPA and DHA), PUFAs. • Negative components: SSB red/processed meats, trans fat, sodium. Modified to eliminate alcohol component. aMed • Positive components: vegetables excluding potatoes, legumes, fruit, nuts, whole grains, fish, ratio of MUFA:SFA. • Negative components: red and processed meats. Modified to eliminate alcohol component. DASH • Positive components: vegetables, fruits, whole grains, low-fat dairy, nuts, seeds, legumes. • Negative components: red and processed meat, SSB, sodium. **Outcomes:** • SGA <10%ile, by sex-specific U.S. reference (Duryea) • LGA ≥90%ile • LBW <2500g • Macrosomia ≥4000g	**LBW** Logistic regression OR (95% CI) AHEI-2010 Q2 vs Q1 (Ref): 0.73 (0.39, 1.38) Q3 vs Q1 (Ref): 0.64 (0.33, 1.22) Q4 vs Q1 (Ref): 0.48 (0.22, 1.06) p trend: 0.065 aMED Q2 vs Q1 (Ref): 0.89 (0.47, 1.69) Q3 vs Q1 (Ref): 0.49 (0.25, 0.95) Q4 vs Q1 (Ref): 0.42 (0.18, 1.00) p trend: 0.024 DASH Q2 vs Q1 (Ref): 1.15 (0.63, 2.12) Q3 vs Q1 (Ref): 0.73 (0.38, 1.40) Q4 vs Q1 (Ref): 0.76 (0.34, 1.69) p trend: 0.33 **Macrosomia** Logistic regression OR (95% CI) AHEI-2010 Q2 vs Q1 (Ref): 1.31 (0.75, 2.27) Q3 vs Q1 (Ref): 1.03 (0.57, 1.85) Q4 vs Q1 (Ref): 0.95 (0.50, 1.81) p trend: 0.87 aMED Q2 vs Q1 (Ref): 1.61 (0.83, 3.14) Q3 vs Q1 (Ref): 1.89 (1.02, 3.48) Q4 vs Q1 (Ref): 1.94 (0.96, 3.94) p trend: 0.063 DASH Q2 vs Q1 (Ref): 1.25 (0.63, 2.48) Q3 vs Q1 (Ref): 1.88 (0.98, 3.58) Q4 vs Q1 (Ref): 1.77 (0.88, 3.58) p trend: 0.075	**Key confounders accounted for:** Parity, Smoking, Race and/or ethnicity, Age, SEP, income, current job/student status, insurance coverage, Pre-pregnancy BMI **Other covariates:** height, marital status, study site, infant sex, total weekly physical activity, total daily energy intake **Funding:** NICHD; American Recovery and Reinvestment Act **Summary:** Greater alignment with the aMED was associated with lower risk of LBW, but not macrosomia, LGA, or SGA. Alignment with AHEI-2010 and DASH were not associated with risk of LBW, macrosomia, LGA, or SGA.

Study Characteristics	Intervention or Exposure, Outcome	Results	Confounders, Funding, Summary
Zhu, 2019[48] **PCS, United States, PETALS (Pregnancy Environment and Lifestyle Study)** Analytic N=2,269 (HEI-2010 Q1, Q4) • Age (y, %): p<0.001; 18-24: 24.3, 9.0; 25-29: 28.9, 26.1; 30-34: 28.9, 38.3; ≥35: 17.8, 26.6 • Race/Ethnicity (%): p<0.001; Hispanic: 43.2, 38.8; Asian/Pacific Islander: 21.9, 24.3; NHW: 17.3, 28.4; African American: 13.6, 4.9; Other: 4.1, 3.5 • SEP: p<0.001 ○ Education (%): ≤HS: 21.2, 8.5; Some college: 43.0, 30.2; ≥College graduate: 35.8, 61.4 ○ Household income (%): <$50k: 42.5, 24.7; ≥$150k: 10.6, 22.4 • Pre-pregnancy BMI: p=0.003; <18.5: 3.9, 2.8; 25.0-29.9: 30.2, 27.5; ≥30.0: 30.9, 23.6 • Current HDP (%): HDP: 10.4, 8.5 • Current DM (%): GDM: 10.2, 11.6 • Smoking (%): In pregnancy: 1.2, 0.0, p=0.008	**HEI-2010** (by quartiles of alignment; ≤80 vs >80) FFQ at: 10-13 GW **DP Description:** • Positive components: total fruit, whole fruit, total vegetables, greens and beans, whole grains, dairy, total protein foods, seafood and plant proteins, fatty acids. • Negative components: refined grains, sodium, empty calories from solid fats and added sugars. • Alcohol component excluded from empty calories **Outcomes:** • SGA: <10%ile, by sex-, gestational age- and racial/ethnic-specific distribution of BW in the underlying population • LGA: >90%ile	**SGA** Poisson regression RR (95% CI) Q1 vs Q4 (Ref): 0.92 (0.61, 1.38) Q2 vs Q4 (Ref): 0.83 (0.55, 1.25) Q3 vs Q4 (Ref): 1.09 (0.75, 1.60) p trend: 0.454 ≤80 vs >80 (Ref): 0.96 (0.69, 1.36 **LGA** Poisson regression RR (95% CI) All Q1 vs Q4 (Ref): 1.76 (1.08, 2.87) Q2 vs Q4 (Ref): 1.71 (1.06, 2.75) Q3 vs Q4 (Ref): 1.67 (1.03, 2.69) p trend: 0.037 ≤80 vs >80 (Ref): 1.81 (1.15, 2.84) Non-GDM (n=1,849) Q1 vs Q4 (Ref): 1.99 (95% CI >1.00) Q2 vs Q4 (Ref): 1.90 (95% CI >1.00) Q3 vs Q4 (Ref): 1.85 (95% CI >1.00) GDM (n=226) Q1 vs Q4 (Ref): 0.98 (95% CI includes 1.00) Q2 vs Q4 (Ref): 0.94 (95% CI includes 1.00) Q3 vs Q4 (Ref): 1.04 (95% CI includes 1.00) HEI-2010 by GDM interaction: p<0.001 Term births (n=1,977) Q1 vs Q4 (Ref): 1.67 (1.01, 2.75) Q2 vs Q4 (Ref): 1.59 (0.98, 2.57) Q3 vs Q4 (Ref): 1.52 (0.93, 2.47) Without HDP (n=1,948) Q1 vs Q4 (Ref): 1.78 (1.09, 2.92) Q2 vs Q4 (Ref): 1.72 (1.03, 2.88) Q3 vs Q4 (Ref): 1.63 (0.99, 2.68)	**Key confounders accounted for:** Parity, Smoking, Race and/or ethnicity, Age, SEP, Pre-pregnancy BMI, Current HDP, DM in current pregnancy **Other covariates:** pre-existing HTN, total daily energy intake during pregnancy, PA during pregnancy, prenatal supplement use, GA at delivery **Funding:** NIEHS; NIH Building Interdisciplinary Research Careers in Women's Health Program; HRSA; NIH ECHO Program **Summary:** Alignment with the HEI-2010 was associated with lower risk of LGA. Alignment with the HEI-2010 was not associated with risk of SGA.

Study Characteristics	Intervention or Exposure, Outcome	Results	Confounders, Funding, Summary
Factor/Cluster Analysis			
Ancira-Moreno, 2020[50] **PCS, Mexico, PRINCESA (Pregnancy Research on Inflammation, Nutrition & City Environment: Systematic Analyses)** Analytic N=660 • Age (y): 25.08±5.8 • SEP (%): Education ≤9 y: 56.0 • Pre-pregnancy BMI: ○ 25.72±5.2 ○ (%): BMI ≥25 to <30: 32.5; ≥30 to <35: 12.4; ≥35: 5.0	**Healthier DP & Mixed DP** (Continuous alignment; Tertiles of alignment) 24HR at: TM2 and TM3 **DP Description:** Healthier DP Higher intakes of white meat and eggs, low fat dairy products, cereals and tubers, fruits and vegetables Lower intakes of high saturated fat and/or added sugar foods, SSB, legumes. Mixed DP Higher intakes of SSBs, red and processed meat, cereals and tubers, supplements Lower intakes of oils and fats, high saturated fat and/or added sugar foods, white meat and eggs, low fat dairy products. **Outcomes:** • LBW: <2,500 g	**LBW** Logistic regression OR (95% CI) Healthier dietary pattern Continuous: 0.85 (0.59, 1.23), p=0.41 T2 vs T1 (ref): 0.66 (0.2, 1.5), p=0.33 T3 vs T1 (ref): 0.65 (0.2, 1.5), p=0.33 Mixed dietary pattern Continuous: 1.11 (0.76, 1.56), p=0.65 T2 vs T1 (ref): 0.98 (0.4, 2.2), p=0.94 T3 vs T1 (ref): 1.12 (0.4, 2.5), p=0.78	**Key confounders accounted for:** Parity, Age, SEP, Pre-pregnancy BMI **Other covariates:** Energy intake, GWG, maternal height, marital status, term of gestation, baby's sex **Funding:** NIEHS **Summary:** Alignment with a "healthier dietary pattern" and "mixed dietary pattern" was not associated with risk of LBW.
Barchitta, 2023[2] **PCS, Italy, MAMI-MED** Exposure N=Cluster 2: 509, Comparator N=Cluster 1: 158 • Age (y): Median (IQR): 31 (7) • SEP: ○ High education level: 24.9% ○ Employed: 50.7% • Pre-pregnancy BMI: Median (IQR): 23.2 (5.8) • Smoking (%): No smoking during pregnancy: 91	**Cluster 2 vs Cluster 1** FFQ at: TM1 **DP Description:** Cluster 1 Higher intake of potatoes, cooked and raw vegetables, legumes, fruits, nuts, yogurt, rice, wholemeal bread, white meat, offal, fish, eggs, butter and margarine, coffee, tea, soup. Cluster 2 Higher intake of milk, pasta, white bread, shellfish, vegetable and olive oils, sweets, fruit juices, dipping sauces, salty snacks, fries **Outcomes:** • SGA: NR • LGA: NR	**SGA** Logistic regression OR (95% CI) Cluster 2 vs Cluster 1 (Ref): 0.537 (0.262, 1.104), p=0.091 **LGA** Logistic regression OR (95% CI) Cluster 2 vs Cluster 1 (Ref): 2.213 (1.047, 4.679), p=0.038	**Key confounders accounted for:** Parity, Smoking, Age, SEP, Pre-pregnancy BMI **Other covariates:** GWG, TEI **Funding:** University of Catania, Italy **Summary:** Alignment with Cluster 2, compared to Cluster 1, was associated with greater risk of LGA. Alignment with Cluster 2, compared to Cluster 1, was not associated with SGA.

Study Characteristics	Intervention or Exposure, Outcome	Results	Confounders, Funding, Summary
Berube, 2023[3] **PCS, United States, StEP Trial (Starting Early Program Trial)** Analytic N=498 • Age (y): 28±6 • Race/Ethnicity (%): Hispanic/Latina: 100 • SEP (%): ○ ≥HS education: 66.4 ○ Employed: 24.8 • Pre-pregnancy BMI: 27.5±5.5	**Western DP, Fruits and vegetables DP** (tertiles of alignment) FFQ at: 28-32 GW **DP Description:** Western DP Higher intake of cakes, pies, and cookies, processed meats, American dishes, candy, sweetened beverages, salty snacks. Fruits and vegetables DP Higher intake of nonstarchy vegetables, starchy vegetables, beans and peas, meat/vegetable soups, whole fresh fruit. **Outcomes:** • SGA: ≤10%ile based on Fenton growth curves • LGA: ≥90%ile	**SGA** Logistic regression OR (95% CI) Western DP T2 vs T1 (Ref): 0.7 (0.3, 1.8) T3 vs T1 (Ref): 0.6 (0.1, 2.4) Fruits and vegetables DP T2 vs T1 (Ref): 0.8 (0.3, 1.8) T3 vs T1 (Ref): 0.4 (0.1, 1.2) **LGA** Logistic regression OR (95% CI) Western DP T2 vs T1 (Ref): 1.2 (0.5, 3.0) T3 vs T1 (Ref): 0.5 (0.1, 2.1) Fruits and vegetables DP T2 vs T1 (Ref): 0.6 (0.2, 1.8) T3 vs T1 (Ref): 2.3 (0.9, 6.2)	**Key confounders accounted for:** Parity, Race and/or ethnicity, Age, SEP, Pre-pregnancy BMI **Other covariates:** Marital status, physical activity, total energy **Funding:** NIFA; NICHD **Summary:** Alignment with Western DP, Fruits and vegetables DP, and the HEI-2015 was not associated with risk of SGA or LGA.

Bodnar, 2024[4]
PCS, United States, nuMoM2b (Nulliparous Pregnancy Outcomes Study: Monitoring Mothers-to-Be)
Exposure N=FVGP: 1347; SS: 2789; BGM: 1742, Comparator N=2381
For FSS; FVGP; SS; BGM

- Age (y, %): <25: 61, 8, 12, 48; 25 to 34: 35, 74, 75, 45; ≥35: 4, 18, 13, 7
- Race/Ethnicity (%): NHW: 48, 76, 84, 38; NHB: 27, 3, 2, 11; Hispanic: 16, 10, 8, 38; Other: 9, 11, 6, 13
- SEP: (% or median (IQR))
  - Married: 33, 89, 85, 56
  - Private Insurance: 48, 92, 91, 54
  - Currently employed: 68, 91, 93, 71
  - Acculturation: US-born (self and parents): 80, 70, 82, 46; US-born/immigrant parent: 14, 12, 11, 19; Born outside US, immigrated at <18 y: 4, 9, 4, 18; Born outside US, immigrated at ≥18 y: 2, 9, 3, 18
  - Education: ≤HS: 38, 3, 4, 24; College graduate: 15, 38, 41, 24; Graduate degree: 6, 47, 35, 14
  - Area Deprivation Index: 59 (55), 24 (34), 27 (33), 45 (62)
  - Percent of neighborhood in poverty: 18 (22), 11 (13), 10 (11), 17 (20)
- Pre-pregnancy BMI: (%) <18.5: 6, 4, 2, 5; 18.5 to <25: 46, 69, 60, 54; 25 to <30: 23, 18, 22, 23; ≥30: 25, 10, 16, 18
- Current HDP (%): PE: Total 8.6, FSS: 11; FVGP: 6.4; SS: 7.8; BGM: 8.3
- Current DM (%): GDM: Total: 4.9, FSS: 5.5; FVGP: 4.1; SS: 4.7; BGM: 5.2
- Smoking (%): Preconception smoker: 30, 6, 14, 12

Greater alignment with **FVGP; SS; or BGM vs FSS DP**
FFQ at: 6-13 GW

DP Description:
High fruits, vegetables, whole grains, and plant proteins (FVGP)
Higher intake of vegetable medley/other vegetables, apples/pears, tomatoes, lettuce, broccoli, bananas, spinach/greens, strawberries/ other berries, avocado, citrus fruits, tofu/meat substitutes, peaches/plums/ apricots/nectarines, yogurt, salad dressing, peas/string beans, nuts/seeds/nut or seed mixed dishes, sweet potatoes, other fruit/fruit salad, melon, coffee
Sandwiches and snacks (SS)
Higher intake of coffee, alcoholic beverages, whole wheat bread, cold cuts, skim milk, diet soda/diet fruit drinks, pretzels/fat-free crackers/rice cakes, nuts/ seeds/nut or seed mixed dishes, condiments, salad dressing, cream, unfried chicken or turkey/mixed dishes, crackers, reduced fat cheese, jam/jelly, white breads, sugars/honey, regular cheese, mayonnaise, nondairy creamer/cream substitutes
Beverages, refined grains, and mixed dishes (BGM)
Higher intake of reduced fat milk, 100% juice (not orange or grapefruit), rice/rice mixed dishes, 100% orange or grapefruit juice, Mexican mixed dishes, dried beans, soup, liver/other organ meats, whole milk, cold cereals, hot cereal, oils, vegetable juice, other white potatoes, vegetable mixed dishes, other meat/other meat mixed dishes, syrups/toppings, eggs/egg mixed dishes, pancakes/waffles/French toast/Pop Tarts, coleslaw
High fat, sugar, and sodium (FSS)
Higher intake of regular soda, fried chicken or fried turkey, fried white potatoes, burgers, sausage/ franks/bacon/ribs, fruit drinks, chips/popcorn/other salty snacks, candy, pizza, grain desserts, other meat/other meat mixed dishes, white yeast breads, pancakes/waffles/French toast/Pop Tarts, dairy desserts, margarine, quick breads, beef/beef mixed dishes, crackers, other white potatoes, mayonnaise
HEI-2015 score and nearly all components of Healthy US-Style Eating Pattern were highest in the FVGP DP and lowest in the FSS DP. There were no meaningful

SGA
Targeted minimum loss-based estimation
Adjusted number of excess cases per 100 pregnancies (95% CI)
FVGP: -0.35 (-2.7, 2.0)
SS: -2.0 (-3.8, -0.14)
BGM: -1.1 (-3.3, 1.00)
FSS: 0 (Ref)

Key confounders accounted for: Parity, Smoking, Race and/or ethnicity, Age, SEP, Pre-pregnancy BMI, DM in current pregnancy
Other covariates: Other sociodemographic factors (marital status, whether the pregnancy was planned), other medical factors (gravidity, nausea and vomiting, season of conception and assisted reproductive technologies), other behaviors (binge drinking, prenatal vitamin use, PA), psychosocial factors (depressive symptoms, anxiety, perceived stress, resilience, health literacy, and sleep satisfaction).

Funding: NICHD; Indiana Univ; Univ of California Irvine

Summary: High alignment with the SS DP versus high alignment with the FSS DP was associated with reduced risk of SGA. High alignment with the FVGP and BGM DP versus high alignment with the FSS DP was not associated with risk of SGA.

Study Characteristics	Intervention or Exposure, Outcome	Results	Confounders, Funding, Summary
	differences in dairy, total protein foods, meats, poultry, and eggs, or seafood intake by DP. **Outcomes:** • SGA: <10%ile based on NICHD ultrasound-based intrauterine fetal weight standards		
Chia, 2016[7] **PCS, Singapore, GUSTO (Growing Up in Singapore Towards healthy Outcomes)** Analytic N=923 By VFR score (Quintile 1; 3; 5) • Age (y): 28.2±5.1; 29.8±5.0; 32.4±4.8 • Race/Ethnicity (%): Chinese: 35; 50; 76; Malayan: 56; 33; 5; Indian: 9; 17; 20 • SEP: Education: None, primary, or secondary: 41; 33; 21; Postsecondary: 40; 38; 31; University: 19; 28; 48 • Pre-pregnancy BMI: 22.5±4.7; 22.7±4.7; 22.1±3.6 • Current HDP (%): 6.0; 4.3; 3.3 • Current DM (%): ○ No serious health conditions such as T1 DM ○ GDM: 12; 12; 26 • Smoking (%): Current Smoker: 7.1; 2.1; 0.5	**VFR, SfN, and PCP DP** (higher vs lower alignment) 24 HR, 3-d food diary at: 26-28 GW **DP Description:** Vegetable, fruit, and white rice (VFR) DP • Higher intakes of vegetables, fruits, plain white rice, whole-grain bread, fish, and nuts and seeds. • Lower intakes of fried potatoes, burgers, carbonated and sweetened drinks, and flavored rice Seafood and noodle (SfN) DP • Higher intakes of soup, seafood, fish and seafood products, noodles (flavored and in soup), and low-fat red meat • Lower intakes of legumes, ethnic bread, white rice, and curry-based gravies Pasta, cheese, and processed meat (PCP) DP • Higher intake of pasta-, tomato-, and cream-based gravies, cheese, and processed meat **Outcomes:** • SGA: <10%ile based on a global BW reference • LGA: >90%ile	**SGA vs AGA** Multinomial Logistic Regression, Higher vs lower adherence (Ref) OR (95% CI) VFR: 1.03 (0.82, 1.30) SfN: 1.17 (0.92, 1.48) PCP: 1.09 (0.89, 1.33) **LGA vs AGA** Multinomial Logistic Regression, Higher vs lower adherence (Ref) OR (95% CI) VFR: 1.31 (1.06, 1.62) SfN: 1.17 (0.92, 1.47) PCP: 1.18 (0.99, 1.39) Subgroup analysis with DP from 3d food records (n=212) showed no statistically significant association between VFR or SfN and SGA or LGA.	**Key confounders accounted for:** Parity, Smoking, Race and/or ethnicity, Age, SEP, Pre-pregnancy BMI, DM in current pregnancy **Other covariates:** Infant sex, and maternal TEI, weight gain until 26–28 wk of gestation, height, alcohol use, and other dietary patterns **Funding:** Singapore National Research Foundation; Agency for Science, Technology, and Research; Nestec **Summary:** Greater alignment with the vegetable, fruit, and white rice DP was associated with a higher risk of LGA. There was no association between the seafood and noodle DP or the pasta, cheese, and processed meat DP and SGA or LGA.

Study Characteristics	Intervention or Exposure, Outcome	Results	Confounders, Funding, Summary
de Seymour, 2022[8] **PCS, China, CLIMB (Complex Lipids in Mothers and Babies)** Analytic N =962 • Age (y): Median (IQR): 28 (26, 31) • Race/Ethnicity (%): Han ethnicity: 97.9 • SEP: ○ Tertiary level education (%): 63.1 ○ Household income (%): <7k yuan/mo: 19.5; >10k yuan/mo: 44.5 • Baseline BMI: Median (IQR): 21.0 (19.4, 22.9) • Current HDP (%): PE: 1.7 • Current DM (%): GDM: 27.7	**FPV DP & PSO DP** (continuous alignment) FFQ at: 11-14 GW **DP Description:** Fish, poultry and vegetables (FPV) DP: Higher in fish; poultry; legumes and bean products; green leafy vegetables; root vegetables; other vegetables; seafood; fruits; eggs; organ meats; beverages; bread; dairy; soup; nuts Pasta, sweetened beverages, oils and condiments (PSO) DP: Higher in pasta; sweetened beverages; oils and condiments; fast food **Outcomes:** • SGA: <10%ile based on references specific to Chongqing • LGA: >90%ile • Macrosomia: >4000 g	**SGA** Binomial logistic regression OR (95% CI) FPV DP: 1.119 (0.775, 1.614), p=0.549 PSO DP: 0.937 (0.607, 1.445), p=0.767 **LGA** Binomial logistic regression OR (95% CI) All participants FPV DP: 1.222 (0.963, 1.552), p=0.100 PSO DP: 0.860 (0.631, 1.172), p=0.340 Sensitivity analysis excluding participants w/ highest and lowest 0.5% of DP scores (N=1207) FPV DP: 1.318 (1.058, 1.641), p=0.014 PSO DP: 0.814 (0.584, 1.135), p=0.225 **Macrosomia** Binomial logistic regression OR (95% CI) All participants FPV DP: 1.265 (0.913, 1.753), p=0.158 PSO DP: 0.955 (0.653, 1.394), p=0.807 Sensitivity analysis excluding participants w/ highest and lowest 0.5% of DP scores (N=1207) FPV DP: p=0.045	**Key confounders accounted for:** Race and/or ethnicity, Age, SEP, Pre-pregnancy BMI, Current HDP, DM in current pregnancy **Other covariates:** CLIMB treatment group; Offspring sex; TEI; Other DP **Funding:** Joint Health Research Council New Zealand–National Science Foundation of China; Lottery Health New Zealand; Fonterra Co-operative Group Ltd., New Zealand; New Zealand Ministry for Primary Industries **Summary:** When participants with the highest and lowest 0.5% of DP scores were removed from the analysis, alignment with the FPV DP was associated with higher risk of LGA and macrosomia, but results were not significant when including all participants. Alignment with the PSO DP was not associated with LGA or macrosomia and neither DP was associated with risk of SGA.

Study Characteristics	Intervention or Exposure, Outcome	Results	Confounders, Funding, Summary
Englund-Ogge, 2019[11] **PCS, Norway, MoBa (Norwegian Mother and Child Cohort Study)** Exposure N=HP: 10,150; HT: 9,754; Comparator N=HW: 9,562 (HW, HP, HT) • Age (y): 28.7±4.5, 31.3±4.1, 30.3±4.8, p<0.001 • SEP: ○ Education (%), p<0.001; ≤12 y: 42.6, 14.7, 36.4; ≥17 y: 14.5, 44.9, 18.8 ○ Household income (%), p<0.001; Both <300k NOK: 33.5, 17.3, 33.1; Both ≥300k NOK: 20.6, 44.5, 19.9 • Pre-pregnancy BMI: 24.6±4.6, 23.1±3.6, 24.1±4.2, p<0.001 • Current DM (%): DM: 0.0 • Smoking (%): p<0.001 ○ Not during pregnancy: 86.7, 96.5, 90.4 ○ Daily during pregnancy: 9.0, 1.4, 6.4	**HW DP, HP DP vs HW DP** FFQ at: 22 GW **DP Description:** High prudent (HP) Higher intake of raw and cooked vegetables, salad, onion/leek/garlic, fruit and berries, nuts, vegetable oils, water as beverage, whole grain cereals, poultry, and fibre rich bread. Lower intake of processed meat products, white bread, pizza/tacos. High western (HW) Higher intake of salty snacks, chocolate and sweets, cakes, French fries, white bread, ketchup, sugar sweetened drinks, processed meat products, pasta. Lower intake of lean fish, fibre rich bread. High traditional (HT) Higher intake of boiled potatoes, fish products, gravy, lean fish, margarine, rice pudding, low fat milk, cooked vegetables. Lower intake of poultry, pizza/tacos. Individuals in HP were in highest tertile of HP and in lowest or middle tertile of HW and HT. Individuals in HW were in highest tertile of HW and in lowest or middle tertile of HP and HT. Individuals in HT were in highest tertile of HT and in lowest or middle tertile of HP and HW. **Outcomes:** • SGA: ○ Ultrasound-based: <2SD ultrasound-derived growth curves ○ Population-based: <10%ile ○ Customized <10%ile ultrasound-derived growth curves accounting for characteristics such as infant sex, maternal weight, height, parity • LGA: ○ Ultrasound-based: >2SD ultrasound-derived growth curves ○ Population-based: >90%ile ○ Customized: >90%ile ultrasound-derived growth curves accounting for characteristics such as infant sex, maternal weight, height, parity	**SGA - ultrasound-based** Logistic regression OR (95% CI) All HP vs HW (Ref): 1.25 (1.02, 1.54) HT vs HW (Ref): 1.16 (0.94, 1.43) BMI <25 HP vs HW (Ref): 1.28 (1.00, 1.64) HT vs HW (Ref): 1.29 (1.00, 1.67) BMI ≥25 HP vs HW (Ref): 1.34 (0.87, 2.30) HT vs HW (Ref): 0.88 (0.52, 1.50) **SGA - population-based** Logistic regression OR (95% CI) All HP vs HW (Ref): 1.04 (0.94, 1.15) HT vs HW (Ref): 0.91 (0.82, 1.01) BMI <25 HP vs HW (Ref): 1.06 (0.94, 1.19) HT vs HW (Ref): 0.90 (0.80, 1.02) BMI ≥25 HP vs HW (Ref): 1.13 (0.83, 1.52) HT vs HW (Ref): 0.88 (0.66, 1.17) **SGA - customized** Logistic regression OR (95% CI) All HP vs HW (Ref): 1.06 (0.98, 1.15) HP vs HW (Ref): 0.92 (0.84, 0.99) BMI <25 HP vs HW (Ref): 1.05 (0.95, 1.16) HT vs HW (Ref): 0.95 (0.86, 1.05) BMI ≥25 HP vs HW (Ref): 1.10 (0.95, 1.27) HT vs HW (Ref): 0.85 (0.74, 0.97)	**Key confounders accounted for:** Parity, Smoking, Age, SEP, Pre-pregnancy BMI, DM in current pregnancy **Other covariates:** TEI, height, alcohol intake **Funding:** Norwegian Research Council; Jane and Dan Olsson Foundation; Swedish Medical Society; Swedish government grants; Norwegian Ministry of Health and Care Services and the Ministry of Education and Research **Summary:** Alignment with a HT DP compared to alignment with a HW DP was associated with lower risk of SGA (customized definition) among all participants and participants with BMI ≥25 and higher risk of LGA (population-based and customized definition) among all participants. Alignment with a HP DP compared to alignment with a HW DP was associated with higher risk of SGA (ultrasound-based definition) among all participants and participants with BMI <25 and a lower risk of LGA (population-based and customized definition) among all participants and participants with BMI <25.

Study Characteristics	Intervention or Exposure, Outcome	Results	Confounders, Funding, Summary

Englund-Ogge, 2019[11] (Continued)
PCS, Norway, MoBa (Norwegian Mother and Child Cohort Study)
Exposure N=HP: 10,150; HT: 9,754;
Comparator N=HW: 9,562
(HW, HP, HT)
• Age (y): 28.7±4.5, 31.3±4.1, 30.3±4.8, p<0.001
• SEP:
  ○ Education (%), p<0.001; ≤12 y: 42.6, 14.7, 36.4; ≥17 y: 14.5, 44.9, 18.8
  ○ Household income (%), p<0.001; Both <300k NOK: 33.5, 17.3, 33.1; Both ≥300k NOK: 20.6, 44.5, 19.9
• Pre-pregnancy BMI: 24.6±4.6, 23.1±3.6, 24.1±4.2, p<0.001
• Current DM (%): DM: 0.0
• Smoking (%): p<0.001
  ○ Not during pregnancy: 86.7, 96.5, 90.4
Daily during pregnancy: 9.0, 1.4, 6.4
	HW DP, HP DP vs HW DP
	FFQ at: 22 GW
	
	DP Description:
	<u>High prudent (HP)</u>
	Higher intake of raw and cooked vegetables, salad, onion/leek/garlic, fruit and berries, nuts, vegetable oils, water as beverage, whole grain cereals, poultry, and fibre rich bread.
	Lower intake of processed meat products, white bread, pizza/tacos.
	<u>High western (HW)</u>
	Higher intake of salty snacks, chocolate and sweets, cakes, French fries, white bread, ketchup, sugar sweetened drinks, processed meat products, pasta.
	Lower intake of lean fish, fibre rich bread.
	<u>High traditional (HT)</u>
	Higher intake of boiled potatoes, fish products, gravy, lean fish, margarine, rice pudding, low fat milk, cooked vegetables.
	Lower intake of poultry, pizza/tacos.
	Individuals in HP were in highest tertile of HP and in lowest or middle tertile of HW and HT.
	Individuals in HW were in highest tertile of HW and in lowest or middle tertile of HP and HT.
	Individuals in HT were in highest tertile of HT and in lowest or middle tertile of HP and HW.
	
	Outcomes:
	• SGA:
	  ○ Ultrasound-based: <2SD ultrasound-derived growth curves
	  ○ Population-based: <10%ile
	  ○ Customized <10%ile ultrasound-derived growth curves accounting for characteristics such as infant sex, maternal weight, height, parity
	• LGA:
	  ○ Ultrasound-based: >2SD ultrasound-derived growth curves
	  ○ Population-based: >90%ile
	  ○ Customized: >90%ile ultrasound-derived growth curves accounting for characteristics such as infant sex, maternal weight, height, parity
		LGA - ultrasound-based
		Logistic regression
		OR (95% CI)
		<u>All</u>
		HP vs HW (Ref): 0.87 (0.73, 1.02)
		HT vs HW (Ref): 1.09 (0.94, 1.26)
		<u>BMI <25</u>
		HP vs HW (Ref): 0.80 (0.63, 1.01)
		HT vs HW (Ref): 1.14 (0.92, 1.41)
		<u>BMI ≥25</u>
		HP vs HW (Ref): 1.09 (0.79, 1.49)
		HT vs HW (Ref): 1.05 (0.80, 1.37)
		
		LGA - population-based
		Logistic regression
		OR (95% CI)
		<u>All</u>
		HP vs HW (Ref): 0.84 (0.75, 0.94)
		HT vs HW (Ref): 1.12 (1.02, 1.24)
		<u>BMI <25</u>
		HP vs HW (Ref): 0.73 (0.63, 0.85)
		HT vs HW (Ref): 1.12 (0.98, 1.28)
		<u>BMI ≥25</u>
		HP vs HW (Ref): 1.03 (0.87, 1.22)
		HT vs HW (Ref): 1.13 (0.98, 1.31)
		
		LGA - customized
		Logistic regression
		OR (95% CI)
		<u>All</u>
		HP vs HW (Ref): 0.88 (0.78, 0.99)
		HP vs HW (Ref): 1.14 (1.03, 1.27)
		<u>BMI <25</u>
		HP vs HW (Ref): 0.89 (0.77, 1.03)
		HT vs HW (Ref): 1.21 (1.06, 1.39)
		<u>BMI ≥25</u>
		HP vs HW (Ref): 0.90 (0.73, 1.12)
		HT vs HW (Ref): 1.06 (0.88, 1.27)
			Key confounders accounted for: Parity, Smoking, Age, SEP, Pre-pregnancy BMI, DM in current pregnancy
			Other covariates: TEI, height, alcohol intake
			
			Funding: Norwegian Research Council; Jane and Dan Olsson Foundation; Swedish Medical Society; Swedish government grants; Norwegian Ministry of Health and Care Services and the Ministry of Education and Research
			
			Summary: Alignment with a HT DP compared to alignment with a HW DP was associated with lower risk of SGA (customized definition) among all participants and participants with BMI ≥25 and higher risk of LGA (population-based and customized definition) among all participants.
			
			Alignment with a HP DP compared to alignment with a HW DP was associated with higher risk of SGA (ultrasound-based definition) among all participants and participants with BMI <25 and a lower risk of LGA (population-based and customized definition) among all participants and participants with BMI <25.

Study Characteristics	Intervention or Exposure, Outcome	Results	Confounders, Funding, Summary
Flynn, 2016[12] **PCS, United Kingdom, UPBEAT (U.K. Pregnancies Better Eating and Activity Trial)** Analytic N=995 (LGA, SGA), 997 (Macrosomia) • Age (y): 30.5±5.5 • Race/Ethnicity (%): White: 64; Black: 23; Asian: 8; Other: 5 • SEP: ○ Education (%): None/GCSE: 20, A level: 16, Degree/higher degree: 40, Vocational qualification: 24 ○ Index of multiple deprivation (%): 1 (least deprived): 4, 2: 7, 3: 12, 4: 34, 5 (most deprived): 43 • Pre-pregnancy BMI: 36.2±4.7; ≥30: 100% • Current HDP (%): PE: 4 • Current DM (%): ○ GDM: 23 ○ Pre-pregnancy DM: 0	**Fruit and veg DP, African/Caribbean DP, Processed DP, Snacks DP** (quartiles of alignment) FFQ at: 15-18 GW **DP Description:** Fruit and veg DP Higher intake of bananas, citrus fruit, dried fruit, fresh fruit, green vegetables, pulses, root vegetables, salad vegetables, tropical fruit, yoghurt African/Caribbean DP Higher intake of red meat, cassava, white meat, pilau/fried/jollof rice, plantain, white/brown/basmati rice, fish Processed DP Higher intake of chocolate, crisps, green vegetables, potatoes, processed/meat products, root vegetables, squash/fizzy drinks, sugar free drinks, takeaway/oven chips Snacks DP Higher intake of biscuits/cookies, cakes/pastries, chocolate, full fat cheese, sweets **Outcomes:** • SGA: <10%ile based on WHO growth curves • LGA: >90%ile • Macrosomia: >4kg	**SGA** Logistic regression OR (95% CI) Fruit and veg DP Q2 vs Q1 (Ref): 0.38 (0.17, 0.83) Q3 vs Q1 (Ref): 0.66 (0.33, 1.32) Q4 vs Q1 (Ref): 0.48 (0.23, 1.03) p = 0.073 African/Caribbean DP Q2 vs Q1 (Ref): 1.30 (0.62, 2.72) Q3 vs Q1 (Ref): 0.46 (0.19, 1.16) Q4 vs Q1 (Ref): 1.10 (0.46, 2.65) p = 0.128 Processed DP Q2 vs Q1 (Ref): 1.82 (0.86, 3.86) Q3 vs Q1 (Ref): 1.49 (0.66, 3.38) Q4 vs Q1 (Ref): 1.48 (0.65, 3.40) p = 0.479 Snacks DP Q2 vs Q1 (Ref): 0.93 (0.45, 1.90) Q3 vs Q1 (Ref): 0.68 (0.30, 1.53) Q4 vs Q1 (Ref): 0.76 (0.36, 1.63) p = 0.773	**Key confounders accounted for:** Parity, Race and/or ethnicity, Age, SEP, Pre-pregnancy BMI, Current HDP **Other covariates:** treatment allocation **Funding:** NIHR (UK); Scottish Government Health Directorates; Guys and St. Thomas' Charity; Tommy's Charity; NHS Foundation Trust; King's College London; EU Seventh Framework Programme **Summary:** Alignment with a fruit and veg DP, an African/Caribbean DP, a Processed DP, and a Snacks DP were not associated with risk of LGA, SGA, or macrosomia except for isolated associations between fruit and veg DP (Q2 vs Q1) and lower risk of SGA, and African/Caribbean DP (Q3 vs Q1) and higher risk of macrosomia.

Study Characteristics	Intervention or Exposure, Outcome	Results	Confounders, Funding, Summary
Flynn, 2016[12] (Continued) **PCS, United Kingdom, UPBEAT (U.K. Pregnancies Better Eating and Activity Trial)** Analytic N=995 (LGA, SGA), 997 (Macrosomia) • Age (y): 30.5±5.5 • Race/Ethnicity (%): White: 64; Black: 23; Asian: 8; Other: 5 • SEP: ○ Education (%): None/GCSE: 20, A level: 16, Degree/higher degree: 40, Vocational qualification: 24 ○ Index of multiple deprivation (%): 1 (least deprived): 4, 2: 7, 3: 12, 4: 34, 5 (most deprived): 43 • Pre-pregnancy BMI: 36.2±4.7; ≥30: 100% • Current HDP (%): PE: 4 • Current DM (%): ○ GDM: 23 Pre-pregnancy DM: 0	**Fruit and veg DP, African/Caribbean DP, Processed DP, Snacks DP** (quartiles of alignment) FFQ at: 15-18 GW **DP Description:** Fruit and veg DP Higher intake of bananas, citrus fruit, dried fruit, fresh fruit, green vegetables, pulses, root vegetables, salad vegetables, tropical fruit, yoghurt African/Caribbean DP Higher intake of red meat, cassava, white meat, pilau/fried/jollof rice, plantain, white/brown/basmati rice, fish Processed DP Higher intake of chocolate, crisps, green vegetables, potatoes, processed/meat products, root vegetables, squash/fizzy drinks, sugar free drinks, takeaway/oven chips Snacks DP Higher intake of biscuits/cookies, cakes/pastries, chocolate, full fat cheese, sweets **Outcomes:** • SGA: <10%ile based on WHO growth curves • LGA: >90%ile • Macrosomia: >4kg	**LGA** Logistic regression OR (95% CI) Fruit and veg DP Q2 vs Q1 (Ref): 1.39 (0.76, 2.53) Q3 vs Q1 (Ref): 1.41 (0.77, 2.59) Q4 vs Q1 (Ref): 1.70 (0.94, 3.06) p = 0.377 African/Caribbean DP Q2 vs Q1 (Ref): 1.41 (0.79, 2.50) Q3 vs Q1 (Ref): 1.52 (0.85, 2.71) Q4 vs Q1 (Ref): 1.47 (0.73, 2.97) p = 0.512 Processed DP Q2 vs Q1 (Ref): 0.93 (0.52, 1.67) Q3 vs Q1 (Ref): 0.77 (0.42, 1.41) Q4 vs Q1 (Ref): 0.85 (0.46, 1.55) p = 0.844 Snacks DP Q2 vs Q1 (Ref): 1.10 (0.59, 2.07) Q3 vs Q1 (Ref): 1.38 (0.74, 2.57) Q4 vs Q1 (Ref): 1.14 (0.60, 2.15) p = 0.749	**Key confounders accounted for:** Parity, Race and/or ethnicity, Age, SEP, Pre-pregnancy BMI, Current HDP **Other covariates:** treatment allocation **Funding:** NIHR (UK); Scottish Government Health Directorates; Guys and St. Thomas' Charity; Tommy's Charity; NHS Foundation Trust; King's College London; EU Seventh Framework Programme **Summary:** Alignment with a fruit and veg DP, an African/Caribbean DP, a Processed DP, and a Snacks DP were not associated with risk of LGA, SGA, or macrosomia except for isolated associations between fruit and veg DP (Q2 vs Q1) and lower risk of SGA, and African/Caribbean DP (Q3 vs Q1) and higher risk of macrosomia.

Study Characteristics	Intervention or Exposure, Outcome	Results	Confounders, Funding, Summary
Flynn, 2016[12] (Continued) **PCS, United Kingdom, UPBEAT (U.K. Pregnancies Better Eating and Activity Trial)** Analytic N=995 (LGA, SGA), 997 (Macrosomia) • Age (y): 30.5±5.5 • Race/Ethnicity (%): White: 64; Black: 23; Asian: 8; Other: 5 • SEP: ○ Education (%): None/GCSE: 20, A level: 16, Degree/higher degree: 40, Vocational qualification: 24 ○ Index of multiple deprivation (%): 1 (least deprived): 4, 2: 7, 3: 12, 4: 34, 5 (most deprived): 43 • Pre-pregnancy BMI: 36.2±4.7; ≥30: 100% • Current HDP (%): PE: 4 • Current DM (%): ○ GDM: 23 Pre-pregnancy DM: 0	**Fruit and veg DP, African/Caribbean DP, Processed DP, Snacks DP** (quartiles of alignment) FFQ at: 15-18 GW **DP Description:** <ins>Fruit and veg DP</ins> Higher intake of bananas, citrus fruit, dried fruit, fresh fruit, green vegetables, pulses, root vegetables, salad vegetables, tropical fruit, yoghurt <ins>African/Caribbean DP</ins> Higher intake of red meat, cassava, white meat, pilau/fried/jollof rice, plantain, white/brown/basmati rice, fish <ins>Processed DP</ins> Higher intake of chocolate, crisps, green vegetables, potatoes, processed/meat products, root vegetables, squash/fizzy drinks, sugar free drinks, takeaway/oven chips <ins>Snacks DP</ins> Higher intake of biscuits/cookies, cakes/pastries, chocolate, full fat cheese, sweets **Outcomes:** • SGA: <10%ile based on WHO growth curves • LGA: >90%ile • Macrosomia: >4kg	**Macrosomia** Logistic regression OR (95% CI) <ins>Fruit and veg DP</ins> Q2 vs Q1 (Ref): 0.86 (0.49, 1.51) Q3 vs Q1 (Ref): 1.33 (0.79, 2.27) Q4 vs Q1 (Ref): 1.40 (0.83, 2.36) p = 0.236 <ins>African/Caribbean DP</ins> Q2 vs Q1 (Ref): 1.45 (0.86, 2.45) Q3 vs Q1 (Ref): 1.71 (1.01, 2.88) Q4 vs Q1 (Ref): 0.98 (0.50, 1.94) p = 0.114 <ins>Processed DP</ins> Q2 vs Q1 (Ref): 0.78 (0.45, 1.33) Q3 vs Q1 (Ref): 0.70 (0.40, 1.21) Q4 vs Q1 (Ref): 0.95 (0.55, 1.61) p = 0.520 <ins>Snacks DP</ins> Q2 vs Q1 (Ref): 1.67 (0.92, 3.02) Q3 vs Q1 (Ref): 1.69 (0.93, 3.09) Q4 vs Q1 (Ref): 1.69 (0.93, 3.08) p = 0.286	**Key confounders accounted for:** Parity, Race and/or ethnicity, Age, SEP, Pre-pregnancy BMI, Current HDP **Other covariates:** treatment allocation **Funding:** NIHR (UK); Scottish Government Health Directorates; Guys and St. Thomas' Charity; Tommy's Charity; NHS Foundation Trust; King's College London; EU Seventh Framework Programme **Summary:** Alignment with a fruit and veg DP, an African/Caribbean DP, a Processed DP, and a Snacks DP were not associated with risk of LGA, SGA, or macrosomia except for isolated associations between fruit and veg DP (Q2 vs Q1) and lower risk of SGA, and African/Caribbean DP (Q3 vs Q1) and higher risk of macrosomia.

Study Characteristics	Intervention or Exposure, Outcome	Results	Confounders, Funding, Summary
Grieger, 2014[15] **PCS, Australia, Lyell McEwin Hospital** Analytic N=309 • Age (y): 26.6±5.4 • Race/Ethnicity (%): Caucasian: 89; Non-Caucasian: 11 • SEP: SES (%): 5 (highest): 5; 4: 5; 3: 3; 2: 30; 1 (lowest): 52 • Pre-pregnancy BMI: 27.6±6.6 • Smoking (n, %): Never/former 211 (68); Quit in pregnancy/current 98 (32)	**High-protein/fruit; High-fat/sugar/takeaway; Vegetarian-type DP** (continuous, per SD of alignment) FFQ at: 13 GW **DP Description:** <u>High-protein/fruit</u> Higher intake of fish, meat, chicken, fruit, whole grains <u>High-fat/sugar/takeaway</u> Higher intake of takeaway foods, potato chips, refined grains, added sugar <u>Vegetarian-type</u> Higher intake of vegetables, whole grains, legumes **Outcomes:** • SGA: <10%ile • LBW: <2500 g	**SGA** <u>High protein/fruit</u>: 0.84 (0.55, 1.28), p=0.41 <u>High fat/sugar/take-away</u>: 1.02 (0.72, 1.46), p=0.90 <u>Vegetarian type</u>: 1.16 (0.82, 1.64), p=0.39 **LBW** <u>High protein/fruit</u>: 0.41 (0.13, 1.33), p=0.14 <u>High fat/sugar/take-away</u>: 1.39 (0.87, 2.22), p=0.17 <u>Vegetarian type</u>: 0.93 (0.54, 1.62), p=0.80	**Key confounders accounted for:** Parity, Smoking, Race and/or ethnicity, Age, SEP, Pre-pregnancy BMI **Other covariates:** Asthma status **Funding:** National Health and Medical Research Council Senior Research Fellowship **Summary:** No DP were associated with risk of SGA or LBW.
Hajianfar, 2018[16] **PCS, Iran (Islamic Rep. of), Isfahan University of Medical Sciences** Analytic N=812 • Age (y): 29.4±4.85 • Current HDP (%): Excluded participants with "medical conditions" • Current DM (%): Excluded participants with "medical condition" • Smoking (%): Current: 0.0	**Healthy DP, Western DP, Traditional DP** (Q2, Q3, Q4 vs Q1) FFQ at: 8-16 GW **DP Description:** <u>Healthy</u> Higher intake of green vegetables, leafy vegetables, colored vegetables, fruit, dairy low fat, poultry, bulky vegetables, red meat, citrus, nuts, fish, olive, marinades, sweat fruit, egg, unsaturated fat. <u>Western</u> Higher intake of fruit, citrus, nuts, fish, fruit juice, sweets and dessert, sugar, saturated fat, sweet fruit, potato, legumes, coffee, egg, pizza, high fat dairy, soft drink, whole grain, processed meat. Lower intake of refined grain. <u>Traditional</u> Higher intake of colored vegetables, olive, sugar, salt, spices, unsaturated fat, garlic onion, tea, refined grain. **Outcomes:** • LBW: <2500g	**LBW** Logistic regression OR (95% CI) <u>Western DP</u> Q2 vs Q1 (Ref): 0.84 (0.29, 2.40) Q3 vs Q1 (Ref): 1.89 (0.65, 5.52) Q4 vs Q1 (Ref): 5.51 (1.82, 16.66) p=0.001 <u>Traditional DP</u> Q2 vs Q1 (Ref): 1.14 (0.49, 2.67) Q3 vs Q1 (Ref): 1.36 (0.58, 3.19) Q4 vs Q1 (Ref): 0.60 (0.32, 1.63) p=0.35 <u>Healthy DP</u> Q2 vs Q1 (Ref): 1.05 (0.45, 2.43) Q3 vs Q1 (Ref): 1.25 (0.53, 2.91) Q4 vs Q1 (Ref): 0.59 (0.19, 1.79) p=0.48	**Key confounders accounted for:** Smoking, Age, SEP, Pre-pregnancy BMI **Other covariates:** energy intake, PA, delivery status, preterm delivery, intrauterine growth restriction, history of abortion, stillbirth **Funding:** Isfahan University of Medical Sciences **Summary:** Alignment with a Western DP was associated with higher risk of LBW. Alignment with a Traditional DP or a Healthy DP was not associated with risk of LBW.

Study Characteristics	Intervention or Exposure, Outcome	Results	Confounders, Funding, Summary
Knudsen, 2008[21] **PCS, Denmark, DNBC (Danish National Birth Cohort)** Exposure N=Health conscious: 7,479; Intermediate: 29,514, Comparator N=7,619 • Age (y): 29y; (%): <20: 0.8; 20-29: 54.3; 30-39: 44.1; >40: 0.9 • Smoking (%): Ever: 23.4	**Health conscious DP; Intermediate DP vs Western DP** FFQ at: 25 GW **DP Description:** <u>Western DP</u> • Highest intake of high-fat dairy, refined grains, processed and red meat, animal fat (butter and lard), potatoes, sweets, beer, coffee, and high-energy drinks • Lowest intake of fruits and vegetables (35% of energy intake from fat) <u>Health conscious DP</u> • Higher intakes of fruits, vegetables, fish, poultry, breakfast cereals, vegetable juice, and water; • Lowest intakes of meat and fat of animal origin (25% of energy intake from fat) <u>Intermediate DP</u> • Higher intakes of low-fat dairy and fruit juice; consumption of the remaining food groups in between Western and Health conscious DPs (30% of energy intake from fat) **Outcomes:** • SGA: <2.5%ile based on sex-specific Scandanavian intrauterine growth curves	**SGA** Logistic regression OR (95% CI) <u>Health conscious DP</u> vs. Western DP (Ref): 0.74 (0.64, 0.86) <u>Intermediate DP</u> vs. Western DP (Ref): 0.68 (0.55, 0.84)	**Key confounders accounted for:** Parity, Smoking, Age, Pre-pregnancy BMI **Other covariates:** Father's height **Funding:** March of Dimes Birth Defects Foundation, Danish National Research Foundation, the European Union, the Pharmacy Foundation, the Egmont Foundation, the Augustinus Foundation and the Health Foundation **Summary:** Higher alignment with the intermediate or health conscious DP compared to the Western DP was associated with lower risk of SGA.

Study Characteristics	Intervention or Exposure, Outcome	Results	Confounders, Funding, Summary
Li, 2021[23] **PCS, China, Tongji Maternal and Child Health Cohort** Analytic N=2847 • Age (y): 28.12±3.54 • Race/Ethnicity (%): Han Chinese: 97 • SEP: ○ Education (%): ≤9y: 3.5, 10-12y: 13.2, 13-15y: 26.9, ≥16y: 53.9 ○ Personal income (CNY/mo; %): ≤1000: 0.4, 1001-2999: 7.5, 3000-4999: 33.7, 5000-9999: 39.9, ≥10000: 16.2 • Pre-pregnancy BMI: ○ 20.77±2.71 ○ (%) <18.5: 20.0; 24-0-27.9: 10.0; ≥28.0: 1.7 • Current DM (%): 0.0 • Smoking (%): Before pregnancy: 3.6	**Beans-vegetables DP, Fish-meat-eggs DP, Nuts-whole grains DP, Organ-poultry-seafood DP, Rice-wheat-fruits DP** (continuous, per 1-unit increase) FFQ at: TM2, before GDM diagnosis **DP Description:** Beans-vegetables DP Higher intake of root vegetables, mushrooms and algae, melon and solanaceous vegetables, beans and bean products (i.e., soybean, mung bean, soybean milk, bean curd, and so on), leafy and cruciferous vegetables Fish-meat-eggs DP Higher intake of red meat, freshwater fishes, eggs Nuts-whole grains DP Higher intake of nuts, whole grains, dairy products (i.e., milk, milk powder, and yogurt) Organ-poultry-seafood DP Higher intake of animal organ and blood, seafood, poultry Rice-wheat-fruits DP Higher intake of rice and wheat products, fruits **Outcomes:** • SGA: <10%ile • LGA: >90%ile	**SGA** Logistic regression OR (95% CI), per 1-unit increase Beans-vegetables DP: 0.89 (0.78, 1.02) Fish-meat-eggs DP: 0.97 (0.85, 1.10) Nuts-whole grains DP: 0.95 (0.83, 1.08) Organ-poultry-seafood DP: 0.98 (0.87, 1.11) Rice-wheat-fruits DP: 0.97 (0.86, 1.10) **LGA** Logistic regression OR (95% CI) Beans-vegetables DP: 1.04 (0.92, 1.18) Fish-meat-eggs DP: 1.18 (1.04, 1.34), p<0.05 Nuts-whole grains DP: 1.00 (0.88, 1.13) Organ-poultry-seafood DP: 1.07 (0.95, 1.21) Rice-wheat-fruits DP: 1.11 (0.98, 1.26)	**Key confounders accounted for:** Parity, Smoking, Race and/or ethnicity, Age, SEP, Pre-pregnancy BMI, DM in current pregnancy **Other covariates:** Physical activity, family history of diabetes, family history of obesity, alcohol habit, GWG, infant sex, TEI, other DP **Funding:** National Program on Basic Research Project of China; National Natural Science Foundation of China; Chinese Nutrition Society Nutrition Science Foundation **Summary:** Alignment with beans-vegetables DP, fish-meat-eggs DP, nuts-whole grains DP, organ-poultry-seafood DP, or rice-wheat-fruits DP were not associated with risk of SGA. Greater alignment with fish-meat-eggs DP was associated with higher risk of LGA. Alignment with beans-vegetables DP, nuts-whole grains DP, organ-poultry-seafood DP, or rice-wheat-fruits DP was not associated with risk of LGA.

Study Characteristics	Intervention or Exposure, Outcome	Results	Confounders, Funding, Summary
Lu, 2016[25] **PCS, China, BIGCS (Born in Guangzhou Cohort Study)** Analytic N=6,954 • Age (y): ~29.0±3.3, p=0.001 • Race/Ethnicity (%): Chinese nationality: 100 • SEP: Education (%): ≤Middle school: 8.5; College: 24.5; Undergraduate: 55.0; Postgraduate: 12.1, p<0.001 between DP • Income (yuan/mo, %): ≤1,500: 9.5; ≥9,001: 15.5, p<0.001 between DP • Pre-pregnancy BMI: (%): <18.5: 23.6; ≥24: 9.5 • Current HDP (%): Chronic HTN: 0.0 • Current DM (%): T1 or T2 DM: 0.0 • Smoking (%): Passive smoking: 30.6, p<0.001 between DP	**Varied DP; Dairy DP; Meats DP; Fruits, nuts, and Cantonese desserts DP & Vegetables DP vs. Cereals, eggs, and Cantonese soups DP** FFQ at: 24-27 GW **DP Description:** Varied DP: Higher intakes of mixed foods, including noodles, bread, root vegetables, melon vegetables, mushrooms, sea vegetables, bean vegetables, processed vegetables, poultry, animal organ meat, fish, other seafood, bean products, yoghurt, sweet beverages, puffed food, confectioneries, and snacks Dairy DP: Higher intakes of milk products (including fresh milk, pasteurized milk, milk powder, and formula for pregnant women) and lower intakes of whole vegetables Meats DP: Higher intakes of red and processed meat Fruits, nuts, and Cantonese desserts DP: Higher intakes of fruits, nuts, and Cantonese desserts Vegetables DP: Higher intakes of leafy and cruciferous vegetables Cereals, eggs, and Cantonese soups DP: Higher intakes of rice, pasta, porridge, eggs, and Cantonese soups **Outcomes:** • SGA: <10%ile Guangzhou GA- and sex-specific reference growth curves • LGA: <90%ile	**SGA** Logistic regression OR (95% CI) Cereals, eggs, and Cantonese soups DP (Ref, n=1026) Varied DP (n=1224): 0.77 (0.57, 1.04) Dairy DP (n=1020): 0.87 (0.63, 1.21) Meats DP (n=1066): 0.95 (0.69, 1.30) Fruits, nuts, and Cantonese desserts DP (n=799): 0.76 (0.53, 1.10) Vegetables DP (n=1383): 0.77 (0.56, 1.05) **LGA** Logistic regression OR (95% CI) Cereals, eggs, and Cantonese soups DP (Ref, n=1026) Varied DP (n=1224): 1.10 (0.85, 1.42) Dairy DP (n=1020): 1.01 (0.75, 1.35) Meats DP (n=1066): 0.75 (0.56, 1.02) Fruits, nuts, and Cantonese desserts DP (n=799): 1.14 (0.84, 1.54) Vegetables DP (n=1383): 1.03 (0.79, 1.36)	**Key confounders accounted for:** Parity, Smoking, Race and/or ethnicity, Age, SEP, Pre-pregnancy BMI, DM in current pregnancy **Other covariates:** alcohol drinking during pregnancy, folic acid supplement use **Funding:** Guangzhou Science and Technology Bureau **Summary:** Compared to the Cereal, eggs, and Cantonese soups DP, none of the other DP were associated with risk of SGA or LGA.

Maldonado, 2022[27]
PCS, United States, MADRES (Maternal and Developmental Risks from Environmental and Social Stressors)
Analytic N=465
- Age (y): SRC Q1: 30.3±0.58, SRC Q4: 27.7±0.52, p=0.001
- Race/Ethnicity (%):
  - Non-Hispanic and non-Latina: SRC Q1: 17.1, SRC Q4: 30.2, p=0.018
  - US-born Hispanic/Latina: SRC Q1: 27.4, SRC Q4: 44.0, p=0.008
  - Foreign-born Hispanic/Latina: SRC Q1: 55.6, SRC Q4: 25.9, p<0.001
- SEP:
  - Education (%)
    <HS: SRC Q1: 37.6, SRC Q4: 24.1, p=0.025
    HS diploma or equivalent: SRC Q1: 35.0, SRC Q4: 44.0
    >HS: SRC Q1: 34.2, SRC Q4: 20.7
  - Total household income
    <$15k: SRC Q1: 22.2, SRC Q4: 16.4
    $15k-29k: SRC Q1: 23.1, SRC Q4: 25.0
    >$30k: SRC Q1: 18.0, SRC Q4: 31.0, p=0.019
- Pre-pregnancy BMI: SRC Q1: 29.9 ± 0.67, SRC Q4: 27.6 ± 0.53, p=0.008
- Current DM (%):
  - No DM: SRC Q1: 79.5, SRC Q4: 89.7, p=0.030
  - GDM: SRC Q1: 8.6, SRC Q4: 8.6
  - Preexisting DM: SRC Q1: 12.0, SRC Q4: 1.7, p=0.002
- Smoking (%): During pregnancy: 1.7%

SRC; VOF (quartiles of alignment; per 1 SD)
24 HR at: Third trimester

DP Description:
Solid fat, refined grain, and cheese (SRC)
- Higher intake of milk, cheese, fruit juices, tomatoes, other vegetables, white potatoes, legumes, seafood, refined grains, meat, processed meats, poultry, eggs, soy protein, nuts and seeds, oils, solid fats, added sugar.
- Lower intake of yogurt, citrus, melons, berries, other fruits, dark green vegetables, other red and orange vegetables, other starchy vegetables, whole grains.

Vegetables, oils, and fruit (VOF)
- Higher intake of milk, yogurt, cheese, citrus, melons, berries, other fruits, fruit juices, dark green vegetables, tomatoes, other red and orange vegetables, other vegetables, white potatoes, other starchy vegetables, legumes, seafood, whole grains, meat, processed meats, poultry, eggs, soy protein, nuts and seeds, oils, added sugar.
- Lower intake of refined grains, solid fats.

Outcomes:
- SGA: <10%ile
- LGA: >90 %ile

SGA
Multivariable logistic regression
OR (95% CI)

SRC
Q2 vs Q1 (Ref): 0.54 (0.22, 1.33)
Q3 vs Q1 (Ref): 0.23 (0.08, 0.72)
Q4 vs Q1 (Ref): 0.27 (0.07, 0.99)
p trend: 0.046
per 1 SD: 0.90 (0.54, 1.52), p=1.00

VOF
Q2 vs Q1 (Ref): 0.53 (0.22, 1.30)
Q3 vs Q1 (Ref): 0.71 (0.30, 1.64)
Q4 vs Q1 (Ref): 0.18 (0.06, 0.58)
p trend: 0.028
per 1 SD: 0.61 (0.41, 0.90), p=0.029

LGA
Multivariable logistic regression
OR (95% CI)

SRC
Q2 vs Q1 (Ref): 1.23 (0.49, 3.09)
Q3 vs Q1 (Ref): 1.46 (0.53, 4.02)
Q4 vs Q1 (Ref): 1.52 (0.39, 5.84)
p trend: 0.176
per 1 SD: 0.79 (0.50, 1.25), p=1.00

VOF
Q2 vs Q1 (Ref): 1.36 (0.51, 3.61)
Q3 vs Q1 (Ref): 1.93 (0.74, 4.99)
Q4 vs Q1 (Ref): 2.46 (0.89, 6.79)
p trend: 0.062
per 1 SD: 1.30 (0.85, 1.98), p=0.060

Sensitivity analyses tested additional inclusion of child sex or PA and household income in the models which did not materially change results.

Key confounders accounted for: Parity, Smoking, Age, SEP, Pre-pregnancy BMI, DM in current pregnancy
Other covariates: TEI

Funding: NIEHS; NIMHHD; EPA; Life Course Approach to Developmental Repercussions of Environmental Agents on Metabolic and Respiratory Health; NIH Office of the Director

Summary: Greater alignment with the SRC DP was associated with lower risk of SGA, but was not associated with risk of LGA. Greater alignment with the SRC DP analyzed continuously was not associated with risk of SGA or LGA. Greater alignment with the VOF DP was associated with lower risk of SGA and higher risk of LGA. Greater alignment with the VOF DP analyzed continuously was associated with lower risk of SGA but was not associated with risk of LGA.

Study Characteristics	Intervention or Exposure, Outcome	Results	Confounders, Funding, Summary
Miele, 2021[28] **PCS, Brazil, Preterm SAMBA (Preterm Screening and Metabolomics in Brazil and Auckland)** Analytic N =1,165 • Age (%): ≤19: 25.0; >35: 6.7 • Race/Ethnicity (%): Non-White: 60.3; White: 39.7 • SEP: ○ Education (%): <12y: 67.9 ○ Yearly income (%): ≤$12k: 73.9 ○ Employed (%): 50.2 • BMI at first visit (%): Overweight: 25.7; Obesity: 17.1 • Current HDP (%): PE: 7.5 • Current DM (%): GDM: 14.1	**Obesogenic DP, Intermediate DP, Vegetarian DP, & Protein DP vs. Traditional DP** 24 HR at: 19-21 GW **DP Descriptions:** Obesogenic DP Higher in ultra-processed and processed foods using NOVA classification (refined carbohydrate; fats; sweets) Intermediate DP Lower consumption of same food groups as "Obesogenic DP" Vegetarian DP Higher in dairy; fruits; vegetables Protein DP Higher in fatty meats; eggs; beans; very low quantity of natural foods (using NOVA classification) Traditional DP Higher in beans; meats; eggs; natural or minimally processed foods (using NOVA classification) **Outcomes:** • SGA: <10%ile adjusted for maternal characteristics (ethnicity, weight, height and parity), GA at birth, and infant sex using the GROW centile calculator	**SGA** Multiple logistic regression OR Obesogenic DP vs. Traditional DP (Ref): 0.84, p≥0.05 Intermediate DP vs. Traditional DP (Ref): 1.25, p≥0.05 Vegetarian DP vs. Traditional DP (Ref): 1.44, p≥0.05 Protein DP vs. Traditional DP (Ref): 1.12, p≥0.05	**Key confounders accounted for:** Parity, Race and/or ethnicity, Age, SEP, occupation, education not associated with outcome, Pre-pregnancy BMI **Other covariates:** Region **Funding:** Brazilian National Research Council; Bill and Melinda Gates Foundation **Summary:** Alignment with the Obesogenic DP, Intermediate DP, Vegetarian DP, and Protein DP was not associated with risk of SGA when compared to the Traditional DP.
Mikeš, 2022[29] **PCS, Czech Republic, ELSPAC-CZ (European Longitudinal Study of Pregnancy and Childhood)** Analytic N=4320 • Age (y): 25±5 • SEP: Education (%): Elementary: 7.5; Secondary school: 74.6; University: 17.4 • Pre-pregnancy BMI: ○ 22.0±3.3 ○ (%): ≤18.5: 7.7; 25-<30:10.2; ≥30: 3.0 • Smoking (%): ○ Smoker: 8.5 ○ Former smoker: 33.3 ○ Non-smoker: 56.8	**Unhealthy DP, Healthy/traditional DP** (continuous by 1 SD increase) FFQ at: 32 GW **DP Description:** Unhealthy DP Higher intake of fried potatoes, offal, fish and fish products, pizza, doughnuts and omelettes, fried food, poultry, cake and pies, processed meat, pasta, cola drinks, wafers, chocolates and sweets, red meat, sweet drinks. Healthy/traditional DP Higher intake of root vegetables, cheese, milk, dairy products, fresh fruits, leafy vegetables, salads, wholemeal bread, boiled potatoes, juice, herbal tea, honey, white bread. **Outcomes:** • SGA: <10%ile	**SGA** Logistic regression OR (95% CI) Unhealthy DP: 1.04 (0.91, 1.19), p=0.590 Healthy/traditional DP: 1.01 (0.90, 1.13), p=0.850	**Key confounders accounted for:** Parity, Smoking, Age, SEP, Pre-pregnancy BMI **Other covariates:** alcohol consumption, child sex **Funding:** Ministry of Education, Youth and Sports; Operational Programme Research, Development and Innovation; EU Horizon 2020 research and innovation programme **Summary:** Alignment with an unhealthy DP or a healthy/traditional DP was not associated with risk of SGA.

Study Characteristics	Intervention or Exposure, Outcome	Results	Confounders, Funding, Summary
Okubo, 2012[32] **PCS, Japan, OMCHS (Osaka Maternal and Child Health Study)** Exposure N=Meat and Eggs: 326; Wheat products: 303, Comparator N=174 (Meat and eggs DP; Wheat products DP; Rice, fish, & vegetables DP) • Age (y, %): p<0.001: <29: 39.0, 40.9, 27.0; 29–31: 25.5, 28.4, 43.1; ≥32: 35.6, 30.7, 29.9 • SEP: ○ Occupation (%): Homemaker: ~71; Outside work: ~29 ○ Education (y, %), p=0.005; <13: 30.4, 31.0, 21.8; 13-14: 40.8, 46.5, 40.2; ≥15: 28.8, 22.4, 37.9 ○ Household income (Japanese yen/year, %): <4M: ~28.1; 4-<6M: ~40.4; ≥6M: ~31.5 • Pre-pregnancy BMI: At age 20y: ~20.2 (95% CI: 20, 21) • Smoking (%): p=0.012 ○ Former: 10.4; 13.5; 13.2 ○ Current: 14.7; 21.1; 10.3	**Meat and eggs DP; Wheat products DP vs Rice, fish, and vegetables DP** FFQ at: 5-39 GW (mean 18 GW) **DP Description:** Meat and eggs DP Higher intakes of beef & pork, processed meat, chicken, eggs, butter, & dairy products Wheat products DP Higher intakes of bread, confectioneries, fruit & vegetable juice, & soft drinks Rice, fish, and vegetables DP Higher intakes of rice, potatoes, nuts, pulses, fruits, green & yellow vegetables, white vegetables, mushrooms, seaweeds, Japanese & Chinese tea, fish, shellfish, sea products, miso soup & salt-containing seasoning **Outcomes:** • SGA: <10th%ile of Japanese gestational age- and sex-specific reference growth curves	**SGA** Logistic regression OR (95% CI) Meat and eggs DP vs Rice, fish, and vegetables DP (Ref): 4.32 (0.92, 20.3) Wheat products DP vs Rice, fish, and vegetables DP (Ref): 5.24 (1.13, 24.4)	**Key confounders accounted for:** Parity, Smoking, Race and/or ethnicity, Age, SEP, Pre-pregnancy BMI **Other covariates:** maternal height, GWG, GW at BL, change in diet in previous 1 month, dietary supplement use, PA level, family structure, season of BL data collection, medical problems in pregnancy, infant sex **Funding:** Ministry of Education, Culture, Sports, Science and Technology; Ministry of Health, Labour and Welfare; Japan Society for the Promotion of Science **Summary:** Greater alignment with the wheat products DP compared to the rice, fish, and vegetables DP was associated with higher risk of SGA. The meat and eggs DP compared to the rice, fish, and vegetables DP was not associated with risk of SGA.

Study Characteristics	Intervention or Exposure, Outcome	Results	Confounders, Funding, Summary
Paknahad, 2019[34] **PCS, Iran (Islamic Rep. of), Selseleh County Health Centers** Exposure N=HCLF: 34, HCHF: 55, Comparator N=61 • Age (y): HCLF: 27.67±6.1; HCHF: 27.70±4.1; High fiber: 29.27±5.8 • SEP: Job (%): Homemaker: HCLF: 97.1; HCHF: 96.4; High fiber: 96.7; Employed: HCLF: 2.9; HCHF: 3.6; High fiber: 3.3 • Pre-pregnancy BMI: Baseline BMI: HCLF: 26.2; HCHF: 26.8; High fiber: 25.8 • Current DM (%): ○ T1 or T2 DM: 0.0 ○ GDM: HCLF: 4.0; HCHF: 2.0; High fiber: 0.7	**HCLF DP & HCHF DP vs. High fiber DP** FFQ at: TM1 **DP Description:** High Carbohydrate-Lower Fat (HCLF) DP: High intake of potato; fried potato; flour; egg; cooked carrots; pickles; noodle soup; beans; pomegranate; corn and maize; lentils; low-fat milk; lettuce; and raw carrot High Carbohydrate-Higher Fat (HCHF) DP: High intake of pea; soybean; fish; cabbage; cooked spinach; vegetable; high-fat milk; butter; tomato; cucumber; soup; cooked beans; and diluted yogurt High fiber DP: High intake of cantaloupe; melon; peach; nectarine; green tomatoes; plums; watermelons; pears; apricots **Outcomes:** • LBW: ≤2500 g • Macrosomia: >4000 g	**LBW** Linear regression OR (95% CI) HCLF vs. High fiber (Ref): 3.41 (0.57, 21.4), p=0.19 HCHF vs. High fiber (Ref): 3.23 (0.56, 18.57), p=0.18 **Macrosomia** Linear regression OR (95% CI) HCLF vs. High fiber (Ref): 1.03 (0.34, 5.61), p=0.91 HCHF vs. High fiber (Ref): 2.38 (0.17, 32.52), p=0.23	**Key confounders accounted for:** Age, SEP, Pre-pregnancy BMI, DM in current pregnancy **Other covariates:** disease history, catching diseases, energy intake **Funding:** NR **Summary:** Alignment with the HCLF DP or the HCHF DP, compared to alignment with the High fiber DP, was not associated with risk of LBW or macrosomia.

Study Characteristics	Intervention or Exposure, Outcome	Results	Confounders, Funding, Summary
Teixeira, 2021[42] **PCS, Brazil, ProcriAr Cohort Study (The Influence of Nutritional Factors and Urban Air Pollutants on Children's Respiratory Health: A Cohort Study in Pregnant Women)** Analytic N=299 • Age (y): Median: 25.9 • SEP (%): ○ Education ≥8y: 54.9 ○ No formal work: 49.8 ○ Married: 59.9 • Pre-pregnancy BMI: (%) 25-29.9: 31.4; ≥30: 16.7 • Current HDP (%): Excluded due to medical complications during pregnancy • Current DM (%): 0 chronic disease • Smoking (%): During pre-pregnancy: 13.1	**DP1, DP2, DP3, & DP4** (quintiles of alignment) FFQ at: 11.1 (10.9, 11.6) GW **DP Description:** DP1: 'Lentils, whole grains and soups' • Higher intake of lentils, wheat bread and brown rice, soups, popcorn, cereal ready to eat and oats, white cheese, desserts with fruits and jelly, simple cakes, soya beverages, beef jerky, nuts, crackers, soya sauce, tea (sweetened), beef, stuffed pasta, feijoada, fruits, yogurt (whole milk) • Lower intake of French bread and white rice DP2: 'Snacks, sandwiches, sweets and soft drinks' • Higher intake of processed meats, sandwiches and snacks, sandwich sauces, desserts and sweets, soft drinks, pasta with meat sauce, stuffed pasta, yogurt with flavor, pork and frankfurters, bakery with filling, fried beef and fried chicken, fried egg or omelette, potato salad, with vegetables and mayonnaise, alcoholic beverages, chocolate milk, feijoada, potato or cassava, mozzarella cheese • Lower intake of yogurt DP3: 'Seasoned vegetables and lean meats' • Higher intake of potato salad, with vegetables and mayonnaise, vegetables, oil (for salad dressing), salt, lean meats and fish, potato or cassava, fruits, French bread and white rice, and unsweetened juices (natural or artificial) DP4: 'Sweetened juices, bread and butter, rice and beans' • Higher intake of sweetened juices (natural or artificial), butter or margarine, French bread and white rice, beans, whole milk, yogurt, fried egg or omelette, potato or cassava (fried) • Lower intake of unsweetened juices (natural or artificial), alcoholic beverages **Outcomes:** • SGA: <10%ile based on INTERGROWTH-21st GA- and sex-specific reference growth curves	**SGA** Poisson regression, RR (95% CI) Lentils, whole grains and soups Quintile 2 vs. Quintile 1 (Ref): 1.16 (0.64, 2.12), p=0.62 Quintile 3 vs. Quintile 1 (Ref): 0.82 (0.43, 1.59), p=0.56 Quintile 4 vs. Quintile 1 (Ref): 1.34 (0.79, 2.28), p=0.28 Quintile 5 vs. Quintile 1 (Ref): 1.28 (0.66, 2.48), p=0.46 Snacks, sandwiches, sweets and soft drinks Quintile 2 vs. Quintile 1 (Ref): 0.91 (0.46, 1.80), p=0.78 Quintile 3 vs. Quintile 1 (Ref): 1.31 (0.69, 2.48), p=0.41 Quintile 4 vs. Quintile 1 (Ref): 0.85 (0.43, 1.67), p=0.63 Quintile 5 vs. Quintile 1 (Ref): 1.92 (1.08, 3.39), p=0.03 p-trend=0.041 Seasoned vegetables and lean meats Quintile 2 vs. Quintile 1 (Ref): 0.79 (0.41, 1.55), p=0.50 Quintile 3 vs. Quintile 1 (Ref): 0.86 (0.48, 1.53), p=0.61 Quintile 4 vs. Quintile 1 (Ref): 1.46 (0.88, 2.43), p=0.14 Quintile 5 vs. Quintile 1 (Ref): 0.90 (0.48, 1.68), p=0.73 Sweetened juices, bread and butter, rice and beans Quintile 2 vs. Quintile 1 (Ref): 0.95 (0.55, 1.66), p=0.86 Quintile 3 vs. Quintile 1 (Ref): 0.74 (0.42, 1.30), p=0.29 Quintile 4 vs. Quintile 1 (Ref): 0.69 (0.39, 1.23), p=0.21 Quintile 5 vs. Quintile 1 (Ref): 0.72 (0.39, 1.34), p=0.30	**Key confounders accounted for:** Parity, Smoking, Age, SEP, Pre-pregnancy BMI, Current HDP **Other covariates:** Marriage status; Other 3 DP **Funding:** Sao Paulo Research Foundation; National Council for Scientific and Technological Development **Summary:** Greater alignment with the Snacks, sandwiches, sweets and soft drinks DP was associated with risk of SGA. Alignment with the 3 other DP was not associated with risk of SGA.

Study Characteristics	Intervention or Exposure, Outcome	Results	Confounders, Funding, Summary
Yamashita, 2022[44] **PCS, Japan, TMM BirThree Cohort Study (Tohoku Medical Megabank Project Birth and Three-Generation Cohort Study)** Analytic N=17,728 • Age (y): <25: 7.2, 25-29: 25.3, 30-34: 37.1, ≥35: 30.3 • SEP (%): ○ Education: ≤HS graduate: 20.7, College graduate: 24.9, University graduate or above: 18.7; Missing: 35.7 ○ Annual household income, Japanese yen/y: <4M: 34.5, 4M-<6M: 31.2, ≥6M: 29.8 • Pre-pregnancy BMI: 21.6±3.4 • Current HDP (%): HDP: 3.9 • Current DM (%): GDM: 2.3 • Smoking (%): ○ Never: 60.3 ○ Quit before pregnancy: 23.0 ○ Quit after noticing pregnancy: 14.0 ○ Current: 2.3	**PCA1 - pre- to early pregnancy, PCA1- early to mid-pregnancy, PCA2 - pre- to early pregnancy, PCA2- early to mid-pregnancy** (quartiles of alignment) FFQ at: 20.6 ± 7.8 GW, 28.5 ± 5.8 GW **DP Description:** PCA1 - pre- to early pregnancy • Higher intake of pulses, vegetables, fruits, mushroom, fish and shellfish. • Lower intake of milk and dairy products. PCA1 - early to mid-pregnancy • Higher intake of pulses, vegetables, fruits, mushroom, fish and shellfish. • Lower intake of milk and dairy products, alcohol beverage. PCA2 - pre- to early pregnancy • Higher intake of vegetables, eggs, milk and dairy products. • Lower intake of cereals, meat. PCA2 - early to mid-pregnancy • Higher intake of pulses, vegetables, eggs, milk and dairy products. • Lower intake of cereals, meat. **Outcomes:** • SGA: <10%ile based on Japan Pediatric Society standard	**SGA** Logistic regression OR (95% CI) PCA1 - pre- to early pregnancy Q2 vs Q1 (Ref): 0.88 (0.74, 1.05) Q3 vs Q1 (Ref): 0.95 (0.80, 1.13) Q4 vs Q1 (Ref): 1.02 (0.86, 1.21) p trend: 0.63 PCA1 - early to mid-pregnancy Q2 vs Q1 (Ref): 1.03 (0.86, 1.22) Q3 vs Q1 (Ref): 1.15 (0.97, 1.37) Q4 vs Q1 (Ref): 0.99 (0.83, 1.19) p trend: 0.72 PCA2 - pre- to early pregnancy Q2 vs Q1 (Ref): 1.04 (0.88, 1.23) Q3 vs Q1 (Ref): 0.79 (0.66, 0.95) Q4 vs Q1 (Ref): 0.95 (0.80, 1.13) p trend: 0.15 PCA2 - early to mid-pregnancy Q2 vs Q1 (Ref): 0.94 (0.79, 1.12) Q3 vs Q1 (Ref): 0.95 (0.80, 1.12) Q4 vs Q1 (Ref): 0.86 (0.72, 1.03) p trend: 0.11	**Key confounders accounted for:** Smoking, Age, SEP, Pre-pregnancy BMI, DM in current pregnancy **Other covariates:** alcohol drinking, folic acid supplement consumption during early pregnancy, GWG **Funding:** Japan Agency for Medical Research and Development **Summary:** Alignment with the PCA1 pattern and the PCA2 pattern during pre- and early pregnancy were not associated with risk of SGA, with the exception of comparisons between Q3 and Q1 for PCA2. Alignment with the PCA1 and PCA2 patterns during early to mid-pregnancy were not associated with risk of SGA.

Study Characteristics	Intervention or Exposure, Outcome	Results	Confounders, Funding, Summary
Yisahak, 2021[46] **PCS, United States, NICHD Fetal Growth Studies-Singletons** Analytic N=1,948 • Age (y): o PCA pattern 1: Q1: 29.5±5.4, Q4: 25.4±5.4, p<0.001 o Other DPs: Q1: ~26, Q4: ~30, p<0.001 • Race/Ethnicity (%): o PCA pattern 1 (%), p<0.001: NHW: Q1: 16, Q4: 13; NHB: Q1: 19, Q4: 50; Hispanic: Q1: 29, Q4: 29; AAPI: Q1: 36, Q4: 8 o Other DPs (%), p<0.001: NHW: Q1: ~15, Q4: ~28; NHB: Q1: ~49, Q4: ~18; Hispanic: Q1: ~26, Q4: ~26; AAPI: Q1: ~10, Q4: ~29 • SEP: • PCA pattern 1 (%): o Education <HS: Q1: 13, Q4: 15; HS or equivalent: Q1: 15, Q4: 29; Postgraduate: Q1: 19, Q4: 9, p<0.001 o Income ($) <30k: Q1: 28, Q4: 50; ≥100k: Q1: 24, Q4: 14, p<0.001 o Full-time school or work: Q1: 65, Q4: 68 o Insurance (private/managed care): Q1: 66, Q4: 43, p<0.001 • Other DPs (%): o Education <HS: Q1: ~15, Q4: ~9; HS or equivalent: Q1: ~27, Q4: ~13; Postgraduate: Q1: ~7, Q4: ~28, p<0.001 o Income ($) <30k: Q1: 47, Q4: 23; ≥100k: Q1: 11, Q4: 38, p<0.001 o Full-time school or work: Q1: 67, Q4: 71 o Insurance (private/managed care): Q1: 48, Q4: 72, p<0.001 • Pre-pregnancy BMI: Q1: ~26.1, Q4: 24.2, p<0.001 • Smoking (%): With obesity: n=17, Without obesity: 0.0	**PCA Patterns 1 and 3** (quartiles of alignment) FFQ at: 8-13 GW **DP Description:** PCA pattern 1 • Higher intake of solid fat, nonwhole grains, white potatoes, meat (from beef, pork, veal, lamb, and game), cheese. PCA pattern 2 • Higher intake of other vegetables (not potatoes, starchy, orange, or dark-green vegetables), dark-green vegetables, orange vegetables, seafood high in omega-3 fatty acids, seafood low in omega-3 fatty acids. **Outcomes:** • SGA <10%ile, by sex-specific U.S. reference (Duryea) • LGA ≥90%ile • LBW <2500g • Macrosomia ≥4000g	**SGA** Logistic regression OR (95% CI) PCA pattern 1 Q2 vs Q1 (Ref): 1.56 (0.93, 2.67) Q3 vs Q1 (Ref): 1.37 (0.76, 2.48) Q4 vs Q1 (Ref): 1.24 (0.53, 2.86) p trend: 0.81 PCA pattern 2 Q2 vs Q1 (Ref): 0.70 (0.42, 1.19) Q3 vs Q1 (Ref): 0.72 (0.41, 1.25) Q4 vs Q1 (Ref): 0.66 (0.36, 1.21) p trend: 0.25 **LGA** Logistic regression OR (95% CI) PCA pattern 1 Q2 vs Q1 (Ref): 0.91 (0.53, 1.56) Q3 vs Q1 (Ref): 0.92 (0.50, 1.68) Q4 vs Q1 (Ref): 0.71 (0.28, 1.85) p trend: 0.51 PCA pattern 2 Q2 vs Q1 (Ref): 0.81 (0.46, 1.42) Q3 vs Q1 (Ref): 1.12 (0.64, 1.94) Q4 vs Q1 (Ref): 0.97 (0.50, 1.88) p trend: 0.88 **LBW** Logistic regression OR (95% CI) PCA pattern 1 Q2 vs Q1 (Ref): 1.07 (0.49, 2.34) Q3 vs Q1 (Ref): 1.47 (0.67, 3.20) Q4 vs Q1 (Ref): 1.11 (0.34, 3.46) p trend: 0.85 PCA pattern 2 Q2 vs Q1 (Ref): 1.08 (0.58, 2.02) Q3 vs Q1 (Ref): 0.79 (0.37, 1.67) Q4 vs Q1 (Ref): 0.64 (0.29, 1.41) p trend: 0.19	**Key confounders accounted for:** Parity, Smoking, Race and/or ethnicity, Age, SEP, income, current job/student status, insurance coverage, Pre-pregnancy BMI **Other covariates:** height, marital status, study site, infant sex, total weekly physical activity, total daily energy intake **Funding:** NICHD; American Recovery and Reinvestment Act **Summary:** Alignment with PCA pattern 1, PCA pattern 2, AHEI-2010, and DASH were not associated with risk of LBW, macrosomia, LGA, or SGA.

Study Characteristics	Intervention or Exposure, Outcome	Results	Confounders, Funding, Summary
Yisahak, 2021[46] (Continued) **PCS, United States, NICHD Fetal Growth Studies-Singletons** Analytic N=1,948 • Age (y): ○ PCA pattern 1: Q1: 29.5±5.4, Q4: 25.4±5.4, p<0.001 ○ Other DPs: Q1: ~26, Q4: ~30, p<0.001 • Race/Ethnicity (%): ○ PCA pattern 1 (%), p<0.001: NHW: Q1: 16, Q4: 13; NHB: Q1: 19, Q4: 50; Hispanic: Q1: 29, Q4: 29; AAPI: Q1: 36, Q4: 8 ○ Other DPs (%), p<0.001: NHW: Q1: ~15, Q4: ~28; NHB: Q1: ~49, Q4: ~18; Hispanic: Q1: ~26, Q4: ~26; AAPI: Q1: ~10, Q4: ~29 • SEP: • PCA pattern 1 (%): ○ Education <HS: Q1: 13, Q4: 15; HS or equivalent: Q1: 15, Q4: 29; Postgraduate: Q1: 19, Q4: 9, p<0.001 ○ Income ($) <30k: Q1: 28, Q4: 50; ≥100k: Q1: 24, Q4: 14, p<0.001 ○ Full-time school or work: Q1: 65, Q4: 68 ○ Insurance (private/managed care): Q1: 66, Q4: 43, p<0.001 • Other DPs (%): ○ Education <HS: Q1: ~15, Q4: ~9; HS or equivalent: Q1: ~27, Q4: ~13; Postgraduate: Q1: ~7, Q4: ~28, p<0.001 ○ Income ($) <30k: Q1: 47, Q4: 23; ≥100k: Q1: 11, Q4: 38, p<0.001 ○ Full-time school or work: Q1: 67, Q4: 71 ○ Insurance (private/managed care): Q1: 48, Q4: 72, p<0.001 • Pre-pregnancy BMI: Q1: ~26.1, Q4: 24.2, p<0.001 • Smoking (%): With obesity: n=17, Without obesity: 0.0	**PCA Patterns 1 and 3** (quartiles of alignment) FFQ at: 8-13 GW **DP Description:** <u>PCA pattern 1</u> • Higher intake of solid fat, nonwhole grains, white potatoes, meat (from beef, pork, veal, lamb, and game), cheese. <u>PCA pattern 2</u> • Higher intake of other vegetables (not potatoes, starchy, orange, or dark-green vegetables), dark-green vegetables, orange vegetables, seafood high in omega-3 fatty acids, seafood low in omega-3 fatty acids. **Outcomes:** • SGA <10%ile, by sex-specific U.S. reference (Duryea) • LGA ≥90%ile • LBW <2500g • Macrosomia ≥4000g	**Macrosomia** Logistic regression OR (95% CI) <u>PCA pattern 1</u> Q2 vs Q1 (Ref): 1.39 (0.78, 2.48) Q3 vs Q1 (Ref): 1.31 (0.66, 2.61) Q4 vs Q1 (Ref): 1.35 (0.46, 3.95) p trend: 0.64 <u>PCA pattern 2</u> Q2 vs Q1 (Ref): 0.95 (0.53, 1.70) Q3 vs Q1 (Ref): 1.17 (0.65, 2.12) Q4 vs Q1 (Ref): 1.03 (0.52, 2.03) p trend: 0.87"	**Key confounders accounted for:** Parity, Smoking, Race and/or ethnicity, Age, SEP, income, current job/student status, insurance coverage, Pre-pregnancy BMI **Other covariates:** height, marital status, study site, infant sex, total weekly physical activity, total daily energy intake **Funding:** NICHD; American Recovery and Reinvestment Act **Summary:** Alignment with PCA pattern 1, PCA pattern 2, AHEI-2010, and DASH were not associated with risk of LBW, macrosomia, LGA, or SGA.

Study Characteristics	Intervention or Exposure, Outcome	Results	Confounders, Funding, Summary
Zhang, 2023[47] **PCS, China, TAWS (Taicang and Wuqiang Mother–Child Cohort Study)** Analytic N=911 • Age (y): Median (IQR): 28.0 (25.0, 30.0) • SEP: Education (%): ≤Primary school: 67.8, ≥HS: 32.2 • Pre-pregnancy BMI: ○ Underweight (%): 6.2 ○ Overweight (%): 30.5 ○ Obesity (%): 12.3 • Current HDP (%): HDP: 2.0 • Current DM (%): GDM: 6.5	**Cereals-vegetables-fruits DP, Vegetables-poultry-aquatic products DP, Milk-meat-eggs DP, Nuts-aquatic products-snacks DP** (tertiles of alignment) FFQ at: TM1 **DP Description:** Cereals-vegetables-fruits DP Higher intake of cereals, tubers and their products, dark vegetables, light vegetables, fruits Vegetables-poultry-aquatic products DP Higher intake of dark vegetables, light vegetables, mushroom and algae, poultry, meat products, fish, shrimp, and other aquatic products Milk-meat-eggs DP Higher intake of milk, red meat (pork), meat products, eggs Nuts-aquatic products-snacks DP Fish, shrimp, and other aquatic products, eggs, bread, biscuits, chocolate, and other snacks, nuts **Outcomes:** • LGA: >90%ile, by GA- and sex-specific national growth standards • Macrosomia: ≥4000 g	**LGA** Logistic regression OR (95% CI) Cereals-vegetables-fruits DP T2 vs T1 (Ref): 1.526 (0.889, 2.62), p=0.125 T3 vs T1 (Ref): 1.578 (0.876, 2.845), p=0.129 Vegetables-poultry-aquatic products DP T2 vs T1 (Ref): 0.793 (0.465, 1.352), p=0.394 T3 vs T1 (Ref): 1.053 (0.569, 1.948), p=0.870 Milk-meat-eggs DP T2 vs T1 (Ref): 1.466 (0.914, 2.35), p=0.113 T3 vs T1 (Ref): 1.219 (0.724, 2.055), p=0.456 Nuts-aquatic products-snacks DP T2 vs T1 (Ref): 0.901 (0.565, 1.437), p=0.662 T3 vs T1 (Ref): 0.645 (0.38, 1.095), p=0.105	**Key confounders accounted for:** Parity, Age, SEP, Pre-pregnancy BMI, Current HDP, DM in current pregnancy **Other covariates:** other DP, PA level **Funding:** National Institute for Nutrition and Health **Summary:** Higher alignment with the cereals-vegetables-fruit DP was associated with higher risk of macrosomia and, among those with prepregnancy overweight/obesity, higher risk of LGA. Higher alignment with the nuts-aquatic products-snacks DP was associated with lower risk of macrosomia. Alignment with the vegetables- poultry-aquatic products DP or the milk-meat-eggs DP was not associated with risk of macrosomia or LGA.

Study Characteristics	Intervention or Exposure, Outcome	Results	Confounders, Funding, Summary

Zhang, 2023[47] (Continued)
PCS, China, TAWS (Taicang and Wuqiang Mother–Child Cohort Study)
Analytic N=911
• Age (y): Median (IQR): 28.0 (25.0, 30.0)
• SEP: Education (%): ≤Primary school: 67.8, ≥HS: 32.2
• Pre-pregnancy BMI:
  ○ Underweight (%): 6.2
  ○ Overweight (%): 30.5
  ○ Obesity (%): 12.3
• Current HDP (%): HDP: 2.0
Current DM (%): GDM: 6.5
	Cereals-vegetables-fruits DP, Vegetables-poultry-aquatic products DP, Milk-meat-eggs DP, Nuts-aquatic products-snacks DP (tertiles of alignment)
	FFQ at: TM1
	
	DP Description:
	Cereals-vegetables-fruits DP
	Higher intake of cereals, tubers and their products, dark vegetables, light vegetables, fruits
	
	Vegetables-poultry-aquatic products DP
	Higher intake of dark vegetables, light vegetables, mushroom and algae, poultry, meat products, fish, shrimp, and other aquatic products
	
	Milk-meat-eggs DP
	Higher intake of milk, red meat (pork), meat products, eggs
	
	Nuts-aquatic products-snacks DP
	Fish, shrimp, and other aquatic products, eggs, bread, biscuits, chocolate, and other snacks, nuts
	
	Outcomes:
	• LGA: >90%ile, by GA- and sex-specific national growth standards
	Macrosomia: ≥4000 g
		LGA
		By PPBMI
		Cereals-vegetables-fruits DP
		Healthy weight (n=521)
		T2 vs T1 (Ref): 1.616 (0.732, 3.566), p=0.235
		T3 vs T2 (Ref): 1.113 (0.461, 2.682), p=0.812
		Overweight and obesity (n=390)
		T2 vs T1 (Ref): 1.501 (0.705, 3.193), p=0.292
		T3 vs T1 (Ref): 2.353 (1.010, 5.480), p=0.047
		Poultry-vegetables-aquatic products DP
		Healthy weight (n=521)
		T2 vs T1 (Ref): 1.019 (0.453, 2.291), p=0.964
		T3 vs T1 (Ref): 1.297 (0.502, 3.353), p=0.592
		Overweight and obesity (n=390)
		T2 vs T1 (Ref): 0.560 (0.266, 1.179), p=0.127
		T3 vs T1 (Ref): 0.868 (0.364, 2.069), p=0.750
		Milk-meat-eggs DP
		Healthy weight (n=521)
		T2 vs T1 (Ref): 1.224 (0.585, 2.562), p=0.592
		T3 vs T1 (Ref): 1.130 (0.508, 2.510), p=0.765
		Overweight and obesity (n=390)
		T2 vs T1 (Ref): 1.681 (0.884, 3.197), p=0.113
		T3 vs T1 (Ref): 1.224 (0.594, 2.521), p=0.584
			Key confounders accounted for:
			Parity, Age, SEP, Pre-pregnancy BMI, Current HDP, DM in current pregnancy
			Other covariates: other DP, PA level
			
			Funding: National Institute for Nutrition and Health
			
			Summary: Higher alignment with the cereals-vegetables-fruit DP was associated with higher risk of macrosomia and, among those with prepregnancy overweight/obesity, higher risk of LGA. Higher alignment with the nuts-aquatic products-snacks DP was associated with lower risk of macrosomia.
			
			Alignment with the vegetables- poultry-aquatic products DP or the milk-meat-eggs DP was not associated with risk of macrosomia or LGA.

Study Characteristics	Intervention or Exposure, Outcome	Results	Confounders, Funding, Summary
Zhang, 2023[47] (Continued) **PCS, China, TAWS (Taicang and Wuqiang Mother–Child Cohort Study)** Analytic N=911 • Age (y): Median (IQR): 28.0 (25.0, 30.0) • SEP: Education (%): ≤Primary school: 67.8, ≥HS: 32.2 • Pre-pregnancy BMI: ○ Underweight (%): 6.2 ○ Overweight (%): 30.5 ○ Obesity (%): 12.3 • Current HDP (%): HDP: 2.0 Current DM (%): GDM: 6.5	**Cereals-vegetables-fruits DP, Vegetables-poultry-aquatic products DP, Milk-meat-eggs DP, Nuts-aquatic products-snacks DP** (tertiles of alignment) FFQ at: TM1 **DP Description:** <u>Cereals-vegetables-fruits DP</u> Higher intake of cereals, tubers and their products, dark vegetables, light vegetables, fruits <u>Vegetables-poultry-aquatic products DP</u> Higher intake of dark vegetables, light vegetables, mushroom and algae, poultry, meat products, fish, shrimp, and other aquatic products <u>Milk-meat-eggs DP</u> Higher intake of milk, red meat (pork), meat products, eggs <u>Nuts-aquatic products-snacks DP</u> Fish, shrimp, and other aquatic products, eggs, bread, biscuits, chocolate, and other snacks, nuts **Outcomes:** • LGA: >90%ile, by GA- and sex-specific national growth standards Macrosomia: ≥4000 g	**LGA** **<u>By PPBMI</u>** <u>Nuts-aquatic products-snacks DP</u> ***Healthy weight*** (n=521) T2 vs T1 (Ref); 1.231 (0.606, 2.501), p=0.565 T3 vs T1 (Ref): 0.808 (0.365, 1.791), p=0.600 ***Overweight and obesity*** (n=390) T2 vs T1 (Ref): 0.695 (0.367, 1.317), p=0.265 T3 vs T1 (Ref): 0.542 (0.260, 1.131), p=0.103 **Macrosomia** Logistic regression OR (95% CI) <u>Cereals-vegetables-fruits DP</u> T2 vs T1 (Ref): 1.981 (0.976, 4.022), p=0.058 T3 vs T1 (Ref): 2.220 (1.018, 4.843), p=0.045 <u>Vegetables-poultry-aquatic products DP</u> T2 vs T1 (Ref): 0.908 (0.455, 1.811), p=0.783 T3 vs T1 (Ref): 0.874 (0.382, 2.002), p=0.750 <u>Milk-meat-eggs DP</u> T2 vs T1 (Ref): 0.984 (0.539, 1.796), p=0.958 T3 vs T1 (Ref): 1.113 (0.576, 2.153), p=0.750 <u>Nuts-aquatic products-snacks DP</u> T2 vs T1 (Ref): 0.718 (0.403, 1.278), p=0.260 T3 vs T1 (Ref): 0.357 (0.175, 0.725), p=0.004	**Key confounders accounted for:** Parity, Age, SEP, Pre-pregnancy BMI, Current HDP, DM in current pregnancy **Other covariates:** other DP, PA level **Funding:** National Institute for Nutrition and Health **Summary:** Higher alignment with the cereals-vegetables-fruit DP was associated with higher risk of macrosomia and, among those with prepregnancy overweight/obesity, higher risk of LGA. Higher alignment with the nuts-aquatic products-snacks DP was associated with lower risk of macrosomia. Alignment with the vegetables- poultry-aquatic products DP or the milk-meat-eggs DP was not associated with risk of macrosomia or LGA.

Study Characteristics	Intervention or Exposure, Outcome	Results	Confounders, Funding, Summary
Zulyniak, 2017[49] **PCS, Canada, NutriGen Alliance: CHILD (Canadian Healthy Infant Longitudinal Development), FAMILY (Family Atherosclerosis Monitoring In early life), START (SouTh Asian birth cohort), ABC (Aboriginal Birth Cohort)** Analytic N=White Europeans: 2,367, South Asians: 884 • Age (y): 31.6±4.7 • Race/Ethnicity (%): White European: 59; South Asian: 22; East/South-East Asian: 8; Aboriginal: 5; Other ethnicity: 4; African: 2 • SEP: ○ Postsecondary education (%): 85.1 ○ Household income ≥$60k (%): 77.2 • Pre-pregnancy BMI: 24.7±4.8 • Current DM (%): GDM: 11.3 • Smoking (%): ○ Never: 77.1 ○ Quit before pregnancy: 16.2 ○ Quit during pregnancy: 3.6 ○ Currently smoking: 3.1	**Plant-based DP** (continuous, per 1 unit increase) FFQ at: 24-28 GW **DP Description:** • Higher intake of low fat dairy, fermented dairy, legumes, fresh seasonings, vegetable medley, other vegetables, whole grains, non-meat dishes, tea. • Lower intake of meat. **Outcomes:** • SGA: <10%ile, by sex- and ethnic-specific birth weight cut points • LGA: ≥90%ile	**SGA** White Europeans: ~50% increase in odds with 1-unit increase in plant-based DP South Asians: non-significant reduction in odds with 1-unit increase in plant-based DP, p=0.428 **LGA** White Europeans: ~30% decrease in odds with 1-unit increase in plant-based DP South Asians: non-significant increase in odds with 1-unit increase in plant-based DP, p=0.249	**Key confounders accounted for:** Parity, Smoking, Race and/or ethnicity, Pre-pregnancy BMI **Other covariates:** GA, infant sex **Funding:** CIHR; ICMR/CIHR; HSF Canada; AllerGen NCE Inc; South Asian Nework Supporting Awareness and Research **Summary:** Higher alignment with a plant-based DP was associated with higher risk of SGA and lower risk of LGA among White Europeans. Alignment with a plant-based DP was not associated with risk of SGA or LGA among South Asians, but results trended to lower risk of SGA and higher risk of LGA.

Study Characteristics	Intervention or Exposure, Outcome	Results	Confounders, Funding, Summary
Reduced Rank Regression			
Alves-Santos, 2019[1] **PCS, Brazil, Rio de Janeiro Federal University** Analytic N=189 • Age (y): 26.7±5.5 • SEP: ○ Per capita family income (US dollars/mo): 524.4±370.0 ○ Education (y): 8.7±2.9 • Pre-pregnancy BMI: ○ 25.13±4.5 ○ ≥25 (%): 42.0 • Current DM (%): Free from chronic disease: 100 • Smoking (%): 6.2	**Fast food and Candies DP; Vegetables and Dairy DP; Beans, Bread, and Fat DP** (tertiles of alignment: High, Medium vs Low) FFQ at: TM1 **DP Description:** Fast Food and Candies DP High intakes of fast food and snacks; cakes, cookies, or crackers; and candies or desserts; low intakes of rice, beans, vegetables spices, and green vegetables or legumes Vegetables and Dairy DP High intakes of green vegetables or legumes, dairy products, fish, tea, fruits or fruit juices, and candies or desserts; low intakes of bread, sweetened and diet soda, and table sugar Beans, Bread, and Fat DP High intakes of beans; cakes, or cookies, or crackers; bread and fats used as spreads; low intakes of fish, fruit or fruit juices, and noodles, pasta, roots, or tubers **Outcomes:** • LGA: >90%ile based on International Fetal and Newborn Growth Consortium for the 21st Century.	**LGA** Multiple logistic regression OR (95% CI) Fast Food and Candies DP Medium vs. Low (Ref): 4.23 (1.23, 14.54), p=0.022 High vs. Low (Ref): 4.38 (1.32, 14.48), p=0.015 Vegetables and Dairy DP Medium vs. Low (Ref): 0.63 (0.21, 1.94), p=0.428 High vs. Low (Ref): 1.90 (0.72, 5.02), p=0.195 Beans, Bread, and Fat DP Medium vs. Low (Ref): 0.64 (0.25, 1.63), p=0.354 High vs. Low (Ref): 0.46 (0.17, 1.27), p=0.136	**Key confounders accounted for:** Smoking, Age, SEP **Other covariates:** Alcohol consumption; TM1 leisure physical activity **Funding:** Carlos Chagas Filho Research Foundation from the State of Rio de Janeiro **Summary:** Medium and high alignment with the Fast Food and Candies DP was associated with greater risk of LGA when compared to low alignment. There was no association between alignment with the Vegetables and Dairy DP or the Beans, Bread, and Fat DP and risk of LGA.

Study Characteristics	Intervention or Exposure, Outcome	Results	Confounders, Funding, Summary
Hwang, 2022[20] **PCS, Korea, MOCEH (Korean Mothers and Children's Environmental Health study)** Analytic N=888 (Pattern 1 Q1, Q4) • Age (y): 29.9±3.9, 30.5±3.5 • SEP: ○ Education (%): ≤HS: 26.3, 26.3; ≤University: 21.8, 16.6; ≥Graduate school: 49.5, 56.1 ○ Family income (%), $/mo: <2k: 30.1, 27.0; 2k-4k: 51.6, 49.5; >4k: 15.2, 21.1 • Pre-pregnancy BMI: 21.1±3.1, 21.5±3.2 • Current HDP (%): Pregnancy complications (HTN): 0.0 • Current DM (%): Pregnancy complications (DM): 0.0	**Pattern 1, Pattern 2, Pattern 3** (quartiles of alignment) FFQ at: 12-28 GW **DP Description:** Pattern 1 • Higher intakes of grains, green/yellow and light-colored vegetables, kimchi, legumes, fruits, meat, eggs, fish, seaweeds, tofu/soymilk, yogurt, nuts. Pattern 2 • Higher intakes of green/yellow and light-colored vegetables, kimchi, seaweed. • Lower intakes of white rice, poultry, meat, red meat by-products. Pattern 3 • Higher intakes of grains, milk, yogurt. • Lower intakes of rice cake, legumes, snacks, bony fish, tofu/soy milk. **Outcomes:** • SGA: <10%ile based on sex-specific reference growth curves in Korean singleton infants	**SGA** Logistic regression OR (95% CI) Pattern 1 Q2 vs Q1 (Ref): 0.23 (0.06, 0.92) Q3 vs Q1 (Ref): 0.43 (0.20, 0.95) Q4 vs Q1 (Ref): 0.36 (0.14, 0.94) p trend: 0.048 Pattern 2 Q2 vs Q1 (Ref): 1.12 (0.54, 2.32) Q3 vs Q1 (Ref): 0.58 (0.18, 1.72) Q4 vs Q1 (Ref): 0.78 (0.45, 1.91) p trend: 0.359 Pattern 3 Q2 vs Q1 (Ref): 0.63 (0.45, 1.33) Q3 vs Q1 (Ref): 0.86 (0.72, 1.11) Q4 vs Q1 (Ref): 0.88 (0.36, 1.68) p trend: 0.056	**Key confounders accounted for:** Parity, Smoking, Age, SEP, Pre-pregnancy BMI, Current HDP, DM in current pregnancy **Other covariates:** maternal energy intake (log-transformed) **Funding:** Ministry of Science & ICT, Republic of Korea **Summary:** Alignment with Pattern 1 was associated with lower risk of SGA. Alignment with Pattern 3 trended toward an association of lower risk of SGA but was not statistically significant. Pattern 2 was not associated with risk of SGA.

<table>
<tr><th>Study Characteristics</th><th>Intervention or Exposure, Outcome</th><th>Results</th><th>Confounders, Funding, Summary</th></tr>
<tr><td>Lecorguillé, 2020[22]
PCS, France, EDEN Mother-Child Study
Analytic N=1638
• Age (y): 29.7±4.9
• SEP:
○ Education (%): Lower secondary school: 25.9, Upper secondary school: 17.9, Post-secondary: 22.6, Tertiary: 33.6
○ Employment status (%): Employed: 76.6, Student: 2.6, Staying at home: 20.7
○ Monthly household income, Euros (%): <1,501: 15.1, 1,501-2,300: 28.4, 2,301-3,000: 26.9, >3,000: 29.6
• Pre-pregnancy BMI (%): Underweight: 8.3; Overweight: 18; Obesity: 7.6
• Current DM (%): Diabetes before pregnancy: 0.0
• Smoking (%): During pregnancy: No: 74.2, 1-9/d: 21.2, ≥10/d: 4.6</td><td>Varied and balanced DP, Vegetarian tendency DP, Bread and starchy food DP (continuous, per 1 SD increase)
FFQ at: <28 GW (~15 GW)

DP Description:
<u>Varied and balanced DP</u>
• Higher intake of low-fat milk, other vegetables, fish, meat, chicory, leek, cabbage, eggs and egg dishes, cereals, broccoli, liver.
• Lower intake of snacks and confectionary, sugar-sweetened beverages.
<u>Vegetarian tendency DP</u>
• Higher intake of other vegetables, chicory, cereals, fruits, bread.
• Lower intake of meat, liver.
<u>Bread and starchy food DP</u>
• Higher intake of bread, rice, pasta, and others, sandwich.
• Lower intake of low-fat milk, fruits, fruit juice, sugar-sweetened beverages.

Outcomes:
• SGA: <10%ile
• LGA: >90%ile</td><td>SGA
Logistic regression
OR (95% CI)
<u>Varied and balanced</u>: 1.00 (0.86, 1.16)
<u>Vegetarian tendency</u>: 1.02 (0.87, 1.21)
<u>Bread and starchy food</u>: 0.83 (0.70, 0.99)

LGA
Logistic regression
OR (95% CI)
<u>Varied and balanced</u>: 1.19 (1.02, 1.39)
<u>Vegetarian tendency</u>: 0.97 (0.81, 1.16)
<u>Bread and starchy food</u>: 1.00 (0.82, 1.23)</td><td>Key confounders accounted for: Parity, Smoking, Age, SEP, employment status, monthly household income, Pre-pregnancy BMI, DM in current pregnancy
Other covariates: center, vitamin supplementation, infant sex

Funding: Foundation for Medical Research; National Agency for Research; National Institute for Research in Public Health; French Ministry of Health; French Ministry of Research; INSERM Bone and Joint Diseases National Research; Human Nutrition National Research Programs; Paris-Sud University; Nestle; Fench National Institute for Population Health Surveillance; French National Institute for Health Education; EU FP7 Programs; Diabetes National Research Program; French Agency for Environmental Health Safety; Mutuelle Generale de l'Education Nationale; French National Agency for Food Security; French-Speaking Association for the Study of Diabetes and Metabolism

Summary: Alignment with a bread and starchy food DP was associated with lower risk of SGA but not risk of LGA. Alignment with a varied and balanced DP was associated with a higher risk of LGA but not with risk of SGA. Alignment with a vegetarian tendency DP was not associated with risk of SGA or LGA.</td></tr>
</table>

Study Characteristics	Intervention or Exposure, Outcome	Results	Confounders, Funding, Summary
Yamashita, 2022[44] **PCS, Japan, TMM BirThree Cohort Study (Tohoku Medical Megabank Project Birth and Three-Generation Cohort Study)** Analytic N=17,728 • Age (y): <25: 7.2, 25-29: 25.3, 30-34: 37.1, ≥35: 30.3 • SEP (%): o Education: ≤HS graduate: 20.7, College graduate: 24.9, University graduate or above: 18.7; Missing: 35.7 o Annual household income, Japanese yen/y: <4M: 34.5, 4M-<6M: 31.2, ≥6M: 29.8 • Pre-pregnancy BMI: 21.6±3.4 • Current HDP (%): HDP: 3.9 • Current DM (%): GDM: 2.3 • Smoking (%): o Never: 60.3 o Quit before pregnancy: 23.0 o Quit after noticing pregnancy: 14.0 o Current: 2.3	**RRR - pre- to early pregnancy, RRR - early to mid-pregnancy** (quartiles of alignment) FFQ at: 20.6 ± 7.8 GW, 28.5 ± 5.8 GW **DP Description:** RRR - pre- to early pregnancy • Higher intake of cereals, fruits. • Lower intake of alcohol beverage, non-alcohol beverage. RRR - early to mid-pregnancy • Higher intake of cereals, fruits, milk and dairy products. • Lower intake of alcohol beverage, non-alcohol beverage. **Outcomes:** • SGA: <10%ile	**SGA** Logistic regression OR (95% CI) RRR - pre- to early pregnancy Q2 vs Q1 (Ref): 0.88 (0.75, 1.05) Q3 vs Q1 (Ref): 0.81 (0.68, 0.96) Q4 vs Q1 (Ref): 0.83 (0.69, 0.99) p trend: 0.02 RRR - early to mid-pregnancy Q2 vs Q1 (Ref): 0.97 (0.82, 1.15) Q3 vs Q1 (Ref): 0.87 (0.73, 1.03) Q4 vs Q1 (Ref): 0.85 (0.71, 1.02) p trend: 0.04	**Key confounders accounted for:** Smoking, Age, SEP, Pre-pregnancy BMI, DM in current pregnancy **Other covariates:** alcohol drinking, folic acid supplement consumption during early pregnancy, GWG **Funding:** Japan Agency for Medical Research and Development **Summary:** Alignment with the RRR pattern during pre- to early pregnancy was associated with lower risk of SGA. Alignment with the RRR pattern during early to mid-pregnancy was associated with lower risk of SGA but no comparisons between any quartiles reached statistical significance.

Study Characteristics	Intervention or Exposure, Outcome	Results	Confounders, Funding, Summary
Other			
Yamashita, 2022[44] **PCS, Japan, TMM BirThree Cohort Study (Tohoku Medical Megabank Project Birth and Three-Generation Cohort Study)** Analytic N=17,728 • Age (y): <25: 7.2, 25-29: 25.3, 30-34: 37.1, ≥35: 30.3 • SEP (%): ○ Education: ≤HS graduate: 20.7, College graduate: 24.9, University graduate or above: 18.7; Missing: 35.7 ○ Annual household income, Japanese yen/y: <4M: 34.5, 4M-<6M: 31.2, ≥6M: 29.8 • Pre-pregnancy BMI: 21.6±3.4 • Current HDP (%): HDP: 3.9 • Current DM (%): GDM: 2.3 • Smoking (%): ○ Never: 60.3 ○ Quit before pregnancy: 23.0 ○ Quit after noticing pregnancy: 14.0 ○ Current: 2.3	**PLS - pre- to early pregnancy, PLS- early to mid-pregnancy** (quartiles of alignment) FFQ at: 20.6 ± 7.8 GW, 28.5 ± 5.8 GW **DP Description:** PLS - pre- to early pregnancy • Higher intake of cereals, fruits. • Lower intake of alcohol beverage, non-alcohol beverage. PLS - early to mid-pregnancy • Higher intake of cereals, fruits, mushroom, milk and dairy products. • Lower intake of alcohol beverage, non-alcohol beverage. **Outcomes:** • SGA: <10%ile	**SGA** Logistic regression OR (95% CI) PLS - pre- to early pregnancy Q2 vs Q1 (Ref): 0.82 (0.69, 0.98) Q3 vs Q1 (Ref): 0.78 (0.66, 0.93) Q4 vs Q1 (Ref): 0.77 (0.64, 0.92) p trend: 0.003 PLS - early to mid-pregnancy Q2 vs Q1 (Ref): 0.83 (0.70, 0.98) Q3 vs Q1 (Ref): 0.76 (0.64, 0.90) Q4 vs Q1 (Ref): 0.76 (0.64, 0.91) p trend: 0.001	**Key confounders accounted for:** Smoking, Age, SEP, Pre-pregnancy BMI, DM in current pregnancy **Other covariates:** alcohol drinking, folic acid supplement consumption during early pregnancy, GWG **Funding:** Japan Agency for Medical Research and Development **Summary:** Alignment with PLS pattern during pre- to early pregnancy was associated with lower risk of SGA. Alignment with the PLS pattern during early to mid-pregnancy was associated with lower risk of SGA.

[a] Abbreviations: %ile: percentile; $#k: # thousands of dollars; #M: million; 24 HR: 24 hour recall; ABC: Aboriginal Birth Cohort; AGA: appropriate for gestational age; AHEI: Alternate Healthy Eating Index; AHEI-P: Alternate Healthy Eating Index for Pregnancy; aMED: alternative Mediterranean diet; BMI: body mass index; BW: birth weight; CG: control group; CI: confidence interval; CVD: cardiovascular disease; d: day(s); DASH: Dietary Approaches to Stop Hypertension; DHA: docosahexaenoic acid; DM: diabetes mellitus; DP: dietary pattern(s); EPA: eicosapentaenoic acid; EVOO: extra virgin olive oil; FFQ: food frequency questionnaire; FIGO: International Federation of Gynecology and Obstetrics; g: gram(s); GDM: gestational diabetes mellitus; GHTN: gestational hypertension; GW: gestational weeks; GWG: gestational weight gain; h: hour(s); HDP: hypertensive disorders of pregnancy; HTN: hypertension; HS: high school; IG: intervention group; INTERGROWTH-21st: International Fetal and Newborn Growth Consortium for the 21st Centruy; IQDAG: Diet Quality Index Adapted for Pregnant Women; IQR: interquartile range; ITT: intention-to-treat; kg: kilogram(s); kcal: kilocalorie(s); L: liter; LBW: low birth weight; LGA: large for gestational age; LI: lifestyle intervention; M: million(s); MD: Mediterranean Diet; MDD: Minimum dietary diversity; MDQS: Maternal Diet Quality Score; MEDAS: Mediterranean Diet Adherence Screener; MedDiet: Mediterranean diet; mg: milligram(s); min: minute(s); mL: milliliter; mo: month; MUFA: monounsaturated fatty acid; N: sample size; NH: non-Hispanic; NHB: non-Hispanic Black; NHW: non-Hispanic White; NIH: National Institutes of Health; NICHD: National Institute of Child Health and Development; NND: New Nordic Diet; NOK: Norwegian Krone; NR: not reported; OMNI: Optimal Macronutrient Intake; OR: odds ratio; PA: physical activity; PCA: principal component analysis; PCS: prospective cohort study; PE: preeclampsia; PLS: partial least squares; PP: per-protocol; PPBMI: pre-pregnancy BMI; PTB: preterm birth; PUFA: polyunsaturated fatty acid; Q#: quartile; RCT: randomized controlled trial; Ref: reference; RR: relative risk; RRR: reduced rank regression; SC: standard care; SD: standard deviation; SEIFA IRSD: Socio-economic Index for Areas—Index of Relative Socio-economic Disadvantage; SEP: socioeconomic position; SES: socioeconomic status; SFA: saturated fatty acid; SGA: small for gestational age; SSB: sugar-sweetened beverage(s); svg: serving(s); T#: tertile; T1 or T2 DM: Type 1 or Type 2 DM; TEI: total energy intake; TG: triglyceride; UC: usual care; ug: microgram(s); U.K.: United Kingdom; vs: versus; wk: week(s); y: year(s)

Table 9. Risk of bias for randomized controlled trials examining dietary patterns consumed during pregnancy and birth weight [a]

Article	Randomization	Deviations from intended interventions (effect of assignment) or (per-protocol)	Missing outcome data	Outcome measurement	Selection of the reported result	Overall risk of bias
Al Wattar, 2019[51]	**LOW**	**LOW**	**LOW**	**LOW**	**LOW**	**LOW**
Assaf-Balut, 2017[52]	**LOW**	**HIGH**	**LOW**	**LOW**	**HIGH**	**HIGH**
Assaf-Balut, 2019[53]	**LOW**	**SOME CONCERNS**	**LOW**	**LOW**	**HIGH**	**HIGH**
Crovetto, 2021[54]	**LOW**	**HIGH**	**LOW**	**LOW**	**SOME CONCERNS**	**HIGH**
Dodd, 2019[55]	**LOW**	**LOW**	**LOW**	**LOW**	**LOW**	**LOW**
Gallagher, 2018[56]	**SOME CONCERNS**	**LOW**	**LOW**	**LOW**	**SOME CONCERNS**	**SOME CONCERNS**
Khoury, 2005[57]	**LOW**	**LOW**	**LOW**	**LOW**	**SOME CONCERNS**	**SOME CONCERNS**
Melero, 2020[58]	**LOW**	**HIGH**	**LOW**	**LOW**	**LOW**	**HIGH**
Van Horn, 2018[59]	**LOW**	**LOW**	**LOW**	**LOW**	**LOW**	**LOW**
Zhao, 2022[60]	**LOW**	**LOW**	**LOW**	**LOW**	**SOME CONCERNS**	**SOME CONCERNS**

[a] Possible ratings of low, some concerns, or high determined using the "Cochrane Risk-of-bias 2.0" (RoB 2.0) (August 2019 version)" (Sterne JAC, Savović J, Page MJ, et al. RoB 2: a revised tool for assessing risk of bias in randomised trials. *BMJ* 2019; **366**: l4898.

Table 10. Risk of bias for non-randomized controlled trials examining dietary patterns consumed during pregnancy and birth weight [a]

Article	Confounding	Selection of participants	Classification of interventions	Deviations from intended interventions	Missing data	Outcome measurement	Selection of the reported result	Overall risk of bias
Melero, 2020[58]	**SERIOUS**	**LOW**	**SERIOUS**	**SERIOUS**	**LOW**	**LOW**	**MODERATE**	**SERIOUS**

[a] Possible ratings of low, moderate, serious, critical, or no information determined using the "Risk of Bias in Non-randomized Studies of Interventions (ROBINS-I) tool" (Sterne JAC, Hernán MA, Reeves BC, et al. ROBINS-I: a tool for assessing risk of bias in non-randomized studies of interventions. *BMJ* 2016; 355; i4919; doi: 10.1136/bmj.i4919.)

Table 11. Risk of bias for observational studies examining dietary patterns consumed during pregnancy and birth weight [a]

Article	Confounding	Exposure measurement	Selection of participants	Post-exposure interventions	Missing data	Outcome measurement	Selection of the reported result	Overall risk of bias
Alves-Santos, 2019[1]	**HIGH**	**LOW**	**LOW**	**SOME CONCERNS**	**SOME CONCERNS**	**LOW**	**SOME CONCERNS**	**HIGH**
Ancira-Moreno, 2020[50]	**HIGH**	**SOME CONCERNS**	**SOME CONCERNS**	**SOME CONCERNS**	**HIGH**	**LOW**	**SOME CONCERNS**	**HIGH**
Barchitta, 2023[2]	**SOME CONCERNS**	**HIGH**	**LOW**	**SOME CONCERNS**	**HIGH**	**LOW**	**SOME CONCERNS**	**HIGH**
Berube, 2023[3]	**SOME CONCERNS**	**SOME CONCERNS**	**SOME CONCERNS**	**SOME CONCERNS**	**HIGH**	**LOW**	**SOME CONCERNS**	**HIGH**
Bodnar, 2024[4]	**LOW**	**LOW**	**LOW**	**LOW**	**SOME CONCERNS**	**LOW**	**SOME CONCERNS**	**SOME CONCERNS**
Chatzi, 2012[5]	**SOME CONCERNS**	**SOME CONCERNS**	**SOME CONCERNS**	**SOME CONCERNS**	**HIGH**	**LOW**	**SOME CONCERNS**	**HIGH**
Chen, 2021[6]	**SOME CONCERNS**	**SOME CONCERNS**	**SOME CONCERNS**	**SOME CONCERNS**	**HIGH**	**LOW**	**SOME CONCERNS**	**HIGH**
Chia, 2016[7]	**HIGH**	**SOME CONCERNS**	**SOME CONCERNS**	**SOME CONCERNS**	**SOME CONCERNS**	**LOW**	**SOME CONCERNS**	**HIGH**

de Seymour, 2022[8]	SOME CONCERNS	LOW	LOW	LOW	HIGH	LOW	SOME CONCERNS	HIGH
Díaz-López, 2022[9]	HIGH	SOME CONCERNS	LOW	SOME CONCERNS	SOME CONCERNS	LOW	SOME CONCERNS	HIGH
Emond, 2018[10]	LOW	SOME CONCERNS	SOME CONCERNS	LOW	HIGH	LOW	SOME CONCERNS	HIGH
Englund-Ogge, 2019[11]	SOME CONCERNS	LOW	SOME CONCERNS	LOW	HIGH	LOW	SOME CONCERNS	HIGH
Flynn, 2016[12]	SOME CONCERNS	LOW	SOME CONCERNS	HIGH	HIGH	LOW	SOME CONCERNS	HIGH
Fulay, 2018[13]	LOW	LOW	LOW	LOW	HIGH	LOW	SOME CONCERNS	HIGH
Gonzalez-Nahm, 2019[14]	SOME CONCERNS	SOME CONCERNS	SOME CONCERNS	SOME CONCERNS	SOME CONCERNS	LOW	SOME CONCERNS	HIGH
Grieger, 2014[15]	SOME CONCERNS	SOME CONCERNS	LOW	SOME CONCERNS	HIGH	LOW	SOME CONCERNS	HIGH
Hajianfar, 2018[16]	HIGH	SOME CONCERNS	LOW	LOW	HIGH	LOW	SOME CONCERNS	HIGH
Hillesund, 2014[17]	SOME CONCERNS	LOW	SOME CONCERNS	SOME CONCERNS	HIGH	LOW	SOME CONCERNS	HIGH
Hillesund, 2018[18]	LOW	LOW	SOME CONCERNS	LOW	LOW	LOW	SOME CONCERNS	SOME CONCERNS
Hrolfsdottir, 2019[19]	SOME CONCERNS	LOW	LOW	LOW	HIGH	LOW	SOME CONCERNS	HIGH
Hwang, 2022[20]	SOME CONCERNS	VERY HIGH	SOME CONCERNS	LOW	HIGH	LOW	SOME CONCERNS	VERY HIGH
Knudsen, 2008[21]	HIGH	LOW	SOME CONCERNS	SOME CONCERNS	HIGH	LOW	SOME CONCERNS	HIGH

Lecorguillé, 2020[22]	SOME CONCERNS	HIGH	SOME CONCERNS	SOME CONCERNS	HIGH	LOW	SOME CONCERNS	HIGH
Li, 2021[23]	HIGH	LOW	SOME CONCERNS	SOME CONCERNS	HIGH	LOW	SOME CONCERNS	HIGH
Lipsky, 2023[24]	HIGH	LOW	LOW	SOME CONCERNS	HIGH	LOW	SOME CONCERNS	HIGH
Lu, 2016[25]	SOME CONCERNS	LOW	SOME CONCERNS	SOME CONCERNS	HIGH	LOW	SOME CONCERNS	HIGH
Makarem, 2022[26]	SOME CONCERNS	LOW	LOW	HIGH	HIGH	LOW	HIGH	HIGH
Maldonado, 2022[27]	SOME CONCERNS	SOME CONCERNS	SOME CONCERNS	LOW	HIGH	LOW	SOME CONCERNS	HIGH
Miele, 2021[28]	HIGH	SOME CONCERNS	SOME CONCERNS	LOW	LOW	LOW	SOME CONCERNS	HIGH
Mikeš, 2022[29]	SOME CONCERNS	VERY HIGH	SOME CONCERNS	SOME CONCERNS	HIGH	LOW	SOME CONCERNS	VERY HIGH
Navarro, 2019[31]	SOME CONCERNS	SOME CONCERNS	SOME CONCERNS	SOME CONCERNS	SOME CONCERNS	LOW	SOME CONCERNS	HIGH
Navarro, 2020[30]	SOME CONCERNS	LOW	SOME CONCERNS	LOW	SOME CONCERNS	LOW	SOME CONCERNS	HIGH
Okubo, 2012[32]	SOME CONCERNS	HIGH	SOME CONCERNS	SOME CONCERNS	HIGH	LOW	SOME CONCERNS	HIGH
Okubo, 2023[33]	SOME CONCERNS	LOW	LOW	SOME CONCERNS	SOME CONCERNS	LOW	SOME CONCERNS	HIGH
Paknahad, 2019[34]	HIGH	SOME CONCERNS	LOW	HIGH	HIGH	LOW	SOME CONCERNS	HIGH
Parisi, 2020[35]	SOME CONCERNS	LOW	LOW	LOW	HIGH	LOW	HIGH	HIGH

Poon, 2013[36]	SOME CONCERNS	HIGH	SOME CONCERNS	LOW	SOME CONCERNS	LOW	SOME CONCERNS	HIGH
Reyes-López, 2021[37]	HIGH	LOW	SOME CONCERNS	LOW	HIGH	LOW	HIGH	HIGH
Rifas-Shiman, 2009[38]	SOME CONCERNS	LOW	LOW	LOW	HIGH	LOW	SOME CONCERNS	HIGH
Rodriguez-Bernal, 2010[39]	SOME CONCERNS	HIGH	LOW	SOME CONCERNS	HIGH	LOW	SOME CONCERNS	HIGH
Santos, 2021[40]	HIGH	SOME CONCERNS	SOME CONCERNS	LOW	HIGH	LOW	SOME CONCERNS	HIGH
Sun, 2023[41]	SOME CONCERNS	SOME CONCERNS	SOME CONCERNS	SOME CONCERNS	HIGH	LOW	SOME CONCERNS	HIGH
Teixeira, 2021[42]	SOME CONCERNS	LOW	LOW	SOME CONCERNS	SOME CONCERNS	LOW	SOME CONCERNS	HIGH
Xu, 2023[43]	SOME CONCERNS	HIGH	SOME CONCERNS	SOME CONCERNS	LOW	LOW	SOME CONCERNS	HIGH
Yamashita, 2022[44]	SOME CONCERNS	HIGH	SOME CONCERNS	LOW	SOME CONCERNS	LOW	SOME CONCERNS	HIGH
Yee, 2020[45]	SOME CONCERNS	LOW	LOW	LOW	HIGH	LOW	SOME CONCERNS	HIGH
Yisahak, 2021[46]	SOME CONCERNS	SOME CONCERNS	LOW	SOME CONCERNS	SOME CONCERNS	LOW	SOME CONCERNS	HIGH
Zhang, 2023[47]	SOME CONCERNS	SOME CONCERNS	LOW	SOME CONCERNS	HIGH	LOW	HIGH	HIGH
Zhu, 2019[48]	HIGH	LOW	LOW	SOME CONCERNS	LOW	LOW	HIGH	HIGH
Zulyniak, 2017[49]	HIGH	SOME CONCERNS	SOME CONCERNS	HIGH	HIGH	LOW	SOME CONCERNS	HIGH

[a] Possible ratings of low, some concerns, high, very high, no information, or not applicable determined using the "Risk of Bias in Non-randomized tool (Higgins JPT, Morgan RL, Rooney AA, et al. A tool to assess risk of bias in non-randomized follow-up studies of exposure effects (ROBINS-E (published online Mar 24); doi: 10.1016/j.envint.2024.108602) *Low risk of bias except for concerns about uncontrolled confounding.

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Appendices

Appendix 1: Abbreviations

Table A 1. List of abbreviations

Abbreviation	Full name
BMI	Body mass index
EVOO	Extra virgin olive oil
GDM	Gestational diabetes mellitus
HDP	Hypertensive disorders of pregnancy
HEI	Healthy Eating Index
HHS	United States Department of Health and Human Services
LBW	Low birth weight
LGA	Large-for-gestational age
NESR	Nutrition Evidence Systematic Review
NICHD	*Eunice Kennedy Shriver* National Institutes of Child Human Development
NRCT	Non-randomized controlled trial
PCS	Prospective cohort study
RCT	Randomized controlled trial
SEP	Socioeconomic position
SGA	Small-for-gestational age
SSB	Sugar-sweetened beverage
USDA	United States Department of Agriculture

Appendix 2: Conclusion statements from the existing systematic review

Table A 2. Conclusion statements from the existing systematic review for the research question: What is the relationship between dietary patterns consumed during pregnancy and birth weight?

Citation	Conclusion statements and grades
Raghavan R, Dreibelbis C, Kingshipp BJ, Wong, YP, Terry N, Abrams B, Bartholomew A, Bodnar LM, Gernand A, Rasmussen K, Siega-Riz AM, Stang JS, Casavale KO, Spahn JM, Stoody E. Dietary Patterns before and during Pregnancy and Gestational Age- and Sex-Specific Birth Weight: A Systematic Review. April 2019. U.S. Department of Agriculture, Food and Nutrition Service, Center for Nutrition Policy and Promotion, Nutrition Evidence Systematic Review. Available at: https://doi.org/10.52570/NESR.PB242018.SR0104.	• No conclusion can be drawn on the association between dietary patterns during pregnancy and birth weight outcomes. Although research is available, the ability to draw a conclusion is restricted by ○ inconsistency in study findings, ○ inadequate adjustment of birth weight for gestational age and sex, and ○ variation in study design, dietary assessment methodology, and adjustment of key confounding factors. • Insufficient evidence exists to estimate the association between dietary patterns before pregnancy and birth weight outcomes. There are not enough studies available to answer this question.

Appendix 3: Inclusion and exclusion criteria comparison between existing and updated systematic reviews

Table A 3. Inclusion and exclusion criteria comparison between existing[*] and updated systematic reviews for the research question: What is the relationship between dietary patterns consumed during pregnancy and birth weight?

Category	Existing Review	Updated Review	Change and Rationale
Study design	Included: • Randomized controlled trials • Prospective cohort studies • Retrospective cohort studies • Nested case-control studies Excluded: • Non-randomized controlled trials • Cross-sectional studies • Case-control studies • Uncontrolled studies • Pre-post studies with a control • Pre-post studies without a control • Narrative reviews • Systematic reviews • Meta-analyses	Included: • Randomized controlled trials • Non-randomized controlled trials[†] • Prospective cohort studies • Retrospective cohort studies • Nested case-control studies Excluded: • Uncontrolled trials[‡] • Case-control studies • Cross-sectional studies • Ecological studies • Narrative reviews • Systematic reviews • Meta-analyses • Modeling and simulation studies	Non-randomized controlled trials, including quasi-experimental and controlled before-and-after studies, will be included in the updated review to align with current NESR standards.
Publication date	Included: • January 1980 – January 2017 Excluded: • Before January 1980, after January 2017	Included: • January 1980 – January 2024[§] Excluded: • Before January 1980, after January 2024	End of the date range is updated to extend from the end of the search in the existing review to present.

[*] Raghavan R, Dreibelbis C, Kingshipp BJ, et al. Dietary Patterns before and during Pregnancy and Gestational Age- and Sex-Specific Birth Weight: A Systematic Review. April 2019. U.S. Department of Agriculture, Food and Nutrition Service, Center for Nutrition Policy and Promotion, Nutrition Evidence Systematic Review. Available at: https://doi.org/10.52570/NESR.PB242018.SR0104.

[†] Including quasi-experimental and controlled before-and-after studies

[‡] Including uncontrolled before-and-after studies

[§] This review update date range encompasses the original systematic review date range, which included articles published from January 1980 to January 2017

Category	Existing Review	Updated Review	Change and Rationale
Population: Study participants	Included: • Human subjects Excluded: • Animal and in vitro models	Included: • Human Excluded: • Non-human	No changes other than to wording for clarity.

Population:
Life stage
	Included:
	• At intervention or exposure:
	  ○ Adolescent girls and women capable of becoming pregnant (15-44 years)
	  ○ Pregnant girls and women (15-44 years) – single and multiple pregnancies
	• At outcome:
	  ○ Pregnant girls and women (15-44 years) – single and multiple pregnancies
	  ○ Neonates
	Excluded:
	• N/A
		Included:
		• At intervention or exposure:
		  ○ Individuals during pregnancy
		• At outcome:
		  ○ Individuals during pregnancy
		  ○ Infants at birth
		Excluded:
		• At intervention or exposure:
		  ○ Individuals before pregnancy
		  ○ Individuals during postpartum
		  ○ Infants at birth
			Individuals before pregnancy were excluded from the updated review based on 2025 DGAC question prioritization discussions. Minor changes were made to formatting and wording for clarity.

Category	Existing Review	Updated Review	Change and Rationale

Population: Health Status	Included:
	• Studies conducted in generally healthy women of reproductive age, including women in pre/peri-conception and pregnancy
	• Studies conducted in samples with elevated chronic disease risk or pregnancy related conditions, or that enroll *some* subjects with a disease or with health outcome of interest such as:
	  ○ Anemia
	  ○ Gestational diabetes
	  ○ Hypertension
	  ○ Preeclampsia
	  ○ Hyperemesis Gravidarum
	  ○ Previous adverse outcome (e.g., preterm)
	  ○ Obesity
	Excluded:
	• Pregnancies conceived ONLY using Assisted Reproductive Technologies
	• Studies that exclusively enroll subjects with chronic conditions (e.g. hypertension, diabetes) that are not related to the index pregnancy
	• Studies that exclusively enroll subjects with a disease or with the health outcome of interest (intermediate or endpoint health outcomes)
	• Studies done in hospitalized or malnourished subjects, if hospitalization is not related to index pregnancy
		Included:
		• Studies that exclusively enroll participants not diagnosed with a disease[*]
		• Studies that enroll some participants:
		  ○ diagnosed with a disease;
		  ○ who became pregnant using Assisted Reproductive Technologies;
		  ○ with multiple gestation pregnancies;
		  ○ pre- or post-bariatric surgery;
		  ○ and/or hospitalized for an illness, injury, or surgery
		Excluded:
		• Studies that exclusively enroll participants:
		  ○ diagnosed with a disease;†
		  ○ who became pregnant using Assisted Reproductive Technologies;
		  ○ with multiple gestation pregnancies;
		  ○ pre- or post-bariatric surgery;
		  ○ and/or hospitalized for an illness, injury, or surgery‡
			Studies that exclusively enroll participants with obesity are included in the updated review due to its prevalence and relevance as a risk factor for other conditions. All other changes are to formatting and wording for clarity.

[*] Studies that enroll participants who are at risk for chronic disease will be included

† Studies that exclusively enroll participants with obesity will be included

‡ Studies that exclusively enroll participants post-cesarean section will be included

Category	Existing Review	Updated Review	Change and Rationale
Population: Analytic approach	Not specified	Included: • Studies that enroll both singleton and multiple gestation pregnancies and present uncombined findings Excluded: • Studies that enroll both singleton and multiple gestation pregnancies and only present aggregate findings	Criteria were added to the updated review to clarify that studies enrolling participants with both singleton and multiple gestation pregnancies will only be included if the singleton pregnancy findings can be isolated.

Category	Existing Review	Updated Review	Change and Rationale

Intervention/exposure	Included:
	• Studies that provide a description of the dietary pattern(s) (i.e., foods and beverages) consumed by subjects and that methodologically use:
	  ○ Indices & scores
	  ○ Cluster or factor analysis
	  ○ Reduced rank regression
	  ○ Other methods
	Excluded:
	• Studies that do not provide a description of the dietary pattern(s) (i.e., foods and beverages) consumed by subjects[*]
		Included:
		• Studies that examine consumption of and/or adherence to a dietary pattern [i.e., the quantities, proportions, variety, or combination of different foods, drinks, and nutrients (when available) in diets, and the frequency with which they are habitually consumed], including, at a minimum, a description of the foods and beverages in the pattern of each intervention/exposure and comparator group
		  ○ Dietary patterns may be measured or derived using a variety of approaches, such as adherence to a priori patterns (indices/scores), data driven patterns (factor or cluster analysis), reduced rank regression, or other methods, including clinical trials
		• Multi-component intervention in which the isolated effect of the dietary pattern on the outcome(s) of interest is provided or can be determined
		Excluded:
		• Studies that do not provide a description of the dietary pattern, which at minimum, must include the foods and beverages in the pattern (i.e., studies that examine a labeled dietary pattern, but do not describe the foods and beverages consumed in each intervention/exposure and comparator group)
		• Multi-component intervention in which the isolated effect of the dietary pattern on the outcome(s) of interest is not analyzed or cannot be determined (e.g., due to multiple intervention components within groups)
			Revisions were made to clarify the intent of the intervention/exposure criteria, but do not represent a change in how the criteria were applied.

[*] For example, a study would be excluded from the systematic review if the dietary pattern were labeled “vegetarian” but lacked a description of what foods/beverages were consumed as part of that dietary pattern

Category	Existing Review	Updated Review	Change and Rationale
Comparator	<u>Included</u>: • Different levels of adherence to a dietary pattern • Adherence to a different dietary pattern <u>Excluded</u>: • N/A	<u>Included</u>: • Consumption of and/or adherence to a different dietary pattern • Different levels of consumption of and/or adherence to a dietary pattern <u>Excluded</u>: • Consumption of and/or adherence to a similar dietary pattern of which only a specific component or food source is different between groups	Revisions were made to clarify the intent of the comparator criteria, but do not represent a change in how the criteria were applied.

Outcome(s)	<u>Included</u>:
	• Intermediate outcomes:
	  ○ Fetal growth and growth velocities
	  ○ Intrauterine growth restriction (IUGR)
	  ○ Uterine artery or umbilical cord artery Doppler measurement
	• Endpoint outcome:
	  ○ Gestational age- and sex-specific birth weight
	<u>Excluded</u>:
	• N/A
		<u>Included</u>:
		• Intrauterine growth restriction (IUGR)
		• Large-for-gestational age (LGA)
		• Small-for-gestational age (SGA)
		• Low birth weight (LBW)
		• Macrosomia
		<u>Excluded</u>:
		• Birth weight outcomes measured continuously
			Uterine artery or umbilical cord artery Doppler measurement are not outcomes in the updated review based on lack of results in the existing review. Revisions were also made to enable focus on risk of IUGR, LGA, SGA, LBW, and macrosomia, which are birth weight outcomes of greater public health concern.

Confounders	<u>Included</u>: • N/A <u>Excluded</u>: • N/A	<u>Included</u>: • Studies that control for one or more of the key confounders listed in the analytic framework. <u>Excluded</u>: • Studies that do not control for any of the key confounders listed in the analytic framework.	Criteria were added to enable focus on a stronger body of evidence.
Temporality	<u>Included:</u> • Studies when the exposure was assessed prior to the outcome <u>Excluded:</u> • Studies when the outcome was assessed prior to the exposure	Not specified	Criteria are covered under “Study Design”.

Category	Existing Review	Updated Review	Change and Rationale
Publication status	Included: • Studies published in peer-reviewed journals Excluded: • Grey literature, including unpublished data, manuscripts, reports, abstracts, conference proceedings	Included: • Peer-reviewed articles published in research journals Excluded: • Non-peer-reviewed articles, unpublished data or manuscripts, pre-prints, reports, editorials, retracted articles, and conference abstracts or proceedings	No changes other than to wording for clarity.
Language	Included: • Studies published in English Excluded: • Studies published in languages other than English	Included: • Published in English Excluded: • Not published in English	No changes other than to wording for clarity.
Country[*]	Included: • Studies conducted in Very High and High Human Development Countries Excluded: • Studies conducted in Medium and Low Human Development Countries	Included: • Studies conducted in countries classified as high or very high on the Human Development Index the year(s) the intervention/exposure data were collected Excluded: • Studies conducted in countries classified as medium or low on the Human Development Index the year(s) the intervention/exposure data were collected	No changes other than to wording for clarity.

[*] The classification of countries on the Human Development Index (HDI) is based on the UN Development Program Human Development Report Office (http://hdr.undp.org/en/data) for the year the study intervention occurred or data were collected. If the study does not report the year(s) in which the intervention/exposure data were collected, the HDI classification for the year of publication is applied. Studies conducted prior to 1990 are classified based on 1990 HDI classifications. If the year is more recent than the available HDI values, then the most recent HDI classifications are used. If a country is not listed in the HDI, then the current country classification from the World Bank is used (The World Bank. World Bank country and lending groups. Available from: https://datahelpdesk.worldbank.org/knowledgebase/articles/906519-world- country-and-lending-groups)

Appendix 4: Literature search strategy

Search from existing review

The search conducted for an existing review identified articles published between January 1980 and January 2017. For the complete search documentation, refer to:

Raghavan R, Dreibelbis C, Kingshipp BJ, et al. Dietary Patterns before and during Pregnancy and Gestational Age- and Sex-Specific Birth Weight: A Systematic Review. April 2019. U.S. Department of Agriculture, Food and Nutrition Service, Center for Nutrition Policy and Promotion, Nutrition Evidence Systematic Review. Available at: https://doi.org/10.52570/NESR.PB242018.SR0104.

Search for the current review

This search was first run on June 8, 2022, and then periodically run using NESR's continuous evidence monitoring methods[*].

Database: PubMed
Provider: U.S. National Library of Medicine
Date(s) Searched: June 8, 2022 (initial search); June 8, 2022 – January 9, 2024 (continuous evidence monitoring)
Dates Covered: January 6, 2017 – January 9, 2024

Table A 4. Search for PubMed

Search #	Concept	String
#1	Birth weight and gestational age	"Birth Weight"[Mesh] OR "Infant, Low Birth Weight"[Mesh] OR "Gestational Age"[Mesh] OR birthweight[tiab] OR ((fetal[tiab] OR "foetal"[tiab] OR baby[tiab] OR babies[tiab] OR infant*[tiab] OR birth[tiab] OR births[tiab] OR newborn[tiab]) AND (weight*[tiab])) OR "Gestational Age"[tiab] OR "Obstetric Labor, Premature"[Mesh] OR ((prematur*[tiab] OR pre-matur*[tiab] OR preterm[tiab] OR pre-term[tiab] OR "before term"[tiab]) AND (baby[tiab] OR infant*[tiab] OR birth[tiab] OR labor[tiab] OR membrane*[tiab] OR babies[tiab])) OR "Fetal Growth Retardation"[Mesh] OR IUGR[tiab] OR "Fetal Development"[Mesh:NoExp] OR "Fetal Weight"[Mesh] OR fetal development[tiab] OR "foetal development"[tiab] OR ((fetal[tiab] OR "foetal"[tiab] OR intrauterine[tiab] OR intra-uterine[tiab]) AND (growth[tiab]))

[*] USDA Nutrition Evidence Systematic Review Branch. Chapter 10: Continuous Evidence Monitoring. In: *USDA Nutrition Evidence Systematic Review: Methodology Manual*. February 2023. U.S. Department of Agriculture, Food and Nutrition Service, Center for Nutrition Policy and Promotion, Nutrition Evidence Systematic Review. Available at: https://nesr.usda.gov/methodology-overview.

Search #	Concept	String
#2	Dietary patterns	("dietary pattern*"[tiab] OR "diet pattern*"[tiab] OR "eating pattern*"[tiab] OR "food pattern*"[tiab] OR "diet quality"[tiab] OR "dietary quality"[tiab] OR "diet variety"[tiab] OR "dietary variety"[tiab] OR "varied diet"[tiab] OR "dietary guideline*"[tiab] OR "dietary recommendation*"[tiab] OR "dietary intake*"[tiab] OR "eating style*"[tiab] OR "Diet, Mediterranean"[Mesh] OR "Mediterranean Diet*"[tiab] OR "Dietary Approaches To Stop Hypertension"[Mesh] OR "Dietary Approaches To Stop Hypertension Diet*"[tiab] OR "DASH diet*"[tiab] OR "Diet, Gluten-Free"[Mesh] OR "Gluten Free diet*"[tiab] OR "prudent diet*"[tiab] OR "Diet, Paleolithic"[Mesh] OR "Paleolithic Diet*"[tiab] OR "Diet, Vegetarian"[Mesh] OR "vegetarian diet*"[tiab] OR "vegan diet*"[tiab] OR "Diet, Healthy"[Mesh] OR "healthy diet*"[tiab] OR "plant based diet*"[tiab] OR "Diet, Western"[Mesh] OR "western diet*"[tiab] OR "Nordic Diet*"[tiab] OR "Okinawan diet*"[tiab] OR "Diet, Fat-Restricted"[Mesh] OR "Diet, High-Fat"[Mesh] OR "high-fat diet*"[tiab] OR "low fat diet*"[tiab] OR "Diet, Sodium-Restricted"[Mesh] OR "low-sodium diet*"[tiab] OR "low salt diet*"[tiab] OR (("Guideline Adherence"[Mesh] OR "guideline adherence*"[tiab])AND (diet[tiab] OR dietary[tiab] OR food[tiab] OR beverage*[tiab] OR nutrition*[tiab])) OR "diet score*"[tiab] OR "diet quality score*"[tiab] OR "diet quality index*"[tiab] OR kidmed[tiab] OR "diet index*"[tiab] OR "dietary index*"[tiab] OR "food score*"[tiab] OR MedDietScore[tiab] OR "healthy eating index"[tiab])
#3	Pre-pregnancy and pregnancy	Pregnancy[Mesh] OR “Pregnancy Complications”[Mesh] OR “Maternal Exposure”[Mesh] OR “Pregnant Women”[Mesh] OR "Prenatal Exposure Delayed Effects"[Mesh] OR "Peripartum Period"[Mesh] OR "Maternal Nutritional Physiological Phenomena"[Mesh] OR pregnan*[tiab] OR prepregnancy[tiab] OR prenatal[tiab] OR perinatal[tiab] OR pre-conception[tiab] OR preconception[tiab] OR peri-conception[tiab] OR periconception[tiab] OR peripartum[tiab] OR peri-partum[tiab] OR gestation*[tiab] OR natal[tiab] OR antenatal[tiab]
#4		#1 AND #2 AND #3
#5	Limits	#4 NOT ("Animals"[Mesh] NOT ("Animals"[Mesh] AND "Humans"[Mesh])) NOT (editorial[ptyp] OR comment[ptyp] OR commentary[tiab] OR news[ptyp] OR letter[ptyp] OR review[ptyp] OR systematic review[ptyp] OR systematic review[ti] OR meta-analysis[ptyp] OR meta-analysis[ti] OR meta-analyses[ti] OR protocol[ti] OR protocols[ti] OR retracted publication[ptyp] OR retraction of publication[ptyp] OR retraction of publication[tiab] OR retraction notice[ti] OR “retracted publication”[ti] OR "Congress"[Publication Type] OR "Consensus Development Conference"[Publication Type] OR “conference abstract*”[tiab] OR “conference proceeding*”[tiab] OR “conference paper*”[tiab] OR "practice guideline"[ptyp] OR "practice guideline"[ti]) from 2017/1/6 - 3000/12/12

Database: Embase

Provider: Elsevier
Date(s) Searched: June 8, 2022 (initial search); June 8, 2022 – January 9, 2024 (continuous evidence monitoring)
Dates Covered: January 6, 2017 – January 9, 2024

Table A 5. Search for Embase

Search #	Concept	String
#1	Birth weight and gestational age	‘Birth Weight’/exp OR ‘Gestational Age’/exp OR ‘large for gestational age’/exp OR ‘premature labor’/exp OR ‘intrauterine growth retardation’/exp OR ‘prenatal development’/de OR ‘fetus development’/de OR ‘fetus weight’/exp OR birthweight:ab,ti OR ‘gestational age’:ab,ti OR IUGR:ab,ti OR ‘fetal development’:ab,ti OR ‘foetal development’:ab,ti OR ((fetal OR foetal OR baby OR babies OR infant* OR birth OR births OR newborn) NEAR/6 weight*):ab,ti OR ((prematur* OR pre-matur* OR preterm OR ‘pre term’ OR ‘before term’) NEAR/6 (baby OR babies OR infant* OR birth OR labor OR membrane*)):ab,ti OR ((fetal OR foetal OR intrauterine OR ‘intra uterine’) NEAR/6 growth):ab,ti
#2	Dietary patterns	'feeding behavior'/de OR 'mediterranean diet'/exp OR 'dash diet'/exp OR 'gluten free diet'/exp OR 'paleolithic diet'/de OR 'vegetarian diet'/exp OR 'healthy diet'/exp OR 'western diet'/de OR 'low carbohydrate diet'/exp OR 'low fat diet'/de OR 'lipid diet'/exp OR 'protein restriction'/exp OR 'sodium restriction'/exp OR 'nordic diet'/de OR 'protein diet'/exp OR ‘dietary pattern*’:ab,ti OR ‘diet pattern*’:ab,ti OR ‘eating pattern*’:ab,ti OR ‘food pattern*’:ab,ti OR ‘diet quality’:ab,ti OR ‘dietary quality’:ab,ti OR ‘diet variety’:ab,ti OR ‘dietary variety’:ab,ti OR ‘varied diet’:ab,ti OR ‘dietary guideline*’:ab,ti OR ‘dietary recommendation*’:ab,ti OR ‘dietary intake*’:ab,ti OR ‘eating style*’:ab,ti OR ‘Mediterranean Diet*’:ab,ti OR ‘Dietary Approaches To Stop Hypertension Diet*’:ab,ti OR ‘DASH diet*’:ab,ti OR ‘Gluten Free diet*’:ab,ti OR ‘prudent diet*’:ab,ti OR ‘Paleolithic Diet*’:ab,ti OR ‘vegetarian diet*’:ab,ti OR ‘vegan diet*’:ab,ti OR ‘healthy diet*’:ab,ti OR ‘plant based diet*’:ab,ti OR ‘western diet*’:ab,ti OR ‘Nordic Diet*’:ab,ti OR ‘Okinawan Diet*’:ab,ti OR ‘high-fat diet*’:ab,ti OR ‘low fat diet*’:ab,ti OR ‘low-sodium diet*’:ab,ti OR ‘low salt diet*’:ab,ti OR ‘diet score*’:ab,ti OR ‘diet quality score*’:ab,ti OR ‘diet quality index*’:ab,ti OR kidmed:ab,ti OR ‘diet index*’:ab,ti OR ‘dietary index*’:ab,ti OR ‘food score*’:ab,ti OR MedDietScore:ab,ti OR ‘healthy eating index’:ab,ti OR ('guideline adherence*' AND (diet OR dietary OR food OR beverage* OR nutrition*)):ab,ti
#3	Pre-pregnancy and pregnancy	‘Pregnancy’/exp OR ‘Pregnancy Complications’/exp OR ‘Maternal Exposure’/exp OR ‘Pregnant Woman’/exp OR 'Prenatal exposure'/exp OR 'perinatal exposure'/exp OR ‘Perinatal Period’/exp OR 'maternal nutrition'/exp OR pregnan*:ab,ti OR prepregnancy:ab,ti OR prenatal:ab,ti OR perinatal:ab,ti OR ‘pre-conception’:ab,ti OR preconception:ab,ti OR ‘peri-conception’:ab,ti OR periconception:ab,ti OR peripartum:ab,ti OR ‘peri-partum’:ab,ti OR gestation*:ab,ti OR natal:ab,ti OR antenatal:ab,ti
#4		#1 AND #2 AND #3

Search #	Concept	String
#5	Limits	#4 AND ([article]/lim OR [article in press]/lim) NOT ([animals]/lim NOT ([animals]/lim AND [humans]/lim)) AND [english]/lim NOT ([conference abstract]/lim OR [conference paper]/lim OR [conference review]/lim OR [editorial]/lim OR [erratum]/lim OR [letter]/lim OR [note]/lim OR 'retraction of publication':ab,ti OR 'retraction notice':ti OR 'retracted publication':ab,ti OR [review]/lim OR [systematic review]/lim OR [meta analysis]/lim OR 'practice guideline':ti) AND [2017-2024]/py

<u>Database: Cochrane Central Register of Controlled Trials (CENTRAL)</u>

Provider: John Wiley & Sons
Date(s) Searched: June 8, 2022 (initial search); June 8, 2022 – January 9, 2024 (continuous evidence monitoring)
Dates Covered: January 6, 2017 – January 9, 2024

Table A 6. Search for Cochrane CENTRAL

Search #	Concept	String
#1	Birth weight and gestational age	[mh "Birth Weight"] OR [mh “Infant, Low Birth Weight”] OR [mh "Gestational Age"] OR [mh "Obstetric Labor, Premature"] OR [mh "Fetal Growth Retardation"] OR [mh ^"Fetal Development"] OR [mh "Fetal Weight"] OR (birthweight OR "gestational age" OR IUGR OR “fetal development” OR “foetal development” OR ((fetal OR foetal OR baby OR babies OR infant* OR birth OR births OR newborn) NEAR/6 weight*) OR ((prematur* OR pre-matur* OR preterm OR “pre term” OR “before term”) NEAR/6 (baby OR babies OR infant* OR birth OR labor OR membrane*)) OR ((fetal OR foetal OR intrauterine OR “intra uterine”) NEAR/6 growth)):ti,ab,kw

Search #	Concept	String
#2	Dietary patterns	[mh "Diet, Mediterranean"] OR [mh "Dietary Approaches To Stop Hypertension"] OR [mh "Diet, Gluten-Free"] OR [mh "Diet, Paleolithic"] OR [mh "Diet, Vegetarian"] OR [mh "Diet, Healthy"] OR [mh "Diet, Western"] OR [mh "Diet, Fat-Restricted"] OR [mh "Diet, High-Fat"] OR [mh "Diet, Sodium-Restricted"] OR [mh "Guideline Adherence"] OR ("dietary pattern" OR "dietary patterns" OR "diet pattern" OR "diet patterns" OR "eating pattern" OR "eating patterns" OR "food pattern" OR "food patterns" OR "diet quality" OR "dietary quality" OR "diet variety" OR "dietary variety" OR "varied diet" OR "dietary guideline" OR "dietary guidelines" OR "dietary recommendation" OR "dietary recommendations" OR "dietary intake" OR "dietary intakes" OR "eating style" OR "eating styles" OR "Mediterranean Diet" OR "Mediterranean Diets" OR "Dietary Approaches To Stop Hypertension Diet" OR "Dietary Approaches To Stop Hypertension Diets" OR "DASH diet" OR "DASH diets" OR "Gluten Free diet" OR "Gluten Free diets" OR "prudent diet" OR "prudent diets" OR "Paleolithic Diet" OR "Paleolithic Diets" OR "vegetarian diet" OR "vegetarian diets" OR "vegan diet" OR "vegan diets" OR "healthy diet" OR "healthy diets" OR "plant based diet" OR "plant based diets" OR "Western diet" OR "Western diets" OR "Nordic Diet" OR "Nordic Diets" OR "Okinawan Diet" OR "Okinawan Diets" OR "high-fat diet" OR "high-fat diets" OR "low fat diet" OR "low fat diets" OR "low-sodium diet" OR "low-sodium diets" OR "low salt diet" OR "low salt diets" OR "diet score" OR "diet scores" OR "diet quality score" OR "diet quality scores" OR "diet quality index" OR "diet quality indexes" OR "diet quality indices" OR kidmed OR "diet index" OR "diet indexes" OR "diet indices" OR "dietary index" OR "dietary indexes" OR "dietary indices" OR "food score" OR "food scores" OR MedDietScore OR "healthy eating index" OR "healthy eating indexes" OR "healthy eating indices"):ti,ab,kw OR ("guideline adherence" NEAR/2 (diet OR dietary OR food OR beverage* OR nutrition*)):ti,ab,kw
#3	Pre-pregnancy and pregnancy	[mh Pregnancy] OR [mh "Pregnancy Complications"] OR [mh "Maternal Exposure"] OR [mh "Pregnant Women"] OR [mh "Peripartum Period"] OR [mh "Prenatal Exposure Delayed Effects"] OR [mh "Peripartum Period"] OR [mh "Maternal Nutritional Physiological Phenomena"] OR (pregnan* OR prepregnancy OR prenatal OR perinatal OR "pre-conception" OR preconception OR "peri-conception" OR periconception OR peripartum OR "peri-partum" OR gestation* OR natal OR antenatal):ti,ab,kw
#4		#1 AND #2 AND #3 In trials, word variations searched Custom publication range: 2017 - 2024

Database: CINAHL

Provider: EBSCO
Date(s) Searched: June 8, 2022 (initial search); June 8, 2022 – January 9, 2024 (continuous evidence monitoring)
Dates Covered: January 6, 2017 – January 9, 2024

Table A 7. Search for CINAHL

Search #	Concept	String
#1	Birth weight and gestational age	(MH "Birth Weight") OR (MH "Infant, Low Birth Weight+") OR (MH "Infant, Large for Gestational Age") OR (MH "Gestational Age") OR (MH "Labor, Premature") OR (MH "Fetal Growth Retardation") OR (MH "Fetal Weight") OR (MH "Fetal Development") OR (TI birthweight OR "gestational age" OR IUGR OR “fetal development” OR “foetal development” OR ((fetal OR foetal OR baby OR babies OR infant* OR birth OR births OR newborn) N6 weight*) OR ((prematur* OR pre-matur* OR preterm OR “pre term” OR “before term”) N6 (baby OR babies OR infant* OR birth OR labor OR membrane*)) OR ((fetal OR foetal OR intrauterine OR “intra uterine”) N6 growth)) OR (AB birthweight OR "gestational age" OR IUGR OR “fetal development” OR “foetal development” OR ((fetal OR foetal OR baby OR babies OR infant* OR birth OR newborn) N6 weight*) OR ((prematur* OR preterm OR “pre term” OR “before term”) N6 (baby OR babies OR infant* OR birth OR labor OR membrane*)) OR ((fetal OR foetal OR intrauterine OR “intra uterine”) N6 growth))

Search #	Concept	String
#2	Dietary patterns	(MH "Mediterranean Diet") OR (MH "DASH Diet") OR (MH “Diet, Gluten-Free") OR (MH "Diet, Paleolithic") OR (MH "Vegetarianism") OR (MH "Diet, Western") OR (MH "Diet, Fat-Restricted") OR (MH "Diet, Sodium-Restricted") OR (MH "Restricted Diet") OR (MH "Diet, High Protein") OR (MH "Diet, Nordic”) OR (MH "Plant-Based Diet") OR (TI "dietary pattern*" OR "diet pattern*" OR "eating pattern*" OR "food pattern*" OR "diet quality" OR "dietary quality" OR "diet variety" OR "dietary variety" OR "varied diet" OR "dietary guideline*" OR "dietary recommendation*" OR "dietary intake*" OR "eating style*" OR "Mediterranean Diet*" OR "Dietary Approaches To Stop Hypertension Diet*" OR "DASH diet*" OR "Gluten Free diet*" OR "prudent diet*" OR "Paleolithic Diet*" OR “Okinawan diet” OR "vegetarian diet*" OR "vegan diet*" OR "healthy diet*" OR "plant based diet*" OR "western diet*" OR "Nordic Diet*" OR "high-fat diet*" OR "low fat diet*" OR "low-sodium diet*" OR "low salt diet*" OR "diet score*" OR "diet quality score*" OR "diet quality index*" OR kidmed OR "diet index*" OR "dietary index*" OR "food score*" OR MedDietScore OR "healthy eating index") OR (AB "dietary pattern*" OR "diet pattern*" OR "eating pattern*" OR "food pattern*" OR "diet quality" OR "dietary quality" OR "diet variety" OR "dietary variety" OR "varied diet" OR "dietary guideline*" OR "dietary recommendation*" OR "dietary intake*" OR "eating style*" OR "Mediterranean Diet*" OR "Dietary Approaches To Stop Hypertension Diet*" OR "DASH diet*" OR "Gluten Free diet*" OR "prudent diet*" OR "Paleolithic Diet*" OR “Okinawan diet” OR "vegetarian diet*" OR "vegan diet*" OR "healthy diet*" OR "plant based diet*" OR "western diet*" OR "Nordic Diet*" OR "high-fat diet*" OR "low fat diet*" OR "low-sodium diet*" OR "low salt diet*" OR "diet score*" OR "diet quality score*" OR "diet quality index*" OR kidmed OR "diet index*" OR "dietary index*" OR "food score*" OR MedDietScore OR "healthy eating index") OR ((MH "Guideline Adherence") OR (TI "guideline adherence*") OR (AB "guideline adherence*")) AND ((TI diet OR dietary OR food OR beverage* OR nutrition*) OR (AB diet OR dietary OR food OR beverage* OR nutrition*))
#3	Pre-pregnancy and pregnancy	(MH "Pregnancy+") OR (MH "Pregnancy Complications+") OR (MH "Maternal Exposure") OR (MH "Expectant Mothers") OR (MH "Prenatal Exposure Delayed Effects") OR (MH "Maternal Nutritional Physiology+") OR (TI pregnan* OR prepregnancy OR prenatal OR perinatal OR “pre-conception” OR preconception OR “peri-conception” OR periconception OR peripartum OR “peri-partum” OR gestation* OR natal OR antenatal) OR (AB pregnan* OR prepregnancy OR prenatal OR perinatal OR “pre-conception” OR preconception OR “peri-conception” OR periconception OR peripartum OR “peri-partum” OR gestation* OR natal OR antenatal)
#4		#1 AND #2 AND #3

Search #	Concept	String
#5		#4 NOT ((MH "Animals+") OR (MH "Animal Studies")) NOT ((MH "Literature Review") OR (MH "Meta Analysis") OR (MH "Systematic Review") OR (MH "News") OR (MH "Retracted Publication") OR (MH "Retraction of Publication) OR (MH "Congresses and Conferences")) English, Apply equivalent subjects Published Date: 20170101-20240109

Appendix 5: Excluded articles

The existing systematic review* for this question included 21 articles. However, after applying the inclusion and exclusion criteria established for the update to that review, only 11 remained eligible for inclusion. The following articles were excluded from the existing systematic review due to updated eligibility criteria:

1. Bouwland-Both MI, Steegers-Theunissen RP, et al. A periconceptional energy-rich dietary pattern is associated with early fetal growth: the Generation R study. *BJOG* 2013;120(4):435-45. doi: 10.1111/1471-0528.12086. (Excluded for: Confounders)
2. Clapp JF. Diet, exercise, and feto-placental growth. *Arch Gynecol Obstet* 1997;260:101-8. doi: 10.1007/s004040050169. (Excluded for: Outcome)
3. Colon-Ramos U, Racette SB, Ganiban J, et al. Association between dietary patterns during pregnancy and birth size measures in a diverse population in Southern US. *Nutrients* 2015;7(2):1318-32. doi: 10.3390/nu7021318. (Excluded for: Outcome)
4. Gresham E, Collins CE, Mishra GD, Byles JE, Hure AJ. Diet quality before or during pregnancy and the relationship with pregnancy and birth outcomes: the Australian Longitudinal Study on Women's Health. *Public Health Nutr* 2016;19(16):2975-83. doi: 10.1017/S1368980016001245. (Excluded for: Population – Life Stage)
5. Kennedy ET. A prenatal screening system for use in a community-based setting. *J Am Diet Assoc* 1986;86(10):1372-5. doi: 10.1016/S0002-8223(21)04121-3. (Excluded for: Confounders)
6. Monteagudo C, Mariscal-Arcas M, Heras-Gonzalez L, Ibanez-Peinado D, Rivas A, Olea-Serrano F. Effects of maternal diet and environmental exposure to organochlorine pesticides on newborn weight in Southern Spain. *Chemosphere* 2016;156:135-42. doi: 10.1016/j.chemosphere.2016.04.103. (Excluded for: Population – Life Stage)
7. Northstone K, Ness AR, Emmett PM, Rogers IS. Adjusting for energy intake in dietary pattern investigations using principal components analysis. *Eur J Clin Nutr* 2008;62(7):931-8. doi: 10.1038/sj.ejcn.1602789. (Excluded for: Outcome)
8. Shapiro AL, Kaar JL, Crume TL, et al. Maternal diet quality in pregnancy and neonatal adiposity: the Healthy Start Study. *Int J Obes (Lond)* 2016;40(7):1056-62. doi: 10.1038/ijo.2016.79. (Excluded for: Outcome)
9. Timmermans S, Steegers-Theunissen RP, Vujkovic M, et al. The Mediterranean diet and fetal size parameters: the Generation R Study. *Br J Nutr* 2012;108(8):1399-409. doi: 10.1017/S000711451100691X. (Excluded for: Outcome)
10. Xie Y, Madkour AS, Harville EW. Preconception Nutrition, Physical Activity, and Birth Outcomes in Adolescent Girls. *J Pediatr Adolesc Gynecol* 2015;28(6):471-6. doi: 10.1016/j.jpag.2015.01.004. (Excluded for: Outcome)

The following table lists the articles excluded after full-text screening for the updated systematic review question (**Table A 8**). At least 1 reason for exclusion is provided for each article, though this may not reflect all possible reasons. Information about articles excluded after title and abstract screening is available upon request.

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* Raghavan R, Dreibelbis C, Kingshipp BJ, et al. Dietary Patterns before and during Pregnancy and Gestational Age- and Sex-Specific Birth Weight: A Systematic Review. April 2019. U.S. Department of Agriculture, Food and Nutrition Service, Center for Nutrition Policy and Promotion, Nutrition Evidence Systematic Review. Available at: https://doi.org/10.52570/NESR.PB242018.SR0104.

Table A 8. Articles excluded after full-text screening

	Citation	Rationale
1	Corrections..Chia A-R et al. A vegetable, fruit, and white rice dietary pattern during pregnancy is associated with a lower risk of preterm birth and larger birth size in a multiethnic Asian cohort: the Growing Up in Singapore Towards healthy Outcomes (GUSTO) cohort study. Am J Clin Nutr 2016. 104:1416–23. Am J Clin Nutr. 2018. 107:484-484. doi:10.1093/ajcn/nqx051.	Publication Status
2	Abdelhamid ER, Kamhawy AH, Gad MA, et al. Association between maternal nutrition and fetal developmental profile: Do leptin and adiponectin have a significant role? Current Pediatric Research. 2021. 25:862-874	Study Design; Intervention/Exposure
3	Abdou RM, El Hawary GS, Saab AA. Effect of gestational Mediterranean diet intervention on newborn fat mass and cord blood leptin level. Egyptian Pediatric Association Gazette. 2020. 68. doi:10.1186/s43054-020-00042-y.	Country
4	Abu-Saad K, Kaufman-Shriqui V, Freedman LS, et al. Preconceptional diet quality is associated with birth outcomes among low socioeconomic status minority women in a high-income country. Eur J Nutr. 2021. 60:65-77. doi:10.1007/s00394-020-02221-4.	Outcome
5	Acosta-Manzano P, Acosta FM, Coll-Risco I, et al. The Influence of Exercise, Lifestyle Behavior Components, and Physical Fitness on Maternal Weight Gain, Postpartum Weight Retention, and Excessive Gestational Weight Gain. Int J Sport Nutr Exerc Metab. 2022 Jul 12:1-14. doi: 10.1123/ijsnem.2021-0201.	Outcome; Comparator
6	Ainscough KM, Kennelly MA, Lindsay KL, et al. An observational analysis of meal patterns in overweight and obese pregnancy: exploring meal pattern behaviours and the association with maternal and fetal health measures. Ir J Med Sci. 2020. 189:585-594. doi:10.1007/s11845-019-02099-0.	Intervention/Exposure
7	Aji AS, Lipoeto NI, Yusrawati Y, et al. Impact of maternal dietary carbohydrate intake and vitamin D-related genetic risk score on birth length: the Vitamin D Pregnant Mother (VDPM) cohort study. BMC Pregnancy Childbirth. 2022 Sep 7. 22(1):690. doi: 10.1186/s12884-022-05020-3.	Intervention/Exposure
8	Alamolhoda SH, Asghari G, Mirabi P. Does trans fatty acid affect low birth weight? A randomised controlled trial. J Obstet Gynaecol. 2022. 42:1-7. doi:10.1080/01443615.2022.2080532.	Intervention/Exposure
9	Alamolhoda SH, Simbar M, Mirmiran P, et al. Effect of low trans-fatty acid intakes on preeclampsia: A randomized controlled trial. Journal of Research in Medical Sciences. 2020. 25. doi:10.4103/jrms.JRMS_149_19.	Intervention/Exposure; Outcome
10	Allehdan S, Basha A, Hyassat D, et al. Effectiveness of carbohydrate counting and Dietary Approach to Stop Hypertension dietary intervention on managing Gestational Diabetes Mellitus among pregnant women who used metformin: A randomized controlled clinical trial. Clinical Nutrition. 2022. 41:384-395. doi:10.1016/j.clnu.2021.11.039.	Intervention/Exposure; Health Status
11	Aminianfar A, Soltani S, Hajianfar H, et al. The association between dietary glycemic index and load and risk of gestational diabetes mellitus: A prospective study. Diabetes Research and Clinical Practice. 2020. 170. doi:10.1016/j.diabres.2020.108469.	Intervention/Exposure; Outcome
12	Anand SS, Gupta M, Teo KK, et al. Causes and consequences of gestational diabetes in South Asians living in Canada: results from a prospective cohort study. CMAJ Open. 2017. 5:E604-e611. doi:10.9778/cmajo.20170027.	Outcome; Comparator
13	Ancira-Moreno M, Vadillo-Ortega F, Rivera-Dommarco JÁ, et al. Gestational weight gain trajectories over pregnancy and their association with maternal diet quality: Results from the PRINCESA cohort. Nutrition. 2019. 65:158-166. doi:10.1016/j.nut.2019.02.002.	Outcome
14	Anelli GM, Parisi F, Sarno L, et al. Associations between Maternal Dietary Patterns, Biomarkers and Delivery Outcomes in Healthy Singleton Pregnancies: Multicenter Italian GIFt Study. Nutrients. 2022 Sep 2. 14(17):3631. doi: 10.3390/nu14173631.	Outcome
15	Angali KA, Shahri P, Borazjani F. Maternal dietary pattern in early pregnancy is associated with gestational weight gain and hyperglycemia: A cohort study in South West of Iran. Diabetes Metab Syndr. 2020. 14:1711-1717. doi:10.1016/j.dsx.2020.08.008.	Outcome
16	Ansu V, He K. Previous preterm birth and the risk of recurrent preterm birth..Chia A-R, de Seymour JV, Colega M, et al. A vegetable, fruit, and white rice dietary pattern during pregnancy is associated with a lower risk of preterm birth and larger birth size in a multiethnic Asian cohort: the Growing Up in Singapore Towards healthy Outcomes (GUSTO) cohort study. Am J Clin Nutr Nov 2016. 104(5):1416–23. Am J Clin Nutr. 2017. 105:1010-1011. doi:10.3945/ajcn.116.149674.	Publication Status
17	Araki S, Shani Levi C, Abutbul Vered S, et al. Pregnancy after bariatric surgery: Effects of personalized nutrition counseling on pregnancy outcomes. Clin Nutr. 2022. 41:288-297. doi:10.1016/j.clnu.2021.11.035.	Comparator
18	Assaf-Balut C, de la Torre NG, Fuentes M, et al. A high adherence to six food targets of the mediterranean diet in the late first trimester is associated with a reduction in the risk of materno-foetal outcomes: The st. carlos gestational diabetes mellitus prevention study. Nutrients. 2019. 11. doi:10.3390/nu11010066.	Confounders

	Citation	Rationale
19	Assaf-Balut C, Garcia de la Torre N, Bordiu E, et al. Consumption of fat-free dairy products is not associated with a lower risk of maternofetal adverse events. BMJ Open Diabetes Res Care. 2020. 8. doi:10.1136/bmjdrc-2019-001145.	Intervention/Exposure
20	Assaf-Balut C, Garcia de la Torre N, Durán A, et al. Medical nutrition therapy for gestational diabetes mellitus based on Mediterranean Diet principles: a subanalysis of the St Carlos GDM Prevention Study. BMJ Open Diabetes Res Care. 2018. 6:e000550. doi:10.1136/bmjdrc-2018-000550.	Intervention/Exposure; Comparator
21	Atkinson SA, Maran A, Dempsey K, et al. Be Healthy in Pregnancy (BHIP): A Randomized Controlled Trial of Nutrition and Exercise Intervention from Early Pregnancy to Achieve Recommended Gestational Weight Gain. Nutrients. 2022. 14. doi:10.3390/nu14040810.	Intervention/Exposure
22	Augustin H, Winkvist A, Bärebring L. Poor Dietary Quality is Associated with Low Adherence to Gestational Weight Gain Recommendations among Women in Sweden. Nutrients. 2020. 12. doi:10.3390/nu12020317.	Outcome
23	Avnon T, Paz Dubinsky E, Lavie I, et al. The impact of a vegan diet on pregnancy outcomes. J Perinatol. 2021. 41:1129-1133. doi:10.1038/s41372-020-00804-x.	Intervention/Exposure
24	Babili MG, Amerikanou C, Papada E, et al. The effect of prenatal maternal physical activity and lifestyle in perinatal outcome: results from a Greek study. Eur J Public Health. 2020. 30:328-332. doi:10.1093/eurpub/ckz223.	Study Design; Outcome
25	Badon SE, Miller RS, Qiu C, et al. Maternal healthy lifestyle during early pregnancy and offspring birthweight: differences by offspring sex. J Matern Fetal Neonatal Med. 2018. 31:1111-1117. doi:10.1080/14767058.2017.1309383.	Outcome
26	Barquiel B, Calvo M, Moreno-Dominguez O, et al. The PREDG study: A randomised controlled trial testing whether an educational intervention can prevent gestational weight gain in women with obesity. Clinical Nutrition ESPEN. 2023. 57:266. doi:10.1016/j.clnesp.2023.07.006.	Intervention/Exposure
27	Bédard A, Northstone K, John Henderson A, et al. Mediterranean diet during pregnancy and childhood respiratory and atopic outcomes: Birth cohort study. European Respiratory Journal. 2020. 55. doi:10.1183/13993003.01215-2019.	Life Stage; Confounders
28	Belfort GP, De Padilha PC, Farias DR, et al. Effect of the Dietary Approaches to Stop Hypertension (DASH) diet on the development of preeclampsia and metabolic outcomes in pregnant women with pre-existing diabetes mellitus: A randomised, controlled, single-blind trial. Journal of Nutritional Science. 2023. 12. doi:10.1017/jns.2023.54.	Health Status
29	Bodnar LM, Cartus AR, Kennedy EH, et al. Use of a Doubly Robust Machine-Learning-Based Approach to Evaluate Body Mass Index as a Modifier of the Association Between Fruit and Vegetable Intake and Preeclampsia. Am J Epidemiol. 2022 Jul 23. 191(8):1396-1406. doi: 10.1093/aje/kwac062.	Intervention/Exposure; Outcome
30	Bonakdar SA, Dorosty Motlagh AR, Bagherniya M, et al. Pre-pregnancy Body Mass Index and Maternal Nutrition in Relation to Infant Birth Size. Clin Nutr Res. 2019. 8:129-137. doi:10.7762/cnr.2019.8.2.129.	Study Design; Intervention/Exposure
31	Brei C, Stecher L, Meyer DM, et al. Impact of Dietary Macronutrient Intake during Early and Late Gestation on Offspring Body Composition at Birth, 1, 3, and 5 Years of Age. Nutrients. 2018. 10. doi:10.3390/nu10050579.	Intervention/Exposure
32	Bruno R, Petrella E, Bertarini V, et al. Adherence to a lifestyle programme in overweight/obese pregnant women and effect on gestational diabetes mellitus: a randomized controlled trial. Matern Child Nutr. 2017. 13. doi:10.1111/mcn.12333.	Intervention/Exposure
33	Brzozowska A, Podlecka D, Jankowska A, et al. Maternal diet during pregnancy and risk of allergic diseases in children up to 7–9 years old from Polish Mother and Child Cohort study. Environmental Research. 2022. 208. doi:10.1016/j.envres.2022.112682.	Outcome
34	Buckingham-Schutt LM, Ellingson LD, Vazou S, et al. The Behavioral Wellness in Pregnancy study: a randomized controlled trial of a multi-component intervention to promote appropriate weight gain. Am J Clin Nutr. 2019. 109:1071-1079. doi:10.1093/ajcn/nqy359.	Intervention/Exposure; Comparator
35	Buxton MA, Perng W, Tellez-Rojo MM, et al. Particulate matter exposure, dietary inflammatory index and preterm birth in Mexico city, Mexico. Environ Res. 2020. 189:109852. doi:10.1016/j.envres.2020.109852.	Intervention/Exposure
36	Call CC, Magee K, Conlon RPK, et al. Disordered eating during pregnancy among individuals participating in the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC). Eating Behaviors. 2023. 49. doi:10.1016/j.eatbeh.2023.101726.	Intervention/Exposure; Outcome
37	Calvo-Lerma J, Selma-Royo M, Hervas D, et al. Breast Milk Lipidome Is Associated With Maternal Diet and Infants' Growth. Front Nutr. 2022 Jul 6. 9:854786. doi: 10.3389/fnut.2022.854786. eCollection 2022.	Intervention/Exposure; Outcome
38	Cano-Ibáñez N, Martínez-Galiano JM, Luque-Fernández MA, et al. Maternal dietary patterns during pregnancy and their association with gestational weight gain and nutrient adequacy. International Journal of Environmental Research and Public Health. 2020. 17:1-13. doi:10.3390/ijerph17217908.	Study Design; Outcome

	Citation	Rationale
39	Carolan-Olah M, Sayakhot P. A randomized controlled trial of a web-based education intervention for women with gestational diabetes mellitus. Midwifery. 2019. 68:39-47. doi:10.1016/j.midw.2018.08.019.	Intervention/Exposure
40	Casas R, Castro-Barquero S, Crovetto F, et al. Maternal Dietary Inflammatory Index during Pregnancy Is Associated with Perinatal Outcomes: Results from the IMPACT BCN Trial. Nutrients. 2022. 14. doi:10.3390/nu14112284.	Intervention/Exposure
41	Charkamyani F, Khedmat L, Hosseinkhani A. Decreasing the main maternal and fetal complications in women undergoing in vitro fertilization (IVF) trained by nutrition and healthy eating practices during pregnancy. J Matern Fetal Neonatal Med. 2021. 34:1855-1867. doi:10.1080/14767058.2019.1651267.	Life Stage
42	Chen LW, Aubert AM, Shivappa N, et al. Maternal dietary quality, inflammatory potential and childhood adiposity: an individual participant data pooled analysis of seven European cohorts in the ALPHABET consortium. BMC Med. 2021. 19:33. doi:10.1186/s12916-021-01908-7.	Outcome
43	Chen LW, Fitzgerald R, Murrin CM, et al. Associations of maternal caffeine intake with birth outcomes: results from the Lifeways Cross Generation Cohort Study. Am J Clin Nutr. 2018. 108:1301-1308. doi:10.1093/ajcn/nqy219.	Intervention/Exposure
44	Chen Y, Qin Y, Zhang Z, et al. Association of the low-carbohydrate dietary pattern with postpartum weight retention in women. Food Funct. 2021. 12:10764-10772. doi:10.1039/d1fo00935d.	Study Design
45	Chia AR, de Seymour JV, Wong G, et al. Maternal plasma metabolic markers of neonatal adiposity and associated maternal characteristics: The GUSTO study. Sci Rep. 2020. 10:9422. doi:10.1038/s41598-020-66026-5.	Comparator
46	Coathup V, Northstone K, Gray R, et al. Dietary Patterns and Alcohol Consumption During Pregnancy: Secondary Analysis of Avon Longitudinal Study of Parents and Children. Alcoholism: Clinical and Experimental Research. 2017. 41:1120-1128. doi:10.1111/acer.13379.	Outcome
47	Cohen CC, Perng W, Sauder KA, et al. Maternal Diet Quality During Pregnancy and Offspring Hepatic Fat in Early Childhood: The Healthy Start Study. Journal of Nutrition. 2023. 153:1122. doi:10.1016/j.tjnut.2023.01.039.	Outcome
48	Comas Rovira M, Moreno Baró A, Burgaya Guiu N, et al. The influence of obesity and diet quality on fetal growth and perinatal outcome. Nutr Hosp. 2022 Sep 21. doi: 10.20960/nh.04076.	Confounders
49	Conradie C, Baumgartner J, Malan L, et al. A Priori and a Posteriori Dietary Patterns among Pregnant Women in Johannesburg, South Africa: The NuPED Study. Nutrients. 2021. 13. doi:10.3390/nu13020565.	Outcome; Comparator
50	Corsi Decenti E, Zambri F, Salvatore MA, et al. Dietary habits, lifestyle, and gestational diabetes in immigrant women: a survey in Northwestern Tuscany (Central Italy). Epidemiol Prev. 2022 Jul-Aug. 46(4):259-267. doi: 10.19191/EP22.4.A372.074.	Intervention/Exposure; Comparator
51	Costanza J, Camanni M, Ferrari MM, et al. Assessment of pregnancy dietary intake and association with maternal and neonatal outcomes. Pediatr Res. 2021. doi:10.1038/s41390-021-01665-6.	Study Design; Intervention/Exposure
52	Crovetto F, Nakaki A, Arranz A, et al. Effect of a Mediterranean Diet or Mindfulness-Based Stress Reduction During Pregnancy on Child Neurodevelopment: A Prespecified Analysis of the IMPACT BCN Randomized Clinical Trial. JAMA Netw Open. 2023 Aug 1. 6(8):e2330255. doi: 10.1001/jamanetworkopen.2023.30255.	Outcome; Data Overlap
53	Crovetto F, Crispi F, Gratacós E. Mediterranean Diet or Mindfulness-Based Stress Reduction and Prevention of Small-for-Gestational-Age Birth Weights in Newborns-Reply. JAMA: Journal of the American Medical Association. 2022. 327:1293-1294. doi:10.1001/jama.2022.2167.	Publication Status
54	Cui N, Li Y, Huang S, et al. Cholesterol-rich dietary pattern during early pregnancy and genetic variations of cholesterol metabolism genes in predicting gestational diabetes mellitus: a nested case-control study. American Journal of Clinical Nutrition. 2023. 118:966. doi:10.1016/j.ajcnut.2023.08.017.	Outcome
55	Cummings JR, Faith MS, Lipsky LM, Liu A, Mooney JT, Nansel TR. Prospective relations of maternal reward-related eating, pregnancy ultra-processed food intake and weight indicators, and feeding mode with infant appetitive traits. Int J Behav Nutr Phys Act. 2022 Aug 3. 19(1):100. doi: 10.1186/s12966-022-01334-9.	Intervention/Exposure; Outcome
56	da Mota Santana J, de Oliveira Queiroz VA, Pereira M, et al. Associations between Maternal Dietary Patterns and Infant Birth Weight in the NISAMI Cohort: A Structural Equation Modeling Analysis. Nutrients. 2021. 13. doi:10.3390/nu13114054.	Outcome
57	Dalfrà MG, Del Vescovo GG, Burlina S, et al. Celiac Disease and Pregnancy Outcomes in Patients with Gestational Diabetes Mellitus. Int J Endocrinol. 2020. 2020:5295290. doi:10.1155/2020/5295290.	Intervention/Exposure
58	Dalrymple KV, Vogel C, Godfrey KM, et al. Longitudinal dietary trajectories from preconception to mid-childhood in women and children in the Southampton Women's Survey and their relation to offspring adiposity: a group-based trajectory modelling approach. International Journal of Obesity. 2022. 46:758-766. doi:10.1038/s41366-021-01047-2.	Life Stage

	Citation	Rationale
59	Damen NA, Gillingham M, Hansen JG, et al. Maternal dietary fat intake during pregnancy and newborn body composition. Journal of Perinatology. 2021. 41:1007-1013. doi:10.1038/s41372-021-00922-0.	Intervention/Exposure
60	Dancause KN, Mutran D, Elgbeili G, et al. Dietary change mediates relationships between stress during pregnancy and infant head circumference measures: the QF2011 study. Maternal and Child Nutrition. 2017. 13. doi:10.1111/mcn.12359.	Outcome
61	de Almeida VAH, da Costa RA, Paganoti CF, et al. Diet quality indices and physical activity levels associated with adequacy of gestational weight gain in pregnant women with gestational diabetes mellitus. Nutrients. 2021. 13. doi:10.3390/nu13061842.	Outcome
62	De Giuseppe R, Bocchi M, Maffoni S, et al. Mediterranean Diet and Lifestyle Habits during Pregnancy: Is There an Association with Small for Gestational Age Infants? An Italian Single Centre Experience. Nutrients. 2021. 13. doi:10.3390/nu13061941.	Study Design
63	de Jersey S, Meloncelli N, Guthrie T, et al. Outcomes from a hybrid implementation-effectiveness study of the living well during pregnancy Tele-coaching program for women at high risk of excessive gestational weight gain. BMC Health Serv Res. 2022. 22:589. doi:10.1186/s12913-022-08002-5.	Outcome
64	de la Torre NG, Assaf-Balut C, Jiménez Varas I, et al. Effectiveness of Following Mediterranean Diet Recommendations in the Real World in the Incidence of Gestational Diabetes Mellitus (GDM) and Adverse Maternal-Foetal Outcomes: A Prospective, Universal, Interventional Study with a Single Group. The St Carlos Study. Nutrients. 2019. 11. doi:10.3390/nu11061210.	Intervention/Exposure; Comparator
65	de Lima MC, Santos IDS, Crivellenti LC, et al. A better quality of maternal dietary fat reduces the chance of large-for-gestational-age infants: A prospective cohort study. Nutrition. 2021. 91-92:111367. doi:10.1016/j.nut.2021.111367.	Intervention/Exposure
66	Dhana K, Haines J, Liu G, et al. Association between maternal adherence to healthy lifestyle practices and risk of obesity in offspring: results from two prospective cohort studies of mother-child pairs in the United States. Bmj. 2018. 362:k2486. doi:10.1136/bmj.k2486.	Life Stage
67	Dodd JM, Deussen AR, Peña AS, Mitchell M, Louise J. Effects of an antenatal dietary intervention in women with obesity or overweight on child outcomes at 8-10 years of age: LIMIT randomised trial follow-up. BMC Pediatr. 2023 Dec 19. 23(1):643. doi: 10.1186/s12887-023-04466-4.	Outcome; Life Stage
68	Dorise B, Byth K, McGee T, et al. A low intensity dietary intervention for reducing excessive gestational weight gain in an overweight and obese pregnant cohort. Eat Weight Disord. 2020. 25:257-263. doi:10.1007/s40519-018-0566-2.	Intervention/Exposure
69	Duran A. Meddiet at early gestation reduces gestational diabetes mellitus (GDM) incidence and adverse gestational and neonatal outcomes. Diabetes. 2017. 66:A387-.	Publication Status
70	El-Gamasy BSM, Hassan SA, Ghonemy GE, et al. Effect of Lifestyle Modification on Pregnancy Outcomes among Women with Gestational Diabetes: Quasi Randomized Controlled Trail (QRCT). NeuroQuantology. 2022. 20:6068. doi:10.14704/nq.2022.20.6.NQ22611.	Intervention/Exposure
71	Elvebakk T, Mostad IL, Mørkved S, et al. Dietary Intakes and Dietary Quality during Pregnancy in Women with and without Gestational Diabetes Mellitus-A Norwegian Longitudinal Study. Nutrients. 2018. 10. doi:10.3390/nu10111811.	Intervention/Exposure; Outcome
72	Englund-Ögge L, Birgisdottir BE, Sengpiel V, et al. Meal frequency patterns and glycemic properties of maternal diet in relation to preterm delivery: Results from a large prospective cohort study. PLoS ONE. 2017. 12. doi:10.1371/journal.pone.0172896.	Intervention/Exposure
73	Kennedy ET. A prenatal screening system for use in a community-based setting. Journal of the American Dietetic Association. 1986. 86:1372-5.	Confounders
74	Facchinetti F, Vijai V, Petrella E, et al. Food glycemic index changes in overweight/obese pregnant women enrolled in a lifestyle program: a randomized controlled trial. Am J Obstet Gynecol MFM. 2019. 1:100030. doi:10.1016/j.ajogmf.2019.100030.	Intervention/Exposure; Comparator
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81	Garay SM, Sumption LA, John RM. Prenatal health behaviours as predictors of human placental lactogen levels. Frontiers in Endocrinology. 2022. 13. doi:10.3389/fendo.2022.946539.	Study Design
82	Geiker NRW, Magkos F, Zingenberg H, et al. A high-protein low-glycemic index diet attenuates gestational weight gain in pregnant women with obesity: The "An optimized programming of healthy children" (APPROACH) randomized controlled trial. American Journal of Clinical Nutrition. 2022. 115:970-979. doi:10.1093/ajcn/nqab405.	Intervention/Exposure; Outcome
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102	Hezaveh ZS, Feizy Z, Dehghani F, et al. The association between maternal dietary protein intake and risk of gestational diabetes mellitus. International Journal of Preventive Medicine. 2019. 10. doi:10.4103/ijpvm.IJPVM_86_19.	Study Design
103	Hirko KA, Comstock SS, Strakovsky RS, et al. Diet during Pregnancy and Gestational Weight Gain in a Michigan Pregnancy Cohort. Curr Dev Nutr. 2020. 4:nzaa121. doi:10.1093/cdn/nzaa121.	Intervention/Exposure; Outcome
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105	Hoirisch-Clapauch S, Constan Werneck Sant'Anna M, Cinelli Couto Moreira E, et al. Lifestyle modification increases the take-home baby rate in women with recurrent early miscarriages: a randomised study. Thrombosis Research. 2017. 151:S104-.	Publication Status; Publication Date
106	Hu J, Gao M, Ma Y, et al. The Association between Dietary Patterns and Pre-Pregnancy BMI with Gestational Weight Gain: The "Born in Shenyang" Cohort. Nutrients. 2022 Jun 20. 14(12):2551. doi: 10.3390/nu14122551.	Outcome
107	Hu J, Aris IM, Lin PD, et al. Association of Maternal Dietary Patterns during Pregnancy and Offspring Weight Status across Infancy: Results from a Prospective Birth Cohort in China. Nutrients. 2021. 13. doi:10.3390/nu13062040.	Outcome
108	Hu J, Li L, Wan N, et al. Associations of Dietary Patterns during Pregnancy with Gestational Hypertension: The “Born in Shenyang” Cohort Study. Nutrients. 2022. 14. doi:10.3390/nu14204342.	Outcome
109	Hu Z, Tylavsky FA, Kocak M, et al. Effects of maternal dietary patterns during pregnancy on early childhood growth trajectories and obesity risk: The CANDLE study. Nutrients. 2020. 12. doi:10.3390/nu12020465.	Confounders
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112	Huvinen E, Koivusalo SB, Meinilä J, et al. Effects of a Lifestyle Intervention during Pregnancy and First Postpartum Year: Findings from the RADIEL Study. Journal of Clinical Endocrinology and Metabolism. 2018. 103:1669-1677. doi:10.1210/jc.2017-02477.	Outcome
113	Huynh DTT, Tran NT, Nguyen LT, et al. Maternal nutritional adequacy and gestational weight gain in vietnamese pregnant women. Annals of nutrition & metabolism. 2017. 71:629-. doi:10.1159/000480486.	Publication Status
114	Hyde NK, Brennan-Olsen SL, Wark JD, et al. Maternal Dietary Nutrient Intake During Pregnancy and Offspring Linear Growth and Bone: The Vitamin D in Pregnancy Cohort Study. Calcified Tissue International. 2017. 100:47-54. doi:10.1007/s00223-016-0199-2.	Intervention/Exposure; Outcome
115	Imai C, Takimoto H, Kurotani K, et al. Diet Quality and Its Relationship with Weight Characteristics in Pregnant Japanese Women: A Single-Center Birth Cohort Study. Nutrients. 2023 Apr 10. 15(8):1827. doi: 10.3390/nu15081827.	Intervention/Exposure; Outcome
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118	Ito M, Takamori A, Yoneda S, et al. Fermented foods and preterm birth risk from a prospective large cohort study: the Japan Environment and Children's study. Environ Health Prev Med. 2019. 24:25. doi:10.1186/s12199-019-0782-z.	Intervention/Exposure
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121	Jiang F, Li Y, Xu P, et al. The efficacy of the Dietary Approaches to Stop Hypertension diet with respect to improving pregnancy outcomes in women with hypertensive disorders. J Hum Nutr Diet. 2019. 32:713-718. doi:10.1111/jhn.12654.	Intervention/Exposure; Comparator

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123	Karimi T, Eini-Zinab H, Rezazadeh A, et al. Maternal dietary diversity and nutritional adequacy in relation with anthropometric measurements of newborns at birth: a cohort study in Tehran city. BMC Pediatr. 2022. 22:129. doi:10.1186/s12887-021-03102-3.	Outcome
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125	Kennedy RAK, Reynolds CME, Cawley S, et al. web-based dietary intervention in early pregnancy and neonatal outcomes: a randomized controlled trial. Journal of Public Health. 2019. 41:371-378. doi:10.1093/pubmed/fdy117.	Intervention/Exposure
126	Kennedy RAK, Reynolds CME, O'Malley EG, et al. Assessing maternal dietary quality in early pregnancy in the programming of intrauterine fetal growth. Acta Obstet Gynecol Scand. 2020. 99:510-517. doi:10.1111/aogs.13768.	Intervention/Exposure
127	Kennedy RAK, Turner MJ. Development of a novel Periconceptual Nutrition Score (PENS) to examine the relationship between maternal dietary quality and fetal growth. Early Hum Dev. 2019. 132:6-12. doi:10.1016/j.earlhumdev.2019.03.004.	Intervention/Exposure
128	Kesary Y, Avital K, Hiersch L. Maternal plant-based diet during gestation and pregnancy outcomes. Arch Gynecol Obstet. 2020. 302:887-898. doi:10.1007/s00404-020-05689-x.	Study Design
129	Kim MJ, Lim HS, Lee HH, et al. Dietary assessment, nutrition knowledge, and pregnancy outcome in high-risk pregnant Korean women. Clinical and Experimental Obstetrics and Gynecology. 2021. 48:1178-1185. doi:10.31083/j.ceog4805188.	Intervention/Exposure; Comparator
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131	Kunath J, Günther J, Rauh K, et al. Effects of a lifestyle intervention during pregnancy to prevent excessive gestational weight gain in routine care - the cluster-randomised GeliS trial. BMC Med. 2019. 17:5. doi:10.1186/s12916-018-1235-z.	Intervention/Exposure
132	Kyrkou C, Fotakis C, Dimitropoulou A, et al. Maternal Dietary Protein Patterns and Neonatal Anthropometrics: A Prospective Study with Insights from NMR Metabolomics in Amniotic Fluid. Metabolites. 2023 Aug 29. 13(9):977. doi: 10.3390/metabo13090977.	Outcome; Confounders
133	Lai JS, Soh SE, Colega M, et al. Macronutrient composition and food groups associated with gestational weight gain: the GUSTO study. European Journal of Nutrition. 2019. 58:1081-1094. doi:10.1007/s00394-018-1623-3.	Outcome
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137	Lecorguille M, Mcauliffe FM, Twomey PJ, et al. Maternal Glycaemic and Insulinemic Status and Newborn DNA Methylation: Findings in Women With Overweight and Obesity. Journal of Clinical Endocrinology and Metabolism. 2023. 108:85. doi:10.1210/clinem/dgac553.	Intervention/Exposure; Outcome
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139	Lee YQ, Lumbers ER, Schumacher TL, et al. Maternal Diet Influences Fetal Growth but Not Fetal Kidney Volume in an Australian Indigenous Pregnancy Cohort. Nutrients. 2021. 13. doi:10.3390/nu13020569.	Outcome
140	Li LJ, Aris IM, Han WM, et al. A Promising Food-Coaching Intervention Program to Achieve Optimal Gestational Weight Gain in Overweight and Obese Pregnant Women: Pilot Randomized Controlled Trial of a Smartphone App. JMIR Form Res. 2019. 3:e13013. doi:10.2196/13013.	Intervention/Exposure
141	Li N, Su X, Liu T, et al. Dietary patterns of Chinese puerperal women and their association with postpartum weight retention: Results from the mother-infant cohort study. Matern Child Nutr. 2021. 17:e13061. doi:10.1111/mcn.13061.	Study Design; Outcome
142	Li S, Liu D, Kang Y, et al. Associations of B Vitamin-Related Dietary Pattern during Pregnancy with Birth Outcomes: A Population-Based Study in Northwest China. Nutrients. 2022. 14. doi:10.3390/nu14030600.	Study Design

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144	Lipsky LM, Burger K, Cummings JR, Faith MS, Nansel TR. Associations of parent feeding behaviors and early life food exposures with early childhood appetitive traits in an observational cohort study. Physiol Behav. 2023 Mar 28:114175. doi: 10.1016/j.physbeh.2023.114175.	Intervention/Exposure; Outcome; Life Stage
145	Liu S-T, Lin C-C, Wei JC-C. Mediterranean Diet or Mindfulness-Based Stress Reduction and Prevention of Small-for-Gestational-Age Birth Weights in Newborns. JAMA: Journal of the American Medical Association. 2022. 327:1292-1293. doi:10.1001/jama.2022.2164.	Publication Status
146	Liu Y-H, Lu L-P, Yi M-H, et al. Study on the correlation between homocysteine-related dietary patterns and gestational diabetes mellitus:a reduced-rank regression analysis study. BMC Pregnancy and Childbirth. 2022. 22. doi:10.1186/s12884-022-04656-5.	Outcome
147	Liu Y-H, Zheng L, Cheng C, et al. Dietary inflammatory index, inflammation biomarkers and preeclampsia risk: A hospital-based case-control study. British Journal of Nutrition. 2023. 129:1528. doi:10.1017/S0007114522001489.	Study Design; Intervention/Exposure
148	Louise J, Poprzeczny AJ, Deussen AR, et al. The effects of dietary and lifestyle interventions among pregnant women with overweight or obesity on early childhood outcomes: an individual participant data meta-analysis from randomised trials. BMC Medicine. 2021. 19:1-15. doi:10.1186/s12916-021-01995-6.	Comparator
149	Ma L, Lu Q, Ouyang J, et al. How are maternal dietary patterns and maternal/fetal cytokines associated with birth weight? A path analysis. Br J Nutr. 2019. 121:1178-1187. doi:10.1017/s0007114519000382.	Outcome
150	Mackeen AD, Young AJ, Lutcher S, et al. Encouraging appropriate gestational weight gain in high-risk gravida: A randomized controlled trial. Obesity Science and Practice. 2022. 8:261. doi:10.1002/osp4.565.	Intervention/Exposure
151	Marchioro L, Hellmuth C, Uhl O, et al. Associations of maternal and fetal SCD-1 markers with infant anthropometry and maternal diet: Findings from the ROLO study. Clinical Nutrition. 2020. 39:2129-2136. doi:10.1016/j.clnu.2019.08.030.	Intervention/Exposure; Outcome
152	Maslin K, Venter C, Palumbo M, et al. Temporal change in maternal dietary intake during pregnancy and lactation between and within 2 pregnancy cohorts assembled in the United Kingdom. Journal of Allergy and Clinical Immunology: In Practice. 2020. 8:1088-1090.e5. doi:10.1016/j.jaip.2019.11.041.	Publication Status
153	Maugeri A, Barchitta M, Favara G, et al. Maternal dietary patterns are associated with pre-pregnancy body mass index and gestational weight gain: Results from the “mamma & bambino” cohort. Nutrients. 2019. 11. doi:10.3390/nu11061308.	Outcome; Confounders
154	Mazurkiewicz D, Bronkowska M. Circulating Insulin and IGF-1 and Frequency of Food Consumption during Pregnancy as Predictors of Birth Weight and Length. Nutrients. 2021. 13:2344-2344. doi:10.3390/nu13072344.	Intervention/Exposure
155	McCullough LE, Miller EE, Calderwood LE, et al. Maternal inflammatory diet and adverse pregnancy outcomes: Circulating cytokines and genomic imprinting as potential regulators?. Epigenetics. 2017. 12:688-697. doi:10.1080/15592294.2017.1347241.	Intervention/Exposure
156	McKenzie KM, Dissanayake HU, McMullan R, et al. Quantity and Quality of Carbohydrate Intake during Pregnancy, Newborn Body Fatness and Cardiac Autonomic Control: Conferred Cardiovascular Risk?. Nutrients. 2017. 9:1375. doi:10.3390/nu9121375.	Intervention/Exposure
157	Melero V, Arnoriaga M, Barabash A, et al. An Early Mediterranean-Based Nutritional Intervention during Pregnancy Reduces Metabolic Syndrome and Glucose Dysregulation Rates at 3 Years Postpartum. Nutrients. 2023. 15. doi:10.3390/nu15143252.	Outcome
158	Melero V, Assaf-Balut C, de la Torre NG, et al. Benefits of adhering to a mediterranean diet supplemented with extra virgin olive oil and pistachios in pregnancy on the health of offspring at 2 years of age. Results of the san carlos gestational diabetes mellitus prevention study. Journal of Clinical Medicine. 2020. 9. doi:10.3390/jcm9051454.	Data Overlap
159	Meng Q, Del Rosario I, Sung K, et al. Maternal dietary patterns and placental outcomes among pregnant women in Los Angeles. Placenta. 2023 Dec 5. 145:72-79. doi: 10.1016/j.placenta.2023.12.002.	Outcome
160	Menichini D, Petrella E, Dipace V, et al. The Impact of an Early Lifestyle Intervention on Pregnancy Outcomes in a Cohort of Insulin-Resistant Overweight and Obese Women. Nutrients. 2020. 12. doi:10.3390/nu12051496.	Intervention/Exposure; Comparator
161	Micali N, Al Essimii H, Field AE, et al. Pregnancy loss of control over eating: A longitudinal study of maternal and child outcomes. American Journal of Clinical Nutrition. 2018. 108:101-107. doi:10.1093/ajcn/nqy040.	Intervention/Exposure
162	Minato-Inokawa S, Hayashi I, Nirengi S, et al. Association of Dietary Change during Pregnancy with Large-for-Gestational Age Births: A Prospective Observational Study. J Nutr Sci Vitaminol (Tokyo). 2020. 66:246-254. doi:10.3177/jnsv.66.246.	Intervention/Exposure

	Citation	Rationale
163	Mitku AA, Zewotir T, North D, et al. The differential effect of maternal dietary patterns on quantiles of Birthweight. BMC Public Health. 2020. 20:976. doi:10.1186/s12889-020-09065-x.	Outcome
164	Mogensen CS, Zingenberg H, Svare J, et al. Gestational weight gain in women with pre-pregnancy overweight or obesity and anthropometry of infants at birth. Frontiers in Pediatrics. 2023. 11. doi:10.3389/fped.2023.1142920.	Intervention/Exposure
165	Monthé-Drèze C, Rifas-Shiman SL, Aris IM, et al. Maternal diet in pregnancy is associated with differences in child body mass index trajectories from birth to adolescence. Am J Clin Nutr. 2021. 113:895-904. doi:10.1093/ajcn/nqaa398.	Outcome
166	Morisaki N, Nagata C, Yasuo S, et al. Optimal protein intake during pregnancy for reducing the risk of fetal growth restriction: the Japan Environment and Children's Study. British Journal of Nutrition. 2018. 120:1432-1440. doi:10.1017/S000711451800291X.	Intervention/Exposure
167	Mughir HAAR, Jasim BS, Jassim RNKH. Maternal nutritional status and preterm birth. Medico-Legal Update. 2020. 20:747-751.	Intervention/Exposure
168	Munda A, Starčič Erjavec M, Molan K, et al. Association between pre-pregnancy body weight and dietary pattern with large-for-gestational-age infants in gestational diabetes. Diabetol Metab Syndr. 2019. 11:68. doi:10.1186/s13098-019-0463-5.	Health Status
169	Mustafa ST, Harding JE, Wall CR, et al. Adherence to Clinical Practice Guideline Recommendations in Women with Gestational Diabetes and Associations with Maternal and Infant Health—A Cohort Study. Nutrients. 2022. 14:1274. doi:10.3390/nu14061274.	Health Status
170	Myklebust-Hansen T, Aamodt G, Haugen M, et al. Dietary Patterns in women with Inflammatory Bowel Disease and Risk of Adverse Pregnancy Outcomes: Results from The Norwegian Mother and Child Cohort Study (MoBa). Inflamm Bowel Dis. 2017. 24:12-24. doi:10.1093/ibd/izx006.	Health Status
171	Naja F, Abdulmalik M, Ayoub J, Mahmoud A, Nasreddine L. Dietary patterns and their associations with postpartum weight retention: results of the MINA cohort study. Eur J Nutr. 2024 Jan 5. doi: 10.1007/s00394-023-03305-7.	Outcome
172	Nakaki A, Crovetto F, Urru A, et al. Effects of Mediterranean diet or mindfulness-based stress reduction on fetal and neonatal brain development: a secondary analysis of a randomized clinical trial. American Journal of Obstetrics and Gynecology MFM. 2023. 5. doi:10.1016/j.ajogmf.2023.101188.	Intervention/Exposure; Data Overlap
173	Nishihara N, Haruna M, Usui Y, et al. Dietary Intake and Its Association with Birth Outcomes in Women with Nausea and Vomiting during the Second Trimester of Pregnancy: A Prospective Cohort Study in Japan. Nutrients. 2023 Jul 29. 15(15):3383. doi: 10.3390/nu15153383.	Intervention/Exposure
174	O'Brien CM, Louise J, Deussen A, et al. In Overweight or Obese Pregnant Women, Maternal Dietary Factors are not Associated with Fetal Growth and Adiposity. Nutrients. 2018. 10. doi:10.3390/nu10070870.	Study Design; Outcome
175	Oostingh EC, de Vos I, Ham AC, et al. No independent associations between preconception paternal dietary patterns and embryonic growth. the Predict Study. Clin Nutr. 2019. 38:2333-2341. doi:10.1016/j.clnu.2018.10.011.	Outcome
176	Osredkar J, Geršak ŽM, Karas Kuželički N, et al. Association of Zn and Cu Levels in Cord Blood and Maternal Milk with Pregnancy Outcomes among the Slovenian Population. Nutrients. 2022. 14. doi:10.3390/nu14214667.	Intervention/Exposure
177	Pacyga DC, Talge NM, Gardiner JC, Calafat AM, Schantz SL, Strakovsky RS. Maternal diet quality moderates associations between parabens and birth outcomes. Environ Res. 2022 Aug 11:114078. doi: 10.1016/j.envres.2022.114078.	Outcome
178	Pacyga DC, Haggerty DK, Gennings C, et al. Interrogating Components of 2 Diet Quality Indices in Pregnancy using a Supervised Statistical Mixtures Approach. American Journal of Clinical Nutrition. 2023. 118:290. doi:10.1016/j.ajcnut.2023.05.020.	Outcome
179	Pan W, Karatela S, Lu Q, et al. Association of diet quality during pregnancy with maternal glucose metabolism in Chinese women. British Journal of Nutrition. 2023. 130:958. doi:10.1017/S0007114523000107.	Outcome
180	Papazian T, Salameh P, Abi Tayeh G, et al. Dietary patterns and birth outcomes of healthy Lebanese pregnant women. Front Nutr. 2022 Sep 27. 9:977288. doi: 10.3389/fnut.2022.977288. eCollection 2022.	Outcome
181	Parisi F, Rousian M, Huijgen NA, et al. Periconceptional maternal 'high fish and olive oil, low meat' dietary pattern is associated with increased embryonic growth: The Rotterdam Periconceptional Cohort (Predict) Study. Ultrasound in Obstetrics & Gynecology. 2017. 50:709-716. doi:10.1002/uog.17408.	Outcome
182	Parisi F, Rousian M, Koning IV, et al. Periconceptional maternal dairy-rich dietary pattern is associated with prenatal cerebellar growth. PLoS One. 2018. 13:e0197901. doi:10.1371/journal.pone.0197901.	Outcome
183	Parisi F, Rousian M, Steegers-Theunissen RPM, et al. Early first trimester maternal 'high fish and olive oil and low meat' dietary pattern is associated with accelerated human embryonic development. Eur J Clin Nutr. 2018. 72:1655-1662. doi:10.1038/s41430-018-0161-7.	Outcome

	Citation	Rationale
184	Parker HW, Tovar A, McCurdy K, et al. Associations between pre-pregnancy BMI, gestational weight gain, and prenatal diet quality in a national sample. PLoS One. 2019. 14:e0224034. doi:10.1371/journal.pone.0224034.	Outcome
185	Parlapani E, Agakidis C, Karagiozoglou-Lampoudi T, et al. The Mediterranean diet adherence by pregnant women delivering prematurely: association with size at birth and complications of prematurity. J Matern Fetal Neonatal Med. 2019. 32:1084-1091. doi:10.1080/14767058.2017.1399120.	Study Design
186	Paterson H, Treharne GJ, Horwath C, et al. Intuitive eating and gestational weight gain. Eating Behaviors. 2019. 34. doi:10.1016/j.eatbeh.2019.101311.	Intervention/Exposure
187	Pathirathna ML, Sekijima K, Sadakata M, et al. Impact of Second Trimester Maternal Dietary Intake on Gestational Weight Gain and Neonatal Birth Weight. Nutrients. 2017. 9. doi:10.3390/nu9060627.	Intervention/Exposure
188	Pauley AM, Hohman E, Savage JS, et al. Gestational Weight Gain Intervention Impacts Determinants of Healthy Eating and Exercise in Overweight/Obese Pregnant Women. J Obes. 2018. 2018:6469170. doi:10.1155/2018/6469170.	Intervention/Exposure
189	Pavlikova J, Ambroz A, Honkova K, et al. Maternal Diet Quality and the Health Status of Newborns. Foods. 2022 Dec 2. 11(23):3893. doi: 10.3390/foods11233893.	Intervention/Exposure; Outcome
190	Peacock A, Hutchinson D, Wilson J, et al. Adherence to the Caffeine Intake Guideline during Pregnancy and Birth Outcomes: A Prospective Cohort Study. Nutrients. 2018. 10:319. doi:10.3390/nu10030319.	Intervention/Exposure
191	Peacock L, Seed PT, Dalrymple KV, et al. The UK pregnancies better eating and activity trial (UPBEAT); pregnancy outcomes and health behaviours by obesity class. International Journal of Environmental Research and Public Health. 2020. 17:1-17. doi:10.3390/ijerph17134712.	Intervention/Exposure
192	Pellonperä O, Koivuniemi E, Vahlberg T, et al. Dietary quality influences body composition in overweight and obese pregnant women. Clinical Nutrition. 2019. 38:1613-1619. doi:10.1016/j.clnu.2018.08.029.	Outcome
193	Peraita-Costa I, Llopis-González A, Perales-Marín A, et al. Maternal profile according to Mediterranean diet adherence and small for gestational age and preterm newborn outcomes. Public Health Nutr. 2021. 24:1372-1384. doi:10.1017/s1368980019004993.	Study Design
194	Pereira-da-Silva L, Virella D. Which type of maternal dietary polyunsaturated fat affects fetal adiposity?. Kennedy RAK, Mullaney L, O'Higgins AC et al. The relationship between early pregnancy dietary intakes and subsequent birthweight and neonatal adiposity. Journal of Public Health, Dec2018. 40(4): 747-755. Journal of Public Health. 2020. 42:639-639. doi:10.1093/pubmed/fdz048.	Study Design; Publication Status
195	Petersen JM, Naimi AI, Kirkpatrick SI, et al. Equal Weighting of the Healthy Eating Index-2010 Components May not be Appropriate for Pregnancy. J Nutr. 2022. doi:10.1093/jn/nxac120.	Intervention/Exposure
196	Pradella F, Leimer B, Fruth A, Queißer-Wahrendorf A, van Ewijk RJ. Ramadan during pregnancy and neonatal health-Fasting, dietary composition and sleep patterns. PLoS One. 2023 Feb 15. 18(2):e0281051. doi: 10.1371/journal.pone.0281051. eCollection 2023.	Study Design; Intervention/Exposure
197	Probst Y, Sulistyoningrum DC, Netting MJ, et al. Estimated Choline Intakes and Dietary Sources of Choline in Pregnant Australian Women. Nutrients. 2022. 14. doi:10.3390/nu14183819.	Intervention/Exposure; Outcome
198	Przybysz P, Kruszewski A, Kacperczyk-Bartnik J, Romejko-Wolniewicz E. The Impact of Maternal Plant-Based Diet on Obstetric and Neonatal Outcomes-A Cross-Sectional Study. Nutrients. 2023 Nov 8. 15(22):4717. doi: 10.3390/nu15224717.	Study Design; Temporality
199	Qin R, Ding Y, Lu Q, et al. Associations of maternal dietary patterns during pregnancy and fetal intrauterine development. Front Nutr. 2022 Sep 15. 9:985665. doi: 10.3389/fnut.2022.985665. eCollection 2022.	Outcome
200	Raab R, Hoffmann J, Spies M, et al. Are pre- and early pregnancy lifestyle factors associated with the risk of preterm birth? A secondary cohort analysis of the cluster-randomised GeliS trial. BMC Pregnancy Childbirth. 2022. 22:230. doi:10.1186/s12884-022-04513-5.	Intervention/Exposure
201	Radwan H, Hashim M, Hasan H, et al. Adherence to the Mediterranean diet during pregnancy is associated with lower odds of excessive gestational weight gain and postpartum weight retention: results of the Mother-Infant Study Cohort. Br J Nutr. 2021. 1-12. doi:10.1017/s0007114521002762.	Outcome
202	Ramos-Levi A, Barabash A, Valerio J, et al. Genetic variants for prediction of gestational diabetes mellitus and modulation of susceptibility by a nutritional intervention based on a Mediterranean diet. Frontiers in Endocrinology. 2022. 13. doi:10.3389/fendo.2022.1036088.	Outcome
203	Rhee DK, Ji Y, Hong X, et al. Mediterranean-Style Diet and Birth Outcomes in an Urban, Multiethnic, and Low-Income US Population. Nutrients. 2021. 13. doi:10.3390/nu13041188.	Study Design
204	Roeren M, Kordowski A, Sina C, et al. Inadequate Choline Intake in Pregnant Women in Germany. Nutrients. 2022. 14. doi:10.3390/nu14224862.	Intervention/Exposure; Outcome
205	Rohatgi KW, Tinius RA, Cade WT, et al. Relationships between consumption of ultra-processed foods, gestational weight gain and neonatal outcomes in a sample of US pregnant women. PeerJ. 2017. 5:e4091. doi:10.7717/peerj.4091.	Intervention/Exposure; Outcome

	Citation	Rationale
206	Roumi Z, Djazayery A, Keshavarz SA. Association Between Infants Anthropometric Outcomes With Maternal AHEI-P and DII Scores. Clin Nutr Res. 2023 May 4. 12(2):116-125. doi: 10.7762/cnr.2023.12.2.116. eCollection 2023 Apr.	Outcome; Confounders
207	Ruggieri S, Drago G, Panunzi S, et al. The Influence of Sociodemographic Factors, Lifestyle, and Risk Perception on Dietary Patterns in Pregnant Women Living in Highly Contaminated Areas: Data from the NEHO Birth Cohort. Nutrients. 2022 Aug 25. 14(17):3489. doi: 10.3390/nu14173489.	Outcome
208	Salavati N, Vinke PC, Lewis F, et al. Offspring Birth Weight Is Associated with Specific Preconception Maternal Food Group Intake: Data from a Linked Population-Based Birth Cohort. Nutrients. 2020. 12. doi:10.3390/nu12103172.	Life Stage
209	Saldiva SRDM, De Arruda Neta ADCP, Teixeira JA, et al. Dietary Pattern Influences Gestational Weight Gain: Results from the ProcriAr Cohort Study-São Paulo, Brazil. Nutrients. 2022 Oct 21. 14(20):4428. doi: 10.3390/nu14204428.	Outcome
210	Sámano R, Martínez-Rojano H, Ortiz-Hernández L, et al. Dietary and Nutrient Intake, Eating Habits, and Its Association with Maternal Gestational Weight Gain and Offspring's Birth Weight in Pregnant Adolescents. Nutrients. 2022 Oct 28. 14(21):4545. doi: 10.3390/nu14214545.	Intervention/Exposure
211	Šarac J, Havaš Auguštin D, Šunić I, et al. Linking infant size and early growth with maternal lifestyle and breastfeeding - the first year of life in the CRIBS cohort. Ann Hum Biol. 2023 Feb. 50(1):332-340. doi: 10.1080/03014460.2023.2224058.	Outcome
212	Savage JS, Hohman EE, McNitt KM, et al. Uncontrolled Eating during Pregnancy Predicts Fetal Growth: the Healthy Mom Zone Trial. Nutrients. 2019. 11. doi:10.3390/nu11040899.	Intervention/Exposure
213	Scherer-Adami F, Dutra-Rosolen M, Schedler F, Carreno I, Alves MN. Nutritional status and dietary intake of pregnant women. Rev Salud Publica (Bogota). 2023 Feb 3. 22(1):27-33. doi: 10.15446/rsap.V22n1.72795.	Study Design; Intervention/Exposure; Outcome
214	Sen S, Rifas-Shiman SL, Shivappa N, et al. Dietary Inflammatory Potential during Pregnancy Is Associated with Lower Fetal Growth and Breastfeeding Failure: Results from Project Viva. Journal of Clinical Chiropractic Pediatrics. 2017. 16:1381-1381. doi:10.3945/jn.115.225581.	Intervention/Exposure
215	Shakeri M, Jafarirad S, Amani R, et al. A longitudinal study on the relationship between mother's personality trait and eating behaviors, food intake, maternal weight gain during pregnancy and neonatal birth weight. Nutrition Journal. 2020. 19. doi:10.1186/s12937-020-00584-2.	Intervention/Exposure
216	Shankar H, Kumar N, Sandhir R, et al. Association of dietary intake below recommendations and micronutrient deficiencies during pregnancy and low birthweight. J Perinat Med. 2019. 47:724-731. doi:10.1515/jpm-2019-0053.	Country
217	Sheynblyum M, Conlon RPK, Donofry SD, et al. Incorporating Skills for Managing Mood, Stress, and Sleep into a Gestational Weight Gain Intervention. Journal of Contemporary Psychotherapy. 2022. doi:10.1007/s10879-022-09577-0.	Outcome
218	Shokri-Mashhadi N, Khoshhali M, Heidari-Beni M, Kelishadi R. Association between maternal plasma total antioxidant capacity and dietary antioxidants intake with birth size outcomes. J Trop Pediatr. 2022 Dec 5. 69(1):fmac112. doi: 10.1093/tropej/fmac112.	Intervention/Exposure
219	Siega-Riz AM, Vladutiu CJ, Butera NM, et al. Preconception Diet Quality Is Associated with Birth Weight for Gestational Age Among Women in the Hispanic Community Health Study/Study of Latinos. J Acad Nutr Diet. 2021. 121:458-466. doi:10.1016/j.jand.2020.09.039.	Life Stage
220	Silva CFM, Saunders C, Peres W, et al. Effect of ultra-processed foods consumption on glycemic control and gestational weight gain in pregnant with pregestational diabetes mellitus using carbohydrate counting. PeerJ. 2021. 9. doi:10.7717/peerj.10514.	Intervention/Exposure; Health Status
221	Simmons D, Devlieger R, van Assche A, et al. Effect of Physical Activity and/or Healthy Eating on GDM Risk: the DALI Lifestyle Study. Journal of clinical endocrinology and metabolism. 2017. 102:903-913. doi:10.1210/jc.2016-3455.	Intervention/Exposure
222	Simões-Wüst AP, Moltó-Puigmartí C, Jansen EH, et al. Organic food consumption during pregnancy and its association with health-related characteristics: the KOALA Birth Cohort Study. Public Health Nutr. 2017. 20:2145-2156. doi:10.1017/s1368980017001215.	Intervention/Exposure
223	Simpson SA, Coulman E, Gallagher D, et al. Healthy eating and lifestyle in pregnancy (HELP): a cluster randomised trial to evaluate the effectiveness of a weight management intervention for pregnant women with obesity on weight at 12 months postpartum. Int J Obes (Lond). 2021. 45:1728-1739. doi:10.1038/s41366-021-00835-0.	Intervention/Exposure
224	Skreden M, Hillesund ER, Wills AK, et al. Adherence to the New Nordic Diet during pregnancy and subsequent maternal weight development: a study conducted in the Norwegian Mother and Child Cohort Study (MoBa). Br J Nutr. 2018. 119:1286-1294. doi:10.1017/s0007114518000776.	Outcome
225	Smit AJP, Hojeij B, Rousian M, et al. A high periconceptional maternal ultra-processed food consumption impairs embryonic growth: The Rotterdam periconceptional cohort. Clinical Nutrition. 2022. 41:1667. doi:10.1016/j.clnu.2022.06.006.	Intervention/Exposure; Outcome
226	Soares MM, Juvanhol LL, Ribeiro SAV, et al. Proinflammatory maternal diet and early weaning are associated with the inflammatory diet index of Brazilian children (6–12 mo): A pathway analysis. Nutrition. 2023. 105. doi:10.1016/j.nut.2022.111845.	Study Design; Intervention/Exposure

	Citation	Rationale
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228	Spies HC, Nel M, Walsh CM. Adherence to the Mediterranean Diet of Pregnant Women in Central South Africa: The NuEMI Study. Nutr Metab Insights. 2022 Jun 24. 15:11786388221107801. doi: 10.1177/11786388221107801. eCollection 2022.	Outcome
229	Starling AP, Sauder KA, Kaar JL, et al. Maternal Dietary Patterns during Pregnancy Are Associated with Newborn Body Composition. J Nutr. 2017. 147:1334-1339. doi:10.3945/jn.117.248948.	Confounders
230	Strohmaier S, Bogl LH, Eliassen AH, et al. Maternal healthful dietary patterns during peripregnancy and long-term overweight risk in their offspring. Eur J Epidemiol. 2020. 35:283-293. doi:10.1007/s10654-020-00621-8.	Study Design
231	Tahir MJ, Haapala JL, Foster LP, et al. Higher Maternal Diet Quality during Pregnancy and Lactation Is Associated with Lower Infant Weight-For-Length, Body Fat Percent, and Fat Mass in Early Postnatal Life. Nutrients. 2019. 11. doi:10.3390/nu11030632.	Confounders
232	Tajirika-Shirai R, Takimoto H, Yokoyama T, et al. Effect of individualised dietary education at medical check-ups on maternal and fetal outcomes in pregnant Japanese women. Asia Pac J Clin Nutr. 2018. 27:607-616. doi:10.6133/apjcn.082017.01.	Intervention/Exposure
233	Tanner H, Barrett HL, Callaway LK, et al. Consumption of a Low Carbohydrate Diet in Overweight or Obese Pregnant Women Is Associated with Longer Gestation of Pregnancy. Nutrients. 2021. 13:3511-3511. doi:10.3390/nu13103511.	Intervention/Exposure
234	Taylor CM, Doerner R, Northstone K, et al. Maternal diet during pregnancy and blood cadmium concentrations in an observational cohort of british women. Nutrients. 2020. 12. doi:10.3390/nu12040904.	Outcome
235	Teo SM, Murrin CM, Mehegan J, et al. Associations between maternal dietary scores during early pregnancy with placental outcomes. Front Nutr. 2023 Feb 8. 10:1060709. doi: 10.3389/fnut.2023.1060709. eCollection 2023.	Outcome
236	Teruel Camargo J, Taylor MK, Gajewski BJ, Carlson SE, Sullivan DK, Gibbs HD. Higher Diet Quality in Latina Women during Pregnancy May Be Associated with Sociodemographic Factors. Int J Environ Res Public Health. 2022 Oct 26. 19(21):13895. doi: 10.3390/ijerph192113895.	Outcome
237	Timmermans S, Steegers-Theunissen RP, Vujkovic M, et al. The Mediterranean diet and fetal size parameters: the Generation R Study. Br J Nutr. 2012. 108.	Outcome
238	Tomaino L, Reyes Suárez D, Reyes Domínguez A, et al. Adherence to Mediterranean diet is not associated with birthweight - Results form a sample of Canarian pregnant women. Nutr Hosp. 2020. 37:86-92. doi:10.20960/nh.02780.	Study Design
239	Trak-Fellermeier MA, Campos M, Meléndez M, et al. PEARLS randomized lifestyle trial in pregnant Hispanic women with overweight/obesity: gestational weight gain and offspring birthweight. Diabetes Metab Syndr Obes. 2019. 12:225-238. doi:10.2147/dmso.S179009.	Intervention/Exposure
240	van Zundert S, van der Padt S, Willemsen S, et al. Periconceptional Maternal Protein Intake from Animal and Plant Sources and the Impact on Early and Late Prenatal Growth and Birthweight: The Rotterdam Periconceptional Cohort. Nutrients. 2022. 14. doi:10.3390/nu14245309.	Intervention/Exposure
241	Vestgaard M, Christensen A, Viggers L, et al. Birth weight and its relation with medical nutrition therapy in gestational diabetes. Archives of Gynecology & Obstetrics. 2017. 296:35-41. doi:10.1007/s00404-017-4396-7.	Outcome
242	Vulin M, Magušić L, Metzger A-M, et al. Sodium-to-Potassium Ratio as an Indicator of Diet Quality in Healthy Pregnant Women. Nutrients. 2022. 14. doi:10.3390/nu14235052.	Study Design; Intervention/Exposure
243	Wahi G, Wilson J, Burning M, et al. Impact of Maternal Health Behaviours and Social Conditions on Infant Diet at Age 1-Year: Results from a Prospective Indigenous Birth Cohort in Ontario, Canada. Nutrients. 2022. 14. doi:10.3390/nu14091736.	Outcome
244	Wang XY, Zhao P, Frolova A, et al. Diet Quality in Pregnancy and the Risk of Fetal Growth Restriction. American Journal of Obstetrics & Gynecology. 2022. 226:S21-S22. doi:10.1016/j.ajog.2021.11.081.	Publication Status
245	Wei Q, Shi H, Ma X, et al. The impact of maternal stress on offspring birth weight and the mediating effect of dietary patterns: the Shanghai Maternal-Child Pairs Cohort study. J Affect Disord. 2021. 278:643-649. doi:10.1016/j.jad.2020.09.077.	Outcome
246	Whyte K, Contento I, Wolf R, et al. A Secondary Analysis of Maternal Ultra-Processed Food Intake in Women with Overweight or Obesity and Associations with Gestational Weight Gain and Neonatal Body Composition Outcomes. J Mother Child. 2022. doi:10.34763/jmotherandchild.20212504.d-21-00025.	Outcome
247	Wiertsema CJ, Mensink-Bout SM, Duijts L, et al. Associations of DASH Diet in Pregnancy With Blood Pressure Patterns, Placental Hemodynamics, and Gestational Hypertensive Disorders. J Am Heart Assoc. 2021. 10:e017503. doi:10.1161/jaha.120.017503.	Outcome

	Citation	Rationale
248	Wilcox S, Liu J, Turner-McGrievy GM, Boutté AK, Wingard E. Effects of a behavioral intervention on physical activity, diet, and health-related quality of life in pregnant women with elevated weight: results of the HIPP randomized controlled trial. Int J Behav Nutr Phys Act. 2022 Dec 9. 19(1):145. doi: 10.1186/s12966-022-01387-w.	Intervention/Exposure; Outcome
249	Wilcox S, Liu J, Addy CL, et al. A randomized controlled trial to prevent excessive gestational weight gain and promote postpartum weight loss in overweight and obese women: Health In Pregnancy and Postpartum (HIPP). Contemporary Clinical Trials. 2018. 66:51-63. doi:10.1016/j.cct.2018.01.008.	Outcome; Publication Status
250	Wrottesley SV, Ong KK, Pisa PT, et al. Maternal traditional dietary pattern and antiretroviral treatment exposure are associated with neonatal size and adiposity in urban, black South Africans. Br J Nutr. 2018. 120:557-566. doi:10.1017/s0007114518001708.	Outcome
251	Wrottesley SV, Prioreschi A, Kehoe SH, et al. A maternal "mixed, high sugar" dietary pattern is associated with fetal growth. Matern Child Nutr. 2020. 16:e12912. doi:10.1111/mcn.12912.	Outcome
252	Wu W, Tang N, Zeng J, et al. Dietary Protein Patterns during Pregnancy Are Associated with Risk of Gestational Diabetes Mellitus in Chinese Pregnant Women. Nutrients. 2022. 14. doi:10.3390/nu14081623.	Outcome
253	Yamada P, Paetow A, Chan M, et al. Pregnancy outcomes with differences in grain consumption: a randomized controlled trial. Journal of Perinatal Medicine. 2022. 50:411-418. doi:10.1515/jpm-2021-0479.	Intervention/Exposure
254	Yang W, Han N, Jiao M, et al. Maternal diet quality during pregnancy and its influence on low birth weight and small for gestational age: a birth cohort in Beijing, China. Br J Nutr. 2022. 7:1-34. doi:10.1017/s0007114522000708.	Intervention/Exposure
255	Yildizli F, Bulduk EO, Bulduk S, et al. Effects of nutrition education on adipocytokines levels in cord blood at birth. Progress in nutrition. 2018. 20:30-37. doi:10.23751/pn.v20i1.6377.	Intervention/Exposure; Comparator
256	Yisahak SF, Hinkle SN, Mumford SL, et al. Vegetarian diets during pregnancy, and maternal and neonatal outcomes. Int J Epidemiol. 2021. 50:165-178. doi:10.1093/ije/dyaa200.	Intervention/Exposure
257	Yong HY, Mohd Shariff Z, Mohd Yusof BN, et al. Pre-Pregnancy BMI Influences the Association of Dietary Quality and Gestational Weight Gain: The SECOST Study. Int J Environ Res Public Health. 2019. 16. doi:10.3390/ijerph16193735.	Outcome
258	Yoshimura M, Fujita M, Shibata A, et al. Association of Eicosapentaenoic and Docosahexaenoic Acid Intake with Low Birth Weight in the Second Trimester: The Japan Pregnancy Eating and Activity Cohort Study. Nutrients. 2023. 15. doi:10.3390/nu15224831.	Intervention/Exposure
259	Zambrano E, Nathanielsz PW. Relative contributions of maternal Western-type high fat, high sugar diets and maternal obesity to altered metabolic function in pregnancy. Journal of Physiology. 2017. 595:4573-4574. doi:10.1113/JP274392.	Study Design
260	Zhang B, Xu K, Mi B, et al. Maternal Dietary Inflammatory Potential and Offspring Birth Outcomes in a Chinese Population. J Nutr. 2023 May. 153(5):1512-1523. doi: 10.1016/j.tjnut.2023.03.006. Epub 2023 Apr 4.	Study Design; Temporality
261	Zhao R, Gao Q, Xiong T, et al. Moderate Freshwater Fish Intake, but Not n-3 Polyunsaturated Fatty Acids, Is Associated with a Reduced Risk of Small for Gestational Age in a Prospective Cohort of Chinese Pregnant Women. Journal of the Academy of Nutrition & Dietetics. 2022. 122:722-722. doi:10.1016/j.jand.2021.10.016.	Intervention/Exposure
262	Zhu Y. Are you what you eat? Through the lens of prepregnancy plant-based diets and risk of gestational diabetes. Am J Clin Nutr. 2021 Dec 1. 114(6):1892-1893. doi: 10.1093/ajcn/nqab334.	Study Design
263	Zhu Y, Olsen SF, Mendola P, et al. Maternal consumption of artificially sweetened beverages during pregnancy, and offspring growth through 7 years of age: a prospective cohort study. Int J Epidemiol. 2017. 46:1499-1508. doi:10.1093/ije/dyx095.	Intervention/Exposure
264	Zulyniak MA, de Souza RJ, Shaikh M, et al. Does the impact of a plant-based diet during pregnancy on birthweight differ by ethnicity?. Proceedings of the Nutrition Society. 2018. 77:1-1. doi:10.1017/S0029665118001362.	Study Design; Publication Status
265	Zulyniak MA, de Souza RJ, Shaikh M, et al. Ethnic differences in maternal diet in pregnancy and infant eczema. PLoS ONE. 2020. 15. doi:10.1371/journal.pone.0232170.	Outcome

Appendix 6: Dietary pattern visualization

The Committee's synthesis was facilitated by a data visualization table that presented the dietary pattern components in each of the dietary patterns examined in the body of evidence (**Table A 9**). During evidence synthesis, these tables were used in conjunction with other materials to compare and contrast the components in the dietary patterns studied along with the direction, magnitude, and statistical significance of reported results. Detailed information about the synthesized body of evidence, including study and population characteristics, reported results for all relevant outcomes, key confounders accounted for, and funding sources, are summarized in the evidence tables of this report (**Table 5** and **Table 8**).

Each column represents the most commonly reported foods/food groups or nutrients across dietary patterns in this body of evidence. Two additional columns, "Other A" and "Other B", captured a variety of other components less frequently reported across dietary patterns that did not fit into one of the preceding columns or categories, such as fast food, ready-to-eat dishes, and pizza. Empty cells mean that the dietary pattern did not include a component within that column/category.

Table A 9. Visualization of dietary pattern components organized by approach across evidence examining the relationship between dietary patterns consumed during pregnancy and birth weight*†

Article; Dietary pattern	Vegetables	Legumes	Fruit	Fruit Juice	Nuts, Seeds	Grains	Grains: Whole	Grains: Refined	Fish, Seafood	Meats: Red, Processed	Meats: Lean, Poultry	Eggs	Dairy	Dairy: Low, Non-fat	Dairy: Whole, High-fat	SSB	Sugary Foods	Fats	Fats: Unsaturated, Oils	Fats: Saturated	Alcohol	Tea and Coffee	Sodium	Other Nutrients	Other A	Other B
RCT																										
Al Wattar, 2019[51]; Mediterranean-style diet	▲	▲	▲	Fr	▲ N				▲	▼ RP	▲ W:R					▼	▼		▲ OO	▼						
Assaf-Balut, 2017[52]; Mediterranean-style DP supplemented w/ pistachios and EVOO	▲	▲	▲	Fr	▲ N				▲	▼ RP	▲ W:R					▼	▼		▲ OO	▼	▲ Wi					
Assaf-Balut, 2019[53]; Mediterranean-style DP supplemented w/ pistachios and EVOO	▲	▲	▲	Fr	▲ N				▲	▼ RP	▲ W:R					▼	▼		▲ OO	▼	▲ Wi					
Crovetto, 2021[54]; Mediterranean-style diet supplemented w/ walnuts and EVOO	▲	▲	▲		▲ N		▲	▼	▲ F	▼ RP	▲ W		▲			▼	▼		▲ OO	▼						
Dodd, 2019[55]; Lifestyle intervention with dietary advice consistent with Australian dietary standards	▲		▲										▲													
Gallagher, 2018[56]; Lifestyle intervention with higher HEI-2010 alignment	▲	▲ pro	▲	Fr	pro		▲	▼	▲ S	pro	pro	pro	▲			▼ AS	AS		▲ FA	▼ Solid fats	▼		▼			

* ▲ Positively-scored component, reflecting higher intake within the food category as part of the pattern; ▼ Negatively-scored component, reflecting lower intake within the food category as part of the pattern; ◄ Neutral component, reflecting moderate (in contrast to higher or lower) intake within the food category as part of the pattern.

† Abbreviations: AHEI, Alternative Healthy Eating Index; AHEI-P, Alternative Healthy Eating Index Pregnancy; aMed, Alternative Mediterranean Diet; AS, added sugar; C, coffee; Ca, calcium; DASH, Dietary Approaches to Stop Hypertension; DASH OMNI, DASH Optimal Macronutrient Intake; DP, dietary pattern; EVOO, extra-virgin olive oil; F, fish; FA, fatty acids; Fe, iron; FIGO, International Federation of Gynecology and Obstetrics; Fr, included with Fruit component; HEI, Healthy Eating Index; IQDAG, Diet Quality Index Adapted for Pregnant Women; L, legumes; M, meat; MDQS, Maternal Diet Quality Score; MedDiet, Mediterranean Diet; MUFA, monounsaturated fatty acids; MUFA:SFA, monounsaturated fatty acid-to-saturated fatty acid ratio; MUFA + PUFA:SFA, monounsaturated fatty acid plus polyunsaturated fatty acid-to-saturated fatty acid ratio; N, nuts; n-3, omega-3; NFFD, Norwegian Fit for Delivery; NRCT, nonrandomized controlled trial; OO, olive oil; P, processed meat; PLS, partial least squares; pro, protein food component; PUFA, polyunsaturated fatty acids; PUFA:SFA, polyunsaturated fatty acid-to-saturated fatty acid ratio; R, red meat; RCT, randomized controlled trial; RRR, reduced rank regression; S, seafood; Se, seeds; SFA, saturated fatty acids; SSB, sugar-sweetened beverage; UFA, unsaturated fatty acid; Vit, vitamin; w/, with; W, white meat; W:R, white-to-red meat ratio; Wi, wine

Article; Dietary pattern	Vegetables	Legumes	Fruit	Fruit Juice	Nuts, Seeds	Grains	Grains: Whole	Grains: Refined	Fish, Seafood	Meats: Red, Processed	Meats: Lean, Poultry	Eggs	Dairy	Dairy: Low, Non-fat	Dairy: Whole, High-fat	SSB	Sugary Foods	Fats	Fats: Unsaturated, Oils	Fats: Saturated	Alcohol	Tea and Coffee	Sodium	Other Nutrients	Other A	Other B
Khoury, 2005[57]; Cholesterol-lowering diet advice	▲		▲		▲				▲ F	▼ M	▼ M				▼				▲	▼					▲	
Melero, 2020[58]; Mediterranean-style DP w/ recommended additional pistachios and EVOO	▲	▲			▲ N				▲ F	▼ RP	▲ W:R					▼	▼		▲ OO	▼						
Van Horn, 2018[59]; Calorie-controlled, DASH-type diet and lifestyle intervention	▲	▲	▲	Fr	▲ N		▲			▼ RP				▲		▼							▼			
Zhao, 2022[60]; Mediterranean-style DP w/ recommended additional pistachios and EVOO	▲	▲	▲	Fr	▲ N				▲	▼ RP	▲ W:R					▼	▼		▲ OO	▼	▲ Wi					
NRCT																										
Melero, 2020[58]; Mediterranean-style DP w/ recommended additional pistachios and EVOO	▲	▲			▲ N				▲ F	▼ RP	▲ W:R					▼	▼		▲ OO	▼						
Index/Score																										
Ancira-Morena, 2020[50]; MDQS	▲	▲	▲							▼ R				▲		▼ AS	AS		▲ PUFA							
Berube, 2023[3]; HEI-2015	▲	▲ pro	▲	Fr	pro		▲	▼	▲ S	pro	pro	pro	▲			▼ AS	AS		▲ FA	▼ SFA			▼			
Chatzi, 2012[5]; Mediterranean Diet	▲	▲	▲		▲ N	▲			▲	▼ M	M		▲						▲ MUFA:SFA	MUFA:SFA						
Chen, 2021[6]; ALPHABET DASH	▲	▲	▲		LNS	▲				▼ RP				▲		▼	▼						▼			
Díaz-López, 2022[9]; Relative MedDiet	▲	▲	▲			▲			▲ F	▼ M	M		▲						▲ OO		▼					
Emond, 2018[10]; AHEI-2010	▲	▲	▲		▲ N		▲			▼ RP						▼			▲ n-3 FA, PUFA	▼ *Trans* fat			▼			
Fulay, 2018[13]; DASH OMNI	▲	▲	▲	▲	▲ N		▲			▼ RP				▲		▼			▲ PUFA, MUFA				▼			
Fulay, 2018[13]; DASH	▲	▲	▲	▲	▲ N		▲			▼ RP				▲		▼							▼			

Article; Dietary pattern	**Vegetables**	**Legumes**	**Fruit**	**Fruit Juice**	**Nuts, Seeds**	**Grains**	**Grains: Whole**	**Grains: Refined**	**Fish, Seafood**	**Meats: Red, Processed**	**Meats: Lean, Poultry**	**Eggs**	**Dairy**	**Dairy: Low, Non-fat**	**Dairy: Whole, High-fat**	**SSB**	**Sugary Foods**	**Fats**	**Fats: Unsaturated, Oils**	**Fats: Saturated**	**Alcohol**	**Tea and Coffee**	**Sodium**	**Other Nutrients**	**Other A**	**Other B**
Gonzalez-Nahm, 2019[14]; AHEI-2010	▲	▲	▲		▲ N		▲			▼ RP						▼			▲ n-3 FA, PUFA	▼ *Trans* fat			▼			
Hillesund, 2014[17]; New Nordic Diet	▲		▲	▼			▲	▼	◄ F	◄	◄		▲			▼									▲	
Hillesund, 2018[18]; NFFD Diet	▲		▲													▼ AS	AS						▼		▲	▼
Hrolfsdottir, 2019[19]; Dietary Risk Score	◄	▼	▼		▼		▼		▼ F	▲ P			◄			▲	▲		▲ Other UFA sources rather than oil	▲				▼ Vit D	▲	
Lipsky, 2023[24]; HEI-2015	▲	▲ pro	▲	Fr	pro		▲	▼	▲ S	pro	pro	pro	▲			▼ AS	AS		▲ FA	▼ SFA			▼			
Makarem, 2022[26]; aMED	▲	▲	▲		▲ N		▲		▲ F	▼ RP									▲ MUFA:SFA	MUFA:SFA	◄					
Navarro, 2019[31]; HEI-2015	▲	▲	▲	Fr			▲	▼	▲ S	▲ pro	pro		▲			▼ AS	AS		▲ PUFA + MUFA:SFA	▼ SFA						
Navarro, 2020[30]; HEI-2015	▲	▲	▲	Fr			▲	▼	▲ S	▲ pro	pro		▲			▼ AS	AS		▲ PUFA + MUFA:SFA	▼ SFA						
Okubo, 2023[33]; Balanced Diet Score	▲		▲			▲			▲ F	▲ M	M		▲								▼		▼		▼	
Parisi, 2020[35]; FIGO	▲		▲				▲		▲ F	▲ M	M		▲				▼						▲	▲ Folic acid	▲	▼
Poon, 2013[36]; aMED	▲	▲	▲		▲ N		▲		▲ F	▼ RP									▲ MUFA:SFA	MUFA:SFA						
Poon, 2013[36]; AHEI-P	▲	▲	▲		▲ N		▲			▼ RP						▼			▲ n-3 FA, PUFA	▼ *Trans* fat			▼	▲ Ca, Fe, Folate		
Reyes-López, 2021[37]; AHEI-2010 for Pregnancy	▲	▲	▲	▼	▲ N		▲		▲ F	▼ RP						▼			▲ PUFA	▼ *Trans* fat				▲ Ca, Fe, Folate		
Rifas-Shiman, 2009[38]; AHEI-P	▲		▲						▲ W:R	W:R	W:R								▲ PUFA:SFA	▼ *Trans* fat				▲ Ca, Fe, Folate	▲	

Article; Dietary pattern	**Vegetables**	**Legumes**	**Fruit**	**Fruit Juice**	**Nuts, Seeds**	**Grains**	**Grains: Whole**	**Grains: Refined**	**Fish, Seafood**	**Meats: Red, Processed**	**Meats: Lean, Poultry**	**Eggs**	**Dairy**	**Dairy: Low, Non-fat**	**Dairy: Whole, High-fat**	**SSB**	**Sugary Foods**	**Fats**	**Fats: Unsaturated, Oils**	**Fats: Saturated**	**Alcohol**	**Tea and Coffee**	**Sodium**	**Other Nutrients**	**Other A**	**Other B**
Rodriguez-Bernal, 2010[39]; AHEI-P	▲	▲	▲		LN				▲ W:R	W:R	W:R								▲ PUFA:SFA	▼ *Trans* fat				▲ Ca, Fe, Folate	▲	
Santos, 2021[40]; IQDAG	▲	▲	▲																▲ n-3 FA					▲ Ca, Fe, Folate	▲	▼
Sun, 2023[41]; Dietary Diversity Score	▲	▲	▲		▲	▲			▲ F	▲ M	M	▲	▲													
Xu, 2023[43]; Dietary Behavior Score	▲		▲							▼ P						▼									▼	
Xu, 2023[43]; Junk Food Score										▲ P						▲									▲	
Yee, 2020[45]; HEI-2010	▲	▲ pro	▲	Fr	pro		▲	▼	▲ S	pro	pro	pro	▲			▼ AS	AS		▲ FA	▼ Solid fats	▼		▼			
Yisahak, 2021[46]; AHEI-2010	▲	▲	▲		▲ N		▲			▼ RP						▼			▲ PUFA	▼ *Trans* fat			▼			
Yisahak, 2021[46]; DASH	▲	▲	▲		▲		▲			▼ RP				▲		▼							▼			
Yisahak, 2021[46]; aMed	▲	▲	▲		▲ N		▲		▲ F	▼ RP									▲ MUFA:SFA	MUFA:SFA						
Zhu, 2019[48]; HEI-2010	▲	▲ pro	▲	Fr	pro		▲	▼	▲ S	pro	pro	pro	▲			▼ AS	AS		▲ FA	▼ Solid fats			▼			
Factor/Cluster																										
Ancira-Morena, 2020[50]; Healthier	▲	▼	▲			▲					▲ W	▲		▲		▼	▼			▼						
Ancira-Morena, 2020[50]; Mixed	▲					▲				▲ RP	▼ W	▼				▲	▼		▼	▼					▲	
Barchitta, 2023[2]; Milk, pasta, white bread, shellfish, vegetable and olive oils, sweets, fruit juices, dipping sauces, salty snacks, fries	▲			▲		▲		▲	▲ S				▲				▲		▲				▲		▲	
Berube, 2023[3]; Western										▲ P						▲	▲						▲		▲	
Berube, 2023[3]; Fruits and vegetables	▲	▲	▲																						▲	

Article; Dietary pattern	Vegetables	Legumes	Fruit	Fruit Juice	Nuts, Seeds	Grains	Grains: Whole	Grains: Refined	Fish, Seafood	Meats: Red, Processed	Meats: Lean, Poultry	Eggs	Dairy	Dairy: Low, Non-fat	Dairy: Whole, High-fat	SSB	Sugary Foods	Fats	Fats: Unsaturated, Oils	Fats: Saturated	Alcohol	Tea and Coffee	Sodium	Other Nutrients	Other A	Other B
Bodnar, 2023[4]; High fruits, vegetables, whole grains, and plant proteins	▲	▲	▲		▲								▲					▲ Salad dressing				▲ C				
Bodnar, 2023[4]; Sandwiches and snacks					▲		▲	▲		▲	▲			▲	▲	▲	▲	▲ Salad dressing			▲	▲ C			▲	
Bodnar, 2023[4]; Beverages, refined grains, and mixed dishes	▲	▲		▲		▲				▲		▲		▲	▲		▲		▲						▲	
Chia, 2016[7]; Vegetable, fruit, and white rice	◄		▲		▲		▲	◄	▲ F	▲						▲										
Chia, 2016[7]; Seafood and noodle		▲				◄		▼	▲	▲ R															▲	▼
Chia, 2016[7]; Pasta, cheese, and processed meat	▲					▲				▲ P					▲											
de Seymour, 2022[8]; Fish, poultry, and vegetables-based	▲	▲	▲		▲ N	▲			▲	▲	▲	▲	▲												▲	
de Seymour, 2022[8]; Pasta, sweetened beverages, oils, and condiments-based						▲										▲		▲ Oils and condiments							▲	
Englund-Ogge, 2019[11]; High prudent	▲		▲		▲ N		▲	▼		▼ RP	▲														▲	▼
Englund-Ogge, 2019[11]; High traditional	▲								▲ F		▼			▲			▲	▲ Margarine							▲	▼
Flynn, 2016[12]; African/ Caribbean	▲		▲				▲	▲	▲ F	▲ R	▲ W															
Flynn, 2016[12]; Fruit and vegetable	▲	▲	▲										▲													
Flynn, 2016[12]; Processed	▲									▲ P						▲	▲								▲	
Flynn, 2016; Snacks															▲		▲									
Grieger, 2014[15]; High protein, fruit			▲				▲		▲ F	▲	▲															

Article; Dietary pattern	Vegetables	Legumes	Fruit	Fruit Juice	Nuts, Seeds	Grains	Grains: Whole	Grains: Refined	Fish, Seafood	Meats: Red, Processed	Meats: Lean, Poultry	Eggs	Dairy	Dairy: Low, Non-fat	Dairy: Whole, High-fat	SSB	Sugary Foods	Fats	Fats: Unsaturated, Oils	Fats: Saturated	Alcohol	Tea and Coffee	Sodium	Other Nutrients	Other A	Other B
Grieger, 2014[15]; High-fat/sugar/takeaway								▲								▲ AS	AS								▲	
Grieger, 2014[15]; Vegetarian-type	▲	▲					▲																			
Hajianfar, 2018[16]; Western	▲	▲	▲	▲	▲ N		▲	▼	▲ F	▲ P		▲			▲	▲	▲			▲		▲ C			▲	
Hajianfar, 2018[16]; Healthy	▲		▲		▲ N				▲ F	▲ R	▲	▲		▲					▲ Olives, marinades, and unsaturated fat							
Hajianfar, 2018[16]; Traditional	▲							▲								▲ AS	AS		▲ Olives and unsaturated fat			▲ T	▲		▲	
Knudsen, 2008[21]; Health conscious	▲		▲			▲			▲ F	▼	▲									▼					▲	
Knudsen, 2008[21]; Intermediate				▲										▲												
Li, 2021[23]; Beans-vegetables	▲	▲	▲																							
Li, 2021[23]; Fish-meat-eggs									▲ F	▲ R		▲														
Li, 2021[23]; Nuts-whole grains					▲ N		▲						▲													
Li, 2021[23]; Organ-poultry-seafood									▲ S	▲	▲															
Li, 2021[23]; Rice-wheat-fruits			▲			▲																				
Lu, 2016[25]; Varied	▲	▲				▲			▲	▲	▲		▲			▲	▲								▲	
Lu, 2016[25]; Dairy	▼												▲													
Lu, 2016[25]; Meats										▲ RP																

Article; Dietary pattern	Vegetables	Legumes	Fruit	Fruit Juice	Nuts, Seeds	Grains	Grains: Whole	Grains: Refined	Fish, Seafood	Meats: Red, Processed	Meats: Lean, Poultry	Eggs	Dairy	Dairy: Low, Non-fat	Dairy: Whole, High-fat	SSB	Sugary Foods	Fats	Fats: Unsaturated, Oils	Fats: Saturated	Alcohol	Tea and Coffee	Sodium	Other Nutrients	Other A	Other B
Lu, 2016[25]; Fruits, nuts, and Cantonese desserts			▲		▲ N												▲									
Lu, 2016[25]; Vegetables	▲																									
Maldonado, 2022[27]; Vegetables, oils, fruit	▲	▲	▲	▲	▲		▲	▼	▲ S	▲ RP	▲	▲	▲			▲ AS	AS		▲	▼ Solid fats						
Maldonado, 2022[27]; Solid fat, refined grain, cheese	◄	▲	▼	▲	▲		▼	▲	▲ S	▲ RP	▲	▲	◄			▲ AS	AS		▲	▲ Solid fats						
Miele, 2021[28]; Intermediate								▼									▼	▼ Fats							▼	
Miele, 2021[28]; Protein	▲	▲								▲		▲													▼	
Miele, 2021[28]; Vegetarian	▲		▲										▲													
Miele, 2021[28]; Obesogenic								▲									▲	▲ Fats							▲	
Mikeš, 2022[29]; Unhealthy	▲					▲			▲ F	▲	▲	▲				▲	▲								▲	
Mikeš, 2022[29]; Healthy/traditional	▲		▲	▲			▲	▲					▲				▲					▲ T				
Okubo, 2012[32]; Meat and eggs										▲ RP	▲	▲	▲							▲						
Okubo, 2012[32]; Wheat products				▲		▲										▲	▲									
Paknahad, 2019[34]; High carbohydrate-lower fat	▲	▲	▲			▲						▲		▲											▲	
Paknahad, 2019[34]; High carbohydrate-higher fat	▲	▲							▲ F						▲					▲					▲	
Teixeira, 2021[42]; Lentils, whole grains, and soups		▲	▲		LN		▲	▼		▲			▲		▲	▲	▲								▲	
Teixeira, 2021[42]; Snacks, sandwiches, sweets, and soft drinks	▲									▲ RP	▲	▲	◄			▲	▲				▲				▲	

Article; Dietary pattern	Vegetables	Legumes	Fruit	Fruit Juice	Nuts, Seeds	Grains	Grains: Whole	Grains: Refined	Fish, Seafood	Meats: Red, Processed	Meats: Lean, Poultry	Eggs	Dairy	Dairy: Low, Non-fat	Dairy: Whole, High-fat	SSB	Sugary Foods	Fats	Fats: Unsaturated, Oils	Fats: Saturated	Alcohol	Tea and Coffee	Sodium	Other Nutrients	Other A	Other B
Teixeira, 2021[42]; Seasoned vegetables and lean meats	▲		▲	▲				▲	▲ F		▲								▲ Oil for salad dressing				▲		▲	
Teixeira, 2021[42]; Sweetened juices, bread and butter, rice, and beans	▲	▲		▼				▲				▲	▲		▲	▲				▲	▼					
Yamashita, 2022[44]; Pattern 1 pre-early pregnancy	▲	▲	▲						▲				▼													
Yamashita, 2022[44]; Pattern 1 early-mid pregnancy	▲	▲	▲						▲				▼								▼					
Yamashita, 2022[44]; Pattern 2 pre-early pregnancy	▲					▼				▼ M	M	▲	▲													
Yamashita, 2022[44]; Pattern 2 early-mid pregnancy	▲	▲				▼				▼ M	M	▲	▲													
Yisahak, 2021[46]; Pattern 1	▲							▲		▲ R			▲													
Yisahak, 2021[46]; Pattern 2	▲								▲ S																	
Zhang, 2023[47]; Cereals-vegetables-fruits	▲		▲			▲																				
Zhang, 2023[47]; Vegetables-poultry-aquatic products	▲								▲	▲	▲															
Zhang, 2023[47]; Milk-meat-eggs										▲ R		▲	▲													
Zhang, 2023[47]; Nuts-aquatic products-snacks					▲ N	▲			▲			▲					▲								▲	
Zulyniak, 2017[49]; Plant-based	▲	▲					▲			▼ M	M		▲	▲								▲ T			▲	
Reduced-Rank Regression																										
Alves-Santos, 2019[1]; Fast food and candies	▼	▼				◄											▲								▲	▼

Article; Dietary pattern	Vegetables	Legumes	Fruit	Fruit Juice	Nuts, Seeds	Grains	Grains: Whole	Grains: Refined	Fish, Seafood	Meats: Red, Processed	Meats: Lean, Poultry	Eggs	Dairy	Dairy: Low, Non-fat	Dairy: Whole, High-fat	SSB	Sugary Foods	Fats	Fats: Unsaturated, Oils	Fats: Saturated	Alcohol	Tea and Coffee	Sodium	Other Nutrients	Other A	Other B
Alves-Santos, 2019[1]; Vegetables and dairy	▲	▲	▲	▲		▼			▲ F				▲			▼	▲									
Alves-Santos, 2019[1]; Beans, bread, and fat	◄	▲	▼	▼		◄			▼ F								▲	▲ Fats used as spreads								
Hwang, 2022[20]; Pattern 1	▲	▲	▲		▲ N	▲			▲ F	▲ M	M	▲	▲													
Hwang, 2022[20]; Pattern 2	▲							▼		▼	▼															
Hwang, 2022[20]; Pattern 3		▼				◄			▼ F				◄													
Lecorguillé, 2020[22]; Varied and balanced	▲					▲			▲ F	▲ M	M	▲		▲		▼	▼								▲	▼
Lecorguillé, 2020[22]; Vegetarian tendency	▲		▲			▲				▼ M	M														▲	
Lecorguillé, 2020[22]; Bread, starchy food			▼	▼		▲								▼		▼									▲	
Yamashita, 2022[44]; RRR pre-early pregnancy			▲			▲															▼				▼	
Yamashita, 2022[44]; RRR early-mid pregnancy			▲			▲							▲								▼				▼	
Other																										
Yamashita, 2022[44]; PLS pre-early pregnancy			▲			▲															▼				▼	
Yamashita, 2022[44]; PLS early-mid pregnancy	▲		▲			▲							▲													