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Dietary Patterns before and during Pregnancy and Gestational Age at Birth: A Systematic Review

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All TEC and NESR team members, Project leads, and FEG-TEC liaisons participated in establishing the research questions, analytic framework, and study inclusion and exclusion criteria. RR, CD, and YPW developed and conducted the literature search. RR, CD, and BLK screened search results, identified studies for inclusion, extracted data, and assessed risk of bias for included studies. BA, AB, LMB, AG, KR, AMSR, JSS, EES, JMS, and KOC reviewed and provided substantive feedback on all systematic review materials, including the synthesis of the body of evidence, conclusion statement, and grade of the strength of the evidence. RR prepared this report and EES, JMS, and KOC provided oversight. All authors critically reviewed and approved the final report. The authors declare no conflicts of interest.

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INTRODUCTION

This document describes a systematic review conducted to answer the following question: What is the relationship between dietary patterns before and during pregnancy and gestational age at birth? This systematic review was conducted as part of the Pregnancy and Birth to 24 Months (P/B-24) Project by USDA's Nutrition Evidence Systematic Review (NESR).

The purpose of the P/B-24 Project was to conduct a series of systematic reviews on diet and health for women who are pregnant and for infants and toddlers from birth to 24 months of age. This project was a joint initiative led by USDA and HHS, and USDA's NESR carried out all of the systematic reviews. A Federal Expert Group (FEG), a broadly representative group of Federal researchers and program leaders, also provided input throughout the P/B-24 Project. More information about the P/B-24 Project has been published[ii] and is available on the NESR website: https://nesr.usda.gov/project-specific-overview-pb-24-0.

NESR, formerly known as the Nutrition Evidence Library (NEL), specializes in conducting food- and nutrition-related systematic reviews using a rigorous, protocol-driven methodology. To conduct each P/B-24 systematic review, NESR's staff worked with a Technical Expert Collaborative (TEC), which is a group of 7–8 leading subject matter experts.

NESR's systematic review methodology involves developing and prioritizing systematic review questions, searching for and selecting studies, extracting and assessing the risk of bias of data from each included study, synthesizing the evidence, developing a conclusion statement, grading the evidence underlying the conclusion statement, and recommending future research. A detailed description of the methodology used in conducting systematic reviews for the P/B-24 Project has been published[iii] and is available on the NESR website: https://nesr.usda.gov/pb-24-project-methodology-0. In addition, starting on page 53, this document includes details about the methodology as it was applied to the systematic review described herein. An analytic framework that illustrates the overall scope of the question, including the population, the interventions and/or exposures, comparators, and outcomes of interest, is found on page 53. In addition, the literature search plan that was used to identify studies included in this systematic review is found on page 54.

[ii] Stoody EE, Spahn JM, Casavale KO. The Pregnancy and Birth to 24 Months Project: a series of systematic reviews on diet and health. *Am J Clin Nutr*. 2019;109(7):685S–97S. doi: 10.1093/ajcn/nqy372.

[iii] Obbagy JE, Spahn JM, Wong YP, Psota TL, Spill MK, Dreibelbis C, et al. Systematic review methodology used in the Pregnancy and Birth to 24 Months Project. *Am J Clin Nutr*. 2019;109(7):698S–704S. doi: 10.1093/ajcn/nqy226.

List of abbreviations

Abbreviation	Full name
FEG	Federal Expert Group
HHS	Department of Health and Human Services
NEL	Nutrition Evidence Library
NESR	Nutrition Evidence Systematic Review
P/B-24	Pregnancy and Birth to 24 Months Project
TEC	Technical Expert Collaborative
USDA	United States Department of Agriculture

WHAT IS THE RELATIONSHIP BETWEEN DIETARY PATTERNS BEFORE AND DURING PREGNANCY AND GESTATIONAL AGE AT BIRTH?

PLAIN LANGUAGE SUMMARY

What is the question?

- The question is: What is the relationship between dietary patterns before and during pregnancy and gestational age at birth?

What is the answer to the question?

- Limited but consistent evidence suggests that certain dietary patterns <u>during</u> pregnancy are associated with a lower risk of preterm birth and spontaneous preterm birth. These protective dietary patterns are:
    - higher in vegetables; fruits; whole grains; nuts, legumes and seeds; and seafood (preterm birth, only), and
    - lower in red and processed meats and fried foods.

  Most of the research was conducted in healthy, Caucasian women with access to health care.
- Evidence is insufficient to estimate the association between dietary patterns <u>before</u> pregnancy and gestational age at birth as well as the risk of preterm birth.

Why was this question asked?

- This important public health question was identified and prioritized as part of the U.S. Department of Agriculture and Department of Health and Human Services Pregnancy and Birth to 24 Months Project.

How was this question answered?

- A team of Nutrition Evidence Systematic Review staff conducted a systematic review in collaboration with a group of experts called a Technical Expert Collaborative.

What was the population of interest?

- Women who are pregnant or able to become pregnant, ages 15-44 years.

What evidence was found?

- This review includes 11 studies published between 2005 and 2016.
- These studies assessed the relationship between dietary patterns before and during pregnancy and gestational age at birth, including premature/preterm birth and gestational age at delivery.
- Eight studies considered dietary patterns during pregnancy and preterm birth. Five of these studies found a statistically significant association. A sixth study found an association between dietary patterns during pregnancy and early preterm birth, but not preterm birth.
- Additionally, five studies considered dietary patterns during pregnancy and *spontaneous* preterm birth. Four of these studies found a statistically significant association. The fifth study showed different associations for women depending

on whether or not it was their first pregnancy.

- There is not enough evidence to estimate the association between dietary patterns during pregnancy and gestational age at birth when measured in days.
- The body of evidence is limited in several ways. For example, minority women and those of lower SES are underrepresented in this body of evidence.

How up-to-date is this review?

- This review includes literature from 01/1980 to 01/2017.

TECHNICAL ABSTRACT

Background

- Systematic reviews were conducted as part of the U.S. Department of Agriculture and Department of Health and Human Services Pregnancy and Birth to 24 Months Project.
- The goal of this systematic review was to examine the relationship between dietary patterns before and during pregnancy and gestational age at birth.

Conclusion Statements and Grades

Limited but consistent evidence suggests that certain dietary patterns during pregnancy are associated with a lower risk of preterm birth and spontaneous preterm birth. These protective dietary patterns are:

- higher in vegetables; fruits; whole grains; nuts, legumes and seeds; and seafood (preterm birth, only), and
- lower in red and processed meats and fried foods.

Most of the research was conducted in healthy, Caucasian women with access to health care.
Grade: Limited

Evidence is insufficient to estimate the association between dietary patterns before pregnancy and gestational age at birth as well as the risk of preterm birth.
Grade: Grade not assignable

Methods

- The systematic review was conducted by a team of Nutrition Evidence Systematic Review staff in collaboration with a Technical Expert Collaborative.
- Literature searches were conducted using PubMed, Embase, Cochrane, and other databases to identify studies that evaluated the relationship between dietary patterns before and during pregnancy and gestational age at birth. A manual search was conducted to identify articles that may not have been included in the electronic databases searched. Articles were screened by two authors independently for inclusion based on pre-determined criteria.
- Data from each included article were extracted, risk of bias was assessed, and both were checked for accuracy. The body of evidence was qualitatively synthesized, a conclusion statement was developed, and the strength of the evidence (grade) was assessed using pre-established criteria for internal validity/risk of bias, adequacy, consistency, impact, and generalizability.

Summary of Evidence

- This systematic review includes 10 prospective cohort studies and 1 randomized controlled trial (RCT) published between 2005 and 2016.
- The studies used multiple approaches to assess dietary patterns:
    - Four studies used indices/scores to assess dietary patterns.
    - Four studies used factor or principal component analysis (PCA).
    - One study used both indices/scores and PCA.
    - One RCT assigned subjects to one of two experimental diets.
    - One study did not use a formal method to arrive at a dietary pattern.

- Despite this variability, 5 of the 8 studies that assessed the relationship between dietary patterns during pregnancy and preterm birth found a statistically significant association. A sixth study found an association between dietary patterns during pregnancy and early preterm birth, but not preterm birth.
  - Highest adherence to a protective dietary pattern during pregnancy was associated with a preterm birth risk reduction of 9% to 90%.
  - Highest adherence to a detrimental dietary pattern during pregnancy was associated with an increase in preterm birth risk of 53% to 55%.
- Additionally, 4 of the 5 studies that assessed the relationship between dietary patterns during pregnancy and spontaneous preterm birth found a statistically significant association. The fifth study showed an effect measure modification by parity.
  - Highest adherence to a protective dietary pattern during pregnancy was associated with a spontaneous preterm birth risk reduction of 15% to 45%.
  - Highest adherence to a detrimental dietary pattern during pregnancy was associated with an increase in spontaneous preterm birth risk of 18% to 92%.
- There is insufficient evidence to estimate the association between dietary patterns during pregnancy and gestational age at birth when measured in days.
- Generalizability of the included studies is limited to healthy Caucasian women who have access to health care. Minority women and those of lower SES are underrepresented in this body of evidence.
- The ability to draw strong conclusions was limited by the following issues:
  - The data were primarily observational in nature, limiting the ability to determine causal effect of the dietary patterns
  - There was heterogeneity in terms of when dietary data were assessed
  - There was a lack of uniformity in outcome assessment, and some studies used less robust methods than others
  - Key confounding factors were not consistently controlled across studies
  - Only two studies were conducted in the U.S, one of which was primarily conducted in adolescent girls
  - Minority and lower SES populations were underrepresented
  - There was a lack of diversity based on BMI, parity, age at conception and smoking status

FULL REVIEW

Systematic review question

What is the relationship between dietary patterns before and during pregnancy and gestational age at birth?

Conclusion statement

Limited but consistent evidence suggests that certain dietary patterns during pregnancy are associated with a lower risk of preterm birth and spontaneous preterm birth. These protective dietary patterns are:

- higher in vegetables; fruits; whole grains; nuts, legumes and seeds; and seafood (preterm birth, only), and
- lower in red and processed meats and fried foods.

Most of the research was conducted in healthy, Caucasian women with access to health care.

Grade

Limited: This grade is assigned to the statement relevant to dietary patterns during pregnancy.

Conclusion statement

Evidence is insufficient to estimate the association between dietary patterns before pregnancy and gestational age at birth as well as the risk of preterm birth.

Grade

Not assignable: This grade is assigned to the statement relevant to dietary patterns before pregnancy.

Summary

- This systematic review includes 10 prospective cohort studies and 1 randomized controlled trial (RCT) published between 2005 and 2016.
- The studies used multiple approaches to assess dietary patterns:
  - Four studies used indices/scores to assess dietary patterns.
  - Four studies used factor or principal component analysis (PCA).
  - One study used both indices/scores and PCA.
  - One RCT assigned subjects to one of two experimental diets.
  - One study did not use a formal method to arrive at a dietary pattern.
- Despite this variability, 5 of the 8 studies that assessed the relationship between dietary patterns during pregnancy and preterm birth found a statistically significant association. A sixth study found an association between dietary patterns during pregnancy and early preterm birth, but not preterm birth.
  - Highest adherence to a protective dietary pattern during pregnancy was associated with a preterm birth risk reduction of 9% to 90%.
  - Highest adherence to a detrimental dietary pattern during pregnancy was associated with an increase in preterm birth risk of 53% to 55%.
- Additionally, 4 of the 5 studies that assessed the relationship between dietary patterns during pregnancy and spontaneous preterm birth found a statistically

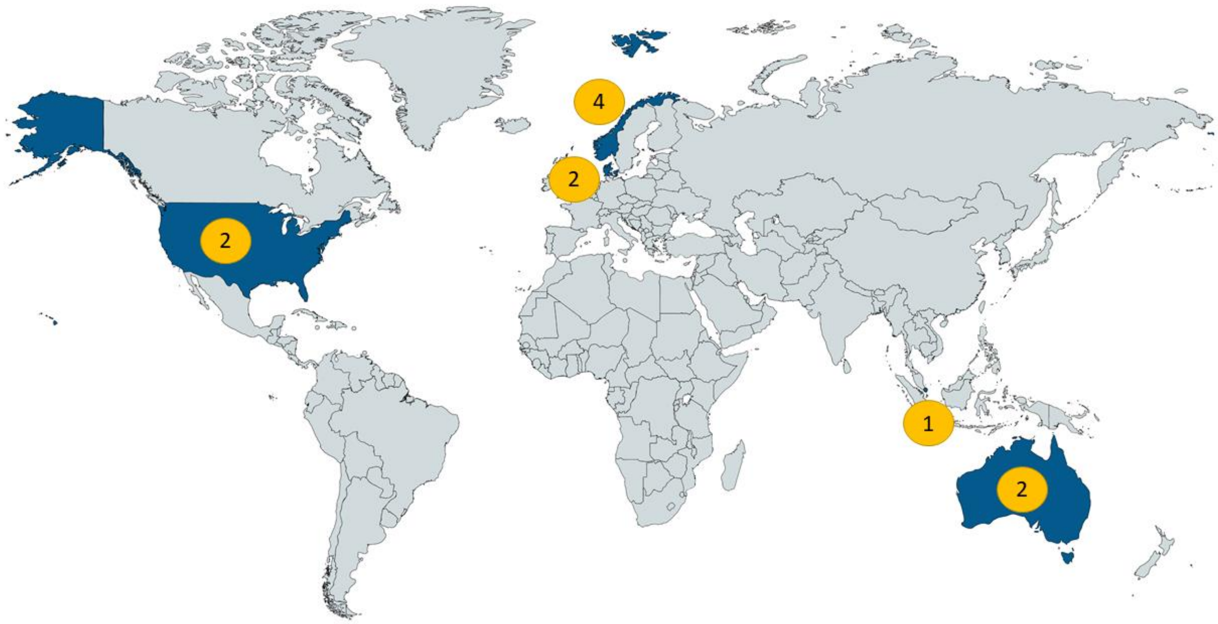
significant association. The fifth study showed an effect measure modification by parity.

- Highest adherence to a protective dietary pattern during pregnancy was associated with a spontaneous preterm birth risk reduction of 15% to 45%.
- Highest adherence to a detrimental dietary pattern during pregnancy was associated with an increase in spontaneous preterm birth risk of 18% to 92%.

- There is insufficient evidence to estimate the association between dietary patterns during pregnancy and gestational age at birth when measured in days.
- Generalizability of the included studies is limited to healthy Caucasian women who have access to health care. Minority women and those of lower SES are underrepresented in this body of evidence.

Description of the evidence

- The search included articles from very high and high Human Development Index (HDI) countries and the search timeframe spanned between January 1980 and January 2017.
- This evidence review includes 10 cohort studies and 1 RCT that examined the relationship between dietary patterns before and during pregnancy and gestational age at birth (GA) (1-11).
- The RCT is from the Cardiovascular Risk Reduction Diet in Pregnancy (CARRDIP) trial. Among 10 cohort studies, three used data from the Norwegian Mother and Child Cohort (MoBA) (3, 5, 7), and two used data from the Danish National Birth Cohort (6, 9). The remaining studies used data from different cohorts: 1) Gresham et al. used the Australian Longitudinal Study on Women's Health cohort; 2) Chia et al. used the Growing Up in Singapore Towards healthy Outcomes (GUSTO) study; 3) Martin et al. used the Pregnancy, Infection and Nutrition (PIN) study; 4) Xie et al. used the National Longitudinal Study of Adolescent Health (Add Health); and 5) Grieger et al. used an unnamed cohort in Lyell McEwin Hospital, Adelaide, Australia. Only one of these studies was conducted in a cohort that was specifically designed to assess the relationship between maternal diet and preterm birth (8).
- Two of the 11 studies were conducted in the U.S. (8, 10). In addition, two studies were conducted in Australia (1, 4) and one in Singapore (2). The rest were conducted in Europe: four in Norway (3, 5, 7, 11) and two in Denmark (6, 9). See the map below.



Subject characteristics:

- **Sample size** of the studies ranged from 290 subjects (11) to 72,072 subjects (7). The median sample size was 3,143.
- **Age**: Most of the studies included women between 20 and 40 years of age. An exception is the Add Health cohort, which included only adolescent participants (10). While two studies reported that ~12% of the participants were 35 years or older (7, 8), it is unclear how many of these participants were over 40 years.
- **Pregnancy characteristics**: Almost all of the studies included singleton pregnancies, only.
- **Health Characteristics**:
    - Three studies excluded women with a history of greater than 3 abortions (5, 6, 11).
    - Englund-Ogge et al. reported that 4% of women had a history of preterm deliveries.
    - A few studies reported study subject's comorbidities.
        - Hillesund reported a prevalence of 2% for diabetes mellitus and 1% for chronic hypertension.
        - Chia et al. excluded women with type 1 diabetes, Englund-Ogge et al. excluded women with type 2 diabetes and Mikkelsen excluded women with chronic hypertension. Khoury et al. excluded women with high risk pregnancies caused by diabetes mellitus, endocrine disease, chronic hypertension, drug abuse, history of thromboembolic disease or significant gastrointestinal, cardiac, pulmonary, or hematologic disease. Women with complications during previous pregnancy, including neonatal death, still birth, preterm delivery were excluded. Women who experienced ongoing hyperemesis gravidarum or bleeding after gestational week 12 in the current pregnancy were not included.

- **Smoking** during pregnancy varied across studies.
    - Daily or occasional smoking was reported to be in the range of ~3% (2) to 32% (4).
    - Three studies excluded smokers (5, 6, 11)
    - Pre-pregnancy smoking status (7-13 y prior to becoming pregnant) was reported to be 25% in one study (1).
- **Race/ethnicity**: About half of the studies (n=6) did not report participants' race/ethnicity. Grieger et al. and Khoury et al. respectively reported that 89% and 100% of their study subjects were Caucasian. Categorized another way, Xie et al. and Martin et al. reported that 69% and 72% of the study subjects were non-Blacks, respectively. The GUSTO study participants (based in Singapore) were Chinese, Malayan or Indian. The authors present race/ethnicity by dietary pattern and do not specify the overall percentage of each race/ethnicity.
- **Parity**: There is heterogeneity in terms of study participants' parity. For example, in some studies, most of the subjects were nulliparous (90% in the ALSWH (1) and 100% in Add Health Cohort (10)). Other studies (n=5) reported that 50-70% of women were nulliparous (3, 7-9, 11).
- **Pre-pregnancy BMI**: Pre-pregnancy BMI ranged from 23.3 kg/m^2 (6) to 27.6 kg/m^2 (4). It should be noted that Khoury et al. and Mikkelsen et al. excluded subjects with a BMI either <19 or >32. While Grieger et al. reported on maternal BMI, it is unclear if it was measured pre-pregnancy. Xie et al. reported that pre-pregnancy BMI in adolescents was 22.2 kg/m^2. Martin et al. noted that the factor and DASH adherence scores were significantly different by pre-pregnancy BMI within each dietary pattern.
- **Maternal education:** Among studies that reported maternal education, participants with more than a high school education ranged from 33% (1) to 82% (11).
- **Socioeconomic status (SES):** Below is a summary of studies that reported SES. Data are presented as they were reported in each study, with some differences across studies.
    - Martin et al. reported that 41% of the study participants were 185% below federal poverty level, 20% between 185-350% and 39% above 350%.
    - Englund-Ogge et al. noted that 28% of participants reported both partners earning <$48,406, 41% reported either participant or partner earning >$48,406 and 28% reported both partners earning >$48,406.
    - Grieger et al. reported that 82% of their participants were in the lowest 2/5th SES strata.
    - Rasmussen et al. mentioned that about half (51%) of the participants had medium level of proficiency or were unskilled.
    - Xie et al. study participants were adolescents, so they reported parental education status as a proxy for SES, with 79% of parents having at least a high school education.

Interventions/Exposures:

Dietary patterns were assessed using 1) index/score analysis; 2) factor and principal components analysis (PCA); 3) both methods; 4) experimental diet; and 5) another unspecified method. A description of the studies included by each method used to measure dietary patterns is included below.

- **Index/score analysis (Table 1. Indices and scores used to assess the relationship between dietary patterns before and during pregnancy and gestational age)**: Five studies included in this review used one or more of the following indices/scores:
    - Australian Recommended Food Score (1)
    - Mediterranean diet (5, 6)
    - New Nordic Diet score (7)
    - DASH adherence score (8)

Table 1. Indices and scores used to assess the relationship between dietary patterns before and during pregnancy and gestational age

Index/Score (Reference)	Australian Recommended Food Score (min-max score)[1]	Mediterranean Diet Index[2,3]	New Nordic Diet Score[4,5]	DASH Diet[6]
Article	Gresham et al., 2016	Haugen et al., 2008; Mikkelsen et al., 2008	Hillesund et al., 2014	Martin et al., 2015
Component	Total score: 0-72	Total score: 0-5	Total score: 0-10	Total score: 8-40
Vegetables	Vegetables (0-22)	Vegetables and fruits (≥5 servings/day)	Root Vegetables ≥Median = 1; <Median = 0	Vegetables (1-5)
			Cabbages ≥Median = 1; <Median = 0	
			Potatoes relative to rice and pasta combined ≥Median = 1; <Median = 0	
Fruit and/or nuts	Fruits (0-14)	*Included with vegetables*	Nordic fruits ≥Median = 1; <Median = 0	Fruits (1-5)
			Native berries (includes "foods from wild countryside")	*Included nuts along with legumes*

[1] Collins, C. E., Young, A. F., & Hodge, A. (2008). Diet quality is associated with higher nutrient intake and self-rated health in mid-aged women. J Am Coll Nutr, 27(1), 146-157.
[2] Willett, W. C., Sacks, F., Trichopoulou, A., Drescher, G., Ferro-Luzzi, A., Helsing, E., & Trichopoulos, D. (1995). Mediterranean diet pyramid: a cultural model for healthy eating. *Am J Clin Nutr, 61*(6 Suppl), 1402s-1406s.
[3] Khoury, J., Henriksen, T., Christophersen, B., & Tonstad, S. (2005). Effect of a cholesterol-lowering diet on maternal, cord, and neonatal lipids, and pregnancy outcome: a randomized clinical trial. Am J Obstet Gynecol, 193(4), 1292-1301. doi:10.1016/j.ajog.2005.05.016
[4] Hillesund, E. R., Bere, E., Haugen, M., & Overby, N. C. (2014). Development of a New Nordic Diet score and its association with gestational weight gain and fetal growth - a study performed in the Norwegian Mother and Child Cohort Study (MoBa). Public Health Nutr, 17(9), 1909-1918. doi:10.1017/s1368980014000421
[5] Includes meal frequency which is not included as a component in this table
[6] Fung, T. T., Chiuve, S. E., McCullough, M. L., Rexrode, K. M., Logroscino, G., & Hu, F. B. (2008). Adherence to a DASH-style diet and risk of coronary heart disease and stroke in women. Arch Intern Med, 168(7), 713-720. doi:10.1001/archinte.168.7.713

Index/Score (Reference)	Australian Recommended Food Score (min-max score)[1]	Mediterranean Diet Index[2,3]	New Nordic Diet Score[4,5]	DASH Diet[6]
Cereals/ Grains and whole grains	Grains (0-14)		Whole grain bread ≥Median = 1; <Median = 0	Whole grains (1-5)
			Oatmeal porridge ≥Median = 1; <Median = 0	
Legumes	*Included under fish and other protein foods*			Nuts and legumes (1-5)
Meat	*Included as part of protein*	Meat (≤2 servings/wk)		Red and processed meats (5-1) (reverse scored)
Fish and other protein foods	Fish (0-2)	Fish (≥2 servings/wk)	Foods from wild countryside (wild fish, seafood, game) *Also includes native berries, captured as part of fruits* ≥Median = 1; <Median = 0	
	Meat (0-5)			
	Nuts/bean/soya (0-6)			
	Eggs (0-1)			
Dairy	Dairy (0-7)		Milk ≥Median = 1; <Median = 0	Low fat dairy (1-5)
Fat	Fat (0-1)	Olive oil or rapeseed oil		
Sodium				Sodium (5-1) (reverse scored)

Index/Score (Reference)	Australian Recommended Food Score (min-max score)[1]	Mediterranean Diet Index[2,3]	New Nordic Diet Score[4,5]	DASH Diet[6]
Sweetened beverage intake				Sweetened beverage intake (5-1) (reverse scored)
Water			Water consumption relative to sweetened beverages ≥Median = 1; <Median = 0	
Alcohol	*Excluded alcohol*			
Caffeine		Coffee (≤2 cups/day)		

- **Factor analysis and principal component analysis (Table 2. Summary of dietary patterns identified using factor or principal component analysis):** Five studies included in this review assessed dietary patterns using factor or PCA (2-4, 8, 9).
- **Experimental diet:** One study included in this review assigned participants to one of two experimental diets (11):
  - Intervention diet:
    - Dietitians encouraged the 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; the consumption of fresh fruits and vegetables was advised (at least 6 a day); 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 was encouraged; subjects were advised to choose meat for a main meal twice a week and use legumes, vegetable main dishes, fatty fish, or poultry with the fat trimmed off on the other days; coffee was limited to 2 cups of filtered coffee a day
    - 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[7]

[7] Khoury, J., Henriksen, T., Seljeflot, I., Mørkrid, L., Frøslie, K. F., & Tonstad, S. (2007). Effects of an antiatherogenic diet during pregnancy on markers of maternal and fetal endothelial activation and

- Control diet:
  - Subjects were 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
  - Included significantly more fatty milk, meat and meat products, fatty minced meat, butter, and hard margarines when compared to the intervention diet[6]
- **Other method:** One study created dietary patterns by grouping foods into categories defined "on the basis of theoretical expectations" by Dube et al.[8] and later used by Jeffery et al.[9] and Agurs-Collins et al[10] (10). The following three categories were created:
  - High-calorie sweet pattern: includes foods such as doughnuts, ice cream, chocolate candy, regular candy, and cookies
  - High-calorie nonsweet pattern: includes steak, fried chicken, fried fish, pizza, hot dogs, sausage, cheese, whole milk, etc.
  - Low-calorie pattern: includes foods such as low-fat and skim milk, grilled chicken, grilled fish, apples, and breakfast cereal

Time point of exposure (Table 3. Time point of exposure assessment):

- Most of the studies collected dietary data during second trimester. The following were the exceptions:
  - Grieger et al. collected data at 13 weeks, but the recall period was 12 months prior to conception.
  - Gresham et al. and Xie et al. did not specify a particular time period when the diet was assessed (which could have ranged from before to during pregnancy).
- Recall periods were heterogeneous across studies.
- Some studies asked women to report on their dietary intake from the start of pregnancy until the time data were collected in second trimester (5, 7).
- In other studies, recall period varied from a few days (2, 10) to a few weeks (6, 9) to a few months (8).

Outcomes:

Studies assessed several outcomes related to gestational age at birth, including premature/preterm birth (sometimes stratified by early/moderate/late and spontaneous/induced) and gestational age at delivery. Table 4. Summary of outcome definitions, summarizes the outcomes and diagnostic criteria grouped by methodology used to create dietary patterns.

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Table 2. Summary of dietary patterns identified using factor or principal component analysis

Study	Dietary Patterns
Chia, 2016	**Vegetable, fruit, and white rice pattern:** positive loadings for vegetables, fruits, plain white rice, whole-grain bread, fish, and nuts and seeds and negative loadings for fried potatoes, burgers, carbonated and sweetened drinks, and flavored rice **Seafood and noodle pattern:** positive loadings for soup, seafood, fish and seafood products, noodles (flavored and in soup), and low-fat red meat and negative loadings for legumes, ethnic bread, white rice, and curry-based gravies **Pasta, cheese, and processed meat pattern:** positive loadings for pasta-, tomato-, and cream-based gravies, cheese, and processed meat
Englund-Ögge, 2014	**Prudent pattern:** positive factor loadings for raw and cooked vegetables, salad, onion/leek/garlic, fruit and berries, nuts, vegetables oils, water as beverage, whole grain cereals, poultry, and fibre rich bread; negative factor loadings for processed meat products (hot dogs, hamburgers, and so on), white bread, and pizza/tacos **Western pattern:** positive factor loadings for salty snacks, chocolate and sweets, cakes, French fries, white bread, ketchup, sugar sweetened drinks, processed meat products, and pasta; negative factor loadings for lean fish and fibre rich bread **Traditional pattern:** positive factor loadings for boiled potatoes, fish products, gravy, lean fish, margarine, rice pudding, low fat milk, and cooked vegetables; negative factor loadings for poultry and pizza/tacos
Grieger, 2014	**High-protein/fruit:** positive factor loadings for fish, meat, chicken, fruit, whole grains **High-fat/sugar/takeaway:** positive loadings for takeaway foods, potato chips, refined grains, added sugar **Vegetarian-type:** characterized by vegetables, whole grains, legumes

Study	Dietary Patterns
Martin, 2015	**Factor 1:** high positive loadings for fruits, tomatoes, broccoli, spinach, carrots, green salads, sweet potatoes, low-fat milk, yogurt, high-fiber and highly fortified cereals, nonfried chicken and fish, and wheat bread **Factor 2:** high positive loadings for beans, corn, French fries, hamburgers or cheeseburgers, white potatoes, fried chicken, spaghetti dishes, cheese dishes such as macaroni and cheese, cornbread or hushpuppies, processed meats, biscuits, and ice cream **Factor 3:** high positive loadings for collard greens, coleslaw or cabbage, red meats, fried chicken and fish, processed meats, cornbread or hushpuppies, eggs or egg biscuits, gravy, whole milk, and vitamin C–rich drinks such as Kool-Aid and Hi-C **Factor 4:** high positive loadings for of shellfish, pizza, salty snacks, candies, pancakes, tacos or burritos, and cakes and cookies
Rasmussen, 2014	**Alcohol pattern:** high positive loadings for soya, root, wine, liquor, and beer **Vegetable/Prudent pattern:** high positive loadings for cabbage, onion, mushroom, corn, salad, tomato, vegetables other, and legumes **Western pattern:** high positive loadings for potatoes, French fries, bread white, pork, beef veal, meat mixed, meat cold, and dressing sauce **Seafood pattern:** high positive loadings for fish **Nordic pattern:** high positive loadings for bread dark, fruit Nordic, and hard cheese **Sweets pattern:** high positive loadings for bread white, margarine, snack, sugar cakes, sweet spread, candy, dessert dairy, and chocolate **Rice/Pasta/Poultry pattern:** high positive loadings for rice, pasta, and poultry

Table 3. Time point of exposure assessment

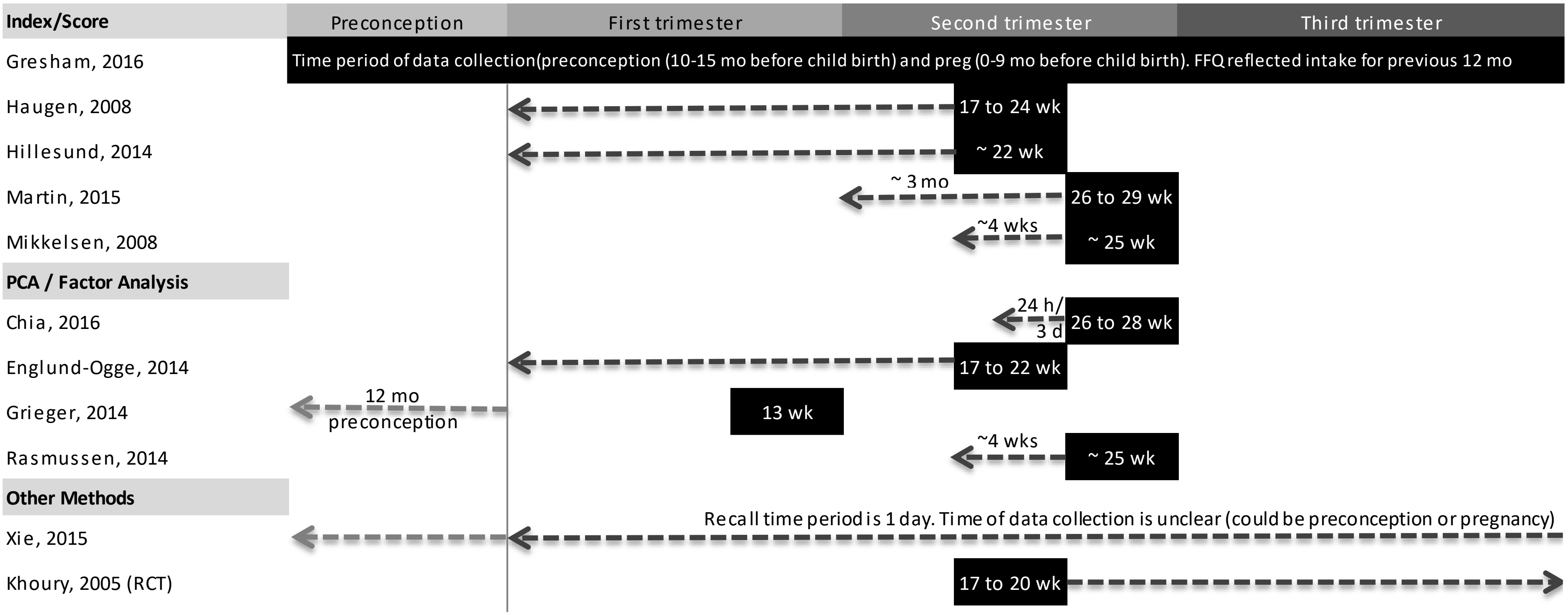


Table 4. Summary of outcome definitions

Study	Outcome	Diagnostic Criteria	Source of Criteria	Method of Assessment	References	Additional Outcomes Measured
Index/Score						
Gresham, 2016	Premature birth	No cutoff specified	NR	Self-reported answer to "Did you experience a premature birth?"	N/A	Gestational hypertension GDM Low birth weight
Haugen, 2008	Preterm birth Late preterm birth Early preterm birth	Preterm birth: >21 and < 37 weeks gestation Late preterm birth: 35-36 weeks gestation Early preterm birth: <35 weeks Note: Elective deliveries were considered a censoring event	NR	Data obtained from the Norwegian Medical Registry	N/A	N/A

Study	Outcome	Diagnostic Criteria	Source of Criteria	Method of Assessment	References	Additional Outcomes Measured
Hillesund, 2014	Preterm delivery Spontaneous preterm delivery (primary outcome)	Preterm delivery: 22 to 37 weeks gestation	NR	Data obtained from the Medical Birth Registry of Norway (Length of gestation estimated from ultrasound examination, supplemented with last menstrual period (LMP), along with information on type of delivery)	N/A	Preeclampsia Early preeclampsia
Martin, 2015	Preterm birth (Spontaneous; Medically indicated)	Preterm birth: <37 weeks gestation Spontaneous preterm birth: preceded by either preterm labor or premature rupture of the membranes resulting in delivery Medically indicated preterm birth: induction of labor or cesarean delivery without labor	NR	Combination of last menstrual period and ultrasound data (when both measures were available and there was agreement within 14 d, LMP was used to assign gestational age; otherwise, ultrasound data were used)	N/A	N/A

Study	Outcome	Diagnostic Criteria	Source of Criteria	Method of Assessment	References	Additional Outcomes Measured
Mikkelsen, 2008	Preterm delivery Early preterm delivery Late preterm delivery	Preterm delivery: >22 to <37 weeks gestation Early preterm delivery: <35 weeks gestation Late preterm delivery: 35-36 weeks gestation Note: Hazard rate of spontaneous delivery was modelled with Cox regression; elective deliveries were considered a censoring event	NR	Assessed ~8-12 weeks gestation using last menstrual period as reported on recruitment form and first interview	N/A	N/A
PCA/Factor Analysis						
Chia, 2016	Preterm birth (Spontaneous; Induced)	Preterm birth: <37 weeks gestation	NR	Dating ultrasound scan	N/A	Birth weight Birth length Body circumferences Body fat percentage

Study	Outcome	Diagnostic Criteria	Source of Criteria	Method of Assessment	References	Additional Outcomes Measured
Englund-Ogge, 2014	Preterm delivery (Spontaneous; Iatrogenic) Late preterm Moderate preterm Early preterm	Preterm delivery: 22 to <37 weeks gestation Late preterm: 34 to <37 weeks gestation Moderately preterm: 32 to <34 weeks gestation Early preterm: 22 to <37 weeks gestation	NR	Based on ultrasound measurements at 17-18wk, or if missing, then calculated from LMP	N/A	N/A
Grieger, 2014	Preterm birth	Preterm birth: <37 weeks gestation	NR	Determined by the date of the LMP and confirmed by ultrasound at 18 wk	N/A	Birth weight Birth length Head circumference
Martin, 2015	See above					
Rasmussen, 2014	Preterm birth (Spontaneous; Induced)	Gestational age <259 days (<37 weeks)	NR	Based on last menstrual period unless cycles were irregular, in which case expected delivery date (based on ultrasound data) was used	N/A	N/A

Evidence synthesis

With 10 prospective cohort studies and 1 RCT, there is a modest body of evidence available to examine the relationship between dietary patterns before and during pregnancy and gestational age. Table 5. Results grouped by methodology used for dietary pattern assessment, provides more information on the findings of each of these studies. There is substantial heterogeneity in the methodology employed to define and assess dietary patterns and how outcomes were reported, which makes it difficult to compare across studies. Also, the time period of dietary assessment was variable. Despite these differences, there is modest evidence of an association between dietary patterns before and during pregnancy and gestational age.

Dietary patterns assessed via index/score

Five studies used indices/scores to assess dietary patterns. Two of these studies found a significant association between adherence to a healthy dietary pattern and reduced risk of preterm birth (7, 8) and an additional study reported risk reduction of early preterm birth, only (6).

- Gresham et al. examined adherence to the Australian Recommended Food Score before and during pregnancy and its association with premature birth. Components included vegetables, fruit, grain, protein (nuts/bean/soya, meat, fish, eggs), dairy, and fat. The exposure was self-reported and captured dietary intake during the previous 12 months. The time point of data collection ranged from before pregnancy to the end of the third trimester of pregnancy. Similar to the exposure, the outcome was also self-reported. The study found no significant difference in the odds of premature birth based on adherence to the ARFS.
- Haugen et al. assessed the relationship between adherence to a Mediterranean diet (characterized by high intake of vegetables, fruits, fish, olive/canola/rapeseed and low intake of red meat and coffee) during pregnancy and risk of preterm birth (>21 to <37 weeks). Adherence to a Mediterranean diet during pregnancy was not associated with the risk of preterm birth. However, fish intake (≥2 times/week) was associated with reduced risk of preterm birth and late preterm birth (35-<37 weeks) after adjusting for remaining Mediterranean diet criteria and other covariates.
- Hillesund et al. assessed adherence to the New Nordic Diet, which measured the frequency of eating the following foods: Nordic fruits (apples, pears, plums, strawberries), root vegetables (carrots, rutabaga and various types of onions), cabbages (kale, cauliflower, broccoli and Brussels sprouts), potatoes, whole grain breads, oat meal porridge, foods from the wild countryside (wild fish, seafood, game and wild berries), milk and water (7). Higher adherence to the New Nordic Diet was associated with reduced risk of preterm delivery (between 22 and 37 weeks). While there was no association with spontaneous preterm delivery in the whole sample, there was effect measure modification by parity. Greater adherence to a New Nordic Diet was associated with a lower risk of spontaneous preterm delivery among nulliparous women. However, greater adherence to the same diet was associated with an increased risk of spontaneous preterm deliveries among multiparous women.
- Martin et al. examined the relationship between adherence to the DASH diet during pregnancy and risk of preterm birth. Greater adherence to a DASH diet

was associated with reduced odds of preterm birth including spontaneous preterm birth. Martin et al. also examined the relationship between four different dietary patterns and preterm birth (discussed in the next section).

- Mikkelsen et al. assessed adherence to a Mediterranean diet and risk of preterm birth. The Mediterranean diet was characterized by higher intake of fruits and vegetables, fish, and olive or rapeseed oil and lower intake of meat and coffee. Compared to women with lower adherence to a Mediterranean diet, women with higher adherence were at reduced risk of early preterm deliveries. However, the odds of preterm delivery and the mean difference in gestational age did not vary significantly based on adherence to a Mediterranean diet.

Dietary patterns assessed via factor or principal component analysis

Five studies used diet-driven methods (i.e., principal component analysis or exploratory factor analysis) to develop a variety of dietary patterns and assessed preterm delivery in that context. A summary of findings across studies is presented below.

- Chia et al. showed that greater adherence to a 'vegetable, fruit and white rice' dietary pattern (characterized by higher intakes of vegetables, fruits, plain white rice, whole-grain bread, fish, and nuts and seeds and lower intakes of fried potatoes, burgers, carbonated and sweetened drinks, and flavored rice) was associated with a lower risk of preterm birth and spontaneous preterm birth. Chia et al. also assessed other dietary patterns ('seafood and noodle' and 'pasta, cheese and processed meat'), which were not associated with preterm and spontaneous preterm birth. There was no association between any of the dietary patterns and induced preterm birth.
- Englund-Ogge et al. generated three different dietary patterns (listed below) and assessed their association with six health outcomes: 1) preterm; 2) spontaneous preterm; 3) iatrogenic preterm; 4) late preterm; 5) moderately preterm; and 6) early preterm.
    - A prudent pattern was characterized by high positive factor loadings for raw and cooked vegetables, salad, onion/leek/garlic, fruit and berries, nuts, vegetables oils, water as beverage, whole grain cereals, poultry, and fibre rich bread; and negative factor loadings for processed meat products (hot dogs, hamburgers, and so on), white bread, and pizza/tacos
    - A Western pattern was characterized by positive factor loadings for salty snacks, chocolate and sweets, cakes, French fries, white bread, ketchup, sugar sweetened drinks, processed meat products, and pasta; and negative factor loadings for lean fish and fibre rich bread
    - A traditional pattern was characterized by positive factor loadings for boiled potatoes, fish products, gravy, lean fish, margarine, rice pudding, low fat milk, and cooked vegetables; and negative factor scores for poultry and pizza/tacos

  Greater adherence to a prudent dietary pattern was associated with a lower risk of preterm, spontaneous preterm and late preterm birth, but there was no association with other outcomes. Similarly, greater adherence to a traditional dietary pattern was associated with a reduction in the risk of preterm, iatrogenic preterm and late preterm birth, but no association was observed with other outcomes. The Western dietary pattern was not associated with any outcomes.

- Grieger et al. collected data that reflected dietary patterns before pregnancy. Three dietary patterns were generated: 1) high protein/fruit, characterized by a diet rich in fish, meat, chicken, fruit and whole grains; 2) high fat, sugar/takeaway, characterized by takeaway foods, potato chips, refined grains, added sugar; and 3) vegetarian type, characterized by a diet rich in vegetables, whole grains, legumes. Greater adherence to a high protein/fruit pattern was negatively associated with preterm birth; greater adherence to a high fat, sugar/takeaway diet was positively associated with the risk of preterm birth. There was no association with the vegetarian type diet and preterm risk.
- Martin et al. generated four dietary patterns:
  - Factor 1: Higher amounts of fruits, tomatoes, broccoli, spinach, carrots, green salads, sweet potatoes, low-fat milk, yogurt, high fiber and highly fortified cereals, nonfried chicken and fish, and wheat bread
  - Factor 2: Higher amounts of beans, corn, French fries, hamburgers or cheeseburgers, white potatoes, fried chicken, spaghetti dishes, cheese dishes such as macaroni and cheese, cornbread or hushpuppies, processed meats, biscuits, and ice cream
  - Factor 3: Higher amounts of collard greens, coleslaw or cabbage, red meats, fried chicken and fish, processed meats, cornbread or hushpuppies, eggs or egg biscuits, gravy, whole milk, and vitamin C–rich drinks such as Kool-Aid and Hi-C
  - Factor 4: Higher amounts of shellfish, pizza, salty snacks, candies, pancakes, tacos or burritos, and cakes and cookies

  Greater adherence to factor 2 and factor 3 dietary patterns was associated with an increased risk of preterm birth and spontaneous preterm birth. Factors 1 and 4 were not associated with these outcomes.
- Rasmussen et al. identified seven different dietary patterns:
  - Alcohol pattern with high intakes of soya, root, wine, liquor, and beer
  - Vegetable/Prudent pattern characterized by high intakes of cabbage, onion, mushroom, corn, salad, tomato, vegetables other, and legumes
  - Western pattern characterized by high intakes of potatoes, French fries, bread white, pork, beef veal, meat mixed, meat cold, and dressing sauce
  - Seafood pattern characterized by high intakes of fish
  - Nordic pattern characterized by high intakes of bread dark, fruit Nordic, and hard cheese
  - Sweets pattern characterized by high intakes of bread white, margarine, snack, sugar cakes, sweet spread, candy, dessert dairy, and chocolate
  - Rice/Pasta/Poultry pattern characterized by high intakes of rice, pasta, and poultry

  Greater adherence to a Western dietary pattern was positively associated with the risk of spontaneous and induced preterm birth. A non-linear relationship was observed between seafood dietary pattern and induced preterm birth, with a protective effect being observed or women in the quintile 4 intake category, only (no associations were found for quintile 5). In this study, other dietary patterns were not associated with the preterm outcomes.

Dietary patterns assessed in the RCT

Khoury et al. randomly assigned participants to an intervention diet characterized by higher amounts of fruits and vegetables, fatty fish, vegetable oils, nuts and low-fat dairy. Participants were asked to restrict meat and replace it with avocado, as well as to limit coffee consumption to 2 cups/day. Subjects who were assigned to the control group were asked to consume their usual diet based on Norwegian foodstuffs and to not introduce more oils or low-fat meat and dairy products than usual (11). The study reported a significant difference in the mean gestational age between the intervention and control groups. Further, the odds of preterm delivery were also lower in those who were assigned to the intervention diet.

Dietary patterns assessed through other methods

Xie et al. generated the following dietary patterns: 1) High-calorie sweet pattern characterized by foods such as doughnuts, ice cream, chocolate candy, regular candy, and cookies; 2) High-calorie nonsweet pattern characterized by steak, fried chicken, fried fish, pizza, hot dogs, sausage, cheese, whole milk, etc.; and 3) Low-calorie pattern characterized by foods such as low-fat and skim milk, grilled chicken, grilled fish, apples, and breakfast cereal. The questionnaire was not validated and the outcome was self-reported. In this adolescent-only cohort, there was no significant difference in preterm birth based on adherence to different dietary patterns.

Table 5. Results grouped by methodology used for dietary pattern assessment

Key for color-coding:
Dietary pattern categorized as beneficial when… Greater adherence improves gestational age outcomes Lower adherence is detrimental for gestational age outcomes
Dietary pattern categorized as detrimental when… Greater adherence is detrimental for gestational age outcomes Lower adherence improves gestational age outcomes

Author, Year Country, N	**Exposure**	**Outcome**	**Significant finding**	**NS finding**
Index/Score				
Before pregnancy/ Before and During Pregnancy				

Author, Year Country, N	Exposure	Outcome	Significant finding	NS finding
Gresham, 2016 **Australia** **N = 1,897**	**Australian Recommended Food Score (ARFS)** Based on consistency with Dietary Guidelines for Australian Adults and core foods within Australian Guide to Healthy Eating	Premature (OR) Q1=REF		Q2: 0.7 (95% CI: 0.3, 1.4) Q3: 1.1 (95% CI: 0.6, 2.0) Q4: 0.8 (95% CI: 0.4, 1.6) Q5: 0.5 (95% CI: 0.2, 1.1)
Pregnancy				
Haugen, 2008 **Norway** **N = 26,563**	**Mediterranean Diet (MD) index** To comply with a Mediterranean diet, all 5 criteria had to be met; compared 5 criteria with 0 criteria and 1-4 criteria <u>MD Criteria</u>: ≥5 servings of veg or fruit/day, ≥2 servings of fruits, olive/canola/rapeseed oil for cooking and dressing, ≤2 servings of red meat/week, and ≤2 cups of coffee per day	Preterm (OR) 0 criteria= REF		All MD criteria: 0.73 (95% CI: 0.32, 1.68)
		Early preterm (OR) 0 criteria= REF		All MD criteria: 0.93 (95% CI: 0.16, 5.37)

Author, Year Country, N	Exposure	Outcome	Significant finding	NS finding
		Late preterm (OR) 0 criteria= REF		All MD criteria: 0.66 (95% CI: 0.25, 1.69)
		Gestational age (HR) 0 criteria= REF		All MD criteria: 0.75 (95% CI: 0.34, 1.65)
		Preterm (OR) 1-4 criteria= REF		All MD criteria: 1.06 (95% CI: 0.71, 1.58)
		Early preterm (OR) 1-4 criteria= REF		All MD criteria: 0.80 (95% CI: 0.40, 1.62)
		Late preterm (OR) 1-4 criteria= REF		All MD criteria: 1.24 (95% CI: 0.77, 2.00)
		Gestational age (HR) 1-4 criteria= REF		All MD criteria: 1.06 (95% CI: 0.72, 1.57)

Author, Year Country, N	Exposure	Outcome	Significant finding	NS finding
Hillesund, 2014 **Norway** **N = 72,072**	**New Nordic Diet score** Constructed to measure adherence with the fundamental guidelines of the NND <u>Positively scored components</u>: (i) eating ≥24 main meals/week; (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	Preterm (OR) Low=REF	High: 0.90 (95% CI: 0.81, 0.98)	Medium: NR
		Spontaneous preterm (OR) Low=REF		Medium: 1.06 (95% CI: 0.94, 1.19) High: 0.91 (95% CI: 0.80, 1.03)
			Nulliparous High: 0.77 (95% CI: 0.66, 0.89)	Medium: 0.95 (95% CI: 0.85, 1.12)

Author, Year Country, N	**Exposure**	**Outcome**	**Significant finding**	**NS finding**
			Multiparous Medium: 1.28 (95% CI: 1.03, 1.58) High: 1.25 (95% CI: 1.00, 1.53)	
Martin, 2015[15] **USA** **N = 3,143**	**DASH adherence score** Positively-scored components: fruits, vegetables, nuts and legumes, low-fat dairy, and whole grains Negatively-scored components: sodium, red and processed meats, and sweetened beverages	Preterm (OR) Q1=REF	Q4: 0.59 (95% CI: 0.40, 0.85)	Q2: 0.85 (95% CI: 0.63, 1.16) Q3: 0.96 (95% CI: 0.72, 1.29)
		Spontaneous preterm (OR) Q1=REF	Q4: 0.58 (95% CI: 0.36, 0.95)	Q2: NR Q3: NR
		Medically indicated preterm: results NR (see figure 1)		NR

[15] Martin, 2015 is listed twice in the table: once under Index/Score and once under Principal Component Analysis/Factor Analysis

Author, Year Country, N	Exposure	Outcome	Significant finding	NS finding
Mikkelsen, 2008 **Denmark** **N = 35,530**	**Mediterranean Diet (MD)** MD group and two control groups: - MD group met all of the below criteria - Control group (CG) 1 met 1-4 criteria - CG 2 met none of the criteria MD Criteria: consumption of fish twice a week or more (lunch or dinner), intake of olive or rape seed oil, high consumption of fruits and vegetables (≥5/day), meat (other than poultry and fish) at most twice a week, and at most 2 cups of coffee/day	Preterm (OR) 0 criteria= REF		All MD criteria: 0.61 (95% CI: 0.35, 1.05)
		Early preterm (OR) 0 criteria= REF	All MD criteria: 0.28 (95% CI: 0.11, 0.76)	
		Late preterm (OR) 0 criteria= REF		All MD criteria: 0.82 (95% CI: 0.43, 1.57)
		Gestational age (HR) 0 criteria= REF		All MD criteria: 1.01 (95% CI: 0.89, 1.15)
		Preterm (OR) 1-4 criteria= REF		All MD criteria: 0.92 (95% CI: 0.69, 1.24)

Author, Year Country, N	Exposure	Outcome	Significant finding	NS finding
		Early preterm (OR) 1-4 criteria= REF		All MD criteria: 0.58 (95% CI: 0.32, 1.06)
		Late preterm (OR) 1-4 criteria= REF		All MD criteria: 1.11 (95% CI: 0.80, 1.55)
		Gestational age (HR) 1-4 criteria= REF		All MD criteria: 0.97 (95% CI: 0.91, 1.04)
PCA/Factor Analysis				
Before pregnancy				
Grieger, 2014 **Australia N = 309**	**High-protein/fruit** Fish, meat, chicken, fruit, whole grains	Preterm (OR for 1 SD increase in DP score)	0.31 (95% CI: 0.13, 0.72)	
	High-fat/sugar/takeaway Takeaway foods, potato chips, refined grains, added sugar	Preterm (OR for 1 SD increase in DP score)	1.54 (95% CI: 1.10, 2.15)	

Author, Year Country, N	Exposure	Outcome	Significant finding	NS finding
	Vegetarian-type Vegetables, whole grains, legumes	Preterm (OR for 1 SD increase in DP score)		1.08 (95% CI: 0.74, 1.57)
Pregnancy				
Chia, 2016 **Singapore** **N = 923**	**Vegetable, fruit, and white rice pattern** Higher intakes of vegetables, fruits, plain white rice, whole-grain bread, fish, and nuts and seeds, and Lower intakes of fried potatoes, burgers, carbonated and sweetened drinks, and flavored rice	Preterm (OR) Low=REF	Higher: 0.67 (95% CI: 0.50, 0.91)	
		Spontaneous preterm (OR) Low=REF	Higher: 0.55 (95% CI: 0.37, 0.82)	
		Induced preterm (OR) Low=REF		Higher: 1.18 (95% CI: 0.69, 2.03)
	Seafood and noodle pattern Higher intakes of soup, seafood, fish and seafood products, noodles (flavored and in soup), and low-fat red meat, and Lower intakes of legumes, ethnic bread, white rice, and curry-based gravies	Preterm (OR) Low=REF		Higher: 1.27 (95% CI: 0.93, 1.74)

Author, Year Country, N	Exposure	Outcome	Significant finding	NS finding
		Spontaneous preterm (OR) Low=REF		Higher: 1.20 (95% CI: 0.78, 1.83)
		Induced preterm (OR) Low=REF		Higher: 1.21 (95% CI: 0.67, 2.20)
	Pasta, cheese, and processed meat pattern High intakes of pasta-, tomato-, and cream-based gravies, cheese, and processed meat	Preterm (OR) Low=REF		Higher: 0.79 (95% CI: 0.55, 1.12)
		Spontaneous preterm (OR) Low=REF		Higher: 0.71 (95% CI: 0.42, 1.19)
		Induced preterm (OR) Low=REF		Higher: 0.50 (95% CI: 0.18, 1.42)
Englund-Ögge, 2014 **Norway N = 66,000**	**Prudent pattern** Positive for raw and cooked vegetables, salad, onion/leek/garlic, fruit and berries, nuts, vegetables oils, water as beverage, whole grain cereals, poultry, and fibre rich bread Negative for processed meat products (hot dogs, hamburgers, and so on), white bread, and pizza/tacos	Preterm (HR) T1=REF	T3: 0.88 (95% CI: 0.80, 0.97)	T2: 0.94 (95% CI: 0.86, 1.02)

Author, Year Country, N	Exposure	Outcome	Significant finding	NS finding
		Spontaneous preterm (HR) T1=REF	T3: 0.85 (95% CI: 0.75, 0.96)	T2: 0.90 (95% CI: 0.81, 1.01)
		Iatrogenic preterm (HR) Low=REF		T2: 1.00 (95% CI: 0.88, 1.15) T3: 0.93 (95% CI: 0.80, 1.08)
		Late preterm (HR) T1=REF	T2: 0.91 (95% CI: 0.82, 0.99) T3: 0.86 (95% CI: 0.78, 0.96)	
		Moderately preterm (HR) T1=REF		T2: 0.94 (95% CI: 0.75, 1.17) T3: 0.91 (95% CI: 0.71, 1.17)
		Early preterm (HR) T1=REF		T2: 1.10 (95% CI: 0.88, 1.38) T3: 0.92 (95% CI: 0.71, 1.19)
	Western pattern Positive for salty snacks, chocolate and sweets, cakes, French fries, white bread, ketchup, sugar sweetened drinks, processed meat products, and pasta Negative for lean fish and fibre rich bread	Preterm (HR) T1=REF		T2: 1.04 (95% CI: 0.95, 1.13) T3: 1.02 (95% CI: 0.92, 1.13)

Author, Year Country, N	Exposure	Outcome	Significant finding	NS finding
		Spontaneous preterm (HR) T1=REF		T2: 1.10 (95% CI: 0.98, 1.23) T3: 1.04 (95% CI: 0.91, 1.19)
		Iatrogenic preterm (HR) T1=REF		T2: 1.00 (95% CI: 0.87, 1.15) T3: 1.05 (95% CI: 0.90, 1.23)
		Late preterm (HR) T1=REF		T2: 1.06 (95% CI: 0.96, 1.17) T3: 1.06 (95% CI: 0.94, 1.19)
		Moderately preterm (HR) T1=REF		T2: 0.81 (95% CI: 0.64, 1.02) T3: 0.79 (95% CI: 0.60, 1.04)
		Early preterm (HR) T1=REF		T2: 1.21 (95% CI: 0.95, 1.53) T3: 1.09 (95% CI: 0.82, 1.44)
	Traditional pattern Positive for boiled potatoes, fish products, gravy, lean fish, margarine, rice pudding, low fat milk, and cooked vegetables Negative for poultry and pizza/tacos	Preterm (HR) T1=REF	T3: 0.91 (95% CI: 0.83, 0.99)	T2: 0.98 (95% CI: 0.90, 1.06)

Author, Year Country, N	Exposure	Outcome	Significant finding	NS finding
		Spontaneous preterm (HR) T1=REF		T2: 0.96 (95% CI: 0.86, 1.07) T3: 0.96 (95% CI: 0.86, 1.09)
		Iatrogenic preterm (HR) T1=REF	T3: 0.85 (95% CI: 0.74, 0.99)	T2: 1.01 (95% CI: 0.89, 1.15)
		Late preterm (HR) T1=REF	T3: 0.89 (95% CI: 0.80, 0.99)	T2: 0.98 (95% CI: 0.89, 1.08)
		Moderately preterm (HR) T1=REF		T2: 1.02 (95% CI: 0.81, 1.28) T3: 1.02 (95% CI: 0.79, 1.32)
		Early preterm (HR) T1=REF		T2: 0.93 (95% CI: 0.74, 1.16) T3: 0.90 (95% CI: 0.69, 1.15)
Martin, 2015[16] **USA** **N = 3,143**	**Factor 1** Fruits, tomatoes, broccoli, spinach, carrots, green salads, sweet potatoes, low-fat milk, yogurt, highfiber and highly fortified cereals, nonfried chicken and fish, and wheat bread	Preterm (OR) Q1=REF		Q2: 1.20 (95% CI: 0.88, 1.64) Q3: 1.07 (95% CI: 0.77, 1.49) Q4: 0.87 (95% CI: 0.60, 1.27)

[16] Martin, 2015 is listed twice in the table: once under Index/Score and once under Principal Component Analysis/Factor Analysis

Author, Year Country, N	Exposure	Outcome	Significant finding	NS finding
		Spontaneous preterm (OR) Q1=REF		Q2: NR Q3: NR Q4: NR
		Medically indicated preterm: results NR (see figure 1)		NR
	Factor 2 Beans, corn, French fries, hamburgers or cheeseburgers, white potatoes, fried chicken, spaghetti dishes, cheese dishes such as macaroni and cheese, cornbread or hushpuppies, processed meats, biscuits, and ice cream	Preterm (OR) Q1=REF	Q4: 1.53 (95% CI: 1.02, 2.30)	Q2: 1.01 (95% CI: 0.72, 1.42) Q3: 1.37 (95% CI: 0.96, 1.96)
		Spontaneous preterm (OR) Q1=REF	Q4: 1.92 (95% CI: 1.08, 3.41)	Q2: NR Q3: NR
		Medically indicated preterm: results NR (see figure 1)		NR

Author, Year Country, N	Exposure	Outcome	Significant finding	NS finding
	Factor 3 Collard greens, coleslaw or cabbage, red meats, fried chicken and fish, processed meats, cornbread or hushpuppies, eggs or egg biscuits, gravy, whole milk, and vitamin C–rich drinks such as Kool-Aid and Hi-C	Preterm (OR) Q1=REF	Q4: 1.55 (95% CI: 1.07, 2.24)	Q2: 1.25 (95% CI: 0.89, 1.74) Q3: 1.32 (95% CI: 0.94, 1.86)
		Spontaneous preterm (OR) Q1=REF	Q4: 1.78 (95% CI: 1.07, 2.96)	Q2: NR Q3: NR
		Medically indicated preterm: results NR (see figure 1)		NR
	Factor 4 Shellfish, pizza, salty snacks, candies, pancakes, tacos or burritos, and cakes and cookies	Preterm (OR) Q1=REF		Q2: 0.94 (95% CI: 0.68, 1.31) Q3: 1.18 (95% CI: 0.85, 1.64) Q4: 1.13 (95% CI: 0.79, 1.63)
		Spontaneous preterm: results NR (see figure 1)		NR

Author, Year Country, N	Exposure	Outcome	Significant finding	NS finding
		Medically indicated preterm: results NR (see figure 1)		NR
Rasmussen, 2014 **Denmark N = 59,949**	**Alcohol pattern** Soya, root, wine, liquor, and beer	Spontaneous preterm (OR)		NR
		Induced preterm (OR)		NR
	Vegetable/Prudent pattern Cabbage, onion, mushroom, corn, salad, tomato, vegetables other, and legumes	Spontaneous preterm (OR)		NR
		Induced preterm (OR)		NR
	Western pattern Potatoes, French fries, bread white, pork, beef veal, meat mixed, meat cold, and dressing sauce	Spontaneous preterm (OR) Q1=REF		Q2: NR Q3: NR Q4: NR Q5: 1.18 (95% CI: 0.99, 1.39)

Author, Year Country, N	Exposure	Outcome	Significant finding	NS finding
		Induced preterm (OR) Q1=REF	Q5 (unadjusted): 1.70 (95% CI: 1.37, 2.11) (Association was "relatively unaffected" after adjustment)	Q2: NR Q3: NR Q4: NR
	Seafood pattern Fish	Spontaneous preterm (OR)		NR
		Induced preterm (OR) Q1=REF	Q4: 0.62 (95% CI: 0.50, 0.79)	Q2: NR Q3: NR Q5: 0.90 (95% CI: 0.72, 1.11)
	Nordic pattern Bread dark, fruit Nordic, and hard cheese	Spontaneous preterm (OR)		NR
		Induced preterm (OR)		NR
	Sweets pattern Bread white, margarine, snack, sugar cakes, sweet spread, candy, dessert dairy, and chocolate	Spontaneous preterm (OR)		NR
		Induced preterm (OR)		NR
	Rice/Pasta/Poultry pattern Rice, pasta, and poultry	Spontaneous preterm (OR)		NR

Author, Year Country, N	**Exposure**	**Outcome**	**Significant finding**	**NS finding**
		Induced preterm (OR)		NR
Other Method				
Before pregnancy/ Before or During Pregnancy				
Xie, 2015 **USA** **N = 572**	**High-calorie sweet pattern** Foods such as doughnuts, ice cream, chocolate candy, regular candy, and cookies	Gestational age (β for 1-unit increase in the scale)		0.03 (SE=0.10)
	High-calorie nonsweet pattern Steak, fried chicken, fried fish, pizza, hot dogs, sausage, cheese, whole milk, etc.	Gestational age (β for 1-unit increase in the scale)		-0.06 (SE=0.04)
	Low-calorie pattern Foods such as low-fat and skim milk, grilled chicken, grilled fish, apples, and breakfast cereal	Gestational age (β for 1-unit increase in the scale)		0.11 (SE=0.08)

Assessment of the body of evidence

This body of evidence was deemed to be limited in strength. The individual grading elements are discussed below.

Internal validity (determined with NEL Bias Assessment Tool):

- Study design: The data were primarily observational in nature, limiting the ability to determine causal effect of the dietary patterns.
- Exposure:
  - Food frequency questionnaires (FFQ) were the primary measurement tool. The type of FFQ used varied between studies; furthermore, the data were self-reported, thus possibly affecting the validity of the data collected.
  - Two studies used 24-hour dietary recalls to collect exposure data (2, 10), one of which was not validated (10). While Chia et al. reported significant associations, Xie et al. did not.
- Timing: Heterogeneity in the duration of recall (e.g. 24 hours vs. 12 months) and the timing of exposure assessment (as noted below) would affect the validity.
  - Grieger et al. assessed dietary patterns before pregnancy.
  - Gresham et al. and Xie et al. measured diet during a wide window spanning from before pregnancy to the end of pregnancy, but did not delineate the findings based on timing (before pregnancy vs. during pregnancy).
  - The rest of the studies assessed diet during pregnancy.
- Outcome: There was a lack of uniformity in outcome assessment, and some studies used less robust methods than others.
  - Two studies used Last Menstrual Period (LMP) to assess outcomes (6, 9).
  - Two studies used ultrasound dating (2, 11).
  - Five studies used a combination of LMP and ultrasound dating (3-5, 7, 8).
  - Two studies used self-reported outcome data (1, 10).
  - Studies measured and reported the outcome (gestational age at birth) in one or more of the following ways-
    - Preterm birth (1-8, 10, 11)
    - Spontaneous preterm birth (2, 3, 7-9)
    - Induced preterm birth (3, 9)
    - Early preterm birth (3, 6)
    - Late preterm birth (3)
    - Gestational age (6, 10, 11)

  It is unclear if the study findings differed based on how the outcome was measured and reported.
- Confounders: Key confounding factors such as parity, educational attainment, smoking status, race/ethnicity, maternal age, family poverty income ratio, pre-pregnancy BMI, mean total energy intake, hypertensive disorders of pregnancy, gestational diabetes mellitus and intrauterine growth restriction were not consistently controlled across studies.

Adequacy:

- The number of studies in this body of evidence was modest. This evidence base included 11 studies corresponding to one RCT and seven unique cohorts.

- There was overlap in the use of some datasets. For example, three studies used MoBA (3, 5, 7) and two used DNBC (6, 9). However, there was no overlap in authorship.
- The sample size varied between 290 subjects in the RCT (11) and 72,072 in a prospective cohort study (7). Notably, the RCT may not have been powered to address this outcome.

Consistency:

- Six of the nine studies found an association between dietary patterns and risk of preterm birth (2-4, 7, 8, 11). It should be noted that Grieger et al. measured dietary patterns before pregnancy while the other studies measured diet during pregnancy. In addition, Mikkelsen et al. observed that dietary patterns were associated with early preterm birth, specifically (not overall preterm birth).
- When gestational age was presented as a continuous outcome (6, 10, 11), only one of the three studies reported a significant finding (11).
- Four of the five studies reported an association between dietary patterns (healthy or unhealthy) and spontaneous preterm birth (2, 3, 8, 9). Only Hillesund et al. did not report a statistically significant association with this outcome. However, Hillesund et al. noted an effect measure modification by parity. Greater adherence to a "healthy" dietary pattern in nulliparous women was associated with a reduced risk of spontaneous preterm birth; on the other hand, greater adherence to the same dietary pattern in multiparous women was associated with an increased risk.
- The following methodological characteristics could explain some of these inconsistencies:
    - Age range of the participants (adolescent vs. adult women)
    - Method of exposure assessment (24-hour recall vs. FFQ)
    - Timing (before pregnancy vs. during pregnancy) and length of time reflected by dietary data (24 hours vs. 12 months)
    - Method of outcome assessment (self-report vs. ultrasound and/or LMP)
    - Measuring the outcome as continuous (gestational age) vs. dichotomous (preterm birth, spontaneous preterm birth, induced preterm birth, early and late preterm birth)
    - Variability in confounders that were adjusted in the analysis

Impact:

- Most of the studies in the body of evidence directly examined the relationship between different dietary patterns or different levels of adherence to a dietary pattern and risk of preterm birth. Notably, only one cohort was designed to understand the etiology of preterm birth (8). Another exception is the RCT, which assessed preterm birth as the secondary outcome. The primary study was focused on understanding the relationship between a cholesterol-lowering diet during pregnancy and cholesterol levels in maternal, cord, neonatal cholesterol (11).
- Modest risk reductions were observed across studies that found a significant relationship between adhering to a dietary pattern and risk of preterm and spontaneous preterm birth.
    - Preterm birth:

        - Highest adherence to a protective dietary pattern during pregnancy was associated with a preterm birth risk reduction of 9% to 90%.
        - Highest adherence to a detrimental dietary pattern during pregnancy was associated with an increase in preterm birth risk of 53% to 55%.
        - One study reported that highest adherence to a protective dietary pattern before pregnancy was associated with a 69% preterm birth risk reduction.
    - Spontaneous preterm birth:
        - Highest adherence to a protective dietary pattern during pregnancy was associated with a spontaneous preterm birth risk reduction of 15% to 45%.
        - Highest adherence to a detrimental dietary pattern during pregnancy was associated with an increase in spontaneous preterm birth risk of 18% to 92%.
- Even though the study findings are merely associations, there is nevertheless a strong scientific premise[17,18] for this association based on experiments in animals, observations in women about LC-PUFA intake and experimental studies in women with LC-PUFA supplements that produce differences in gestational age comparable to those observed in this body of evidence.

Generalizability:

- Only two studies in this body of evidence were conducted in the U.S (8, 10), and one of them was primarily conducted in adolescent girls.
- Minority and lower SES populations were underrepresented in the body of evidence. There was also a lack of diversity based on BMI, parity, age at conception and smoking status.
- It is unknown if the findings would be applicable in more diverse samples before and during pregnancy.

Other limitations/considerations:

A wide range of methods (sometimes using the same nomenclature) was used to define and assess dietary patterns, which made it difficult to compare and contrast results across studies. Journal editors and peer-reviewers may be less willing to publish studies that replicate others' findings, which could have resulted in an evidence base with a wide array of dietary patterns. It is important for the editors and peer-reviewers to understand the need for publishing studies that replicate dietary patterns, in addition to publishing studies that assess unique dietary patterns[19].

[17] Imhoff-Kunsch, B., Briggs, V., Goldenberg, T., & Ramakrishnan, U. (2012). Effect of n-3 long-chain polyunsaturated fatty acid intake during pregnancy on maternal, infant, and child health outcomes: a systematic review. *Paediatr Perinat Epidemiol, 26 Suppl 1*, 91-107. doi:10.1111/j.1365-3016.2012.01292.x

[18] De Giuseppe, R., Roggi, C., & Cena, H. (2014). n-3 LC-PUFA supplementation: effects on infant and maternal outcomes. *Eur J Nutr, 53*(5), 1147-1154. doi:10.1007/s00394-014-0660-9

[19] U.S. Department of Health and Human Services and U.S. Department of Agriculture. (2015). *2015 – 2020 Dietary Guidelines for Americans. 8th Edition.* Retrieved from https://health.gov/dietaryguidelines/2015/guidelines/.

Research recommendations

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

- Include diverse populations from the U.S. and elsewhere with varying racial/ethnic and socioeconomic backgrounds.
- Foster collaborative efforts across different regions and populations so that dietary patterns can be more consistently scored, compared and reproduced across studies.
- Develop and validate novel epidemiological tools that can accurately capture the complexity of dietary habits.
- Promote harmonization of research methods across various cohorts and randomized trials, similar to the National Cancer Institute's Dietary Patterns Methods Project[20].
- Adjust for key confounding factors in observational studies, including parity, educational attainment, smoking status, race/ethnicity, maternal age, family poverty income ratio, pre-pregnancy BMI, mean total energy intake, hypertensive disorders of pregnancy, gestational diabetes mellitus and intrauterine growth restriction.
- Improve comparability across studies by increasing the uniformity of 1) the timing of dietary assessment, and 2) the outcomes measured.
- Include well-designed and sufficiently powered RCTs.
- Include women before and during pregnancy and contrast the findings to understand whether dietary patterns during certain time periods are more critical than others for preterm deliveries.
- Report study findings as both continuous (gestational age) and dichotomous (preterm birth) outcomes.
- Include women with multiple gestation and measure gestational age as a continuous outcome.
- Assess effect measure modification by parity, pre-pregnancy BMI, smoking status, and income in multiethnic subgroups within the U.S.

[20] Liese, A. D., Krebs-Smith, S. M., Subar, A. F., George, S. M., Harmon, B. E., Neuhouser, M. L., . . . Reedy, J. (2015). The Dietary Patterns Methods Project: synthesis of findings across cohorts and relevance to dietary guidance. J Nutr, 145(3), 393-402. doi:10.3945/jn.114.205336

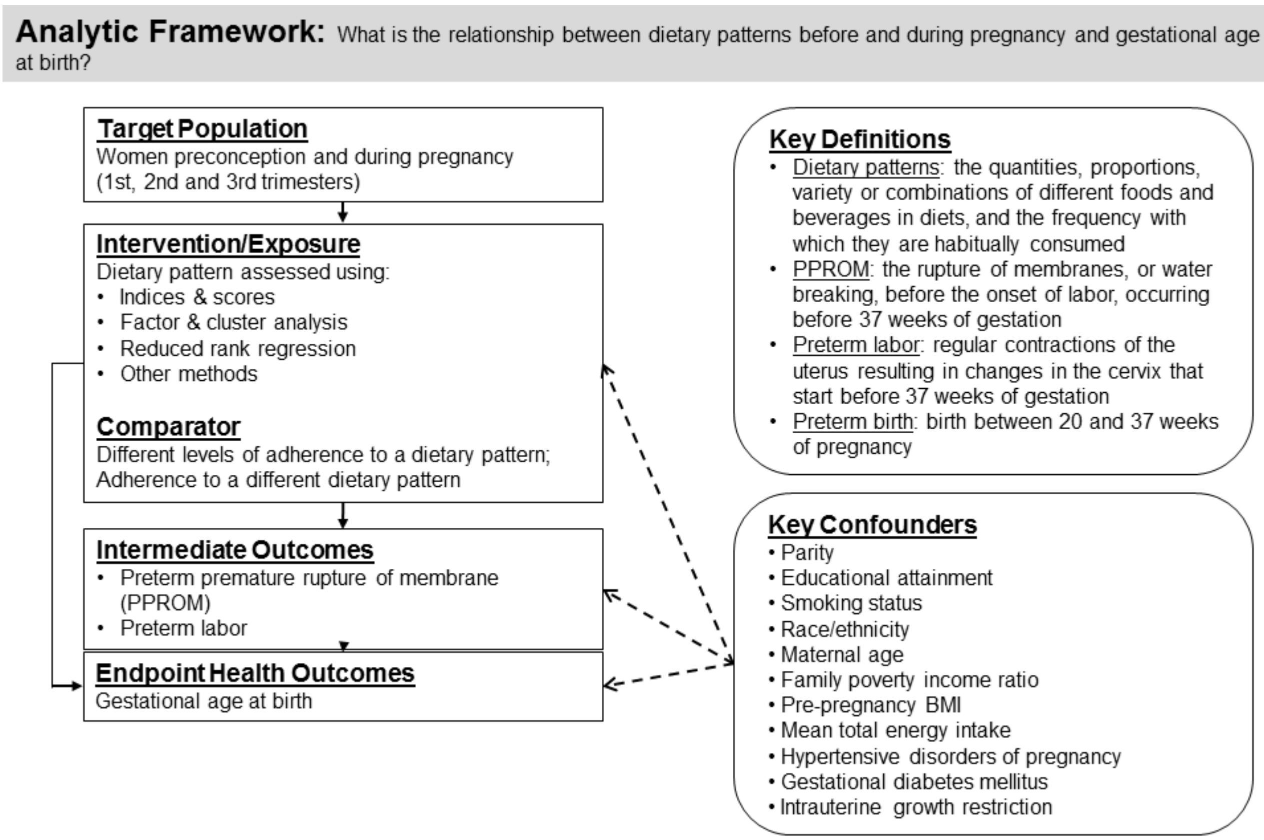
Included articles

1. 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.
2. Chia AR, de Seymour JV, Colega M, Chen LW, Chan YH, Aris IM, Tint MT, Quah PL, Godfrey KM, Yap F, 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(5):1416-23.
3. Englund-Ogge L, Brantsaeter AL, Sengpiel V, Haugen M, Birgisdottir BE, Myhre R, Meltzer HM, Jacobsson B. Maternal dietary patterns and preterm delivery: results from large prospective cohort study. BMJ 2014;348:g1446.
4. Grieger JA, Grzeskowiak LE, Clifton VL. Preconception dietary patterns in human pregnancies are associated with preterm delivery. J Nutr 2014;144(7):1075-80.
5. Haugen M, Meltzer HM, Brantsaeter AL, Mikkelsen T, Osterdal ML, Alexander J, Olsen SF, Bakketeig L. Mediterranean-type diet and risk of preterm birth among women in the Norwegian Mother and Child Cohort Study (MoBa): a prospective cohort study. Acta Obstet Gynecol Scand 2008;87(3):319-24.
6. Mikkelsen TB, Osterdal ML, Knudsen VK, Haugen M, Meltzer HM, Bakketeig L, Olsen SF. Association between a Mediterranean-type diet and risk of preterm birth among Danish women: a prospective cohort study. Acta Obstet Gynecol Scand 2008;87(3):325-30.
7. Hillesund ER, Overby NC, Engel SM, Klungsoyr K, Harmon QE, Haugen M, Bere E. Associations of adherence to the New Nordic Diet with risk of preeclampsia and preterm delivery in the Norwegian Mother and Child Cohort Study (MoBa). Eur J Epidemiol 2014;29(10):753-65.
8. Martin CL, Sotres-Alvarez D, Siega-Riz AM. Maternal Dietary Patterns during the Second Trimester Are Associated with Preterm Birth. J Nutr 2015;145(8):1857-64.
9. Rasmussen MA, Maslova E, Halldorsson TI, Olsen SF. Characterization of dietary patterns in the Danish national birth cohort in relation to preterm birth. PLoS One 2014;9(4):e93644.
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.
11. Khoury J, Henriksen T, Christophersen B, Tonstad S. Effect of a cholesterol-lowering diet on maternal, cord, and neonatal lipids, and pregnancy outcome: a randomized clinical trial. Am J Obstet Gynecol 2005;193(4):1292-301.

ANALYTIC FRAMEWORK

The analytic framework (Figure 1) illustrates the overall scope of the systematic review, including the population, the interventions and/or exposures, comparators, and outcomes of interest. It also includes definitions of key terms and identifies key confounders considered in the systematic review. This is the analytic framework for the systematic review conducted to examine the relationship between dietary patterns before and after pregnancy and gestational age at birth.

Figure 1: Analytic framework



SEARCH PLAN AND RESULTS

Inclusion and exclusion criteria

The inclusion and exclusion criteria are a set of characteristics to determine which studies will be included or excluded in the systematic review. This table provides the inclusion and exclusion criteria for the systematic review question(s): What is the relationship between dietary patterns before and during pregnancy and gestational age at birth?

Table 6. Inclusion and exclusion criteria

Category	Inclusion Criteria	Exclusion Criteria
Study Design	• Randomized controlled trials • Prospective cohort studies • Retrospective cohort studies • Nested case-control studies	• 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
Exposure/ Intervention	• 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	• Studies that do not provide a description of the dietary pattern(s) (i.e., foods and beverages) consumed by subjects[21]
Comparator	• Different levels of adherence to a dietary pattern • Adherence to a different dietary pattern	

[21] 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	Inclusion Criteria	Exclusion Criteria
Date Range	• Studies published in the following date range: 1980-present (search date)	
Language	• Studies published in English	• Studies published in languages other than English
Study Setting	• Studies conducted in Very High and High Human Development Countries* **Determined using the most recent Human Development Index*	• Studies conducted in Medium and Low Human Development Countries* **Determined using the most recent Human Development Index*
Study Duration	• Studies regardless of length	
Temporality	• Studies when the exposure was assessed prior to the outcome	• Studies when the outcome was assessed prior to the exposure
Publication Status	• Studies published in peer-reviewed journals	• Grey literature, including unpublished data, manuscripts, reports, abstracts, conference proceedings
Study Subjects	• Human subjects • Adolescent girls and women capable of becoming pregnant (15-44 years) • Pregnant girls and women (15-44 years) – single and multiple pregnancies • Neonates	• Animal and in vitro models • Hospitalized patients, when hospitalization is not related to pregnancy, birth and immediate postpartum • Pregnancies conceived ONLY using Assisted Reproductive Technologies
Size of Study Groups	• Studies regardless of group size	

Category	Inclusion Criteria	Exclusion Criteria

Health Status of Study Subjects	• 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
	  ○ Hypermesis Gravidarum
	  ○ Previous adverse outcome (e.g., preterm)
	  ○ Obesity
		• 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

Outcomes	• Gestational age at birth
	• Intermediate Outcomes:
	  ○ Preterm premature rupture of membrane
	  ○ Preterm labor	

Search terms and electronic databases used

PubMed, US National Library of Medicine

- Date(s) searched: January 1980 to January 2017
- Search Terms:

pregnancy[mh] OR “Prenatal Exposure Delayed Effects”[mesh] OR “Maternal Exposure”[mesh] OR “pregnant women”[mh] OR pregnan*[tiab] OR prenatal[tiab] OR maternal OR mother* OR postpartum OR newborn*[tiab] OR perinatal OR peri-natal OR pre-conception OR preconception OR peri-conception OR periconception OR "Infant, Newborn"[Mesh] OR neonat*[tiab] OR newly born* OR "Peripartum Period"[Mesh] OR peripartum[tiab] OR peri-partum[tiab] OR gestation* OR natal OR puerperium[tiab] OR "Maternal Nutritional Physiological Phenomena"[Mesh]

AND

hypertensi*[tiab] OR "Hypertension"[Mesh:NoExp] OR vomit* OR diabetes*[tiab] OR diabetic*[tiab] OR "Birth Weight"[Mesh] OR "Birth Weight"[tiab] OR "Glucose Intolerance"[Mesh] OR Glucose Intoleran*[tiab] OR glucose toleran* OR "Insulin Resistance"[Mesh] OR Insulin Resistan*[tiab] OR Dysglycemia[tiab] OR fasting blood glucose* OR "Hemoglobin A, Glycosylated"[Mesh] OR "Proteinuria"[Mesh:noexp] OR Albuminuria OR "Blood Pressure"[mh] OR “blood pressure”[tiab]

OR

"Diabetes, Gestational"[Mesh] OR (gestation*[tiab] AND (diabetes*[tiab] OR diabetic*[tiab])) OR "Pre-Eclampsia"[Mesh] OR "Pre-Eclampsia"[tiab] OR preeclampsia[tiab] OR "Hypertension, Pregnancy-Induced"[Mesh] OR Eclampsia OR "Gestational Age"[Mesh] OR "Morning Sickness"[Mesh] OR (Hyperemesis Gravidarum) OR "Gestational Age"[tiab] OR "Obstetric Labor, Premature"[Mesh] OR ((prematur*[tiab] OR preterm [tiab]) AND (baby[tiab] OR infant*[tiab] OR birth OR labor OR membrane* OR babies)) OR "Fetal Growth Retardation"[Mesh] OR IUGR[tiab] OR “Intrauterine growth restriction” OR "Fetal Development"[Mesh:noexp] OR "Fetal Weight"[Mesh] OR "Umbilical Arteries"[Mesh] OR "Uterine Artery"[Mesh]

AND

(“diet quality” OR dietary pattern* OR diet pattern* OR eating pattern* OR food pattern* OR eating habit* OR dietary habit* OR food habit* OR dietary profile* OR food profile* OR diet profile* OR eating profile* OR dietary guideline* OR dietary recommendation* OR eating style*) OR

(DASH[ti] OR DASH[tw] OR ("dietary approaches"[ti] AND hypertension[ti]) OR "Diet, Mediterranean"[Mesh] OR Mediterranean[ti] OR vegan* OR vegetarian* OR "Diet, Vegetarian"[Mesh] OR “prudent diet” OR “western diet” OR nordiet OR omni[ti] OR omniheart[tiab] OR (Optimal Macronutrient Intake Trial to Prevent Heart Disease) OR adventist* OR ((Okinawa* OR "Ethnic Groups"[Mesh] OR “plant based” OR Mediterranean[tiab] OR Nordic[tiab] OR "heart healthy"[tiab] OR indo-mediterranean) AND (diet[mh] OR diet[tiab] OR diets[tiab] OR food[mh]))) OR

("Guideline Adherence"[Mesh] AND (diet OR food OR eating OR eat OR dietary OR feeding OR nutrition OR nutrient*)) OR (adherence AND (nutrient* OR nutrition OR diet OR dietary OR food OR eat OR eating) AND (guideline* OR guidance OR recommendation*)) OR

(dietary score* OR adequacy index* OR kidmed OR Diet Quality Index* OR Food Score* OR Diet Score* OR MedDietScore OR Dietary Pattern Score* OR "healthy eating index") OR

((index*[ti] OR score*[ti] OR indexes OR scoring[ti] OR indices[ti]) AND (dietary[ti] OR nutrient*[ti] OR eating[tiab] OR food[ti] OR food[mh] OR diet[ti] OR diet[mh]) AND (pattern* OR habit* OR profile*)) OR meals[mh] OR meals[tiab] OR meal[tiab] OR mealtime*[tiab]

OR

diet[mh:noexp] OR diet[ti] OR diets[ti] OR food*[tiab] OR "Food"[mh:noexp] OR "Eating"[mh] OR dietary intake*[tiab] OR food intake*[tiab] OR food habits[mh] OR diet habit*[tiab] OR eating habit*[tiab] OR food choice*[tiab] OR dietary choice*[tiab] OR dietary change*[tiab] NOT (editorial[ptyp] OR comment[ptyp] OR news[ptyp] OR letter[ptyp] OR review[ptyp] OR systematic[sb])

Embase, Elsevier:

- Date(s) searched: January 1980 to January 2017
- Search Terms:

'pregnancy'/exp OR 'pregnant woman'/exp OR 'prenatal period'/exp OR 'mother'/exp OR 'prenatal exposure'/exp OR 'prenatal growth'/exp OR 'puerperium'/exp OR 'newborn'/exp OR prematurity/exp OR pregnan*:ti,ab OR maternal:ti,ab OR mother*:ti,ab OR prenatal:ti,ab OR pre-natal:ti,ab OR 'puerperium':ti,ab OR postpartum:ti,ab OR newborn:ti,ab OR neonat*:ti,ab OR "newly born":ti,ab OR periconception:ti,ab OR peri-conception:ti,ab OR pre-conception:ti,ab OR preconception;ti,ab OR gestation* OR peripartum:ti,ab OR peri-partum:ti,ab OR natal:ti,ab OR gestation* OR 'perinatal development'/exp OR 'perinatal care'/de OR perinatal:ti,ab OR peri-natal:ti,ab OR 'puerperium'/de OR 'puerperium':ti,ab OR 'maternal nutrition'/exp

AND

hypertensi* OR hyperemesis:ti,ab OR vomit*:ti,ab OR diabet* OR 'birth weight'/exp OR birthweight:ti,ab OR ((neonatal OR newborn) NEAR/3 weight)

OR

'glucose intolerance'/exp OR (Glucose NEAR/2 Intoleran*) OR (glucose NEAR/2 toleran*) OR 'insulin resistance'/exp OR (Insulin NEAR/1 Resistan*):ti,ab OR Dysglycemia OR "fasting blood glucose" OR 'hemoglobin A1c'/exp OR 'hemoglobin A1c' OR 'proteinuria'/exp OR albuminuria OR "Blood Pressure"/de

OR

'pregnancy diabetes mellitus'/exp OR "diabetes mellitus gravidarum":ti,ab OR 'eclampsia OR preeclampsia'/exp OR eclampsia:ti,ab OR preeclampsia:ti,ab OR pre-eclampsia:ti,ab OR 'maternal hypertension'/exp OR 'gestational age'/exp OR 'small for date infant'/exp OR 'gestational age' OR 'hyperemesis gravidarum'/exp OR ‘morning sickness'/exp OR (gestation* NEAR/2 diabet*):ti,ab OR (Obstetric NEAR/3 (Labor OR labour)) OR (labor/exp AND obstetric*) OR 'prematurity'/exp OR ((prematur* OR preterm) NEAR/3 (baby OR infant* OR babies OR birth OR childbirth OR labor OR membrane*)) OR 'intrauterine growth retardation'/de OR IUGR:ti,ab OR “Intrauterine growth restriction” OR 'fetus growth'/exp OR 'fetus development'/exp OR ‘fetus weight'/exp OR 'umbilical artery'/exp OR 'uterine artery'/exp OR ((fetal OR fetus OR foetal OR foetus OR embryo*) NEAR/3 (weight OR develop* OR growth)):ti,ab

AND

'eating habit'/exp OR 'Mediterranean diet'/exp OR nordiet:ti,ab OR ‘nordic diet’:ti,ab OR DASH:ti,ab OR ‘dietary approaches to stop hypertension’:ti,ab OR vegan*:ab,ti OR vegetarian*:ab,ti OR 'vegetarian diet'/exp OR 'vegetarian'/exp OR ‘prudent diet’:ti,ab OR ‘western diet’:ti,ab OR 'Western diet'/exp OR meal/de OR omniheart:ti,ab OR omni:ti OR ‘plant based diet’ OR ((eating OR food OR diet* OR calori*) NEAR/3 (pattern? OR habit? OR profile? OR recommendation? OR guideline? OR style* OR choice* OR intake OR quality)) OR (('ethnic, racial and religious groups'/exp OR Okinawa* OR adventist* OR ‘mediterranean') AND (diet/exp OR eating/exp OR 'food intake'/de OR calori* OR diet* OR food OR eating))

OR

Diet/de OR 'dietary intake'/de OR 'food preference'/de OR 'food intake'/de OR 'diet restriction'/exp OR 'eating habit'/exp OR diet*:ti OR kidmed:ab,ti OR 'meddietscore':ab,ti OR 'healthy eating index':ab,ti OR ((index OR score OR scoring OR indices) NEAR/3 (diet* OR eating OR food)) OR “food consumption”

OR

food*:ti,ab OR "Food"/de OR Eating:ti,ab OR (dietary NEAR/1 change*):ti,ab OR Meal*:ti,ab

Cochrane, Central Register of Controlled Trials, John Wiley & Sons:

- Date(s) searched: January 1980 to January 2017
- Search Terms:

  [mh pregnancy] OR [mh “Maternal Exposure”] OR [mh “Prenatal Exposure Delayed Effects”] OR [mh “pregnant women”] OR pregnan*:ti,ab OR prenatal OR maternal OR mother* OR postpartum OR newborn*:ti,ab OR perinatal OR peri-natal OR pre-conception OR preconception OR peri-conception OR periconception OR [mh "Infant, Newborn"] OR neonat*:ti,ab OR (newly NEAR/1 born*) OR gestation* OR peripartum OR peri-partum OR natal:ti,ab OR puerperium OR gravidarum OR [mh "Peripartum Period"] OR peripartum:ti,ab

OR peri-partum:ti,ab OR natal OR puerperium:ti,ab OR [mh "Maternal Nutritional Physiological Phenomena”]

AND

(hypertensi*:ti,ab OR [mh ^Hypertension] OR vomit*:ti,ab OR diabet*:ti,ab OR [mh "Birth Weight"] OR "Birth Weight":ti,ab OR [mh "Glucose Intolerance"] OR (Glucose NEAR/1 Intoleran*) OR (glucose NEAR/1 toleran*) OR [mh "Insulin Resistance"] OR (Insulin NEAR/1 Resistan*:ti,ab) OR Dysglycemia:ti,ab OR “fasting blood glucose” OR [mh "Hemoglobin A, Glycosylated"] OR [mh ^"Proteinuria"] OR Albuminuria OR [mh "Blood Pressure"] OR “blood pressure”:ti,ab)

OR

[mh "Diabetes, Gestational"] OR (gestation* NEAR/1 diabet*) OR [mh "Pre-Eclampsia"] OR "Pre-Eclampsia":ti,ab OR preeclampsia:ti,ab OR [mh "Hypertension, Pregnancy-Induced"] OR Eclampsia OR [mh "Gestational Age"] OR [mh "Morning Sickness"] OR (Hyperemesis NEAR/3 Gravidarum) OR "Gestational Age":ti,ab OR [mh "Birth Weight"] OR "Birth Weight":ti,ab OR ((neonatal OR newborn) NEAR/3 weight) OR [mh "Obstetric Labor, Premature"] OR ((prematur*:ti,ab OR preterm:ti,ab) AND (baby:ti,ab OR infant*:ti,ab OR birth OR labor OR membrane* OR babies)) OR [mh "Fetal Growth Retardation"] OR IUGR:ti,ab OR “Intrauterine growth restriction” OR [mh ^"Fetal Development"] OR [mh "Fetal Weight"] OR [mh "Umbilical Arteries"] OR [mh "Uterine Artery"]

AND (diet:ti OR diets:ti OR dietary:ti OR meal*:ti,ab OR “prudent diet” OR nordiet:ti,ab OR omniheart OR "Optimal Macronutrient Intake Trial to Prevent Heart Disease" OR ((Index OR score OR indices OR scoring) NEAR/3 (dietary OR diet OR food OR eating)) OR “adequacy index” OR kidmed OR MedDietScore)

OR ‘dietary approaches to stop hypertension’:ti,ab OR omniheart:ti,ab OR omni:ti OR ‘plant based diet’ OR ((eating OR food OR diet* OR calori*) NEAR/3 (pattern? OR habit? OR profile? OR recommendation? OR guideline? OR style* OR choice* OR intake OR quality))

OR

food*:ti,ab OR Eating:ti,ab OR (dietary NEAR/1 change*):ti,ab OR DASH:ti,ab OR vegan*:ab,ti OR vegetarian*:ab,ti OR omni:ti OR ((ethni* OR racial OR religio* OR asia* OR western OR Okinawa* OR adventist* OR ‘mediterranean' OR Nordic* OR indo-mediterranean) NEAR/3 (calori* OR diet* OR food OR eating))

OR [mh "Diet, Mediterranean"] OR [mh "Diet, Vegetarian"] OR ([mh "Ethnic Groups"] AND ([mh diet] OR diet*:ti,ab OR [mh ^food] OR eat:ti,ab OR eating:ti,ab OR [mh "Eating"] OR [mh “food habits”])) OR

([mh "Guideline Adherence"] AND (diet OR food OR eating OR eat OR dietary)) OR ((adhere* OR adhering) AND (diet OR dietary OR food OR eat OR eating) AND (guideline* OR guidance OR recommendation*)) OR [mh meals] OR [mh ^diet] OR diet*:ti,ab OR [mh ^"Food"] OR [mh "Eating"] OR [mh “food habits”]

CINAHL (Plus) with Full Text, EBSCO (Cumulative Index to Nursing and Allied Health Literature):

- Date(s) searched: January 1980 to January 2017
- Search Terms:

  (MH "Food and Beverages") OR (MH "Food") OR (MH "Diet") OR (MH "Eating") OR (MH "Eating Behavior") OR (MH "Meals+") OR (MH "Food Preferences") OR (MH "Food Habits") OR (MH "Mediterranean Diet") OR (MH "Diet, Western") OR (MH "DASH Diet") OR (MH "Vegetarianism")

  OR meal* OR “prudent diet” OR nordiet OR omniheart OR "Optimal Macronutrient Intake Trial to Prevent Heart Disease" OR ((Index OR score OR indices OR scoring) N3 (dietary OR diet OR food OR eating)) OR “adequacy index” OR kidmed OR MedDietScore

  OR “dietary approaches to stop hypertension” OR “plant based diet” OR ((eating OR food* OR diet* OR calori*) N3 (pattern? OR habit? OR profile? OR recommendation? OR guideline? OR style* OR choice* OR intake OR quality))

  OR

  (dietary NEAR/1 change*) OR vegan* OR vegetarian* OR ((ethni* OR racial OR religio* OR asia* OR western OR Okinawa* OR adventist* OR ‘mediterranean' OR Nordic* OR indo-mediterranean OR omni*) N3 (calori* OR diet* OR food OR eating))

  OR (MH "Ethnic Groups+") AND ((mh diet) OR diet* OR (MH food) OR eat OR eating OR (MH "Eating") OR MH “food habits”)) OR

  ((adhere* OR adhering) N3 (diet OR dietary OR food OR eat OR eating)) AND (guideline* OR guidance OR recommendation*))

  (MH "Maternal Nutritional Physiology+") OR (MH "Maternal Exposure") OR (MH "Pregnancy+") OR (MH "Pregnancy in Adolescence+") OR (MH "Maternal Age 14 and Under") OR (MH "Pregnancy Outcomes") OR (MH "Mothers+") OR (MH "Prenatal Nutritional Physiology") OR (MH "Infant, Newborn+") OR (MH "Postnatal Period+") OR (MH "Periconceptual Period")

  AND

  (MH "Hypertension+") OR (MH "Nausea and Vomiting+") OR (MH "Vomiting+") OR (MH "Birth Weight") OR (MH "Glucose Tolerance Test") OR (MH "Prediabetic State") OR (MH "Glucose Intolerance") OR (MH "Insulin Resistance+") OR (MH "Blood Pressure+") OR (MH "Proteinuria+") OR (MH "Hemoglobin A, Glycosylated")

  OR

  (MH "Diabetes Mellitus, Gestational") OR (MH "Gestational Age") OR (MH "Pre-Eclampsia+") OR (MH "Eclampsia+") OR (MH "Fetal Growth Retardation") OR (MH "Fetal Weight") OR (MH "Umbilical Arteries") OR (MH "Delivery, Obstetric+")

Limiters - Published Date: 19800101-; Peer Reviewed; English Language; Exclude MEDLINE records; Pregnancy

Narrow by SubjectMajor: - energy intake

Narrow by SubjectMajor: - vegetarianism

Narrow by SubjectMajor: - women's health

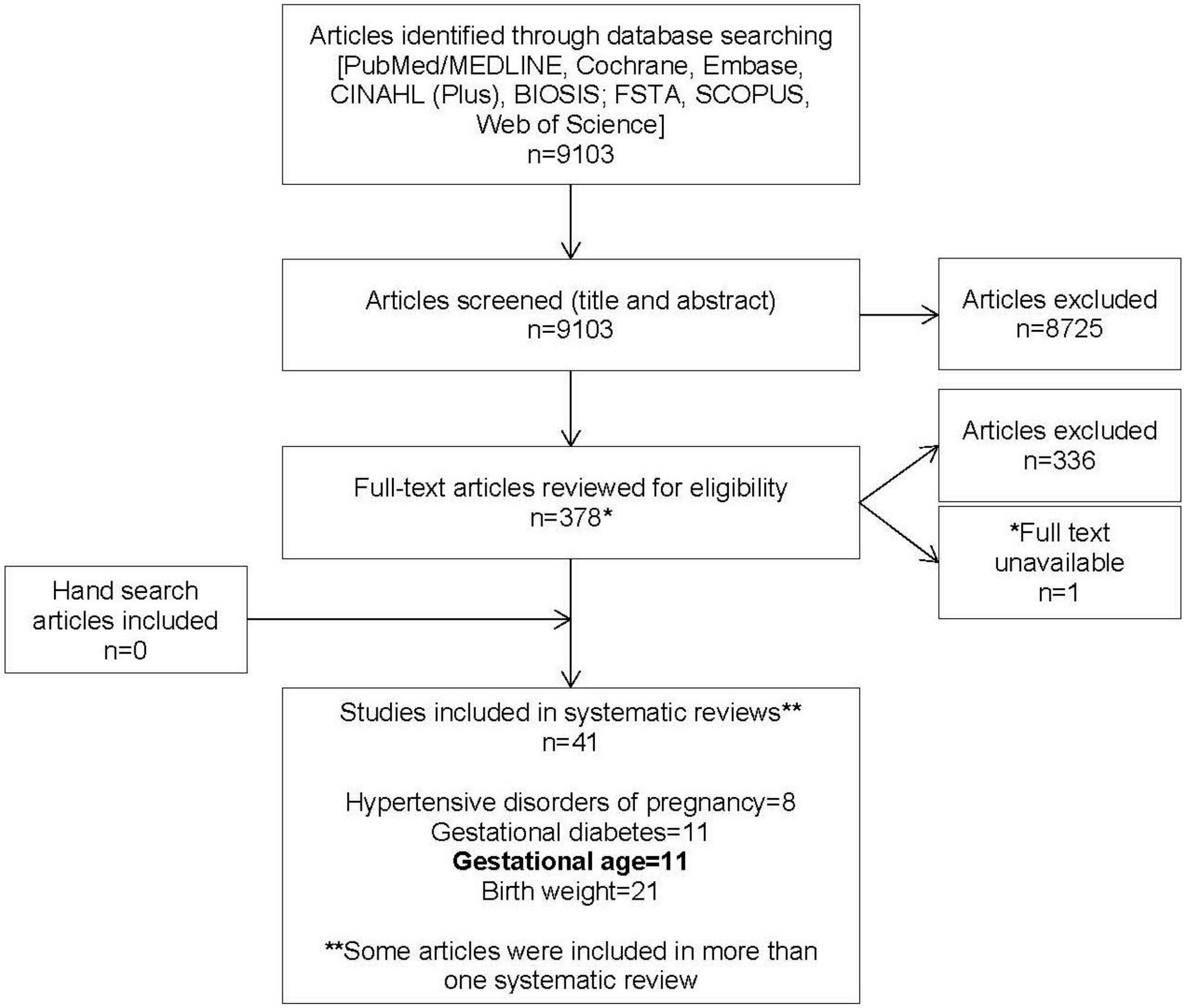
Narrow by SubjectMajor: - pregnancy outcomes

Narrow by SubjectMajor: - pregnancy complications

Narrow by SubjectMajor: - food habits

Narrow by SubjectMajor: - diabetes mellitus, gestational

Figure 2: Flow chart of literature search and screening results



This flow chart illustrates the literature search and screening results for articles examining the relationship between dietary patterns before and during pregnancy and gestational age at birth. The results of the electronic database searches were screened independently by two NESR analysts in a step-wise manner by reviewing titles, abstracts, and full text articles to determine which articles met the criteria for inclusion. A manual search was done to ascertain articles not identified through the electronic database search. The systematic review on gestational age included 11 articles. The literature search was conducted for multiple systematic reviews that addressed the relationships between dietary patterns before and during birth and risk of hypertensive disorders of pregnancy, risk of gestational diabetes mellitus, gestational age, and sex- and age-adjusted birth weight; the systematic reviews on hypertensive disorders of pregnancy, gestational diabetes, and birth weight are reported elsewhere.

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The table below lists the excluded articles with at least one reason for exclusion, and may not reflect all possible reasons.

Table 7. Excluded articles

	Citation	Rationale
1	Aaltonen, J, Ojala, T, Laitinen, K et al. Risk Reduction of Infant Insulin Resistance by Dietary Intervention during Pregnancy and Breastfeeding. Pediatric Academic Societies Annual Meeting; 2009 May 2 5; Baltimore MD, United States, 2009	Dependent variable
2	Abel, Ht, Bannert, N, Starke, I et al. Study into Ca/P homeostasis in premature babies on different diets. Klin Padiatr, 1991, 203	Independent variable
3	Adami, G. F., Friedman, D., Cuneo, S. et al. Intravenous nutritional support in pregnancy. Experience following biliopancreatic diversion. Clinical Nutrition, 1992, 11: 106-109	Independent variable
4	Akbari, Z., Mansourian, M., Kelishadi, R. Relationship of the intake of different food groups by pregnant mothers with the birth weight and gestational age: Need for public and individual educational programs. J Educ Health Promot, 2015, 4. PMID:25883993.	Independent variable
5	Alfonso, H. Preventing preeclampsia: the evidence on nutrients. Nurs Womens Health, 2009, 13: 419-21. PMID:19821918.	Study design
6	Ali, H. I., Jarrar, A. H., El Sadig, M. et al. Diet and carbohydrate food knowledge of multi-ethnic women: a comparative analysis of pregnant women with and without Gestational Diabetes Mellitus. PLoS One, 2013, 8. PMID:24069200.	Study design
7	Alwan, N. A., Greenwood, D. C., Simpson, N. A. et al. Dietary iron intake during early pregnancy and birth outcomes in a cohort of British women. Hum Reprod, 2011, 26: 911-9. PMID:21303776.	Independent variable
8	Andreasyan, K., Ponsonby, A. L., Dwyer, T. et al. Higher maternal dietary protein intake in late pregnancy is associated with a lower infant ponderal index at birth. Eur J Clin Nutr, 2007, 61: 498-508. PMID:17136041.	Independent variable
9	Arkkola, T., Uusitalo, U., Kronberg-Kippila, C. et al. Seven distinct dietary patterns identified among pregnant Finnish women--associations with nutrient intake and sociodemographic factors. Public Health Nutr, 2008, 11: 176-82. PMID:17610760.	Dependent variable

	Citation	Rationale
10	Asaka, A., Imaizumi, Y., Inouye, E. Analysis of multiple births in Japan. V. Effects of gestational age, maternal age and other factors on growth rate of weight in twins. Jinrui Idengaku Zasshi, 1981, 26: 83-90. PMID:7328851.	Independent variable
11	Asbee, Sm, Jenkins, Tr, Butler, Jr et al. Dietary counseling prevents excessive weight gain during pregnancy, a randomized controlled trial. Obstet Gynecol, 2008, 111	Dependent variable
12	Asp, N. G. Nutrition and human development. Scandinavian Journal of Food and Nutrition, 2006, 50	Independent variable, study design
13	Babson, Sg, Bramhall, Jl. Diet and growth in the premature infant. Journal of Pediatrics, 1969, 74: 890-900	Date
14	Bakouei, S., Reisian, F., Lamyian, M. et al. High Intake of Manganese During Second Trimester, Increases the Risk of Preterm Delivery: A Large Scale Cohort Study. Glob J Health Sci, 2015, 7: 226-32. PMID:26156900.	Independent variable
15	Bao, W., Bowers, K., Tobias, D. K. et al. Prepregnancy low-carbohydrate dietary pattern and risk of gestational diabetes mellitus: a prospective cohort study. Am J Clin Nutr, 2014, 99: 1378-84. PMID:24717341.	Independent variable
16	Bao, W., Li, S., Chavarro, J. E. et al. Low Carbohydrate-Diet Scores and Long-term Risk of Type 2 Diabetes Among Women With a History of Gestational Diabetes Mellitus: A Prospective Cohort Study. Diabetes Care, 2016, 39: 43-9. PMID:26577416.	Dependent variable
17	Bao, W., Tobias, D. K., Hu, F. B. et al. Pre-pregnancy potato consumption and risk of gestational diabetes mellitus: prospective cohort study. Bmj, 2016, 352. PMID:26759275.	Independent variable
18	Bao, W., Tobias, D. K., Olsen, S. F. et al. Pre-pregnancy fried food consumption and the risk of gestational diabetes mellitus: a prospective cohort study. Diabetologia, 2014, 57: 2485-91. PMID:25303998.	Independent variable
19	Baron, R., Te Velde, S. J., Heymans, M. W. et al. The Relationships of Health Behaviour and Psychological Characteristics with Spontaneous Preterm Birth in Nulliparous Women. Matern Child Health J, 2016, . PMID:27581004.	Independent variable
20	Bell, E. H., Geyer, J., Jones, L. A structured intervention improves breastfeeding success for ill or preterm infants. MCN Am J Matern Child Nurs, 1995, 20: 309-14. PMID:8551932.	Dependent variable
21	Berntorp, K. E. Gestational diabetes: whatâ€™’s up?. Diabetologia, 2016, 59: 1382-1384	Study design

	Citation	Rationale
22	Bertolotto, A., Volpe, L., Calianno, A. et al. Physical activity and dietary habits during pregnancy: effects on glucose tolerance. J Matern Fetal Neonatal Med, 2010, 23: 1310-4. PMID:20334531.	Independent variable, study design
23	Bhatia, B. D., Banerjee, D., Agarwal, D. K. et al. Fetal growth: relationship with maternal dietary intakes. Indian J Pediatr, 1983, 50: 113-20. PMID:6618569.	Country
24	Bjerregaard, P., Hansen, J. C. Effects of smoking and marine diet on birthweight in Greenland. Arctic Med Res, 1996, 55: 156-64. PMID:9115541.	Independent variable
25	Bloomfield, F. H., Oliver, M. H., Hawkins, P. et al. A periconceptional nutritional origin for noninfectious preterm birth. Science, 2003, 300. PMID:12714735.	Independent variable, health status
26	Bo, S., Rosato, R., Ciccone, G. et al. Simple lifestyle recommendations and the outcomes of gestational diabetes. A 2 x 2 factorial randomized trial. Diabetes Obes Metab, 2014, 16: 1032-5. PMID:24646172.	Independent variable, health status
27	Bobinski, R., Mikulska, M., Mojska, H. et al. Assessment of the diet components of pregnant women as predictors of risk of preterm birth and born baby with low birth weight. Ginekol Pol, 2015, 86: 292-9. PMID:26117989.	Independent variable, study design
28	Bobinski, R., Mikulska, M., Mojska, H. et al. The Dietary Composition of Women Who Delivered Healthy Full-Term Infants, Preterm Infants, and Full-Term Infants Who Were Small for Gestational Age. Biol Res Nurs, 2015, 17: 495-502. PMID:25358685.	Independent variable, study design
29	Borberg, C., Gillmer, M. D., Brunner, E. J. et al. Obesity in pregnancy: the effect of dietary advice. Diabetes Care, 1980, 3: 476-81. PMID:6993162.	Independent variable
30	Borgen, I., Aamodt, G., Harsem, N. et al. Maternal sugar consumption and risk of preeclampsia in nulliparous Norwegian women. Eur J Clin Nutr, 2012, 66: 920-5. PMID:22713766.	Independent variable
31	Bower, D. The influence of dietary salt intake on pre-eclampsia. Journal of obstetrics and gynaecology of the British Commonwealth, 1961, 63: 123-6	Date
32	Bowers, K., Tobias, D. K., Yeung, E. et al. A prospective study of prepregnancy dietary fat intake and risk of gestational diabetes. Am J Clin Nutr, 2012, 95: 446-53. PMID:22218158.	Independent variable

	Citation	Rationale
33	BrantsÃ¦ter, A. L., Haugen, M., Myhre, R. et al. Diet matters, particularly in pregnancy â€“ Results from MoBa studies of maternal diet and pregnancy outcomes. Norsk Epidemiologi, 2014, 24: 63-77	Study design
34	Brantsaeter, A. L., Myhre, R., Haugen, M. et al. Intake of probiotic food and risk of preeclampsia in primiparous women: the Norwegian Mother and Child Cohort Study. Am J Epidemiol, 2011, 174: 807-15. PMID:21821542.	Independent variable
35	Breslow, S, Belafsky, Ha, Shangold, Je et al. Control of weight gain in pregnancy: double blind study of a dieting aid. Clinical medicine, 1963, 70: 931-8	Date
36	Brooke, O. G. Low birth weight babies. Nutrition and feeding. Br J Hosp Med, 1982, 28: 462-9. PMID:7171896.	Dependent variable
37	Brooke, O. G. Nutrition in the preterm infant. Lancet, 1983, 1: 514-6. PMID:6131220.	Study subjects
38	Brown, J. E., Kahn, E. S., Hartman, T. J. Profet, profits, and proof: do nausea and vomiting of early pregnancy protect women from harmful vegetables?. Am J Obstet Gynecol, 1997, 176: 179-81. PMID:9024110.	Independent variable
39	Brumfield, C. G., Huddleston, J. F. The management of diabetic ketoacidosis in pregnancy. Clin Obstet Gynecol, 1984, 27: 50-9. PMID:6423330.	Independent variable
40	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, 2016, . PMID:27647837.	Independent variable, study design
41	Buchanan, T. A., Kjos, S. L. Diabetes and pregnancy. Curr Ther Endocrinol Metab, 1994, 5: 278-83. PMID:7704732.	Study design
42	Buul, E, Rijpkema, A, Steegers, E et al. Chronic dietary sodium restriction in pregnancy reduces calcium intake. J Perinat Med, 1992, 20	Independent variable
43	Campbell, Dm. Dietary restriction in obesity and its effect on neonatal outcome. Nutrition in Pregnancy. Proceedings of 10th Study Group of the Rcog; 1983; London, UK, 1983, : 243-50	Not peer-reviewed
44	Canda, M. T., Sezer, O., Demir, N. An audit of seafood consumption awareness during pregnancy and its association with maternal and fetal outcomes in a Turkish population. J Obstet Gynaecol, 2011, 31: 293-7. PMID:21534748.	Independent variable

	Citation	Rationale
45	Carmichael, S. L., Yang, W., Shaw, G. M. Maternal dietary nutrient intake and risk of preterm delivery. Am J Perinatol, 2013, 30: 579-88. PMID:23208764.	Independent variable, study design
46	Carter, J. P., Furman, T., Hutcheson, H. R. Preeclampsia and reproductive performance in a community of vegans. South Med J, 1987, 80: 692-7. PMID:3589760.	Independent variable
47	Carver, Jd, Saste, Md, Sosa, R et al. Dietary nucleotide (NT) effects on superior mesenteric artery (SMA) blood flow in preterm infants. Pediatr Res, 2000, 47	Independent variable
48	C'De Baca, J., Lapham, S. C., Skipper, B. J. et al. Use of computer interview data to test associations between risk factors and pregnancy outcomes. Comput Biomed Res, 1997, 30: 232-43. PMID:9281330.	Independent variable
49	Chamberlain, G. Epidemiology and aetiology of the preterm baby. Clin Obstet Gynaecol, 1984, 11: 297-314. PMID:6478726.	Study design
50	Chandler-Laney, P. C., Schneider, C. R., Gower, B. A. et al. Association of late-night carbohydrate intake with glucose tolerance among pregnant African American women. Matern Child Nutr, 2016, 12: 688-98. PMID:25786515.	Independent variable
51	Chavarro, J. E., Halldorsson, T. I., Leth, T. et al. A prospective study of trans fat intake and risk of preeclampsia in Denmark. Eur J Clin Nutr, 2011, 65: 944-51. PMID:21559043.	Independent variable
52	Chen, C. M., Weng, H. C., Li, Y. C. et al. The evaluation of dietary intervention on the blood glucose level of gestational diabetes mellitus pregnant women. Nutritional Sciences Journal, 1999, 24: 250-261	Language
53	Chen, L., Hu, F. B., Yeung, E. et al. Prospective study of pre-gravid sugar-sweetened beverage consumption and the risk of gestational diabetes mellitus. Diabetes Care, 2009, 32: 2236-41. PMID:19940226.	Independent variable
54	Chong, M. F., Chia, A. R., Colega, M. et al. Maternal Protein Intake during Pregnancy Is Not Associated with Offspring Birth Weight in a Multiethnic Asian Population. J Nutr, 2015, 145: 1303-10. PMID:25948786.	Independent variable
55	Christian, K, Andreas, M, Martin, F. Diet and lifestyle modification in mothers with burnout syndrome: Ayurvedic versus conventional standard counselling-design of a randomised clinical pilot study (VEDA-Trial) [abstract]. European journal of integrative medicine [abstracts of the 5th european congress for integrative medicine; 2012 sept 21-22; flo, 2012, 4: 47-8	Dependent variable

	Citation	Rationale
56	Clapp, J. F. Effects of Diet and Exercise on Insulin Resistance during Pregnancy. Metab Syndr Relat Disord, 2006, 4: 84-90. PMID:18370754.	Study design
57	Clausen, T., Slott, M., Solvoll, K. et al. High intake of energy, sucrose, and polyunsaturated fatty acids is associated with increased risk of preeclampsia. Am J Obstet Gynecol, 2001, 185: 451-8. PMID:11518908.	Independent variable
58	Coelho Nde, L., Cunha, D. B., Esteves, A. P. et al. Dietary patterns in pregnancy and birth weight. Rev Saude Publica, 2015, 49. PMID:26398873.	Study design
59	Cooney, G. Food for thought. Midwives, 2008, 11: 30-1. PMID:24902215.	Study design
60	Cooper, M. L. Stories to learn from: toxemia in pregnancy. Midwifery Today Int Midwife, 2014, : 18-21. PMID:25980103.	Not peer-reviewed
61	Corbett, M. A., Burst, H. V. Nutritional intervention in pregnancy. J Nurse Midwifery, 1983, 28: 23-9. PMID:6554311.	Study design, independent variable
62	Cosgrove, M., Davies, D. P. Poor diet in pregnancy may be a proxy for some other hostile influence on fetal growth [8]. Br Med J, 1996, 312: 1478-1479	Independent variable, study design
63	Costa-Orvay, Ja, Figueras-Aloy, J, Romera, G et al. The effects of varying protein and energy intakes on the growth and body composition of very low birth weight infants. Nutr J, 2011, 10	Independent variable
64	Crozier, S. R., Inskip, H. M., Godfrey, K. M. et al. Nausea and vomiting in early pregnancy: Effects on food intake and diet quality. Matern Child Nutr, 2016, . PMID:27896913.	Dependent variable
65	Dancause, K. N., Mutran, D., Elgbeili, G. et al. Dietary change mediates relationships between stress during pregnancy and infant head circumference measures: the QF2011 study. Matern Child Nutr, 2016, . PMID:27562643.	Independent variable
66	Darling, A. M., Mitchell, A. A., Werler, M. M. Preconceptional Iron Intake and Gestational Diabetes Mellitus. Int J Environ Res Public Health, 2016, 13. PMID:27231921.	Independent variable
67	Davidson, J. K. Newer approaches to diet management of diabetes: calorie control. Med Times, 1980, 108: 35-40. PMID:7374404.	Study design

	Citation	Rationale
68	Davies, W. E., Hopkins, P. C., Rose, S. J. et al. The influence of different taurine diets on hearing development in normal babies. A preliminary report. Adv Exp Med Biol, 1996, 403: 631-7. PMID:8915404.	Independent variable
69	Davison, J. M., Lindheimer, M. D. Pregnancy in renal transplant recipients. J Reprod Med, 1982, 27: 613-21. PMID:6757420.	Health status
70	Dawn, Cs. Effects of substandard prenatal diet and nutrition on the development and incidence of pre-eclampsia of pregnancy. J Obstet Gynaecol India, 1961, 12: 237-45	Date
71	de Seymour, J., Chia, A., Colega, M. et al. Maternal Dietary Patterns and Gestational Diabetes Mellitus in a Multi-Ethnic Asian Cohort: The GUSTO Study. Nutrients, 2016, 8. PMID:27657116.	Study design
72	Deka, D., Sharma, N. Nutrition in pregnancy and lactation. Perinatology, 2005, 7: 1-15	Study design
73	Delemarre, F. M., van Leest, L. A., Jongsma, H. W. et al. Effect of low-sodium diet on uteroplacental circulation. J Matern Fetal Med, 2000, 9: 197-200. PMID:11048827.	Independent variable
74	Demmelmair, H, Klingler, M, Campoy, C et al. The influence of habitual diet and increased docosahexaenoic acid intake during pregnancy on the fatty acid composition of individual placental lipids [Study design]. J Pediatr Gastroenterol Nutr, 2005, 40: 622-3	Study design
75	Deveer, R., Deveer, M., Akbaba, E. et al. The effect of diet on pregnancy outcomes among pregnant with abnormal glucose challenge test. Eur Rev Med Pharmacol Sci, 2013, 17: 1258-61. PMID:23690197.	Independent variable
76	Dieckmann, Wj, Davis, Me, Rynkiewicz, Lm et al. Does the administration of diethylstilbestrol during pregnancy have therapeutic value?. Am J Obstet Gynecol, 1953, 66: 1062-75	Date
77	Diet & nutrition. Good news: caffeine in pregnancy doesn't affect the baby's growth..and folic acid seems to prevent cleft lip. Child Health Alert, 2007, 25: 5-6. PMID:17443983.	Not peer-reviewed
78	Dodd, J. M., Deussen, A. R., Mohamad, I. et al. The effect of antenatal lifestyle advice for women who are overweight or obese on secondary measures of neonatal body composition: The LIMIT randomised trial. BJOG: An International Journal of Obstetrics and Gynaecology, 2016, 123: 244-253	Independent variable
79	Dodd, J. M., McPhee, A. J., Turnbull, D. et al. The effects of antenatal dietary and lifestyle advice for women who are overweight or obese on neonatal health outcomes: the LIMIT randomised trial. BMC Med, 2014, 12. PMID:25315325.	Independent variable

	Citation	Rationale
80	Dominguez, L. J., Martinez-Gonzalez, M. A., Basterra-Gortari, F. J. et al. Fast food consumption and gestational diabetes incidence in the SUN project. PLoS One, 2014, 9. PMID:25215961.	Independent variable
81	Donnelly, J, Horan, M, Walsh, J et al. Impact of a Low GI Diet on Neonatal Body Composition [ROLO Kids]. Pediatric Academic Societies Annual Meeting, 2013,	Not peer-reviewed
82	Donnelly, J. M., Walsh, J. M., Byrne, J. et al. Impact of maternal diet on neonatal anthropometry: a randomized controlled trial. Pediatr Obes, 2015, 10: 52-6. PMID:24443392.	Independent variable
83	Doyle, W. Maternal nutrition and low birth weight. J Fam Health Care, 2002, 12. PMID:12630147.	Study design
84	Doyle, W., Crawford, M. A., Wynn, A. H. A. et al. Maternal nutrient intake and birth-weight. Journal of Human Nutrition and Dietetics, 1989, 2: 415-422	Independent variable
85	Drake, A. J., McPherson, R. C., Godfrey, K. M. et al. An unbalanced maternal diet in pregnancy associates with offspring epigenetic changes in genes controlling glucocorticoid action and foetal growth. Clin Endocrinol (Oxf), 2012, 77: 808-15. PMID:22642564.	Dependent variable
86	Drouillet, P., Kaminski, M., De Lauzon-Guillain, B. et al. Association between maternal seafood consumption before pregnancy and fetal growth: evidence for an association in overweight women. The EDEN mother-child cohort. Paediatr Perinat Epidemiol, 2009, 23: 76-86. PMID:19228317.	Independent variable
87	Dubois, S., Coulombe, C., Pencharz, P. et al. Ability of the Higgins Nutrition Intervention Program to improve adolescent pregnancy outcome. J Am Diet Assoc, 1997, 97: 871-8. PMID:9259709.	Independent variable
88	Dunn, C., Kolasa, K., Dunn, P. C. et al. Dietary intake of pregnant adolescents in a rural southern community. J Am Diet Assoc, 1994, 94: 1040-1. PMID:8071488.	Independent variable, dependent variable
89	Ebbs, Jh, Tisdall, Ff, Scott, Wa. The influence of prenatal diet on the mother and child. Journal of Nutrition, 1941, 22: 515-26	Date
90	Elmacioglu, F., Surucu, B., Alper, T. et al. Is adequate and balanced nutrition during pregnancy more effective than iron and folic acid supplements?. Central European Journal of Medicine, 2010, 5: 235-242	Dependent variable

	Citation	Rationale
91	Ershoff, Dh, Aaronson, Nk, Danaher, Bg et al. Behavioral, health, and cost outcomes of an HMO based prenatal health education program. Public health reports, 1983, 98: 536-47	Independent variable
92	Ershoff, D. H., Aaronson, N. K., Danaher, B. G. et al.. Behavioral, health, and cost outcomes of an HMO-based prenatal health education program. Public Health Rep, 1983, 98: 536-47. PMID:6419268.	Duplicate
93	Eshriqui, I., Vilela, A. A., Rebelo, F. et al. Gestational dietary patterns are not associated with blood pressure changes during pregnancy and early postpartum in a Brazilian prospective cohort. Eur J Nutr, 2016, 55: 21-32. PMID:25526968.	Dependent variable
94	Fairburn, C. G., Stein, A., Jones, R. Eating habits and eating disorders during pregnancy. Psychosom Med, 1992, 54: 665-72. PMID:1454960.	Independent variable
95	Farbu, J., Haugen, M., Meltzer, H. M. et al. Impact of singlehood during pregnancy on dietary intake and birth outcomes- a study in the Norwegian Mother and Child Cohort Study. BMC Pregnancy Childbirth, 2014, 14. PMID:25475509.	Independent variable
96	Fard, N Mehrabian F Sarraf-Zadegan NS. Fat-modified diets during pregnancy and lactation and serum lipids after birth. Indian J Pediatr, 2004, 71: 683-7	Country
97	Farland, L. V., Rifas-Shiman, S. L., Gillman, M. W. Early Pregnancy Cravings, Dietary Intake, and Development of Abnormal Glucose Tolerance. J Acad Nutr Diet, 2015, 115. PMID:26099686.	Study design, independent variable
98	Ferland, S., O'Brien, H. T. Maternal dietary intake and pregnancy outcome. J Reprod Med, 2003, 48: 86-94. PMID:12621791.	Independent variable
99	Flynn, A. C., Seed, P. T., Patel, N. et al. Dietary patterns in obese pregnant women; influence of a behavioral intervention of diet and physical activity in the UPBEAT randomized controlled trial. Int J Behav Nutr Phys Act, 2016, 13. PMID:27894316.	Health status
100	Ford, J. H. Preconception risk factors and SGA babies: Papilloma virus, omega 3 and fat soluble vitamin deficiencies. Early Hum Dev, 2011, 87: 785-9. PMID:21705161.	Independent variable
101	Fowles, E. R., Gabrielson, M. First trimester predictors of diet and birth outcomes in low-income pregnant women. J Community Health Nurs, 2005, 22: 117-30. PMID:15877540.	Independent variable, study design

	Citation	Rationale
102	Fraser, R. B., Ford, F. A., Milner, R. D. G. A controlled trial of a high dietary fibre intake in pregnancy-effects in plasma glucose and insulin levels. Diabetologia, 1983, 25: 238-241	Independent variable
103	Fraser, Rb. High fibre diets in pregnancy. Nutrition in Pregnancy. Proceedings of 10th Study Group of the Royal College of Obstetricians and Gynaecologists; 1982 September, 1983, : 269-80	Independent variable, not peer reviewed
104	Garratt, F. N. Pre-eclampsia: a challenge to public health teams worldwide to ensure that maternal diets contain adequate levels of folic acid, n3 polyunsaturated fatty acids and vitamin D at conception. Public Health, 2009, 123: 95-6. PMID:19058819.	Study design
105	Gennaro, S., Biesecker, B., Fantasia, H. C. et al. Nutrition profiles of African [corrected] American women in the third trimester. MCN Am J Matern Child Nurs, 2011, 36: 120-6. PMID:21350375.	Independent variable, dependent variable
106	Gerrard, J., Popeski, D., Ebbeling, L. et al. Dietary omega 3 fatty acids and gestational hypertension in the Inuit. Arctic Med Res, 1991, : 763-7. PMID:1365294.	Independent variable, study design
107	Gesteiro, E., Rodriguez Bernal, B., Bastida, S. et al. Maternal diets with low healthy eating index or Mediterranean diet adherence scores are associated with high cord-blood insulin levels and insulin resistance markers at birth. Eur J Clin Nutr, 2012, 66: 1008-15. PMID:22828732.	Dependent variable
108	Ghebremeskel, K., Leighfield, M., Ashwell, M. et al. Infant brain lipids and diet [1]. Lancet, 1992, 340: 1093-1094	Dependent variable
109	Gillen, L., Tapsell, L. C., Martin, G. S. et al. The type and frequency of consumption of carbohydrate-rich foods may play a role in the clinical expression of insulin resistance during pregnancy. Dietetics, 2002, 59: 135-143	Dependent variable
110	Glueck, C. J., Goldenberg, N., Pranikoff, J. et al. Effects of metformin-diet intervention before and throughout pregnancy on obstetric and neonatal outcomes in patients with polycystic ovary syndrome. Curr Med Res Opin, 2013, 29: 55-62. PMID:23205605.	Health status
111	Godfrey, K., Robinson, S., Barker, D. J. et al. Maternal nutrition in early and late pregnancy in relation to placental and fetal growth. Bmj, 1996, 312: 410-4. PMID:8601112.	Independent variable

	Citation	Rationale
112	Grant, S. M., Wolever, T. M., O'Connor, D. L. et al. Effect of a low glycaemic index diet on blood glucose in women with gestational hyperglycaemia. Diabetes Res Clin Pract, 2011, 91: 15-22. PMID:21094553.	Independent variable
113	Gray-Donald, K., Robinson, E., Collier, A. et al. Intervening to reduce weight gain in pregnancy and gestational diabetes mellitus in Cree communities: an evaluation. Cmaj, 2000, 163: 1247-51. PMID:11107459.	Independent variable
114	Grivell, R. M., Yelland, L. N., Deussen, A. et al. Antenatal dietary and lifestyle advice for women who are overweight or obese and the effect on fetal growth and adiposity: the LIMIT randomised trial. Bjog, 2016, 123: 233-43. PMID:26841216.	Independent variable
115	Guilloty, N. I., Soto, R., Anzalota, L. et al. Diet, Pre-pregnancy BMI, and Gestational Weight Gain in Puerto Rican Women. Matern Child Health J, 2015, 19: 2453-61. PMID:26100133.	Independent variable, dependent variable
116	Guldner, L., Monfort, C., Rouget, F. et al. Maternal fish and shellfish intake and pregnancy outcomes: a prospective cohort study in Brittany, France. Environ Health, 2007, 6. PMID:17958907.	Independent variable
117	Gupta, A. P., Bhandari, B., Gupta, A. et al. Stool pH and sugar in preterm neonates. Indian J Pediatr, 1984, 51: 391-3. PMID:6526446.	Independent variable
118	Haas, A. V. Diet du jour! Pregnancy and popular diets. Midwifery Today Int Midwife, 2014, : 53-5. PMID:25975083.	Study design, non peer-reviewed
119	Haggarty, P., Campbell, D. M., Duthie, S. et al. Diet and deprivation in pregnancy. Br J Nutr, 2009, 102: 1487-97. PMID:19682400.	Independent variable
120	Halldorsson, T. I., Thorsdottir, I., Meltzer, H. M. et al. Dioxin-like activity in plasma among Danish pregnant women: dietary predictors, birth weight and infant development. Environ Res, 2009, 109: 22-8. PMID:18945425.	Independent variable
121	Halldorsson, T. I., Thorsdottir, I., Meltzer, H. M. et al. Linking exposure to polychlorinated biphenyls with fatty fish consumption and reduced fetal growth among Danish pregnant women: a cause for concern?. Am J Epidemiol, 2008, 168: 958-65. PMID:18718897.	Independent variable
122	Hankin, Me, Symonds, Em. Body weight, diet and pre-eclamptic toxaemia of pregnancy. gynaecology, 1962, 4: 156-60	Date

	Citation	Rationale
123	Harper, V., MacInnes, R., Campbell, D. et al. Increased birth weight in northerly islands: is fish consumption a red herring?. Bmj, 1991, 303. PMID:1878642.	Independent variable
124	Hatfield, Hm, Dunstan, Ja, Hayes, L et al. Dietary N-3 polyunsaturated fatty acid (PUFA) supplementation during pregnancy is associated with changes in cord blood (CB) progenitor numbers and responsiveness to IL-5 in infants at risk of atopy [Abstract]. Journal of allergy and clinical immunology, 2003, 111	Study design
125	Haugen, M., Brantsaeter, A. L., Trogstad, L. et al. Vitamin D supplementation and reduced risk of preeclampsia in nulliparous women. Epidemiology, 2009, 20: 720-6. PMID:19451820.	Independent variable
126	Hayashi, Tt, Phitaksphraiwan, P, Willson, Jr. Effects of diet and diuretic agents in pregnancy toxemias. Obstet Gynecol, 1963, 22: 327-34	Date
127	Healthy diet halves the risk of diabetes after pregnancy. Kidney Care, 2013, 10: 6-6	Dependent variable
128	Hegsted, D. M. What is a healthful diet?. Prim Care, 1982, 9: 445-73. PMID:6924383.	Dependent variable
129	Heim, T. Energy and lipid requirements of the fetus and the preterm infant. J Pediatr Gastroenterol Nutr, 1983, . PMID:6417303.	Independent variable, study design
130	Hellmuth, C., Lindsay, K. L., Uhl, O. et al. Association of maternal prepregnancy BMI with metabolomic profile across gestation. Int J Obes (Lond), 2017, 41: 159-169. PMID:27569686.	Dependent variable
131	Hennessy, M. D., Volpe, S. L., Sammel, M. D. et al. Skipping meals and less walking among African Americans diagnosed with preterm labor. J Nurs Scholarsh, 2010, 42: 147-55. PMID:20618599.	Independent variable
132	Heppe, D. H., Steegers, E. A., Timmermans, S. et al. Maternal fish consumption, fetal growth and the risks of neonatal complications: the Generation R Study. Br J Nutr, 2011, 105: 938-49. PMID:21266095.	Independent variable
133	Hernandez-Diaz, S., Boeke, C. E., Romans, A. T. et al. Triggers of spontaneous preterm delivery--why today?. Paediatr Perinat Epidemiol, 2014, 28: 79-87. PMID:24384058.	Independent variable, study design

	Citation	Rationale
134	Herrera, Mg, Mora, Jo, Paredes, B et al. Maternal weight/height and the effect of food supplementation during pregnancy and lactation. Maternal Nutrition during Pregnancy and Lactation. A Nestle Foundation Workshop; 1979 April 26-27; Lausanne Switzerland, 1980, : 252-63	Independent variable, not peer reviewed
135	Hoff, C., Wertelecki, W., Reyes, E. et al. Diet, blood pressure, and hematologic variables of nulliparous women attending a prenatal clinic. Obstet Gynecol, 1986, 67: 868-72. PMID:3703412.	Independent variable
136	Hoffman, D, Uauy, R, Birch, D et al. Essentiality of dietary docosahexaenoic acid (dha) for optimal visual maturation in preterm infants: plasma and red blood cell (rbc) fatty acid profiles. Iovs, 1992, 33	Dependent variable
137	Hoffman, Dr, Uauy, R. Essentiality of dietary n-3 fatty acids for premature infants; plasma and red blood cell fatty acid composition. Lipids, 1992, 27: 886-95	Independent variable
138	Hollingsworth, D. R., Ney, D., Stubblefield, N. et al. Metabolic and therapeutic assessment of gestational diabetes by two-hour and twenty-four-hour isocaloric meal tolerance tests. Diabetes, 1985, : 81-7. PMID:3888746.	Dependent variable
139	Hook, E. B. Influence of pregnancy on dietary selection. Int J Obes, 1980, 4: 338-40. PMID:7419353.	Study design
140	Horan, M. K., McGowan, C. A., Gibney, E. R. et al. Maternal low glycaemic index diet, fat intake and postprandial glucose influences neonatal adiposity--secondary analysis from the ROLO study. Nutr J, 2014, 13. PMID:25084967.	Independent variable
141	Horan, M. K., McGowan, C. A., Gibney, E. R. et al. Maternal Nutrition and Glycaemic Index during Pregnancy Impacts on Offspring Adiposity at 6 Months of Age--Analysis from the ROLO Randomised Controlled Trial. Nutrients, 2016, 8. PMID:26742066.	Independent variable, dependent variable
142	Horan, M. K., McGowan, C. A., Gibney, E. R. et al. Maternal nutrition and glycaemic index during pregnancy impacts on offspring adiposity at 6 months of ageâ€"analysis from the ROLO randomised controlled trial. Nutrients, 2016, 8.	Duplicate
143	Huh, S. Y., Rifas-Shiman, S. L., Kleinman, K. P. et al. Maternal protein intake is not associated with infant blood pressure. Int J Epidemiol, 2005, 34: 378-84. PMID:15576466.	Independent variable
144	Hui, A. L., Ludwig, S. M., Gardiner, P. et al. Community-based exercise and dietary intervention during pregnancy: A pilot study. Canadian Journal of Diabetes, 2006, 30: 169-175	Independent variable

	Citation	Rationale
145	Hui, A., Back, L., Ludwig, S. et al. Lifestyle intervention on diet and exercise reduced excessive gestational weight gain in pregnant women under a randomized controlled trial. Obstetrical and Gynecological Survey, 2012, 67: 263-264	Independent variable
146	Iyengar, L. Effects of dietary supplements late in pregnancy on the expectant mother and her newborn. Indian Journal of Medical Research, 1967, 55: 85-9	Date
147	Jedrychowski, W., Perera, F., Mrozek-Budzyn, D. et al. Higher fish consumption in pregnancy may confer protection against the harmful effect of prenatal exposure to fine particulate matter. Ann Nutr Metab, 2010, 56: 119-26. PMID:20134157.	Independent variable
148	Jing, W., Huang, Y., Liu, X. et al. The effect of a personalized intervention on weight gain and physical activity among pregnant women in China. Int J Gynaecol Obstet, 2015, 129: 138-41. PMID:25697965.	Independent variable
149	Johnson, A. A., Knight, E. M., Edwards, C. H. et al. Dietary intakes, anthropometric measurements and pregnancy outcomes. J Nutr, 1994, 124. PMID:8201444.	Independent variable
150	Jovanovic-Peterson, L, Durak, Ep, Peterson, Cm. Randomized trial of diet vs diet plus cardiovascular conditioning on glucose levels in gestational diabetes. Am J Obstet Gynecol, 1989, 161: 415-9	Health status
151	Jovanovic-Peterson, L., Peterson, C. M. Turning point in the management of pregnancies complicated by diabetes. Normoglycemia with self blood glucose monitoring of diet and insulin dosing. ASAIO Trans, 1990, 36: 799-804. PMID:2268482.	Independent variable, study design
152	Jowett, N. I., Nichol, S. G. Diabetic pregnancy. Midwives Chron, 1987, 100: 33-6. PMID:3645266.	Study design
153	Kafatos, A. G., Vlachonikolis, I. G., Codrington, C. A. Nutrition during pregnancy: the effects of an educational intervention program in Greece. Am J Clin Nutr, 1989, 50: 970-9. PMID:2816804.	Independent variable
154	Kalhan, S. C., Tserng, K. Y., Gilfillan, C. et al. Metabolism of urea and glucose in normal and diabetic pregnancy. Metabolism, 1982, 31: 824-33. PMID:7098852.	Dependent variable
155	Kaseb, F., Kimiagar, M., Ghafarpoor, M. et al. Effect of traditional food supplementation during pregnancy on maternal weight gain and birthweight. Int J Vitam Nutr Res, 2002, 72: 389-93. PMID:12596505.	Independent variable

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156	Kelleher, C. C., Viljoen, K., Khalil, H. et al. Longitudinal follow-up of the relationship between dietary intake and growth and development in the Lifeways cross-generation cohort study 2001-2013. Proc Nutr Soc, 2014, 73: 118-31. PMID:24300176.	Study design
157	Kesmodel, U., Olsen, S. F., Salvig, J. D. Marine n-3 fatty acid and calcium intake in relation to pregnancy induced hypertension, intrauterine growth retardation, and preterm delivery. A case-control study. Acta Obstet Gynecol Scand, 1997, 76: 38-44. PMID:9033242.	Independent variable
158	Khoury, J, Haugen, G, Tonstad, S et al. Effect of an antiatherogenic diet on maternal and fetal Doppler velocimetry: a randomized clinical trial. 35th Nordic Congress of Obstetrics and Gynecology; 2006 May 23-25; Goteburg, Sweden, 2008,	Not peer-reviewed
159	Khoury, J, Henriksen, T, Seljeflot, I et al. Effects of a cholesterol-lowering diet during pregnancy on cardiovascular risk factors and pregnany outcome: a randomized clinical trial [Study design]. Atherosclerosis. Supplements, 2006, 7	Study design
160	Khoury, J., Haugen, G., Tonstad, S. et al. Effect of a cholesterol-lowering diet during pregnancy on maternal and fetal Doppler velocimetry: the CARRDIP study. Am J Obstet Gynecol, 2007, 196. PMID:17547890.	Independent variable
161	Kinnunen, T. I., Pasanen, M., Aittasalo, M. et al. Preventing excessive weight gain during pregnancy - a controlled trial in primary health care. Eur J Clin Nutr, 2007, 61: 884-91. PMID:17228348.	Independent variable
162	Kinnunen, T. I., Puhkala, J., Raitanen, J. et al. Effects of dietary counselling on food habits and dietary intake of Finnish pregnant women at increased risk for gestational diabetes - a secondary analysis of a cluster-randomized controlled trial. Matern Child Nutr, 2014, 10: 184-97. PMID:22735030.	Independent variable, dependent variable
163	Kizirian, N. V., Kong, Y., Muirhead, R. et al. Effects of a low-glycemic index diet during pregnancy on offspring growth, body composition, and vascular health: a pilot randomized controlled trial. Am J Clin Nutr, 2016, 103: 1073-82. PMID:26936333.	Independent variable
164	Klebanoff, M. A., Harper, M., Lai, Y. et al. Fish consumption, erythrocyte fatty acids, and preterm birth. Obstet Gynecol, 2011, 117: 1071-7. PMID:21508745.	Independent variable
165	Knudsen, V. K., Heitmann, B. L., Halldorsson, T. I. et al. Maternal dietary glycaemic load during pregnancy and gestational weight gain, birth weight and postpartum weight retention: a study within the Danish National Birth Cohort. Br J Nutr, 2013, 109: 1471-8. PMID:22906835.	Independent variable

	Citation	Rationale
166	Knuist, M., Bonsel, G. J., Zondervan, H. A. et al. Low sodium diet and pregnancy-induced hypertension: a multi-centre randomised controlled trial. Br J Obstet Gynaecol, 1998, 105: 430-4. PMID:9609271.	Independent variable
167	Koivusalo, S. B., Rono, K., Klemetti, M. M. et al. Gestational Diabetes Mellitus Can Be Prevented by Lifestyle Intervention: The Finnish Gestational Diabetes Prevention Study (RADIEL): A Randomized Controlled Trial. Diabetes Care, 2016, 39: 24-30. PMID:26223239.	Independent variable
168	Kokanali, M. K., Tokmak, A., Kaymak, O. et al. The effect of treatment on pregnancy outcomes in women with one elevated oral glucose tolerance test value. Ginekol Pol, 2014, 85: 748-53. PMID:25546925.	Independent variable
169	Kolu, P., Raitanen, J., Rissanen, P. et al. Cost-effectiveness of lifestyle counselling as primary prevention of gestational diabetes mellitus: findings from a cluster-randomised trial. PLoS One, 2013, 8. PMID:23457562.	Independent variable
170	Korpi-Hyovalti, E., Schwab, U., Laaksonen, D. E. et al. Effect of intensive counselling on the quality of dietary fats in pregnant women at high risk of gestational diabetes mellitus. Br J Nutr, 2012, 108: 910-7. PMID:22093485.	Independent variable
171	Kubota, K., Itoh, H., Tasaka, M. et al. Changes of maternal dietary intake, bodyweight and fetal growth throughout pregnancy in pregnant Japanese women. J Obstet Gynaecol Res, 2013, 39: 1383-90. PMID:23815608.	Independent variable
172	Kumar, P., Nangia, S., Saili, A. et al. Growth and morbidity patterns of exclusively breast-fed preterm babies. Indian Pediatr, 1999, 36: 296-300. PMID:10713842.	Dependent variable
173	Lakin, V., Haggarty, P., Abramovich, D. R. et al. Dietary intake and tissue concentration of fatty acids in omnivore, vegetarian and diabetic pregnancy. Prostaglandins Leukot Essent Fatty Acids, 1998, 59: 209-20. PMID:9844995.	Independent variable
174	Langley-Evans, A. J., Langley-Evans, S. C. Relationship between maternal nutrient intakes in early and late pregnancy and infants weight and proportions at birth: prospective cohort study. J R Soc Promot Health, 2003, 123: 210-6. PMID:14669495.	Independent variable
175	Laraia, B. A., Siega-Riz, A. M., Kaufman, J. S. et al. Proximity of supermarkets is positively associated with diet quality index for pregnancy. Prev Med, 2004, 39: 869-75. PMID:15475018.	Dependent variable
176	Latva-Pukkila, U., Isolauri, E., Laitinen, K. Dietary and clinical impacts of nausea and vomiting during pregnancy. J Hum Nutr Diet, 2010, 23: 69-77. PMID:19943842.	Dependent variable

	Citation	Rationale
177	Leblance, H., Passa, P. Diabetes and pregnancy. Revue du Praticien - Medecine Generale, 1992, 6: 577-582	Study design, language
178	Lechtig, A, Habicht, Jp, Delgado, H et al. Effect of food supplementation during pregnancy on birthweight. Pediatrics, 1975, 56: 508-20	Date
179	Lenders, C. M., Hediger, M. L., Scholl, T. O. et al. Gestational age and infant size at birth are associated with dietary sugar intake among pregnant adolescents. J Nutr, 1997, 127: 1113-7. PMID:9187625.	Independent variable
180	Ley, S. H., Hanley, A. J., Retnakaran, R. et al. Effect of macronutrient intake during the second trimester on glucose metabolism later in pregnancy. Am J Clin Nutr, 2011, 94: 1232-40. PMID:21955650.	Independent variable, study design
181	L'Heureux, J. Got sugar? Tips on preventing diabetes. Posit Living, 2002, 11: 12-4. PMID:12083048.	Study design
182	Li, S., Zhu, Y., Chavarro, J. E. et al. Healthful Dietary Patterns and the Risk of Hypertension Among Women With a History of Gestational Diabetes Mellitus: A Prospective Cohort Study. Hypertension, 2016, 67: 1157-65. PMID:27091899.	Dependent variable
183	Lilja, G, Dannaeus, A, Foucard, T et al. Effects of maternal diet during late pregnancy and lactation on the development of atopic disease in infants up to 18 months of age - in-vivo results. Clinical and Experimental Allergy, 1989, 19: 473-9	Dependent variable
184	Liu, X., Lv, L., Zhang, H. et al. Folic acid supplementation, dietary folate intake and risk of preterm birth in China. European Journal of Nutrition, 2016, 55: 1411-1422	Independent variable, study design
185	Lorber, D. Gestational diabetes: The hidden epidemic. Female Patient - Practical Ob/Gyn Medicine, 1990, 15: 15-25	Study design
186	Luoto, R, Nermes, M, Laitinen, K et al. Impact of Maternal Probiotic-Supplemented Dietary Counselling on Pregnancy Outcome and Prenatal and Postnatal Growth: A Double-Blind, Placebo-Controlled Study. Pediatric Academic Societies Annual Meeting; 2009 May 2 5; Baltimore MD, United States, 2009,	Not peer-reviewed
187	MacGillivray, I. Aetiology of pre-eclampsia. Br J Hosp Med, 1981, 26. PMID:7296126.	Independent variable, study design

	Citation	Rationale
188	MacNeill, S., Dodds, L., Hamilton, D. C. et al. Rates and risk factors for recurrence of gestational diabetes. Diabetes Care, 2001, 24: 659-62. PMID:11315827.	Independent variable
189	Mahony, R, Byrne, J, Curran, S et al. A pilot study of the feasibility of a randomised trial of low glycaemic diet versus normal diet from early pregnancy in euglycaemic women. Arch Dis Child Fetal Neonatal Ed, 2008, 93	Not peer-reviewed
190	Makela, J., Lagstrom, H., Kaljonen, A. et al. Hyperglycemia and lower diet quality in pregnant overweight women and increased infant size at birth and at 13 months of age--STEPS study. Early Hum Dev, 2013, 89: 439-44. PMID:23375946.	Study design
191	Maresh, M, Alderson, C, Beard, Rw et al. Comparison of insulin against diet treatment in the management of abnormal carbohydrate tolerance in pregnancy. Nutrition in Pregnancy. Proceedings of 10th Study Group of the Rcog; 1983, 1983, : 255-67	Independent variable, not peer reviewed
192	Mariscal-Arcas, M., Rivas, A., Monteagudo, C. et al. Proposal of a Mediterranean diet index for pregnant women. Br J Nutr, 2009, 102: 744-9. PMID:19243664.	Dependent variable
193	Markovic, T. P., Muirhead, R., Overs, S. et al. Randomized Controlled Trial Investigating the Effects of a Low-Glycemic Index Diet on Pregnancy Outcomes in Women at High Risk of Gestational Diabetes Mellitus: The GI Baby 3 Study. Diabetes Care, 2016, 39: 31-8. PMID:26185283.	Independent variable
194	Marshall, J. Infant feeding: 8. Breastfeeding premature babies. Pract Midwife, 2013, 16. PMID:23789255.	Dependent variable
195	Martin, C. L., Siega-Riz, A. M., Sotres-Alvarez, D. et al. Maternal Dietary Patterns are Associated with Lower Levels of Cardiometabolic Markers during Pregnancy. Paediatr Perinat Epidemiol, 2016, 30: 246-55. PMID:26848932.	Study design
196	Maten, Gd, Hammen, Rm, Visman, L et al. Effects of a sodium restricted diet during pregnancy on maternal blood pressure and zinc status. J Perinat Med, 1992, 20	Independent variable
197	Mathews, F., Yudkin, P., Neil, A. Influence of maternal nutrition on outcome of pregnancy: prospective cohort study. Bmj, 1999, 319: 339-43. PMID:10435950.	Independent variable
198	Mathewson, M. Women diagnosed with pregnancy-induced hypertension (pre-eclampsia) should be placed on sodium restricted diets. Crit Care Nurse, 1983, 3. PMID:6552952.	Study design
199	McFadyen, A. Intervention in mothers with eating disorders and their babies (controlled trial). National Research Register, 2000,	Not peer-reviewed

	Citation	Rationale
200	McGowan, C. A., Walsh, J. M., Byrne, J. et al. The influence of a low glycemic index dietary intervention on maternal dietary intake, glycemic index and gestational weight gain during pregnancy: a randomized controlled trial. Nutr J, 2013, 12. PMID:24175958.	Independent variable
201	McGuire, Mk, Burgert, Sl, Milner, Ja et al. Selenium status of infants is influenced by supplementation of formula or maternal diets. American Journal of Clinical Nutrition, 1993, 58: 643-8	Independent variable
202	Meinila, J., Koivusalo, S. B., Valkama, A. et al. Nutrient intake of pregnant women at high risk of gestational diabetes. Food Nutr Res, 2015, 59. PMID:25994096.	Dependent variable
203	Meinila, J., Valkama, A., Koivusalo, S. B. et al. Healthy Food Intake Index (HFII) - Validity and reproducibility in a gestational-diabetes-risk population. BMC Public Health, 2016, 16. PMID:27475905.	Dependent variable
204	Meltzer, H. M., Brantsaeter, A. L., Nilsen, R. M. et al. Effect of dietary factors in pregnancy on risk of pregnancy complications: results from the Norwegian Mother and Child Cohort Study. Am J Clin Nutr, 2011, 94. PMID:21543541.	Study design
205	Mendelson, R., Dollard, D., Hall, P. et al. The impact of the Healthiest Babies Possible Program on maternal diet and pregnancy outcome in underweight and overweight clients. J Can Diet Assoc, 1991, 52: 229-34. PMID:10116012.	Independent variable
206	Mendez, M. A., Plana, E., Guxens, M. et al. Seafood consumption in pregnancy and infant size at birth: results from a prospective Spanish cohort. J Epidemiol Community Health, 2010, 64: 216-22. PMID:19710045.	Independent variable
207	Mestman, J. H. Outcome of diabetes screening in pregnancy and perinatal morbidity in infants of mothers with mild impairment in glucose tolerance. Diabetes Care, 1980, 3: 447-52. PMID:7389561.	Independent variable
208	Mikkelsen, T. B., Osler, M., Orozova-Bekkevold, I. et al. Association between fruit and vegetable consumption and birth weight: a prospective study among 43,585 Danish women. Scand J Public Health, 2006, 34: 616-22. PMID:17132595.	Independent variable
209	Mikode, M. S., White, A. A. Dietary assessment of middle-income pregnant women during the first, second, and third trimesters. J Am Diet Assoc, 1994, 94: 196-9. PMID:8300999.	Independent variable
210	Misra, A., Ray, S., Patrikar, S. A longitudinal study to determine association of various maternal factors with neonatal birth weight at a tertiary care hospital. Med J Armed Forces India, 2015, 71: 270-3. PMID:26288495.	Country

	Citation	Rationale
211	Mitchell, J., Mackerras, D. The traditional humoral food habits of pregnant Vietnamese-Australian women and their effect on birth weight. Aust J Public Health, 1995, 19: 629-33. PMID:8616205.	Independent variable
212	Mohanty, A. F., Thompson, M. L., Burbacher, T. M. et al. Periconceptional Seafood Intake and Fetal Growth. Paediatr Perinat Epidemiol, 2015, 29: 376-87. PMID:26147526.	Independent variable
213	Moldenhauer, J, Guo, S, Liang, R et al. Dietary intake levels of the antioxidants vitamin c and vitamin e are adequately achieved with standard prenatal vitamin supplementation in high risk pregnancy groups [abstract]. Am J Obstet Gynecol, 2002, 187	Not peer-reviewed
214	Moore, V. M., Davies, M. J., Willson, K. J. et al. Dietary composition of pregnant women is related to size of the baby at birth. J Nutr, 2004, 134: 1820-6. PMID:15226475.	Independent variable
215	Morley, R, Lucas, A. Randomised diet in the neonatal period and growth performance until 7.5-8 y of age in preterm children. American Journal of Clinical Nutrition, 2000, 71: 822-8	Dependent variable
216	Morley, R., Lucas, A. Early diet and outcome in prematurely born. Clinical Nutrition, 1993, 12: 6-11	Independent variable, health status
217	Morrison, Ra, Brien, Pms, Micklewright, A. The effect of dietary supplementation with linoleic acid on the development of pregnancy induced hypertension. 4th World Congress of the International Society for the Study of Hypertension in Pregnancy;1984 June 18-21; Amsterdam, the Neth, 1984,	Not peer-reviewed
218	Morrison, Ra, Brien, Pms. The effect of dietary supplementation with prostaglandin precursors in pregnancy induced hypertension (PIH). 5th International Congress of the International Society for the Study of Hypertension in Pregnancy; 1986 7-10 July, Nottingham,, 1986,	Not peer-reviewed
219	Morton, N. E., Gulbrandsen, C. L., Rao, D. C. et al. Determinants of blood pressure in Japanese-American Families. Hum Genet, 1980, 53: 261-6. PMID:7358393.	Independent variable, health status
220	Moses, R. G., Casey, S. A., Quinn, E. G. et al. Pregnancy and Glycemic Index Outcomes study: effects of low glycemic index compared with conventional dietary advice on selected pregnancy outcomes. Am J Clin Nutr, 2014, 99: 517-23. PMID:24351875.	Independent variable
221	Moses, R. G., Luebcke, M., Davis, W. S. et al. Effect of a low-glycemic-index diet during pregnancy on obstetric outcomes. Am J Clin Nutr, 2006, 84: 807-12. PMID:17023707.	Independent variable

	Citation	Rationale
222	Moses, R. G., Luebke, M., Petocz, P. et al. Maternal diet and infant size 2 y after the completion of a study of a low-glycemic-index diet in pregnancy [5]. American Journal of Clinical Nutrition, 2007, 86	Duplicate
223	Moses, Rg, Luebke, M, Petocz, P et al. Maternal diet and infant size 2 y after the completion of a study of a low-glycemic-index diet in pregnancy. American Journal of Clinical Nutrition, 2007, 86	Dependent variable
224	Moss, J. L., Harris, K. M. Impact of maternal and paternal preconception health on birth outcomes using prospective couples' data in Add Health. Arch Gynecol Obstet, 2015, 291: 287-98. PMID:25367598.	Independent variable
225	Mullaney, Laura, Brennan, Aisling, Cawley, Shona et al. Relationship between fasting plasma glucose levels and maternal food group and macronutrient intakes in pregnancy. Dietetics, 2016, 73: 441-447	Independent variable
226	Munson, M., Saatkamp, R., West, C. Late preterm infants: steps to success. Neonatal Netw, 2011, 30: 267-70. PMID:21729860.	Dependent variable
227	Musaiger, A. O. Food habits of mothers and children in two regions of Oman. Nutr Health, 1996, 11: 29-48. PMID:8817582.	Independent variable, study design
228	Musselman, J. R., Jurek, A. M., Johnson, K. J. et al. Maternal dietary patterns during early pregnancy and the odds of childhood germ cell tumors: A Children's Oncology Group study. Am J Epidemiol, 2011, 173: 282-91. PMID:21098631.	Dependent variable
229	Myhre, R., Brantsaeter, A. L., Myking, S. et al. Intakes of garlic and dried fruits are associated with lower risk of spontaneous preterm delivery. J Nutr, 2013, 143: 1100-8. PMID:23700347.	Independent variable
230	Newman, Ak, Deussen, Ar, Moran, Lj et al. The effect of antenatal dietary and lifestyle advice on maternal psychological health in women who are overweight or obese-findings from the limit randomised trial. Journal of Paediatrics and Child Health [abstracts of the 17th Congress of the Perinatal Society of Australia and New Zealand, , 2013, 49	Not peer-reviewed
231	Ney, D., Hollingsworth, D. R., Cousins, L. Decreased insulin requirement and improved control of diabetes in pregnant women given a high-carbohydrate, high-fiber, low-fat diet. Diabetes Care, 1982, 5: 529-33. PMID:6329613.	Independent variable, health status

	Citation	Rationale
232	Nicholls, M. G. Reduction of dietary sodium in Western Society. Benefit or risk?. Hypertension, 1984, 6: 795-801. PMID:6394485.	Study design
233	Niedhammer, I., Murrin, C., O'Mahony, D. et al. Explanations for social inequalities in preterm delivery in the prospective Lifeways cohort in the Republic of Ireland. Eur J Public Health, 2012, 22: 533-8. PMID:21746747.	Independent variable
234	Odent, M. Land food .. sea food .. brain food. Midwifery Today Childbirth Educ, 1996, : 18-20. PMID:9016057.	Study design
235	Olafsdottir, A. S., Skuladottir, G. V., Thorsdottir, I. et al. Maternal diet in early and late pregnancy in relation to weight gain. Int J Obes (Lond), 2006, 30: 492-9. PMID:16331301.	Independent variable
236	Olsen, S. F., Beck, D. N., Kollslid, R. et al. High birth weights in prewar Faroe Islands. J Epidemiol Community Health, 2001, 55. PMID:11160178.	Independent variable
237	Olsen, S. F., Grandjean, P., Weihe, P. et al. Frequency of seafood intake in pregnancy as a determinant of birth weight: evidence for a dose dependent relationship. J Epidemiol Community Health, 1993, 47: 436-40. PMID:8120495.	Independent variable
238	Olsen, S. F., Secher, N. J. Low consumption of seafood in early pregnancy as a risk factor for preterm delivery: prospective cohort study. Bmj, 2002, 324. PMID:11859044.	Independent variable
239	Paisey, R. B., Hartog, M., Savage, P. A high-fibre diet in gestational diabetes--wheat fibre, leguminous fibre or both?. Hum Nutr Appl Nutr, 1987, 41: 146-9. PMID:3032872.	Study design
240	Papadopoulou, E., Kogevinas, M., Botsivali, M. et al. Maternal diet, prenatal exposure to dioxin-like compounds and birth outcomes in a European prospective mother-child study (NewGeneris). Sci Total Environ, 2014, 484: 121-8. PMID:24691212.	Study design
241	Papazian, T., Hout, H., Sibai, D. et al. Development, reproducibility and validity of a food frequency questionnaire among pregnant women adherent to the Mediterranean dietary pattern. Clinical Nutrition, 2016, 35: 1550-1556	Dependent variable
242	Pedersen, M., von Stedingk, H., Botsivali, M. et al. Birth weight, head circumference, and prenatal exposure to acrylamide from maternal diet: the European prospective mother-child study (NewGeneris). Environ Health Perspect, 2012, 120: 1739-45. PMID:23092936.	Study design
243	Pentieva, K., Petrova, S., Ovcharova, D. et al. Influence of some sociodemographic factors and smoking on the risk for intrauterine growth retardation. Khigiena i Zdraveopazvane, 1996, 39: 5-8	Language

	Citation	Rationale
244	Perez-Ferre, N., Fernandez, D., Torrejon, M. J. et al. Effect of lifestyle on the risk of gestational diabetes and obstetric outcomes in immigrant Hispanic women living in Spain. J Diabetes, 2012, 4: 432-8. PMID:22742428.	Health status
245	Persson, B, Stangenberg, M, Hansson, U et al. Gestational diabetes mellitus (GDM): comparative evaluation of two treatment regimens, diet vs insulin and diet. Diabetes, 1985, 34: 101-5	Independent variable
246	Petrella, E., Malavolti, M., Bertarini, V. et al. Gestational weight gain in overweight and obese women enrolled in a healthy lifestyle and eating habits program. J Matern Fetal Neonatal Med, 2014, 27: 1348-52. PMID:24175912.	Independent variable
247	Petridou, E., Stoikidou, M., Diamantopoulou, M. et al. Diet during pregnancy in relation to birthweight in healthy singletons. Child Care Health Dev, 1998, 24: 229-42. PMID:9618037.	Independent variable, study design
248	Phelan, S., Hart, C., Phipps, M. et al. Maternal behaviors during pregnancy impact offspring obesity risk. Exp Diabetes Res, 2011, 2011. PMID:22110475.	Independent variable
249	Picaud, Jc, Lapillonne, A, Boucher, P et al. Dietary cholesterol does not affect vitamin D metabolism in preterm infants : preliminary results. Pediatr Res, 1999, 45	Dependent variable
250	Picone, T. A., Allen, L. H., Olsen, P. N. et al. Pregnancy outcome in North American women. II. Effects of diet, cigarette smoking, stress, and weight gain on placentas, and on neonatal physical and behavioral characteristics. Am J Clin Nutr, 1982, 36: 1214-24. PMID:7148740.	Independent variable
251	Pinto, E., Barros, H., dos Santos Silva, I. Dietary intake and nutritional adequacy prior to conception and during pregnancy: a follow-up study in the north of Portugal. Public Health Nutr, 2009, 12: 922-31. PMID:18752697.	Independent variable, dependent variable
252	Piraquive, J, Grieve, P, Sudha, K et al. Quality of Diet and Central Nervous System Activity in Low Birth Weight Infants. Pediatric Academic Societies Annual Meeting, 2013,	Independent variable
253	Popeski, D., Ebbeling, L. R., Brown, P. B. et al. Blood pressure during pregnancy in Canadian Inuit: community differences related to diet. Cmaj, 1991, 145: 445-54. PMID:1878826.	Independent variable
254	Qiu, C., Coughlin, K. B., Frederick, I. O. et al. Dietary fiber intake in early pregnancy and risk of subsequent preeclampsia. Am J Hypertens, 2008, 21: 903-9. PMID:18636070.	Independent variable

	Citation	Rationale
255	Qiu, C., Zhang, C., Gelaye, B. et al. Gestational diabetes mellitus in relation to maternal dietary heme iron and nonheme iron intake. Diabetes Care, 2011, 34: 1564-9. PMID:21709295.	Independent variable
256	Radder, J. K., Terpstra, J. Comparison of postprandial (lunch tolerance) and postglucose (oral glucose tolerance) blood sugar values in pregnancy. Eur J Obstet Gynecol Reprod Biol, 1980, 10: 163-71. PMID:7189481.	Independent variable
257	Raman, L. Influence of maternal nutritional factors affecting birthweight. Am J Clin Nutr, 1981, 34: 775-83. PMID:7223693.	Country
258	Ramon, R., Ballester, F., Aguinagalde, X. et al. Fish consumption during pregnancy, prenatal mercury exposure, and anthropometric measures at birth in a prospective mother-infant cohort study in Spain. Am J Clin Nutr, 2009, 90: 1047-55. PMID:19710189.	Independent variable
259	Ramon, R., Ballester, F., Iniguez, C. et al. Vegetable but not fruit intake during pregnancy is associated with newborn anthropometric measures. J Nutr, 2009, 139: 561-7. PMID:19158218.	Independent variable
260	Ramos-LevÃ, A. M., PÃ©rez-Ferre, N., FernÃ¡ndez, M. D. et al. Risk factors for gestational diabetes mellitus in a large population of women living in Spain: Implications for preventative strategies. International Journal of Endocrinology, 2012, 2012	Independent variable, study design
261	Ray, J. G., Mamdani, M. M. Association between folic acid food fortification and hypertension or preeclampsia in pregnancy. Arch Intern Med, 2002, 162: 1776-7. PMID:12153382.	Independent variable
262	Reddy, S., Sanders, T. A., Obeid, O. The influence of maternal vegetarian diet on essential fatty acid status of the newborn. Eur J Clin Nutr, 1994, 48: 358-68. PMID:8055852.	Independent variable
263	Reece, Ea, Gay, L, DeGennaro, N et al. A randomized clinical trial of a fiber-enriched diabetic diet vs the standard American Diabetes Association recommended diet in the management of diabetes mellitus in pregnancy. Proceedings of 10th Annual Meeting of Society of Perinatal Obstetricians; 1990 Jan 23-27; Houston, Texas, USA, 1990,	Not peer-reviewed
264	Renzaho, A. M., Skouteris, H., Oldroyd, J. Preventing gestational diabetes mellitus among migrant women and reducing obesity and type 2 diabetes in their offspring: a call for culturally competent lifestyle interventions in pregnancy. J Am Diet Assoc, 2010, 110: 1814-7. PMID:21111090.	Study design

	Citation	Rationale
265	Rhodes, E. T., Pawlak, D. B., Takoudes, T. C. et al. Effects of a low-glycemic load diet in overweight and obese pregnant women: a pilot randomized controlled trial. Am J Clin Nutr, 2010, 92: 1306-15. PMID:20962162.	Independent variable
266	Ribeiro, M. D. Diet and pregnancy toxemia: new thoughts on an old problem. Public Health Rev, 1982, 10: 149-67. PMID:7167640.	Study design
267	Rogers, I., Emmett, P., Baker, D. et al. Financial difficulties, smoking habits, composition of the diet and birthweight in a population of pregnant women in the South West of England. ALSPAC Study Team. Avon Longitudinal Study of Pregnancy and Childhood. Eur J Clin Nutr, 1998, 52: 251-60. PMID:9578337.	Independent variable
268	Ross, Ra, Perlzweig, Wa, Taylor, Hm et al. A study of certain dietary factors of possible etiologic significance in toxemias of pregnancy. Am J Obstet Gynecol, 1938, 35: 426-40	Date
269	Ruiz-Gracia, T., Duran, A., Fuentes, M. et al. Lifestyle patterns in early pregnancy linked to gestational diabetes mellitus diagnoses when using IADPSG criteria. The St Carlos gestational study. Clin Nutr, 2016, 35: 699-705. PMID:25998584.	Independent variable
270	Rush, D., Stein, Z., Susser, M. Diet in pregnancy: a randomized controlled trial of nutritional supplements. Birth Defects Orig Artic Ser, 1980, 16. PMID:7000197.	Independent variable
271	Saldana, T. M., Siega-Riz, A. M., Adair, L. S. Effect of macronutrient intake on the development of glucose intolerance during pregnancy. Am J Clin Nutr, 2004, 79: 479-86. PMID:14985225.	Independent variable
272	Sanders, T. A., Reddy, S. The influence of a vegetarian diet on the fatty acid composition of human milk and the essential fatty acid status of the infant. J Pediatr, 1992, 120. PMID:1560329.	Dependent variable
273	Sauder, K. A., Starling, A. P., Shapiro, A. L. et al. Diet, physical activity and mental health status are associated with dysglycaemia in pregnancy: the Healthy Start Study. Diabet Med, 2016, 33: 663-7. PMID:26872289.	Study design
274	Saunders, J. B. Investing in healthy babies. NCSL Legisbrief, 2009, 17: 1-2. PMID:19301480.	Not peer-reviewed
275	Saunders, L., Guldner, L., Costet, N. et al. Effect of a Mediterranean diet during pregnancy on fetal growth and preterm delivery: results from a French Caribbean Mother-Child Cohort Study (TIMOUN). Paediatr Perinat Epidemiol, 2014, 28: 235-44. PMID:24754337.	Study design

	Citation	Rationale
276	Savard, N., Levallois, P., Rivest, L. P. et al. Impact of individual and ecological characteristics on small for gestational age births: an observational study in Quebec. Chronic Dis Inj Can, 2014, 34: 46-54. PMID:24618381.	Independent variable
277	Schneck, M. E., Sideras, K. S., Fox, R. A. et al. Low-income pregnant adolescents and their infants: dietary findings and health outcomes. J Am Diet Assoc, 1990, 90: 555-8. PMID:2319076.	Independent variable
278	Scott, F. W., Kolb, H. Dietary intervention for diabetes prevention in the neonate. Diabetes Metab Rev, 1998, 14. PMID:9605633.	Study design
279	Seely, E. W., Maxwell, C. Cardiology patient page. Chronic hypertension in pregnancy. Circulation, 2007, 115. PMID:17309919.	Independent variable, study design
280	Sen, S., Rifas-Shiman, S. L., Shivappa, N. et al. Dietary Inflammatory Potential during Pregnancy Is Associated with Lower Fetal Growth and Breastfeeding Failure: Results from Project Viva. J Nutr, 2016, 146: 728-36. PMID:26936137.	Independent variable
281	Shin, D., Lee, K. W., Song, W. O. Dietary Patterns during Pregnancy Are Associated with Risk of Gestational Diabetes Mellitus. Nutrients, 2015, 7: 9369-82. PMID:26569302.	Study design
282	Siega-Riz, A. M., Herrmann, T. S., Savitz, D. A. et al. Frequency of eating during pregnancy and its effect on preterm delivery. Am J Epidemiol, 2001, 153: 647-52. PMID:11282791.	Independent variable
283	Siega-Riz, A. M., Savitz, D. A., Zeisel, S. H. et al. Second trimester folate status and preterm birth. Am J Obstet Gynecol, 2004, 191: 1851-7. PMID:15592264.	Independent variable
284	Simoes-Wust, A. P., Kummeling, I., Mommers, M. et al. Influence of alternative lifestyles on self-reported body weight and health characteristics in women. Eur J Public Health, 2014, 24: 321-7. PMID:23639916.	Independent variable
285	Sister, MorningStar. Sick pregnancies. Midwifery Today Int Midwife, 2014, : 12-5. PMID:25980101.	Study design, non peer-reviewed
286	Smeeth, L., Williams, D. Can a dietary supplement prevent pre-eclampsia? L-arginine with vitamins show promise, but there are good grounds for caution. Bmj, 2011, 342	Independent variable
287	Smith, L. K., Draper, E. S., Evans, T. A. et al. Associations between late and moderately preterm birth and smoking, alcohol, drug use and diet: a population-based case-cohort study. Arch Dis Child Fetal Neonatal Ed, 2015, 100. PMID:25972442.	Study design

	Citation	Rationale
288	Smith, V. M. Preterm infant nutrition. Midwives Chron, 1989, 102: 143-6. PMID:2725350.	Study design
289	Sokup, A., Mioduszewska, M., BaÌ§k, A. et al. Unhealthy eating habits precede gestational diabetes mellitus in Polish women Part I: Evaluation of frequency, regularity of consumed meals and consumed snacks, bread, sweets, fruit and vegetables. Eating habits and gestational diabetes. Diabetologia Doswiadczalna i Kliniczna, 2010, 10: 17-22	Independent variable, health status
290	Soto, R., Guilloty, N., Anzalota, L. et al. Association between maternal diet factors and hemoglobin levels, glucose tolerance, blood pressure and gestational age in a Hispanic population. Arch Latinoam Nutr, 2015, 65: 86-96. PMID:26817380.	Independent variable
291	Souza, Lalitha, Jayaweera, Hiranthi, Pickett, Kate E. Pregnancy diets, migration, and birth outcomes. Health Care Women Int, 2016, 37: 964-978	Study design
292	Sparks, J. W. Fetal growth and diet. Mead Johnson Symp Perinat Dev Med, 1984, : 21-7. PMID:6545381.	Study design
293	Standards of care of diabetes mellitus in pregnancy. Diabetologie Metabolismus Endokrinologie Vyziva, 2007, 10: 229-231	Study design, language
294	Steegers, E. A., Van Lakwijk, H. P., Jongsma, H. W. et al. (Patho)physiological implications of chronic dietary sodium restriction during pregnancy; a longitudinal prospective randomized study. Br J Obstet Gynaecol, 1991, 98: 980-7. PMID:1751444.	Independent variable
295	Steegers, E. A. P., Van Lakwijk, H. P. J. M., Jongsma, H. W. et al. (Patho)physiological implications of chronic dietary sodium restriction during pregnancy; a longitudinal prospective randomzied study. Br J Obstet Gynaecol, 1991, 98: 980-987	Duplicate
296	Steegers, Eap, Buul, Eja. Chronic dietary sodium restriction in the prevention of hypertension during pregnancy: preliminary results of a Dutch multicentered trial. 9th International Congress of the International Society for the Study of Hypertension in Pregnancy; 1994 March 15-18; Sydney, A, 1994,	Not peer-reviewed
297	Stein, A. Adressing disturbances in the relationship between mothers with eating disorders and their infants: a randomized controlled trial. Personal communication, 2004,	Independent variable, not peer reviewed
298	Stein, A. The influence of maternal eating disorder on infant development: an intervention study. ControlledTrials.com [http://www.controlled-trials.com/ISRCTN95026274], 2004,	Independent variable, not peer reviewed

	Citation	Rationale
299	Stephens, T. V., Woo, H., Innis, S. M. et al. Healthy pregnant women in Canada are consuming more dietary protein at 16- and 36-week gestation than currently recommended by the Dietary Reference Intakes, primarily from dairy food sources. Nutr Res, 2014, 34: 569-76. PMID:25150115.	Independent variable
300	Stuckey-Schrock, K., Schrock, S. D. Head off complications in late preterm infants. J Fam Pract, 2013, 62. PMID:23570036.	Independent variable, study design
301	Suhail, M., Suhail, M. F., Khan, H. Role of vitamins C and E in regulating antioxidant and pro-oxidant markers in preeclampsia. Journal of Clinical Biochemistry and Nutrition, 2008, 43: 210-220	Country
302	Svenningsen, Nw, Lindquist, B. Incidence of metabolic acidosis in term, preterm and small for gestational age infants in relation to dietary protein intake. Acta Paediatr Scand, 1973, 62: 1-10	Date
303	Switkowski, K. M., Jacques, P. F., Must, A. et al. Maternal protein intake during pregnancy and linear growth in the offspring. Am J Clin Nutr, 2016, 104: 1128-1136. PMID:27581477.	Independent variable
304	Symonds, M. E., Budge, H., Edwards, L. J. et al. Maternal nutrition, cortisol and programming of fetal development. Perinatology, 2002, 4: 67-74	No full text
305	Tande, D. L., Ralph, J. L., Johnson, L. K. et al. First trimester dietary intake, biochemical measures, and subsequent gestational hypertension among nulliparous women. J Midwifery Womens Health, 2013, 58: 423-30. PMID:23895215.	Independent variable
306	Tanha, F. D., Mohseni, M., Ghajarzadeh, M. et al. The effects of healthy diet in pregnancy. Journal of Family and Reproductive Health, 2013, 7: 121-125	Independent variable, dependent variable
307	Taylor, C. M., Golding, J., Emond, A. M. Blood mercury levels and fish consumption in pregnancy: Risks and benefits for birth outcomes in a prospective observational birth cohort. Int J Hyg Environ Health, 2016, 219: 513-20. PMID:27252152.	Independent variable
308	Thacker, S. M., Petkewicz, K. A. Gestational diabetes mellitus. U.S. Pharm., 2009, 34: 43-48	Study design
309	Thomas, B., Ghebremeskel, K., Lowy, C. et al. Nutrient intake of women with and without gestational diabetes with a specific focus on fatty acids. Nutrition, 2006, 22: 230-6. PMID:16500549.	Independent variable, study design

	Citation	Rationale
310	Thomas, D. M., Clapp, J. F., Shernce, S. A foetal energy balance equation based on maternal exercise and diet. J R Soc Interface, 2008, 5: 449-55. PMID:17895222.	Independent variable
311	Thompson, J. M., Wall, C., Becroft, D. M. et al. Maternal dietary patterns in pregnancy and the association with small-for-gestational-age infants. Br J Nutr, 2010, 103: 1665-73. PMID:20211035.	Study design
312	Tielemans, M. J., Erler, N. S., Leermakers, E. T. M. et al. A Priori and a Posteriori dietary patterns during pregnancy and gestational weight gain: The generation R study. Nutrients, 2015, 7: 9383-9399	Dependent variable
313	Tobias, D. K., Zhang, C., Chavarro, J. et al. Healthful dietary patterns and long-term weight change among women with a history of gestational diabetes mellitus. Int J Obes (Lond), 2016, 40: 1748-1753. PMID:27569683.	Dependent variable
314	Tovar, A., Must, A., Bermudez, O. I. et al. The impact of gestational weight gain and diet on abnormal glucose tolerance during pregnancy in Hispanic women. Matern Child Health J, 2009, 13: 520-30. PMID:18597166.	Independent variable
315	Uusitalo, U., Arkkola, T., Ovaskainen, M. L. et al. Unhealthy dietary patterns are associated with weight gain during pregnancy among Finnish women. Public Health Nutr, 2009, 12: 2392-9. PMID:19323867.	Dependent variable
316	Valentini, R., Dalfra, M. G., Masin, M. et al. A pilot study on dietary approaches in multiethnicity: two methods compared. Int J Endocrinol, 2012, 2012. PMID:22505892.	Health status
317	Van Buul, B. J. A., Steegers, E. A. P., Van Der Maten, G. D. et al. Dietary sodium restriction does not prevent gestational hypertension: A Dutch two-center randomized trial. Hypertension in Pregnancy, 1997, 16: 335-346	Independent variable
318	van Buul, B. J., Steegers, E. A., Jongsma, H. W. et al. Dietary sodium restriction in the prophylaxis of hypertensive disorders of pregnancy: effects on the intake of other nutrients. Am J Clin Nutr, 1995, 62: 49-57. PMID:7598066.	Independent variable
319	van der Maten, G. D. Low sodium diet in pregnancy: effects on maternal nutritional status. Eur J Obstet Gynecol Reprod Biol, 1995, 61: 63-4. PMID:8549849.	Independent variable
320	van der Maten, G. D., van Raaij, J. M., Visman, L. et al. Low-sodium diet in pregnancy: effects on blood pressure and maternal nutritional status. Br J Nutr, 1997, 77: 703-20. PMID:9175991.	Independent variable

	Citation	Rationale
321	Vejrup, K., Brantsaeter, A. L., Knutsen, H. K. et al. Prenatal mercury exposure and infant birth weight in the Norwegian Mother and Child Cohort Study. Public Health Nutr, 2014, 17: 2071-80. PMID:24103413.	Independent variable
322	Vilela, A. A., Pinto Tde, J., Rebelo, F. et al. Association of Prepregnancy Dietary Patterns and Anxiety Symptoms from Midpregnancy to Early Postpartum in a Prospective Cohort of Brazilian Women. J Acad Nutr Diet, 2015, 115: 1626-35. PMID:25769749.	Dependent variable
323	Vitolo, Mr, Fraga, Bueno Ms, Mendes, Gama C. Impact of a dietary counseling program on the gain weight speed of pregnant women attended in a primary care service. Revista Brasileira de Ginecologia e Obstetricia, 2011, 33: 13-19	Language
324	Wakimoto, Patricia, Akabike, Andrea, King, Janet C. Maternal Nutrition and Pregnancy Outcomeâ€"A Look Back. Nutrition Today, 2015, 50: 221-229	Study design, non peer-reviewed
325	Walsh, J. M., Mahony, R. M., Culliton, M. et al. Impact of a low glycemic index diet in pregnancy on markers of maternal and fetal metabolism and inflammation. Reprod Sci, 2014, 21: 1378-81. PMID:24642719.	Dependent variable
326	Walsh, J. M., McGowan, C. A., Mahony, R. et al. Low glycaemic index diet in pregnancy to prevent macrosomia (ROLO study): randomised control trial. Bmj, 2012, 345. PMID:22936795.	Independent variable
327	Wang, C., Zhu, W., Wei, Y. et al. Exercise intervention during pregnancy can be used to manage weight gain and improve pregnancy outcomes in women with gestational diabetes mellitus. BMC Pregnancy Childbirth, 2015, 15. PMID:26459271.	Independent variable
328	Weed, S. S. Preeclampsia. Midwifery Today Int Midwife, 2014, : 22-3. PMID:25980104.	Study design
329	Wen, L. M., Simpson, J. M., Rissel, C. et al. Maternal junk food diet during pregnancy as a predictor of high birthweight: findings from the healthy beginnings trial. Birth, 2013, 40: 46-51. PMID:24635424.	Independent variable
330	Wheeler, S. J., Poston, L., Thomas, J. E. et al. Maternal plasma fatty acid composition and pregnancy outcome in adolescents. Br J Nutr, 2011, 105: 601-10. PMID:21269546.	Independent variable
331	Widga, A. C., Lewis, N. M. Defined, in-home, prenatal nutrition intervention for low-income women. J Am Diet Assoc, 1999, 99. PMID:10491673.	Independent variable
332	Williams, C., Highley, W., Ma, E. H. et al. Protein, amino acid, and caloric intakes of selected pregnant women. J Am Diet Assoc, 1981, 78: 28-35. PMID:7217557.	Independent variable

	Citation	Rationale
333	Williams, E. J. Gestational diabetes mellitus and diet control. Diabetes Educ, 1986, 12: 16-7. PMID:3633805.	Study design
334	Wolff, C. B., Wolff, H. K. Maternal eating patterns and birth weight of Mexican American infants. Nutr Health, 1995, 10: 121-34. PMID:7491165.	Study design
335	Wood,. Diet for diabetics: fact vs. hypothesis. Compr Ther, 1980, 6: 56-61. PMID:7408433.	Study design
336	Wynn, A. H., Crawford, M. A., Doyle, W. et al. Nutrition of women in anticipation of pregnancy. Nutr Health, 1991, 7: 69-88. PMID:2038457.	Independent variable
337	Zielinsky, P., Piccoli,, Vian, I. et al. Maternal restriction of polyphenols and fetal ductal dynamics in normal pregnancy: an open clinical trial. Arq Bras Cardiol, 2013, 101: 217-25. PMID:23949325.	Independent variable