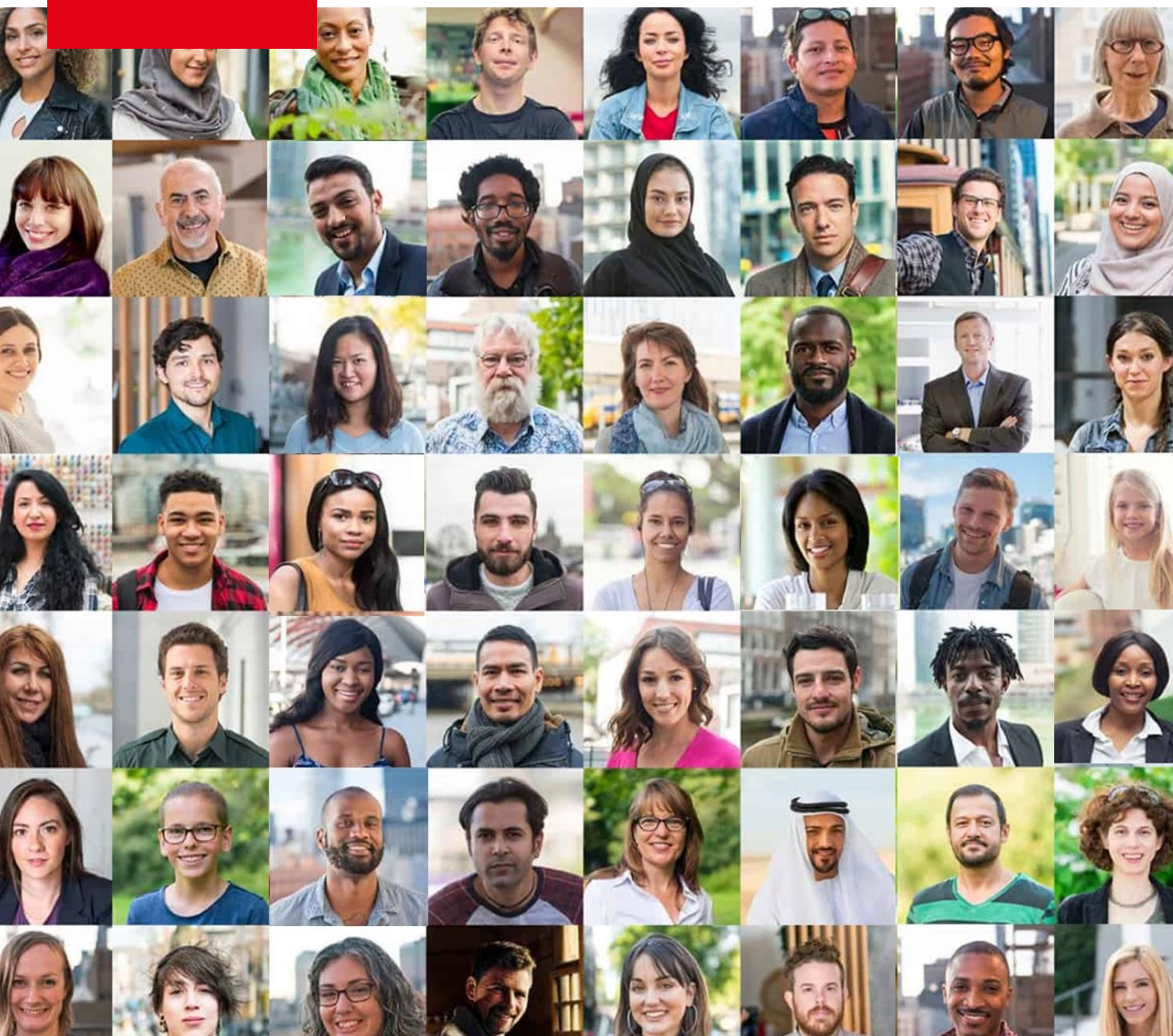


Food4Health

A L L I A N C E



Limitations of the Evidence on Race, Ethnicity, and Socio-economic Status in the Report by the 2020 Dietary Guidelines Advisory Committee



Introduction:

Congress intended for the Dietary Guidelines for Americans (DGA) to be for the “general public,” which, today, is more than one quarter (26%) non-white, including nearly 13% black/African American and 17.6% Hispanic/Latinx.

Minorities and all people of low socio-economic status are about twice as likely to suffer from diet-related chronic diseases. They are also more likely to consume meals funded by the USDA Feeding Assistance Programs, whose contents are largely determined by the DGA.

Thus, we undertook an inquiry to see if the evidence-base for the 2020 DGA contains adequate data and/or consideration for minority and/or low-income populations. This analysis was conducted on the systematic reviews overseen by the 2020 Dietary Guidelines Advisory Committee and conducted by U.S. Department of Agriculture (USDA) The result of the Committee’s work is contained in its final report, which was submitted to the Secretaries of USDA and the U.S. Department of Health and Human Services on July 15, 2020.¹

The final 2020-2025 DGA will be written by the departments based on this expert report.

FINDINGS:

Number of review questions where the expert report judged the evidence to be:

“Strong:” **6 reviews**

Of those, how many have limitations in neglecting to take into account race/ethnicity, socio-economic status, and/or used a sample that could not be generalized to the US population? **6, or 100% have limitations**

“Moderate” – **20 reviews**

Of those, how many have limitations in neglecting to take into account race/ethnicity, socio-economic status, and/or used a sample that could not be generalized to the US population? **17-18 reviews* or 85-90% have limitations**

“Limited”— **30 reviews**

Of those, how many have limitations in neglecting to take into account race/ethnicity, socio-economic status, and/or used a sample that could not be generalized to the US population? **28-29 reviews* or 93-96% have limitations**

Total: of the 56 reviews, 91-95% have limitations in neglecting to take into account race/ethnicity, socio-economic status, and/or used a sample that could not be generalized to the larger US population.

¹ Dietary Guidelines Advisory Committee. 2020. *Scientific Report of the 2020 Dietary Guidelines Advisory Committee: Advisory Report to the Secretary of Agriculture and the Secretary of Health and Human Services*. U.S. Department of Agriculture, Agricultural Research Service, Washington, DC.

* Note: one review’s limitations are questionable. It states that “a large proportion [of the population in the review] had completed some college or a college degree” which suggests a sample that may not include people of low socio-economic status.

Of the reviews with “Strong” or “Moderate” findings, upon which the 2020-2025 DGA recommendations are likely to be based, 23-24 of 26 reviews, or 88-92% have limitations.

In addition, reviews conducted by the Dietary Guidelines Advisory Committee and USDA judged 132 review questions to have “insufficient evidence” to answer (“Grade Not Assignable”).

These numbers do not include all of the USDA’s Birth-to-24 month reviews. Many were conducted by USDA before the convening of the 2020 Committee and only include evidence through mid-2016. These were not considered by this report.

PREGNANCY AND LACTATION SUBCOMMITTEE

1. [What is the relationship between dietary patterns consumed during pregnancy and gestational weight gain?](#)

(Covers evidence 2000-2019)

Limited evidence suggests that certain dietary patterns during pregnancy are associated with a lower risk of excessive gestational weight gain during pregnancy. These patterns are higher in vegetables, fruits, nuts, legumes, fish, and lower in added sugar, and red and processed meat.

(Grade: Limited)

Limitation: "People with **lower socioeconomic status(SES), adolescents, and racially and ethnically diverse populations were underrepresented in the body of evidence.**"²

2. [What is the relationship between dietary patterns consumed during lactation and postpartum weight loss?](#)

(Covers evidence 2000-2019)

Insufficient evidence is available to determine the relationship between dietary patterns during lactation and postpartum weight loss.

(Grade: Grade not assignable)

3. [What is the relationship between dietary patterns consumed during lactation and human milk composition and quantity?](#)

(Covers evidence 2000-2019)

No evidence is available to determine the relationship between maternal dietary patterns during lactation and human milk quantity.

(Grade: Grade not assignable)

Insufficient evidence is available to determine the relationship between maternal n differing in macronutrient distributions during lactation and human milk quantity. **(Grade: Grade not assignable)**

Insufficient evidence is available to determine the relationship between dietary patterns during lactation and total fat in human milk.

(Grade: Grade not assignable)

Limited evidence suggests that maternal consumption of diets higher in fat (>35 percent fat) and lower in carbohydrate during lactation is related to higher total fat in human milk collected in the maternal postprandial period.

(Grade: Limited)

² Note: When quotes are used, these are statements taken directly from the USDA systematic reviews themselves. In some cases, where information on race, ethnicity, SES was not mentioned in the summary of the evidence, we looked directly at the data itself. These instances are noted.

“Important Limitation”: “The study populations did not fully represent the racial/ethnic or socioeconomic diversity of the U.S. population.”

Limited evidence suggests that certain maternal dietary patterns during lactation, including diets based on macronutrient distributions, are related to the relative proportions of saturated fat and monounsaturated fatty acids in human milk, and of polyunsaturated fatty acids in human milk collected in the maternal postprandial period. (Grade: **Limited**)

“Important Limitation”: “The study populations did not fully represent the racial/ethnic or socioeconomic diversity of the U.S. population.”

No evidence is available to determine the relationship between maternal dietary patterns during lactation and total protein concentration in human milk. (Grade: **Grade not assignable**)

Insufficient evidence is available to determine the relationship between maternal diets differing in macronutrient distribution during lactation and total protein concentration in human milk. (Grade: **Grade not assignable**)

No evidence is available to determine the relationship between maternal dietary patterns during lactation and bioactive proteins including alpha-lactalbumin, lactoferrin, casein, alpha (1) antitrypsin, osteopontin, secretory immunoglobulin A, lysozyme in human milk. (Grade: **Grade not assignable**)

No evidence is available to determine the relationship between maternal dietary patterns during lactation and human milk oligosaccharides. (Grade: **Grade not assignable**)

Insufficient evidence is available to determine the relationship between maternal dietary patterns during lactation and vitamin B12 concentration in human milk. (Grade: **Grade not assignable**)

No evidence is available to determine the relationship between maternal dietary patterns during lactation and vitamin C, choline and B vitamins (other than vitamin 12 B12) in human milk. (Grade: **Grade not assignable**)

- No evidence is available to determine the relationship between maternal dietary patterns during lactation and vitamins A, D, E and K in human milk. (Grade: **Grade not assignable**)
 - • No evidence is available to determine the relationship between maternal dietary patterns during lactation and iodine and selenium in human milk. (Grade: **Grade not assignable**)
4. [What is the relationship between dietary patterns consumed during lactation and developmental milestones, including neurocognitive development, in the child?](#)
(Covers evidence 2000 to Jan 2020)

No evidence is available to determine the relationship between maternal dietary patterns during lactation and developmental outcomes, including neurocognitive development, in the child.

(Grade: Grade not assignable)

5. [What is the relationship between folic acid from supplements and/or fortified foods consumed before and during pregnancy and lactation and health outcomes?](#)

(Evidence from 1980 to 2019)

Micronutrient status

Pregnancy

Strong evidence indicates that folic acid supplements consumed before and/or during pregnancy are positively associated with folate status (serum, plasma, and/or red blood cell folate).

(Grade: Strong)

“Important Limitation”: “The study populations did not fully represent the racial/ethnic or socioeconomic diversity of the U.S. population.”

No evidence is available to determine the relationship between folic acid from supplements consumed before and/or during pregnancy and red blood cell distribution width.

(Grade: Grade not assignable)

No evidence is available to determine the relationship between folic acid from fortified foods consumed before and/or during pregnancy and micronutrient status.

(Grade: Grade not assignable)

Lactation

Moderate evidence indicates that folic acid supplements consumed during lactation are positively associated with red blood cell folate, and may be positively associated with serum or plasma folate.

(Grade: Moderate)

“Important Limitation:” “The study populations did not fully represent the racial/ethnic or socioeconomic diversity of the U.S. population.”

Insufficient evidence is available to determine the relationship between folic acid from supplements consumed during lactation and hemoglobin, mean corpuscular volume, and serum vitamin B12.

Grade: Grade not assignable

No evidence is available to determine the relationship between folic acid from supplements consumed during lactation and red blood cell distribution width.

(Grade: Grade not assignable)

No evidence is available to determine the relationship between folic acid

from fortified foods consumed during lactation and micronutrient status.
(Grade: **Grade not assignable**)

- **Gestational diabetes**

Insufficient evidence is available to determine the relationship between folic acid from supplements and/or fortified foods consumed before and during pregnancy and the risk of gestational diabetes.

(Grade: **Grade not assignable**)

- **Hypertensive disorders of pregnancy**

Limited evidence suggests that folic acid supplements consumed during early pregnancy may have a beneficial effect on reducing the risk of hypertensive disorders during pregnancy among women at high-risk (e.g., history of preeclampsia or pre-pregnancy BMI ≥ 25 kg/m²) compared to no folic acid supplementation.

(Grade: **Limited**)

Limitation: "Race/ethnicity was either not reported (studies from Iran, China, and Denmark) or tended to have a majority of Caucasians"

Moderate evidence indicates that higher levels of folic acid supplements consumed during pregnancy compared to lower levels (including no folic acid supplementation) does not affect the risk of hypertensive disorders during pregnancy among women at low-risk.

(Grade: **Moderate**)

Limitation: "Race/ethnicity was either not reported (studies from Iran, China, and Denmark) or tended to have a majority of Caucasians "

No evidence is available to determine the relationship between folic acid from fortified foods consumed before and during pregnancy and the risk of hypertensive disorders during pregnancy.

(Grade: **Grade not assignable**)

Moderate evidence indicates that folic acid supplements consumed during lactation does not influence folate levels in human milk.

(Grade: **Moderate**)

Limitation: "Race/ethnicity was either not reported (studies from Iran, China, and Denmark) or tended to have a majority of Caucasians"

No evidence is available to determine the relationship between folic acid from fortified foods consumed during lactation and human milk folate.

(Grade: **Grade not assignable**)

- **Human milk composition**

Pregnancy

No evidence is available to determine the relationship between folic acid from supplements or fortified foods consumed before and during pregnancy and human milk folate.

(Grade: **Grade not assignable**)

Lactation

Moderate evidence indicates that folic acid supplements consumed during lactation does not influence folate levels in human milk.

(Grade: **Moderate**)

Limitation: "The study populations did not fully represent the racial/ethnic or socioeconomic diversity of the U.S. population."³

No evidence is available to determine the relationship between folic acid from supplements or fortified foods consumed before and during pregnancy and human milk folate.

(Grade: **Grade not assignable**)

• **Developmental milestones**

Pregnancy

Insufficient evidence is available to determine the relationship between folic acid supplementation before and/or during pregnancy and cognitive, language, and social-emotional development, and risk of autism spectrum disorder in the child.

(Grade: **Grade not assignable**)

No evidence is available to determine the relationship between folic acid from supplements consumed before and during pregnancy and movement and physical development, academic performance, anxiety, depression, or the risk of attention-deficit disorder or attention-deficit/hyperactivity disorder in the child.

(Grade: **Grade not assignable**)

No evidence is available to determine the relationship between folic acid from fortified foods consumed before and during pregnancy and developmental milestones, including neurobehavioral development, in the child.

(Grade: **Grade not assignable**)

Lactation

No evidence is available to determine the relationship between folic acid from supplements or fortified foods consumed during lactation and developmental milestones, including neurobehavioral development, in the child.

(Grade: **Grade not assignable**)

³ NESR review, p. 21

6. [What is the relationship between omega-3 fatty acids from supplements consumed before and during pregnancy and lactation and developmental milestones, including neurocognitive development, in the child?](#)

Pregnancy

Limited evidence suggests that omega-3 fatty acid supplementation during pregnancy may result in favorable cognitive development in the child. (**Grade: Limited**)

- **Limitation:** “People with lower socioeconomic status, adolescents, and racially and ethnically diverse populations were underrepresented in the body of evidence.”

Insufficient evidence is available to determine the relationship between omega-3 fatty acid supplementation during both pregnancy and lactation, or during pregnancy only, and language and social emotional development in the child. (**Grade: Grade not assignable**)

Insufficient evidence is available to determine the relationship between omega-3 fatty acid supplementation during pregnancy and motor and visual development, academic performance, and the risk of attention-deficit disorder, attention-deficit/hyperactivity disorder, and autism spectrum disorder in the child. (**Grade: Grade not assignable**)

No evidence is available to determine the relationship between omega-3 fatty acid supplementation during both pregnancy and lactation, or during pregnancy only, and anxiety or depression in the child. (**Grade: Grade not assignable**)

Insufficient evidence is available to determine the relationship between omega-3 fatty acid supplementation during both pregnancy and lactation and cognitive development in the child. (**Grade: Grade not assignable**)

No evidence is available to determine the relationship between omega-3 fatty acid supplementation during both pregnancy and lactation and visual development, academic performance, or the risk of attention-deficit disorder, attention-deficit/hyperactivity disorder, or autism spectrum disorder in the child. (**Grade: Grade not assignable**)

Lactation

Insufficient evidence is available to determine the relationship between omega-3 fatty acid supplementation consumed during both pregnancy and lactation or during lactation alone, and cognitive, language, motor, and visual development in the child. (**Grade: Grade not assignable**)

No evidence is available to determine the relationship between omega-3 fatty acid supplementation consumed during both pregnancy and lactation or during lactation alone and academic performance, anxiety, depression, or the risk of attention-deficit disorder, attention-deficit/hyperactivity disorder, or autism spectrum disorder in the child.

(Grade: Grade not assignable)

No evidence is available to determine the relationship between omega-3 fatty acid supplementation consumed during lactation and social-emotional development in the child.

(Grade: Grade not assignable)

7. [What is the relationship between maternal diet during pregnancy and lactation and risk of child food allergies and atopic allergic diseases?](#)

(Review is from 1980 to Jan 2020)

Food allergy
Pregnancy

Insufficient evidence is available to determine the relationship between lower or restricted consumption of cow milk products during pregnancy only, or during both pregnancy and lactation, and risk of food allergy in the child.

(Grade: Grade not assignable)

Insufficient evidence is available to determine the relationship between peanuts, eggs, or wheat consumed during pregnancy and risk of food allergy in the child.

(Grade: Grade not assignable)

Limited evidence suggests no relationship between soybean consumed during pregnancy and risk of food allergy in the child.

(Grade: Limited)

Limitation: “People with lower SES, adolescents, and racially and ethnically diverse populations were underrepresented in the body of evidence.”

No evidence is available to determine the relationship between maternal dietary patterns or fish, tree nuts and seeds, and foods not commonly considered to be allergens, such as meat, vegetables, and fruits consumed during pregnancy and risk of food allergy in the child.

(Grade: Grade not assignable)

Lactation

Insufficient evidence is available to determine the relationship between lower or restricted consumption of cow milk products during both pregnancy and lactation and risk of food allergy in the child.

(Grade: Grade not assignable)

No evidence is available to determine the relationship between maternal dietary patterns or cow milk products, eggs, peanuts, soybean, wheat, fish, tree nuts and seeds, and

foods not commonly considered to be allergens, such as meat, vegetables, and fruits consumed during lactation and risk of food allergy in the child.

(Grade: Grade not assignable)

Atopic dermatitis/eczema

Pregnancy

Moderate evidence indicates that lower or restricted consumption of cow milk products during pregnancy does not reduce the risk of atopic dermatitis/eczema in the child.

(Grade: Moderate)

Limitation: “People with lower SES, adolescents, and racially and ethnically diverse populations were underrepresented in the body of evidence.”

Moderate evidence indicates that lower or restricted consumption of egg during pregnancy does not reduce the risk of atopic dermatitis/eczema in the child. **(Grade: Moderate)**

(Grade: Moderate)

Limitation: “People with lower SES, adolescents, and racially and ethnically diverse populations were underrepresented in the body of evidence.”

Insufficient evidence is available to determine the relationship between cow milk products and eggs restricted during both pregnancy and lactation and risk of atopic dermatitis/eczema in the child.

(Grade: Grade not assignable)

Limited evidence suggests that fish consumed during pregnancy does not increase the risk of atopic dermatitis/eczema in the child.

(Grade: Limited)

Limitation: “People with lower SES, adolescents, and racially and ethnically diverse populations were underrepresented in the body of evidence.”

Limited evidence suggests that dietary patterns during pregnancy are not associated with risk of atopic dermatitis/eczema in the child.

(Grade: Limited)

Limitation: “People with lower SES, adolescents, and racially and ethnically diverse populations were underrepresented in the body of evidence.”

Insufficient evidence is available to determine the relationship between peanuts, soybean, wheat/cereal, yogurt and probiotic milk products, and foods not commonly considered to be allergens, such as meat, vegetables, and fruits, consumed during pregnancy and risk of atopic dermatitis/eczema in the child.

(Grade: Grade not assignable)

No evidence is available to determine the relationship between tree nuts and seeds consumed during pregnancy and risk of atopic dermatitis/eczema in the child.

(Grade: Grade not assignable)

Lactation

Insufficient evidence is available to determine the relationship between cow milk products restricted during both pregnancy and lactation, or during lactation only, and risk of atopic dermatitis/eczema in the child.

(Grade: Grade not assignable)

Insufficient evidence is available to determine the relationship between egg consumption restricted during both pregnancy and lactation and risk of atopic dermatitis/eczema in the child.

(Grade: Grade not assignable)

No evidence is available to determine the relationship between maternal dietary patterns or yogurt and probiotic milk products, eggs, fish, peanuts, tree nuts and seeds, soybean, wheat/cereal, and foods not commonly considered to be allergens, such as meat, vegetables, and fruits, consumed during lactation and risk of atopic dermatitis/eczema in the child.

(Grade: Grade not assignable)

Allergic rhinitis

Pregnancy

Insufficient evidence is available to determine the relationship between cow milk products (fermented or non-fermented) consumed during pregnancy only, or during both pregnancy and lactation, and risk of allergic rhinitis in the child.

(Grade: Grade not assignable)

Moderate evidence indicates that lower or restricted consumption of eggs during pregnancy does not reduce the risk of allergic rhinitis in the child.

(Grade: Moderate)

Limitation: “People with lower SES, adolescents, and racially and ethnically diverse populations were underrepresented in the body of evidence.”

Limited evidence suggests that dietary patterns during pregnancy are not associated with risk of allergic rhinitis in the child.

(Grade: Limited)

Limitation: “People with lower SES, adolescents, and racially and ethnically diverse populations were underrepresented in the body of evidence.”

Insufficient evidence is available to determine the relationship between fish, peanuts, tree nuts, soybean, wheat, and foods not commonly considered to be allergens, such as meat, vegetables, and fruits consumed during pregnancy and risk of allergic rhinitis in the child.

(Grade: Grade not assignable)

No evidence is available to determine the relationship between seeds consumed during pregnancy and the risk of allergic rhinitis in the child.

(Grade: Grade not assignable)

Lactation

Insufficient evidence is available to determine the relationship between cow milk products consumed during both pregnancy and lactation, and risk of allergic rhinitis in the child.

(Grade: Grade not assignable)

No evidence is available to determine the relationship between maternal dietary patterns or cow milk products, eggs, fish, peanuts, tree nuts and seeds, soybean, wheat, and foods not commonly considered to be allergens, such as meat, vegetables, and fruits consumed during lactation and risk of allergic rhinitis in the child.

(Grade: Grade not assignable)

Asthma

Pregnancy

Limited evidence suggests that a lower consumption of cow milk products during pregnancy does not reduce risk of asthma in the child.

(Grade: Limited)

Limitation: “People with lower SES, adolescents, and racially and ethnically diverse populations were underrepresented in the body of evidence.”

Insufficient evidence is available to determine the relationship between cow milk products consumed during both pregnancy and lactation and risk of asthma in the child.

(Grade: Grade not assignable)

Limited evidence suggests no relationship between eggs consumed during pregnancy and risk of asthma in the child.

(Grade: Limited)

Limitation: “People with lower SES, adolescents, and racially and ethnically diverse populations were underrepresented in the body of evidence.”

Limited evidence suggests no relationship between fish consumed during pregnancy and risk of asthma in the child.

(Grade: Limited)

Limitation: “People with lower SES, adolescents, and racially and ethnically diverse populations were underrepresented in the body of evidence.”

Insufficient evidence is available to determine the relationship between maternal dietary patterns or peanuts, tree nuts, soybean, and other foods such as wheat/whole grains, vegetables, fruits, beverages, and margarine consumed during pregnancy and risk of asthma in the child.

(Grade: Grade not assignable)

No evidence is available to determine the relationship between seeds consumed during pregnancy and risk of asthma in the child.

(Grade: Grade not assignable)

Lactation

Insufficient evidence is available to determine the relationship between cow milk products consumed during both pregnancy and lactation, or during lactation only, and risk of asthma in the child.

(Grade: Grade not assignable)

Insufficient evidence is available to determine the relationship between fish, and other foods, such as margarine, oil, butter and butter-spreads, meat, and meat products consumed during lactation and risk of asthma in the child.

(Grade: Grade not assignable)

No evidence is available to determine the relationship between maternal dietary patterns or eggs, peanuts, wheat, tree nuts and seeds, and soybean consumed during lactation and risk of asthma in the child.

(Grade: Grade not assignable)

The Pregnancy and Lactation Subcommittee also [answered 4 questions using existing USDA \(NESR\) reviews:](#)

All these reviews were conducted by USDA staff before the convening of the Dietary Guidelines Advisory Committee. The reviews were published in a supplemental issue (non-peer-reviewed) of the American Journal of Clinical Nutrition in 2019.⁴ This supplement was paid for by USDA.

All the reviews searched the scientific literature **only through July 2016.**

This is an important limitation, because Congress requires that the DGA reflect the literature that is “current at the time.”⁵

1. [What is the relationship between dietary patterns consumed during pregnancy and risk of gestational diabetes mellitus?](#)

Limited but consistent evidence suggests that certain dietary patterns before pregnancy are associated with a reduced risk of gestational diabetes mellitus. These protective dietary patterns are higher in vegetables, fruits, whole grains, nuts, legumes, and fish, and lower in red and processed meats.

Grade: Limited

⁴ https://academic.oup.com/ajcn/issue/109/Supplement_1

⁵ National Nutrition Monitoring and Related Research Act of 1990 (Public Law 101-445 - Oct. 22, 1990).

Limitation: “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 during pregnancy and risk of gestational diabetes mellitus.

Grade: Grade not assignable

2. [What is the relationship between dietary patterns consumed during pregnancy and risk of hypertensive disorders during pregnancy?](#)

(This review covered evidence through 1/2017)

Limited evidence in healthy Caucasian women with access to health care suggests that dietary patterns before and during pregnancy higher in vegetables, fruits, whole grains, nuts, legumes, fish, and vegetable oils and lower in meat and refined grains are associated with a reduced risk of hypertensive disorders of pregnancy, including preeclampsia and gestational hypertension. Not all components of the assessed dietary patterns were associated with all hypertensive disorders.

Grade Limited: This grade is assigned to the statement **relevant to healthy Caucasian women with access to health care**

Limitation: “relevant to healthy Caucasian women with access to health care.”

Evidence is insufficient to estimate the association between dietary patterns before and during pregnancy and risk of hypertensive disorders of pregnancy in minority women and those of lower socioeconomic status.

Grade: Grade not assignable: This grade is assigned to the statement **relevant to minority women and those of lower socioeconomic status**.

3. [What is the relationship between dietary patterns consumed during pregnancy and gestational age at birth?](#)

Limited but consistent evidence suggests that certain dietary patterns during pregnancy are associated with a lower risk of preterm birth and spontaneous preterm birth. Most of the research was conducted in healthy, Caucasian women with access to health care.

Grade: Limited

Limitation: “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.”

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

4. [What is the relationship between dietary patterns consumed during pregnancy and birth weight standardized for gestational age and sex?](#)

No conclusion can be drawn on the association between dietary patterns during pregnancy and birth weight outcomes. Although research is available, the ability to draw a conclusion is restricted by inconsistency in study findings, inadequate adjustment of

birth weight for gestational age and sex, and variation in study design, dietary assessment methodology, and adjustment of key confounding factors.

Grade: Grade not assignable

Insufficient evidence exists to estimate the association between dietary patterns before pregnancy and birth weight outcomes. There are not enough studies available to answer this question.

Grade: Grade not assignable

These reviews can be accessed from the webpage of the [Pregnancy and Birth to 24 Months Project](#),

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BIRTH -24 MONTHS SUBCOMMITTEE

For an overview of this committee's work, see [this page](#).

The committee oversaw 4 systematic reviews:

1. [What is the relationship between the duration, frequency, and volume of exclusive human milk and/or infant formula consumption and overweight and obesity?](#)
(Evidence covers Jan 2011 to Sept 2019 and additional sibling studies from Jan 1980 to Sept 2019).

Ever vs never consuming human milk

Moderate evidence from observational studies indicates that ever, compared with never, consuming human milk is associated with lower risk of overweight and obesity at age 2 years and older, particularly if the duration of human milk consumption is 6 months or longer.

(Grade: Moderate)* No limitations noted regarding race/ethnicity/SES

Duration of any human milk consumption among infants fed human milk

Insufficient evidence is available to determine the relationship between the duration of any human milk consumption, among infants fed human milk, and overweight and obesity at age 2 years and older; the available evidence was inconsistent.

(Grade: Grade not assignable)

Duration of exclusive human milk consumption before the introduction of infant formula

Insufficient evidence is available to determine the relationship between the duration of exclusive human milk consumption before the introduction of infant formula and overweight and obesity at age 2 years and older.

(Grade: Grade not assignable)

Intensity, proportion, or amount of human milk consumed by mixed-fed infants

No evidence is available to determine the relationship between the intensity, proportion, or amount of human milk consumed by mixed-fed infants and overweight and obesity at age 2 years and older.

(Grade: Grade not assignable)

Intensity, proportion, or amount of human milk consumed at the breast vs by bottle in infants fed human milk as their only source of milk

No evidence is available to determine the relationship between the intensity, proportion, or amount of human milk consumed at the breast vs by bottle in infants fed human milk as their only source of milk and overweight and obesity at age 2 years and older.

(Grade: Grade not assignable)

Consuming human milk or infant formula (i.e., a single substance) vs human milk and infant formula (i.e., both substances) during a single feeding session

No evidence is available to determine the relationship between consuming human milk or infant formula (i.e., a single substance) vs human milk and infant formula (i.e., both substances, e.g., “topping up”) during a single feeding session and overweight and obesity at age 2 years and older.

(Grade: Grade not assignable)

2. [What is the relationship between the duration, frequency, and volume of exclusive human milk and/or infant formula consumption and nutrient status?](#)

(Evidence covers Jan 1980 to Sept 2019)

Ever vs never consuming human milk

Moderate evidence indicates that ever, compared with never, consuming human milk may be associated with fatty acid status from birth to 24 months. However, the difference in fatty acid status between infants fed human milk and infants fed infant formula is likely to depend on the composition of the human milk and infant formula consumed.

(Grade: Moderate)* No limitations noted regarding race/ethnicity/SES.

Insufficient evidence is available to determine the relationship between ever, compared with never, consuming human milk and iron and zinc status from birth to 24 months. No evidence is available to determine the relationship between ever, compared with never, consuming human milk and iodine, vitamin B12, and vitamin D status from birth to 24 months.

(Grade: Grade not assignable)

Duration of any human milk consumption among infants fed human milk

Insufficient evidence is available to determine the relationship between the duration of any human milk consumption, among infants fed human milk, and iron, zinc, vitamin D, and fatty acid status from birth to 24 months. No evidence is available to determine the relationship between the duration of any human milk consumption, among infants fed human milk, and iodine or vitamin B12 status from birth to 24 months.

(Grade: Grade not assignable)

Duration of exclusive human milk consumption before the introduction of infant formula

Insufficient evidence is available to determine the relationship between the duration of exclusive human milk consumption before the introduction of infant formula and fatty acid status. No evidence is available to determine the relationship between the duration of exclusive human milk consumption before the introduction of infant formula and iron, zinc, iodine, vitamin B12, or vitamin D status from birth to 24 months.

(Grade: Grade not assignable)

Intensity, proportion, or amount of human milk consumed by mixed-fed infants

No evidence is available to determine the relationship between the intensity, proportion, or amount of human milk consumed by mixed-fed infants and iron, zinc, iodine, vitamin B12, vitamin D, or fatty acid status from birth to 24 months.

(Grade: Grade not assignable)

3. [What is the relationship between iron from supplements consumed during infancy and toddlerhood and growth, size, and body composition?](#)

(Evidence covers Jan 2000-Jan 2020)

Moderate evidence indicates that human milk-fed infants who are supplemented with iron do not have greater growth, and may have slower growth, than human milk-fed infants not supplemented with iron.

(Grade: Moderate) * No limitations noted regarding race/ethnicity/SES.

Insufficient evidence is available to determine the relationship between iron from supplements consumed during infancy and body composition during infancy. **(Grade: Grade not assignable)**

Insufficient evidence is available to determine the relationship between iron from supplements consumed during infancy and growth, size, and body composition beyond age 12 months.

(Grade: Grade not assignable)

Insufficient evidence is available to determine the relationship between iron from supplements consumed after age 12 months and growth, size, and body composition.

(Grade: Grade not assignable)

4. [What is the relationship between vitamin D from supplements consumed during infancy and toddlerhood and bone health?](#)

(Evidence covers Jan 2000-Jan 2020)

Limited evidence suggests no relationship between consumption of 400 IU per day of vitamin D from supplements before age 12 months, compared with higher dosages of up to 1600 IU per day, and biomarkers of bone metabolism in children up to age 36 months.

(Grade: Limited) * No limitations noted regarding race/ethnicity/SES.

Insufficient evidence is available to determine the relationship between 400 IU per day of vitamin D from supplements, compared with higher dosages, and bone mass, rickets, or fracture.

(Grade: Grade not assignable)

Insufficient evidence is available to determine the relationship between 400 IU per day of vitamin D from supplements, compared with lower dosages, and bone mass, biomarkers of bone metabolism, rickets, or fracture.

(Grade: Grade not assignable)

Insufficient evidence is available to determine the relationship between vitamin D from supplements, compared with no vitamin D from supplements, and bone mass, biomarkers of bone metabolism, rickets, or fracture.

(Grade: Grade not assignable)

Insufficient evidence is available to determine the relationship between vitamin D from supplements, compared with vitamin D from fortified foods, and bone mass, biomarkers of bone metabolism, rickets, or fracture.
(Grade: Grade not assignable)

The Birth to 24 Months Subcommittee also answered [7 questions using existing USDA \(NESR\) reviews:](#)

All these reviews were conducted by USDA staff before the convening of the Dietary Guidelines Advisory Committee. The reviews were published in a supplemental issue (non-peer-reviewed) of the American Journal of Clinical Nutrition in 2019.⁶ This supplement was paid for by USDA.

All the reviews searched the scientific literature **only through July 2016.**

This is an important limitation, because Congress requires that the DGA reflect the literature that is “current at the time.”⁷

→ Due to this basic limitation of the data ending in 2016 and the large number of questions within each of these reviews, an analysis was not conducted.

1. What is the relationship between the duration, frequency, and volume of exclusive human milk and/or infant formula consumption and long-term health outcomes?
2. What is the relationship between the duration, frequency, and volume of exclusive human milk and/or infant formula consumption and food allergies and atopic allergic diseases?
3. What is the relationship between complementary feeding and growth, size, and body composition?
4. What is the relationship between complementary feeding and developmental milestones, including neurocognitive development?
5. What is the relationship between complementary feeding and nutrient status?
6. What is the relationship between complementary feeding and bone health?
7. What is the relationship between complementary feeding and food allergies and atopic allergic diseases?

DIETARY PATTERNS SUBCOMMITTEE

The Dietary Patterns Subcommittee conducted systematic reviews or “review scans” to address 8 questions that examined the relationship between dietary patterns and health outcomes:

⁶ https://academic.oup.com/ajcn/issue/109/Supplement_1

⁷ National Nutrition Monitoring and Related Research Act of 1990 (Public Law 101-445 - Oct. 22, 1990).

1. [What is the relationship between dietary patterns consumed and growth, size, body composition, and risk of overweight and obesity?](#)

Dietary patterns: Children

Limited evidence suggests that dietary patterns consumed by children or adolescents that are lower in fruits, vegetables, whole grains, and low-fat dairy while being higher in added sugars, refined grains, fried potatoes, and processed meats are associated with higher fat-mass index and BMI later in adolescence.

(Grade: **Limited**)

Limitation: 10 of the 12 studies included “Did not account for race/ethnicity” (Table 1 of the review).⁸

Dietary patterns: Adults

The 2020 Dietary Guidelines Advisory Committee reviewed newly published evidence using a systematic evidence scan and determined that the conclusion drawn by the 2015 Dietary Guidelines Advisory Committee generally reflects the current state of science. Moderate evidence indicates dietary patterns emphasizing vegetables, fruits, and whole grains; seafood and legumes; moderate in dairy products (particularly low and non-fat dairy) and alcohol; lower in meats (including red and processed meats), and low in sugar-sweetened foods and beverages, and refined grains are associated with favorable outcomes related to body weight, (including lower BMI, waist circumference, or percent body fat) or risk of obesity. Components of the dietary patterns associated with these favorable outcomes include higher intakes of unsaturated fats and lower intakes of saturated fats, cholesterol, and sodium.

(2015 Dietary Guidelines Advisory Committee Grade: **Moderate**)

Limitations:

--No new systematic review conducted. The 2020 DGAC instead relied upon the 2015 DGAC report, which in turn relied on USDA systematic reviews of studies through mid-2013.⁹ This review is thus limited by systematically reviewing the evidence only through mid-2013.

--Limitation from 2013 USDA review: “Many of the studies were conducted with predominantly Caucasian adults. Additional research should be conducted to examine if and how race/ethnicity, age, and sex might influence the relationship between dietary patterns and health outcomes.”¹⁰

Diets based on macronutrient distribution: Children

No evidence is available to determine a relationship between diets based on macronutrient distribution consumed during childhood and growth, size, body composition, and risk of overweight/obesity.

(Grade: **Grade not assignable**)

Diets Based on macronutrient distribution: Adults

Insufficient evidence is available to determine the relationship between macronutrient distributions with proportions of energy falling outside of the AMDR for at least one

⁸ This limitation is not noted by the review itself.

⁹ <https://nesr.usda.gov/sites/default/files/2019-06/DietaryPatternsReport-FullFinal2.pdf>, p. 14

¹⁰ <https://nesr.usda.gov/sites/default/files/2019-06/DietaryPatternsReport-FullFinal2.pdf>, p. 7

macronutrient and growth, size, body composition, and risk of overweight/obesity, due to methodological limitations and inconsistent results.

(Grade: **Grade not assignable**)

2. [What is the relationship between dietary patterns consumed and risk of cardiovascular disease?](#)

Dietary Patterns: Children

Limited evidence suggests that dietary patterns consumed by children and adolescents reflecting higher intakes of vegetables, fruits, whole grains, fish, low-fat dairy, legumes, and lower intake of sugar-sweetened beverages, other sweets, and processed meat, are associated with lower blood pressure and blood lipid levels, including low-density lipoprotein cholesterol, high-density lipoprotein cholesterol, and triglycerides later in life.

(Grade: **Limited**)

Limitations: In the 4 studies reviewed, none accounted for “race/ethnicity.”¹¹

Dietary Patterns: Adults

The 2020 Dietary Guidelines Advisory Committee conducted a systematic evidence scan and confirmed that the conclusion drawn by the 2015 Dietary Guidelines Advisory Committee generally reflects the current state of science: Strong and consistent evidence demonstrates that dietary patterns associated with decreased risk of cardiovascular disease are characterized by higher consumption of vegetables, fruits, whole grains, low-fat dairy, and seafood, and lower consumption of red and processed meat, and lower intakes of refined grains, and sugar-sweetened foods and beverages relative to less healthy patterns. Regular consumption of nuts and legumes and moderate consumption of alcohol also are shown to be components of a beneficial dietary pattern in most studies. Randomized dietary intervention studies have demonstrated that healthy dietary patterns exert clinically meaningful impact on cardiovascular risk factors, including blood lipids and blood pressure. Additionally, research that includes specific nutrients in their description of dietary patterns indicate that patterns that are lower in saturated fat, cholesterol, and sodium and richer in fiber, potassium, and unsaturated fats are beneficial for reducing cardiovascular disease risk.

(2015 Dietary Guidelines Advisory Committee **Grade: Strong**)

Limitations:

---No new systematic review conducted. The 2020 DGAC instead relied upon the 2015 DGAC report, which in turn relied on USDA systematic reviews of studies through mid-2013.¹² This review is thus limited by systematically reviewing the evidence only through mid-2013.

--Limitation from 2013 USDA review: “Many of the studies were conducted with predominantly Caucasian adults. Additional research should be conducted to examine if and how race/ethnicity, age, and sex might influence the relationship between dietary patterns and health outcomes.”¹³

¹¹ This limitation is not noted by the review itself.

¹² <https://nesr.usda.gov/sites/default/files/2019-06/DietaryPatternsReport-FullFinal2.pdf>, p. 14

¹³ <https://nesr.usda.gov/sites/default/files/2019-06/DietaryPatternsReport-FullFinal2.pdf>, p. 7

Diets Based on Macronutrient Distribution: Children

No evidence was available to determine the relationship between diets based on macronutrient distribution consumed by children or adolescents and concurrent or future development of cardiovascular disease.

(Grade: Grade Not Assignable)

Diets Based on Macronutrient Distribution: Adults

Limited evidence suggests non-energy restricted diets based solely on macronutrient distribution with either carbohydrate, fat, and/or protein proportions outside of the Acceptable Macronutrient Distribution Range, are neither beneficial nor detrimental regarding risk of cardiovascular disease in adults, primarily among those at high-risk, such as those with overweight, obesity or features of metabolic syndrome.

(Grade: **Limited**)

Limitations: Half (15 out of 30 prospective cohort studies) reviewed “did not account for race/ethnicity.” Five out of 30 study populations reviewed were from the U.S. The rest of the studies were located in Japan, Sweden, Spain, Australia, and other countries.¹⁴

3. What is the relationship between dietary patterns consumed and risk of type 2 diabetes?

Dietary patterns: Children

Insufficient evidence is available to determine the relationship between dietary patterns consumed by children or adolescents and risk of type 2 diabetes.

(Grade: Grade Not Assignable)

Dietary patterns: Adults

The 2020 Dietary Guidelines Advisory Committee reviewed newly published evidence using a systematic evidence scan and determined that the conclusion drawn by the 2015 Dietary Guidelines Advisory Committee generally reflects the current state of science: Moderate evidence indicates that healthy dietary patterns higher in vegetables, fruits, and whole grains and lower in red and processed meats, high-fat dairy products, refined grains, and sweets/sugar-sweetened beverages reduce the risk of developing type 2 diabetes. 2015 Dietary Guidelines Advisory Committee

(Grade: Moderate)

Limitations:

----No new systematic review conducted. The 2020 DGAC instead relied upon the 2015 DGAC report, which in turn relied on USDA systematic reviews of studies through mid-2013.¹⁵ This review is thus limited by systematically reviewing the evidence only through mid-2013.

--Limitation from 2013 USDA review: “Many of the studies were conducted with predominantly Caucasian adults. Additional research should be conducted to examine if and

¹⁴ This limitation is not noted by the review itself.

¹⁵ <https://nesr.usda.gov/sites/default/files/2019-06/DietaryPatternsReport-FullFinal2.pdf>, p. 14

how race/ethnicity, age, and sex might influence the relationship between dietary patterns and health outcomes.”¹⁶

Diets based on macronutrient distribution: Children

No evidence is available to determine a relationship between diets based on macronutrient proportion distribution consumed during childhood and risk of type 2 diabetes.

(Grade: Grade Not Assignable)

Diets based on macronutrient distribution: Adults

Insufficient evidence is available to determine the relationship between macronutrient distributions with proportions of energy falling outside of the AMDR for at least one macronutrient and risk of type 2 diabetes, due to methodological limitations and inconsistent results.

(Grade: Grade Not Assignable)

4. [What is the relationship between dietary patterns consumed and risk of certain types of cancer?](#)

Conclusion statements and grades

Dietary patterns: Breast cancer

Moderate evidence indicates that dietary patterns rich in vegetables, fruits, and whole grains, and lower in animal-source foods and refined carbohydrates, are associated with reduced risk of postmenopausal breast cancer. The data regarding these dietary patterns and premenopausal breast cancer risk point in the same direction, but the evidence is limited as fewer studies include premenopausal breast cancer.

(Grade: Moderate - Postmenopausal breast cancer risk, **Limited** – Premenopausal breast cancer risk)

Limitations:

--16 of the 21 prospective cohort studies in the review “did not account for race/ethnicity”¹⁷

--The 2020 review states that It relies on the 2015 DGAC review on this topic. That review, in turn, states: The “**generalizability to the US population may be of concern**. Although 10 of the studies included in the review were done in the United States, five of the studies used data from a single cohort (the Nurse’s Health Study). In addition, **little information was provided about subject demographics, including ethnicity/race**, making it difficult to determine how the results apply to specific subgroups.”¹⁸

Dietary patterns: Colorectal cancer

Moderate evidence indicates that dietary patterns higher in vegetables, fruits, legumes, whole grains, lean meats and seafood, and low-fat dairy; and low in red and processed meats, saturated fat and sugar-sweetened beverages and sweets relative to other dietary patterns are associated with lower risk of colon and rectal cancer. Moderate evidence also indicates that dietary patterns that are higher in red and processed meats, French fries, potatoes, and sources of sugars (e.g., sugar-sweetened beverages, sweets and dessert foods) are associated with a greater colon and rectal cancer risk.

(Grade: Moderate)

¹⁶ <https://nesr.usda.gov/sites/default/files/2019-06/DietaryPatternsReport-FullFinal2.pdf>, p. 7

¹⁷ This limitation is not noted by the review itself.

¹⁸ <https://nesr.usda.gov/sites/default/files/2019-04/2015DGAC-SR-DietaryPatterns.pdf>, p. 35.

Limitations:

--The 2020 relies on the 2015 DGAC review, which states, “Although most cohort studies make extensive efforts to include participants across a wide range of race/ethnic groups and across the socioeconomic continuum, there still may be some groups for which the association between dietary patterns and colorectal cancer risk cannot be reliably assessed; therefore, conclusions cannot be drawn.”¹⁹

Dietary patterns: Lung cancer

Limited evidence suggests that dietary patterns containing more frequent servings of vegetables, fruits, seafood, grains and cereals, legumes and lean vs. higher fat meats and lower fat or non-fat dairy products may be associated with lower risk of lung cancer, primarily among former smokers and current smokers.

(Grade: Limited)

Limitation: The 2020 review included only 1 study on a US population.²⁰

Dietary patterns: Prostate cancer

Limited evidence suggests no relationship between dietary patterns and risk of prostate cancer.

(Grade: Limited)

Limitation: This 2020 review included only 1 study on a US population.²¹

5. What is the relationship between dietary patterns consumed and bone health?

Moderate evidence indicates that a dietary pattern higher in fruits, vegetables, legumes, nuts, low-fat dairy, whole grains, and fish, and lower in meats (particularly processed meats), sugar sweetened beverages, and sweets is associated with favorable bone health outcomes in adults, primarily decreased risk of hip fracture.

(Grade: Adults – Moderate)

Limitation: “These results were not always consistent by gender or age group.” An additional limitation is was not noted in the paper is that only 2 studies looked at US populations, one of which excluded “non-white race/ethnicity” and the other which “did not account for socio-economic status.”²²

Insufficient evidence is available to determine the relationship between dietary patterns consumed during childhood and bone health.

(Grade: Children – Grade not assignable)

6. What is the relationship between dietary patterns consumed and neurocognitive health?

¹⁹ <https://nesr.usda.gov/sites/default/files/2019-04/2015DGAC-SR-DietaryPatterns.pdf>, p. 48.

²⁰ <https://nesr.usda.gov/sites/default/files/2020-07/DP-dietary-patterns-cancer%20-%20full%20SR.pdf>, p. 35

²¹ <https://nesr.usda.gov/sites/default/files/2020-07/DP-dietary-patterns-cancer%20-%20full%20SR.pdf>, p. 39

²² Table 1 of the review. The first population studied which excluded those of “non-white race/ethnicity” is listed in two papers, Fung 2015, Fung 2016, p. 21-22; the second, which “did not account for socio-economic status” is Haring 2016, p. 23.

Limited evidence suggests that dietary patterns containing vegetables, fruits, unsaturated vegetable oils and/or nuts, legumes, and fish or seafood consumed during adulthood are associated with lower risk of age-related cognitive impairment and/or dementia.
(Grade: Limited)

Limitation: “results are most generalizable to the generally healthy, older adults. Few studies reported information on or accounted for race/ethnicity of participants, and therefore, the results may be less generalizable in populations of diverse racial/ethnic backgrounds.”

7. What is the relationship between dietary patterns consumed and sarcopenia?

Dietary patterns

Insufficient evidence is available to determine the relationship between dietary patterns and sarcopenia in older adults.
(Grade: Grade not assignable)

Diets based on macronutrient distribution

Insufficient evidence was available to determine the relationship between diets based on macronutrient distribution and sarcopenia.
(Grade: Grade not assignable)

8. What is the relationship between dietary patterns consumed and all-cause mortality?
(Evidence reviewed was from 2000 to 2019)

Dietary patterns

Strong evidence demonstrates that dietary patterns in adults and older adults characterized by vegetables, fruits, legumes, nuts, whole grains, unsaturated vegetable oils, and fish, lean meat or poultry when meat was included, are associated with decreased risk of all-cause mortality. These patterns were also relatively low in red and processed meat, high-fat dairy, and refined carbohydrates or sweets. Some of these dietary patterns also included alcoholic beverages in moderation.
(Grade: Strong)

Limitations:

-- Most studies adjusted for key confounders, “with the exception of race and ethnicity” and “It is difficult to determine the impact that race and ethnicity specifically may have on the relationship between dietary patterns and all-cause mortality due to a lack of reporting.” Indeed, the review reports that a study on black men had results contrary to other studies..²³

Diets based on macronutrient distribution

Insufficient evidence was available to determine the relationship between diets based on macronutrient distribution and all-cause mortality.
(Grade: Grade not assignable)



BEVERAGES AND ADDED SUGARS SUBCOMMITTEE

²³ https://nesr.usda.gov/sites/default/files/2020-07/DP-dietary-patterns-all-cause-mortality%20-%20SR_0.pdf, p. 20

1. [What is the relationship between beverage consumption and growth, size, body composition, and risk of overweight and obesity?](#)

(Evidence covers Jan, 2000-June, 2019)

Milk:

Limited evidence suggests that milk intake is not associated with adiposity in children.

(Grade: Limited)

Limitation: "The predominant race/ethnic group represented in this evidence was non-Hispanic white; however, there were 6 studies [out of 30] where more than half of participants at baseline were not non-Hispanic white."

Insufficient evidence is available to draw a conclusion about the relationship between the type of milk (i.e., milk fat content, flavor) and adiposity in children.

(Grade: Grade not assignable)

Limited evidence suggests that higher milk intake is associated with a greater increase in height compared to lower intake in children.

(Grade: Limited)

Limitation: The predominant race/ethnic group represented in this evidence was non-Hispanic white; however, there were 6 studies [out of 30] where more than half of participants at baseline were not non-Hispanic white."

Limited evidence suggests that milk intake is not associated with adiposity in adults.

(Grade: Limited))

Limitation: "The predominant race/ethnic group represented in this evidence was non-Hispanic white; yet, there were 2 studies [out of 32] where more than half of participants at baseline were not non-Hispanic white."

100% Juice:

Limited evidence suggests 100% juice intake in children is not associated with adiposity or height in children.

(Grade: Limited)*

Limitation: "Based on data from studies that reported race/ethnicity, most participants were primarily white"

Limited evidence suggests 100% juice consumption is not associated with measures of adiposity in adults.

(Grade: Limited) *

Limitation: "In studies reporting race/ethnicity data, most enrolled a predominantly white sample."

Sugar-sweetened beverages:

Moderate evidence suggests that higher sugar-sweetened beverage intake is associated with greater adiposity in children.

(Grade: Moderate)

Limitation: “most participants were non-Hispanic white but there was some race/ethnic diversity.”

Limited evidence suggests that higher sugar-sweetened beverage intake is associated with greater adiposity in adults.

(Grade: Limited)

Limitation: “Based on data from studies that reported race/ethnicity, most participants were non-Hispanic white but there was some race/ethnic diversity.”

Insufficient evidence is available to determine the relationship between sugar-sweetened beverages compared with low- and no- calorie sweetened beverages on adiposity in children.

(Grade: Grade not assignable)

Limited evidence suggests no association between sugar-sweetened beverages compared with low- and no- calorie sweetened beverages on adiposity in adults.

(Grade: Limited)

Limitation: “most participants were non-Hispanic white but there was some race/ethnic diversity.”

Low and no-calorie sweetened beverages:

Limited evidence suggests no association between low- and no-calorie sweetened beverage consumption and adiposity in children.

(Grade: Limited)

Limitation: Based on data from studies that reported race/ethnicity, most participants were primarily white; however, one study was done in Hispanics adolescents, and three studies [out of 17 total] had other racial representation

Limited evidence suggests that low- and no- calorie sweetened beverage consumption is associated with reduced adiposity in adults.

(Grade: Limited)

Limitation: Based on data from studies that reported race/ethnicity, most participants were primarily white; however, one RCT had other racial representation, as did four observational studies [out of 20 total].

2. [What is the relationship between beverage consumption during pregnancy and birth weight standardized for gestational age and sex?](#)

(Evidence covers Jan 2000 to June 2019)

Insufficient evidence is available to determine the relationship between consumption of milk during pregnancy and birth weight outcomes.

(Grade: Grade not assignable)

Insufficient evidence is available to determine the relationship between consumption of tea during pregnancy and birth weight outcomes.

(Grade: Grade not assignable)

Insufficient evidence is available to determine the relationship between consumption of coffee during pregnancy and birth weight outcomes.

(Grade: Grade not assignable)

Insufficient evidence is available to determine the relationship between consumption of sugar-sweetened beverages or low- or no-calorie sweetened beverages during pregnancy and birth weight outcomes.

(Grade: Grade not assignable)

Insufficient evidence is available to determine the relationship between consumption of water during pregnancy and birth weight outcomes.

(Grade: Grade not assignable)

3. [What is the relationship between alcohol consumption and all-cause mortality?](#)

(Evidence covers Jan 2010 to Mar 2020)

Primary comparisons (among those who currently drink alcohol)

Moderate evidence indicates that higher average alcohol consumption is associated with an increased risk of all-cause mortality compared with lower average alcohol consumption among those who drink.

(Grade: Moderate)

Limitation: Only about 1/3 of the studies (36%) are US-based and less than half of studies accounted for race/ethnicity as a confounder.²⁴

Moderate evidence indicates that binge drinking (consuming 5 or more drinks for men or 4 or more drinks for women during a drinking occasion) is associated with increased risk of all-cause mortality, and that more frequent binge drinking is associated with increased risk of all-cause mortality compared with less frequent or no binge drinking among those who drink.

(Grade: Moderate)

Limitation: Only about 1/3 of the studies (36%) are US-based and less than half of studies accounted for race/ethnicity as a confounder.²⁵

Secondary comparison (between those who currently drink alcohol and those who have never consumed alcohol)

Limited evidence suggests that low average alcohol consumption, particularly without binge drinking, is associated with a lower risk of all-cause mortality compared with never drinking alcohol. However, in light of the many scientific and public health issues associated with alcoholic beverages, any conclusions about low average consumption compared to never drinking alcohol require careful consideration.

(Grade: Limited)

²⁴ This limitation is not noted by the review itself.

²⁵ This limitation is not noted by the review itself.

Limitation: Only about 1/3 of the studies (36%) are US-based and less than half of studies account for race/ethnicity as a confounder.²⁶

What is the relationship between added sugars consumption and risk of cardiovascular disease?

(Evidence covers Sept. 2014 to Sept. 2019)

Limited evidence from prospective cohort studies that were based primarily on sugar-sweetened beverages suggests that higher consumption of added sugars in adulthood is associated with increased risk of cardiovascular disease mortality.

(Grade: Limited)

Limitation: “The majority of studies enrolled middle-aged adults that were primarily white, suggesting good generalizability for that population, but less generalizability for younger, older, and non-white adults.”

Insufficient evidence is available to determine the relationship between added sugars consumption and risk of cardiovascular disease in children.

(Grade: Grade not assignable)

Insufficient evidence is available to determine the relationship between added sugars intake in adulthood and cardiovascular disease risk profile.

(Grade: Grade not assignable)

Insufficient evidence is available to determine the relationship between added sugars intake in adulthood and risk of stroke.

(Grade: Grade not assignable)

Insufficient evidence is available to determine the relationship between added sugars intake in adulthood and incident ischemic cardiovascular disease events.

(Grade: Grade not assignable)

Insufficient evidence is available to determine the relationship between added sugars intake in adulthood and risk of peripheral artery disease.

(Grade: Grade not assignable)

Insufficient evidence is available to determine the relationship between added sugars intake in adulthood and risk of heart failure.

(Grade: Grade not assignable)



DIETARY FATS AND SEAFOOD SUBCOMMITTEE

1. What is the relationship between types of dietary fat consumed and risk of cardiovascular disease?

(Evidence for children covers 1990-2019; for adults, Jan. 2010-Oct. 2019)

²⁶ This limitation is not noted by the review itself.

Cardiovascular disease intermediate outcomes: Children

Strong evidence demonstrates that diets lower in saturated fatty acids and cholesterol during childhood result in lower levels of total blood and low-density lipoprotein cholesterol throughout childhood, particularly in boys.

(Grade: Strong)

Limitation: "Most articles did not report race and ethnicity, but those that did included predominantly White or Caucasian participants."

Moderate evidence indicates that diets higher in polyunsaturated fatty acids during childhood result in lower levels of total blood cholesterol throughout childhood, particularly in boys.

(Grade: Moderate)

Limitation: "Most articles did not report race and ethnicity, but those that did included predominantly White or Caucasian participants."

Insufficient evidence is available to determine the relationship between monounsaturated fatty acid intake during childhood and total blood and low-density lipoprotein cholesterol throughout childhood.

(Grade: Grade not assignable)

Insufficient evidence is available to determine the relationship between intake of types of dietary fat during childhood and blood pressure throughout childhood.

(Grade: Grade not assignable)

Cardiovascular disease endpoint outcomes: Children

Insufficient evidence is available to determine the relationship between intake of types of dietary fat during childhood and cardiovascular disease health outcomes during adulthood.

(Grade: Grade not assignable)

Cardiovascular disease intermediate outcomes: Adults

Strong and consistent evidence from randomized controlled trials demonstrates that replacing saturated fatty acids with unsaturated fats, especially polyunsaturated fatty acids, in adults significantly reduces total and low-density lipoprotein cholesterol. Replacing saturated fatty acids with carbohydrates (sources not defined) also reduces total and low-density lipoprotein cholesterol, but significantly increases triglycerides and reduces high-density lipoprotein cholesterol. Since the 2015 Dietary Guidelines Advisory Committee review, evidence remains inadequate to differentiate among sources of carbohydrate and their impact on blood lipids.

(Grade: Strong)

Limitation: "Race or ethnicity was not consistently reported, but among those studies that provided this information, the majority included participants who were predominantly White or Caucasian."

Insufficient evidence is available to determine an independent relationship between dietary cholesterol intake in adults and blood lipids, given the co-occurrence of

cholesterol with saturated fats in foods.

(Grade: Grade not assignable)

Strong evidence demonstrates that replacing saturated fatty acids with polyunsaturated fatty acids in adults reduces the risk of coronary heart disease events and cardiovascular disease mortality.

(Grade: Strong)

Limitation: "Race or ethnicity was not consistently reported, but among those studies that provided this information, the majority included participants who were predominantly White or Caucasian."

Insufficient evidence is available to determine whether replacing saturated fatty acids with polyunsaturated fatty acids in adults affects the risk of stroke or heart failure.

(Grade: Grade not assignable)

Insufficient evidence is available to determine whether replacing saturated fatty acids with different types of carbohydrates (e.g., complex, simple) in adults affects the risk of cardiovascular disease.

(Grade: Grade not assignable)

Limited evidence is available regarding whether replacing saturated fatty acids with monounsaturated fatty acids in adults confers overall cardiovascular disease endpoint health benefits. Main sources of monounsaturated fatty acids in a typical American diet are animal fats, with co-occurrence of saturated fatty acids and monounsaturated fatty acids in these foods thereby obscuring the independent association of monounsaturated fatty acids with cardiovascular disease. Evidence reviewed from randomized controlled trials and prospective studies demonstrated benefits of plant sources of monounsaturated fats, including olive oil and nuts on cardiovascular disease risk.

(Grade: Limited)

Limitation: "Race or ethnicity was not consistently reported, but among those studies that provided this information, the majority included participants who were predominantly White or Caucasian."

Moderate evidence indicates that total intake of omega-3 polyunsaturated fatty acids, particularly eicosapentaenoic acid and docosahexaenoic acid from food sources, by adults is associated with lower risk of cardiovascular disease.

(Grade: Moderate)

Limitation: "Race or ethnicity was not consistently reported, but among those studies that provided this information, the majority included participants who were predominantly White or Caucasian."

Limited evidence suggests that intake of linoleic acid, but not arachidonic acid, during adulthood may be associated with lower risk of cardiovascular disease, including cardiovascular disease mortality.

(Grade: Limited)

Limitation: "Race or ethnicity was not consistently reported, but among those studies that provided this information, the majority included participants who were predominantly White or Caucasian."

Insufficient evidence is available from randomized controlled trials to quantify an independent relationship between dietary cholesterol intake in adults and overall risk of cardiovascular disease.

(Grade: Grade not assignable)

2. [What is the relationship between seafood consumption during pregnancy and lactation and neurocognitive development in the child?](#)

(Evidence covers Jan 2000 to Oct. 2019)

Seafood intake during pregnancy

Moderate evidence indicates that seafood intake during pregnancy is associated favorably with measures of cognitive development in young children.

(Grade: Moderate)

Limitation: A “majority of participants completed high school and a large proportion had completed some college or a college degree” which may suggest lack of representation of low SES.

Limited evidence suggests that seafood intake during pregnancy may be associated favorably with measures of language and communication development in the child.

(Grade: Limited)

Limitation. A “majority of participants completed high school and a large proportion had completed some college or a college degree” which may suggest lack of representation of low SES.

Insufficient evidence is available to determine the relationship between seafood intake during pregnancy and movement and physical development in the child.

(Grade: Grade not assignable)

Insufficient evidence is available to determine the relationship between seafood intake during pregnancy and social-emotional and behavioral development in the child.

(Grade: Grade not assignable)

Insufficient evidence is available to determine the relationship between seafood consumption during pregnancy and attention deficit disorder or attention-deficit/hyperactivity disorder-like traits or behaviors in the child.

(Grade: Grade not assignable)

No evidence is available to determine the relationship between seafood consumption during pregnancy and diagnosis of attention deficit disorder or attention-deficit/hyperactivity disorder in the child.

(Grade: Grade not assignable)

Insufficient evidence is available to determine the relationship between seafood consumption during pregnancy and autism spectrum disorder-like traits or behaviors or autism spectrum disorder diagnosis in the child.

(Grade: Grade not assignable)

No evidence is available to determine the relationship between seafood intake during pregnancy and academic performance in the child.

(Grade: Grade not assignable)

No evidence is available to determine the relationship between seafood intake during pregnancy and anxiety in the child.

(Grade: Grade not assignable)

No evidence is available to determine the relationship between seafood intake during pregnancy and depression in the child.

(Grade: Grade not assignable)

Seafood intake during lactation

No evidence is available to determine the relationship between maternal seafood intake during lactation and neurocognitive development in the child.

(Grade: Grade not assignable)

3. [What is the relationship between seafood consumption during childhood and adolescence \(up to 18 years of age\) and neurocognitive development?](#)

Insufficient evidence is available to determine whether there is a favorable relationship between seafood intake during childhood and adolescence and measures of cognitive development in children and adolescents. However, no unfavorable relationships were found between seafood consumption during childhood and adolescence and measures of cognitive development.

(Grade: Grade not assignable)

Insufficient evidence is available to determine whether there is a favorable relationship between seafood intake during childhood and adolescence and measures of language and communication development in children and adolescents. However, no unfavorable relationships were found between seafood consumption during childhood and adolescence and measures of language and communication development.

(Grade: Grade not assignable)

Insufficient evidence is available to determine the relationship between seafood intake during childhood and movement and physical development in children.

(Grade: Grade not assignable)

Insufficient evidence is available to determine the relationship between seafood intake during childhood and adolescence and social-emotional and behavioral development in children and adolescents.

(Grade: Grade not assignable)

Insufficient evidence is available to determine the relationship between seafood consumption during childhood and adolescence and attention deficit disorder or attention-deficit/hyperactivity disorder-like traits or behaviors.

(Grade: Grade not assignable)

No evidence is available to determine the relationship between seafood intake during childhood and adolescence and autism spectrum disorder-like traits or behaviors or autism spectrum disorder diagnosis.

(Grade: Grade not assignable)

Insufficient evidence is available to determine the relationship between seafood intake during adolescence and academic performance in adolescents.

(Grade: Grade not assignable)

Insufficient evidence is available to determine the relationship between seafood consumption during childhood and adolescence and anxiety and depression.

(Grade: Grade not assignable)

4. [What is the relationship between seafood consumption during childhood and adolescence \(up to 18 years of age\) and risk of cardiovascular disease?](#)

Insufficient evidence is currently available to accurately determine the relationship between seafood consumption during childhood and adolescence and risk of developing cardiovascular disease.

(Grade: Grade not assignable)



FREQUENCY OF EATING SUBCOMMITTEE

1. [What is the relationship between the frequency of eating and growth, size, body composition, and risk of overweight and obesity?](#)

Insufficient evidence is available to determine the relationship between the frequency of eating and growth, size, body composition, and risk of overweight and obesity.

(Grade: Grade not assignable)

2. [What is the relationship between the frequency of eating and risk of cardiovascular disease?](#)

Insufficient evidence is available to determine the relationship between the frequency of eating and cardiovascular disease.

(Grade: Grade not assignable)

3. [What is the relationship between the frequency of eating and risk of type 2 diabetes?](#)

Insufficient evidence is available to determine the relationship between the frequency of eating and type 2 diabetes.

(Grade: Grade not assignable)

4. [What is the relationship between the frequency of eating during lactation and postpartum weight loss?](#)

Insufficient evidence is available to determine the relationship between the frequency of eating during lactation and postpartum weight loss.

(Grade: Grade not assignable)

5. [What is the relationship between the frequency of eating during pregnancy and gestational weight gain?](#)

No evidence is available to determine the relationship between the frequency of eating during pregnancy and gestational weight gain.

(Grade: Grade not assignable)

6. What is the relationship between the frequency of eating and all-cause mortality?

No evidence is available to determine the relationship between the frequency of eating and all-cause mortality.

(Grade: Grade Not Assignable)