

# 2020 Dietary Guidelines Advisory Committee: Dietary Patterns Subcommittee

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# Topics and Questions Under Review

- Presented at previous meeting:
  - Dietary patterns and all-cause mortality
- To be discussed today:
  - Dietary patterns and sarcopenia
  - Dietary patterns and cancer
  - Dietary patterns and cardiovascular disease
  - Dietary patterns and growth, size, body composition, obesity
  - Dietary patterns and type 2 diabetes
  - Dietary patterns and bone health
  - Dietary patterns and neurocognitive health

# Inclusion and Exclusion Criteria Updates – Intervention/Exposure

Category	Inclusion Criteria	Exclusion Criteria
<b>Intervention/exposure</b> (All-cause Mortality; Sarcopenia; Cardiovascular disease (CVD); Growth, size, Body composition, Obesity (GSBCO); Type 2 Diabetes (T2D))	<p>Studies that examine consumption of and/or adherence to a</p> <ol style="list-style-type: none"> <li>1. Dietary pattern [i.e., the quantities proportions, variety, or combination of different foods, drinks, and nutrients (when available) in diets, and the frequency with which they are habitually consumed] such as Dietary Approaches to Stop Hypertension (DASH), and vegetarian/vegan), including, at a minimum, a description of the foods and beverages in the pattern such as Dietary Approaches to Stop Hypertension (DASH), vegetarian/vegan, low-carbohydrate, and high-fat diets)               <ul style="list-style-type: none"> <li>• Dietary patterns may be measured or derived using a variety of approaches, such as adherence to a priori patterns (indices/scores), data driven patterns (factor or cluster analysis), reduced rank regression, or other methods, including clinical trials.</li> </ul> </li> </ol> <p><b>And/or</b></p> <ol style="list-style-type: none"> <li>2. Diet based on macronutrient distribution outside of the AMDR, such as low-carbohydrate and high-fat diets, and               <ul style="list-style-type: none"> <li>• Include the macronutrient distribution of carbohydrate, fat, and protein of the diet, and</li> <li>• Include at least one macronutrient outside of the acceptable macronutrient distribution range (AMDR)</li> </ul> </li> </ol>	<p>Studies that</p> <ol style="list-style-type: none"> <li>1a. Do not provide a description of the dietary pattern, which at minimum, must include the foods and beverages in the pattern (i.e., studies that examine a labeled dietary pattern, but do not describe the foods and beverages consumed)</li> <li>2a. Examine consumption of and/or adherence to a diet based on macronutrient proportion in which all macronutrients are within the AMDR</li> <li>2b. Do not describe the entire macronutrient distribution of the diet (i.e., studies that only examine a single macronutrient in relation to outcomes)</li> </ol>

# Question - Sarcopenia

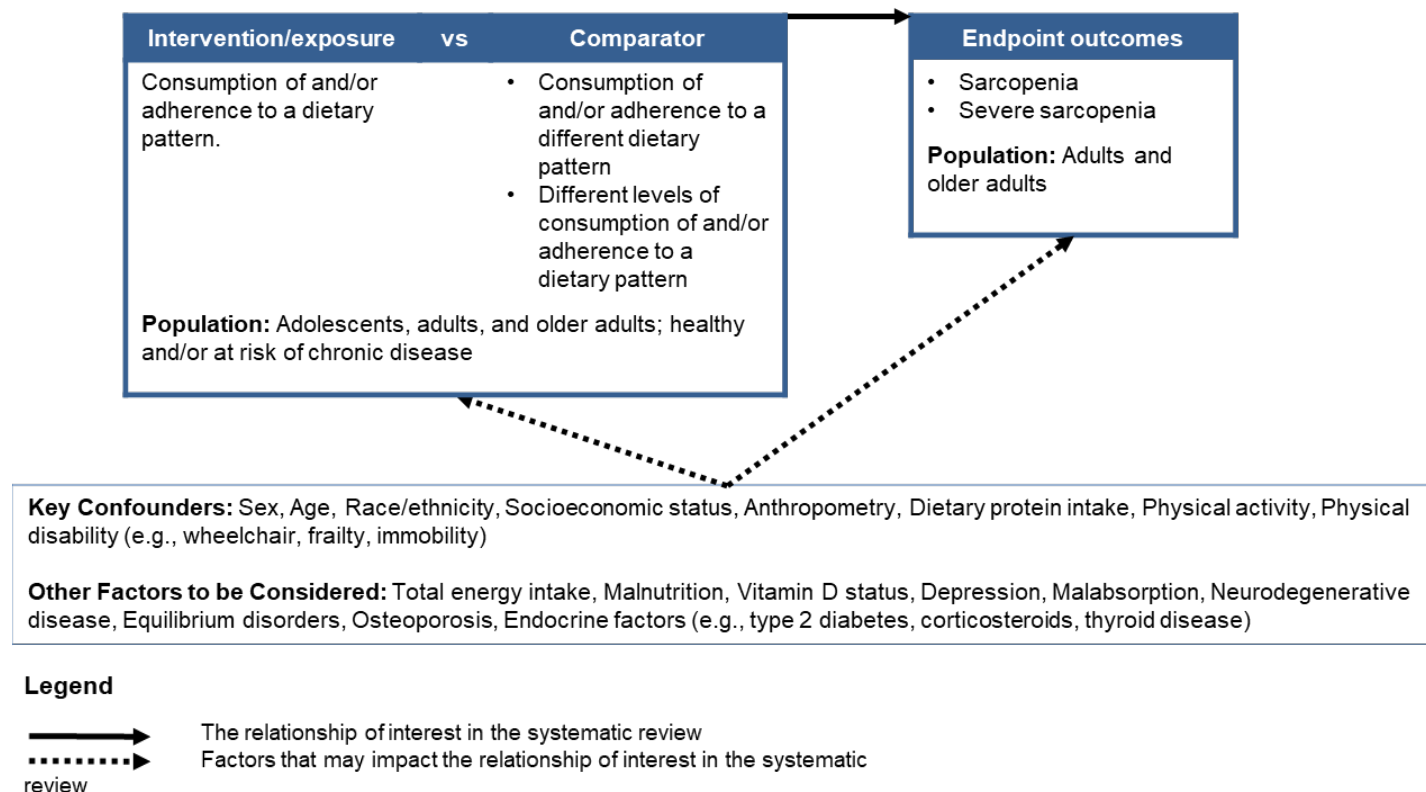
What is the relationship between dietary patterns consumed and sarcopenia?

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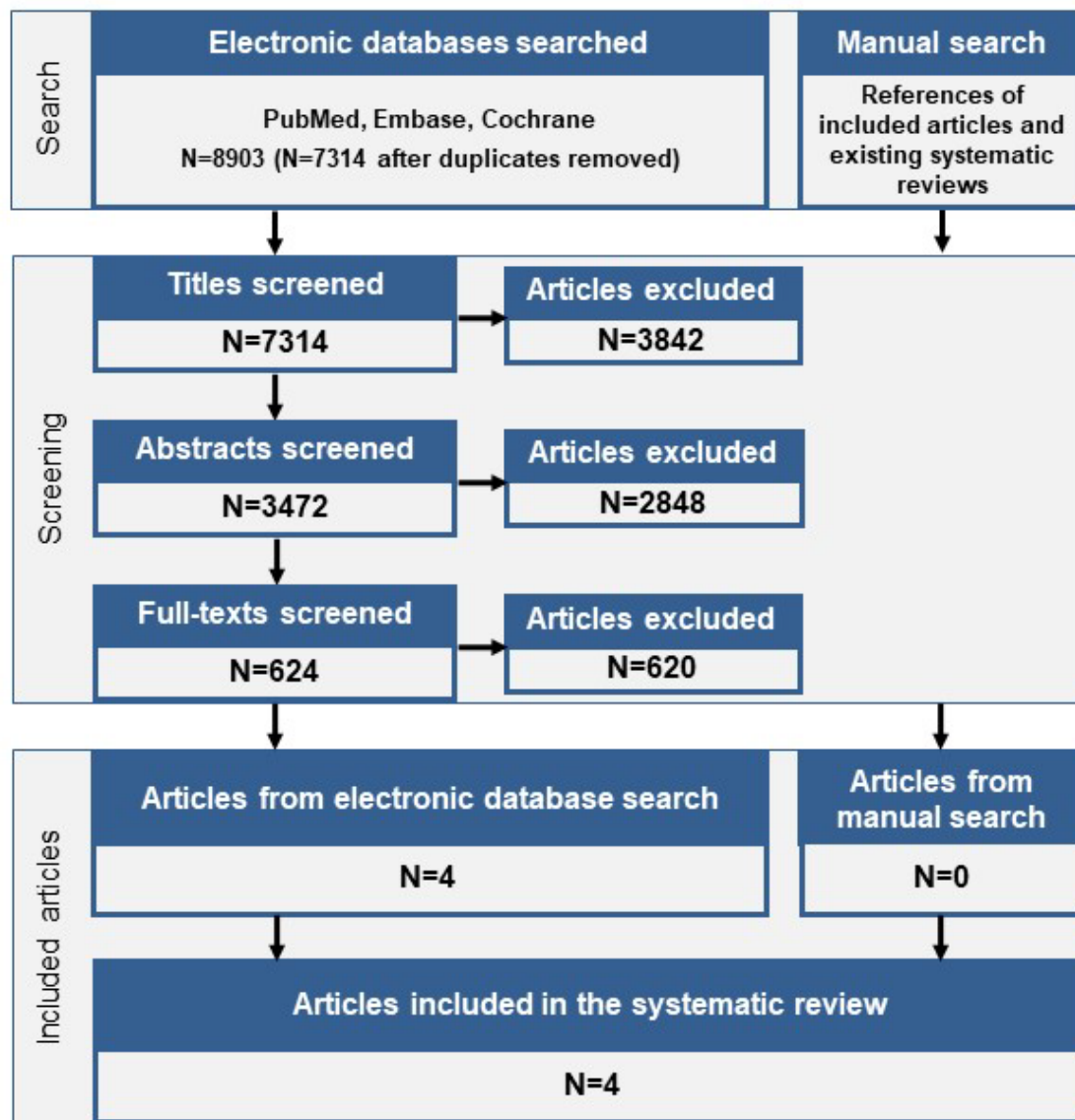
Approach to Answer Question: NESR Systematic Review

# Analytic Framework: Dietary Patterns and Sarcopenia

**Sarcopenia** - A progressive and generalized loss of skeletal muscle mass, alone or in conjunction with either or both low muscle strength and low muscle performance.



# Literature Search and Screening Results: Sarcopenia



# Description of the Evidence: Dietary Patterns and Sarcopenia

- 4 prospective cohort studies
- Various methods used to identify or examine adherence to dietary patterns:
  - Factor analysis (Chan, 2016),
  - Cluster analysis (Granic, 2019) [*Note: mean % energy from fat was higher than AMDR in all 3 clusters*]
  - Indices or scores (Chan, 2016; Isanejad, 2018; Karlsson, 2019)
- Included articles defined sarcopenia as low muscle mass with low muscle strength based on handgrip strength and/or low muscle performance based on walking speed

# Summary of the Evidence Synthesis: Dietary Patterns and Sarcopenia

- Studies were inconsistent – both in terms of the dietary patterns examined and reported results
- Studies had a number of limitations:
  - Diet was assessed once at baseline
  - Adjusted for a number of potential confounders, but not all key confounders, such as race/ethnicity or physical disability
  - Potential for selection bias due to participants enrolled likely representing healthier individuals (i.e., those able to walk, take public transportation, or with interest in preventing future falls or fracture)



# DRAFT Conclusion Statement: Dietary Patterns and Sarcopenia

## **Conclusion statement**

Insufficient evidence is available to determine the relationship between dietary patterns and sarcopenia in older adults.

**Grade:** Grade Not Assignable

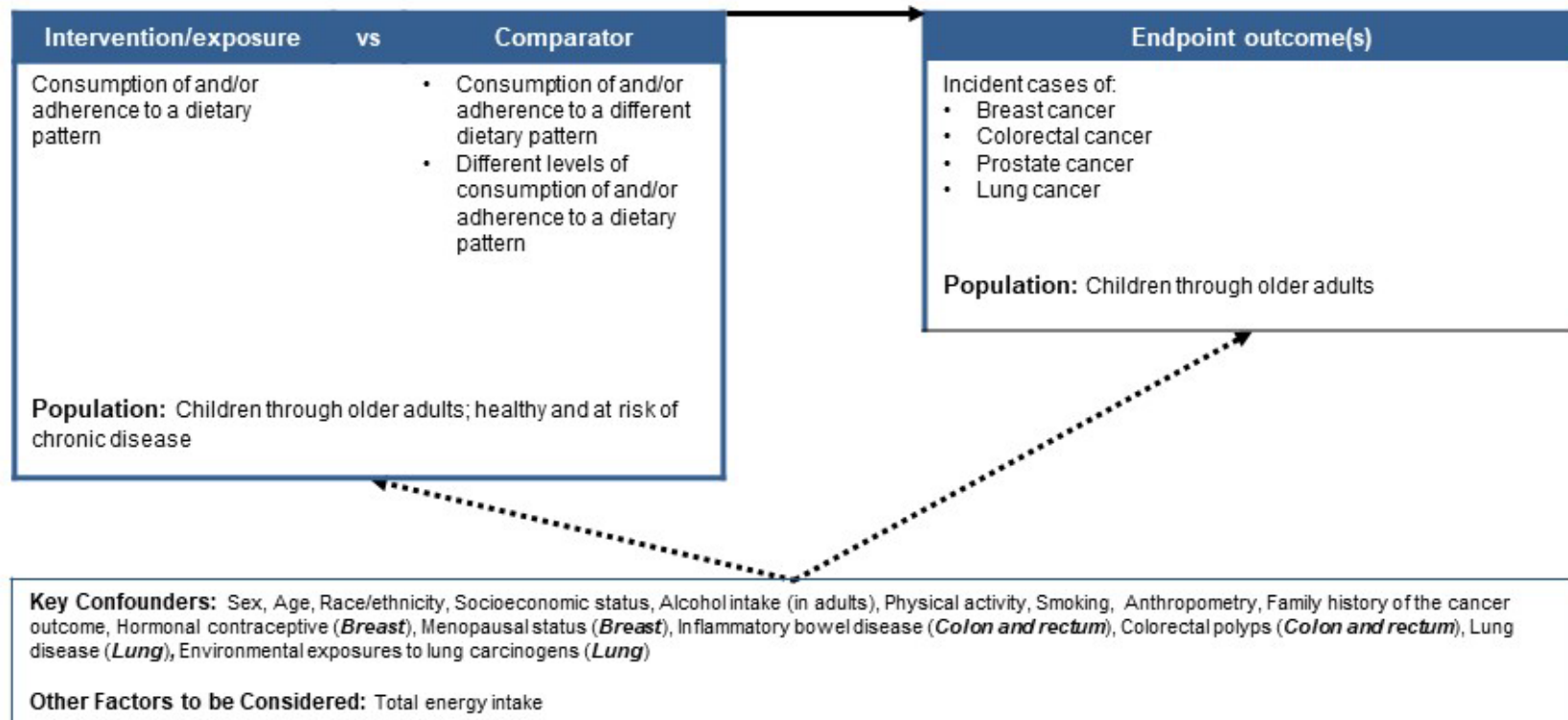
# Question - Cancer

What is the relationship between dietary patterns consumed and certain types of cancer?

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Approach to Answer Question: Update to  
existing NESR Systematic Review

# Analytic Framework: Dietary Patterns and Cancer



## Key definitions

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

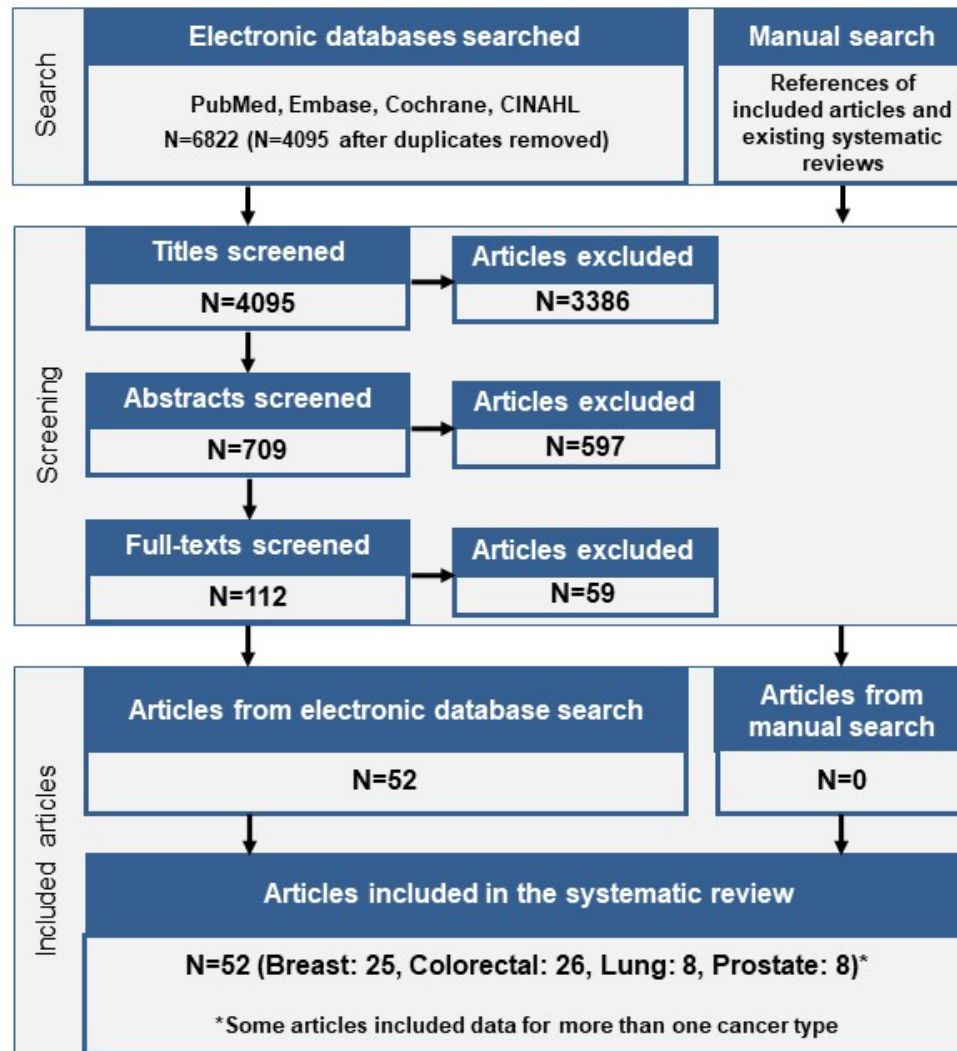
## Legend



The relationship of interest in the systematic review

Factors that may impact the relationship of interest in the systematic review

# Literature Search and Screening Results: Dietary Patterns and Cancer



# Description of the Evidence: Dietary Patterns and Cancer

- Included articles, published between January 2014 and January 2020, addressed the relationship between dietary patterns and:
  - Prostate cancer: 8 articles
  - Lung cancer: 8 articles
  - Breast cancer: 26 articles
  - Colorectal cancer: 25 articles
- This review updates reviews conducted by the 2015 Dietary Guidelines Advisory Committee, which included studies published from January 2000 to January 2014.

# Description and Synthesis of the Evidence: Dietary Patterns and Prostate Cancer

- This systematic review update includes 7 prospective cohort studies and 1 nested-case-control study
- 6 studies examined adherence to dietary patterns using indices or scores; 1 study identified dietary patterns using factor analysis; 1 study examined variations of vegetarian diets
- Most studies reported no significant associations
  - There was some inconsistency in the direction and magnitude of effects reported depending on cancer type (advanced vs. non-advanced), dietary pattern analysis (categorical vs. continuous; inclusion of alcohol intake), or subject characteristics
  - Studies had some risks of bias (e.g., potential for confounding, assessment of diet once at baseline)
  - Analytic sample sizes ranged from 2,753 to 140,729 with sufficient number of prostate cancer cases over follow-up (range: 4y to 20y)
  - Studies were direct and generalizable, and therefore, applicable to the U.S. population

# **DRAFT Conclusion Statement: Dietary Patterns and Prostate Cancer**

## **Conclusion Statement**

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

**Grade: Limited**

## **Status relative to conclusions reached in the existing review:**

- This systematic review updates, and builds upon, the existing review from the 2015 Dietary Guidelines Advisory Committee
- Existing review from the 2015 Dietary Guidelines Advisory Committee did not draw a conclusion regarding the relationship between dietary patterns and the risk of prostate cancer, “due to limited evidence from a small number of studies with wide variation in study design, dietary assessment methodology and prostate cancer outcome ascertainment. (Grade: Grade Not Assignable).”

# Description and Synthesis of the Evidence: Dietary Patterns and Lung Cancer

- This systematic review update includes 7 prospective cohort studies and 1 nested case-control study
- All studies examined adherence to dietary patterns using indices or scores
- Most studies reported significant associations
  - Significant associations were primarily evident in former and current smokers
  - Studies had some risks of bias (e.g., potential for confounding, assessment of diet once at baseline)
  - Analytic sample sizes ranged from 4,336 to 460,700 with sufficient number of cases over follow-up (range: 4y to 20y)
  - Studies were direct and generalizable, and therefore, applicable to the U.S. population



# DRAFT Conclusion Statement:

## Dietary Patterns and Lung Cancer

### **Conclusion Statement**

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**

### **Status relative to conclusions reached in the existing review:**

- This systematic review updates, builds upon, and concurs with the conclusion drawn by the 2015 Dietary Guidelines Advisory Committee.

# Description and Synthesis of the Evidence: Dietary Patterns and Breast Cancer

- This systematic review update includes 3 articles from 2 randomized controlled trials, 21 prospective cohort studies, and 2 nested case-control studies
- 2 articles from the same RCT examined a low-fat diet with increased vegetables, fruit, and grains, and the other RCT tested Mediterranean diets (with extra-virgin olive oil or nuts) and a low-fat diet
- 14 studies examined adherence to dietary patterns using indices or scores, 5 studies identified dietary patterns using factor analysis, 5 studies identified dietary patterns using reduced rank regression, 1 study examined variations of vegetarian diets
- Many studies reported significant associations.
  - Significant associations were primarily evident for post-menopausal breast cancer risk; fewer studies examined risk of pre-menopausal breast cancer
  - Studies had some risks of bias (e.g., potential for confounding, assessment of diet once at baseline).
  - Analytic sample sizes were large (range of 2,492 to 330,766) with sufficient number of cases over follow-up (range from 4y to 23y).
  - Studies were direct and generalizable, and therefore, applicable to the U.S. population.

# DRAFT Conclusion Statement:

## Dietary Patterns and Breast Cancer

### **Conclusion Statement**

Moderate evidence indicates an inverse association between dietary patterns rich in vegetables, fruit and whole grains, and lower in animal products and refined carbohydrate, are associated with reduced risk of postmenopausal breast cancer. The data regarding this dietary pattern and premenopausal breast cancer risk point in the same direction, but the evidence is limited due to fewer studies.

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

### **Status relative to conclusions reached in the existing review:**

- This systematic review updates, builds upon, and concurs with the conclusion drawn by the 2015 Dietary Guidelines Advisory Committee

# Summary of the Evidence Synthesis: Dietary Patterns and Colorectal Cancer

- This systematic review update includes 2 articles from the same RCT, 22 prospective cohort studies, and 1 nested case-control study
- The RCT examined a low-fat diet with increased vegetables, fruit, and grains
- 18 studies examined adherence to a dietary pattern using indices and scores, 3 studies identified dietary patterns using factor or cluster analysis, 1 study identified dietary patterns using reduced rank regression, 1 study examined variations of vegetarian diets
- Many studies reported significant associations
  - Exposure assessment changes the direction of the results.
  - There was some inconsistency by cancer type (colorectal, colon, rectal) and by subject characteristics (e.g., sex)
  - Studies had some risks of bias (e.g., potential for confounding, assessment of diet once at baseline)
  - Analytic sample sizes were large (range of 8,050 to 471,495) with sufficient number of cases over follow-up (range from 4y to 20y)
  - Studies were direct and generalizable, and therefore, applicable to the U.S. population

# **DRAFT Conclusion Statement:**

## **Dietary patterns and Colorectal cancer**

### **Conclusion Statement**

Moderate evidence suggests dietary patterns that are higher in vegetables, fruits, legumes, whole grains, lean meats and seafood, low-fat dairy and moderate alcohol; lower in saturated fat and sodas and sweets, and low or no intake of red and processed meats relative to other dietary patterns are associated with reduced-risk of colon and rectal cancer. Moderate evidence also suggests dietary patterns that are higher in red and processed meats, French fries and potatoes, and sources of sugars (e.g., sodas, sweets and dessert foods) are associated with a greater colon and rectal cancer risk.

### **Grade: Moderate**

### **Status relative to conclusions reached in the existing review:**

- This systematic review updates, builds upon, and concurs with the conclusion drawn by the 2015 Dietary Guidelines Advisory Committee

# Questions – CVD, T2DM, and GSBCO

What is the relationship between dietary patterns consumed and risk of cardiovascular disease?

What is the relationship between dietary patterns consumed and growth, size, body composition, and risk of overweight or obesity?

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

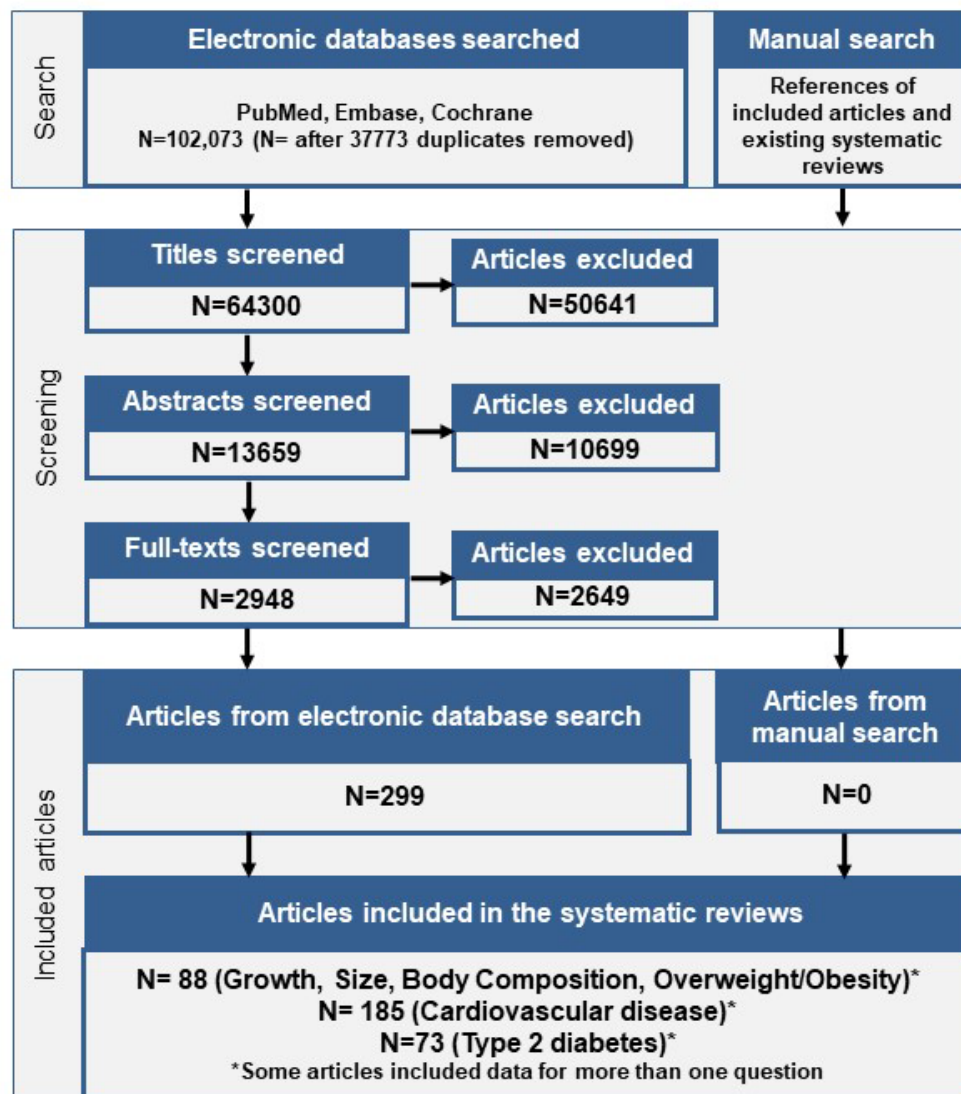
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Approach to Answer Question: Update to an existing NESR  
Systematic Review

# Inclusion and Exclusion Criteria Updates – Study Duration, Size of Study Groups

Category	Inclusion Criteria	Exclusion Criteria
<b>Study duration</b> (CVD, GSBCO, T2DM, Bone, Neurocognitive)	<ul style="list-style-type: none"> <li>Minimum length of intervention of 12 weeks</li> </ul>	<ul style="list-style-type: none"> <li>Interventions &lt;12 weeks</li> </ul>
<b>Size of study groups</b> (CVD, GSBCO, T2DM, Bone, Neurocognitive)	<ul style="list-style-type: none"> <li>30 participants per-arm for interventions, or</li> <li>A power calculation included for interventions</li> <li><math>n \geq 1,000</math> for observational studies</li> </ul>	<ul style="list-style-type: none"> <li>Fewer than 30 participants per arm for interventions, or</li> <li>No power calculation reported for interventions</li> <li>Fewer than 1000 participants for observational studies</li> </ul>
<b>Health status (in the context of health status)</b> (CVD, GSBCO, T2DM)		Interventions designed to induce weight loss or treat overweight and obesity through energy-restriction/hypocaloric diets for the purposes of treating additional or other medical conditions

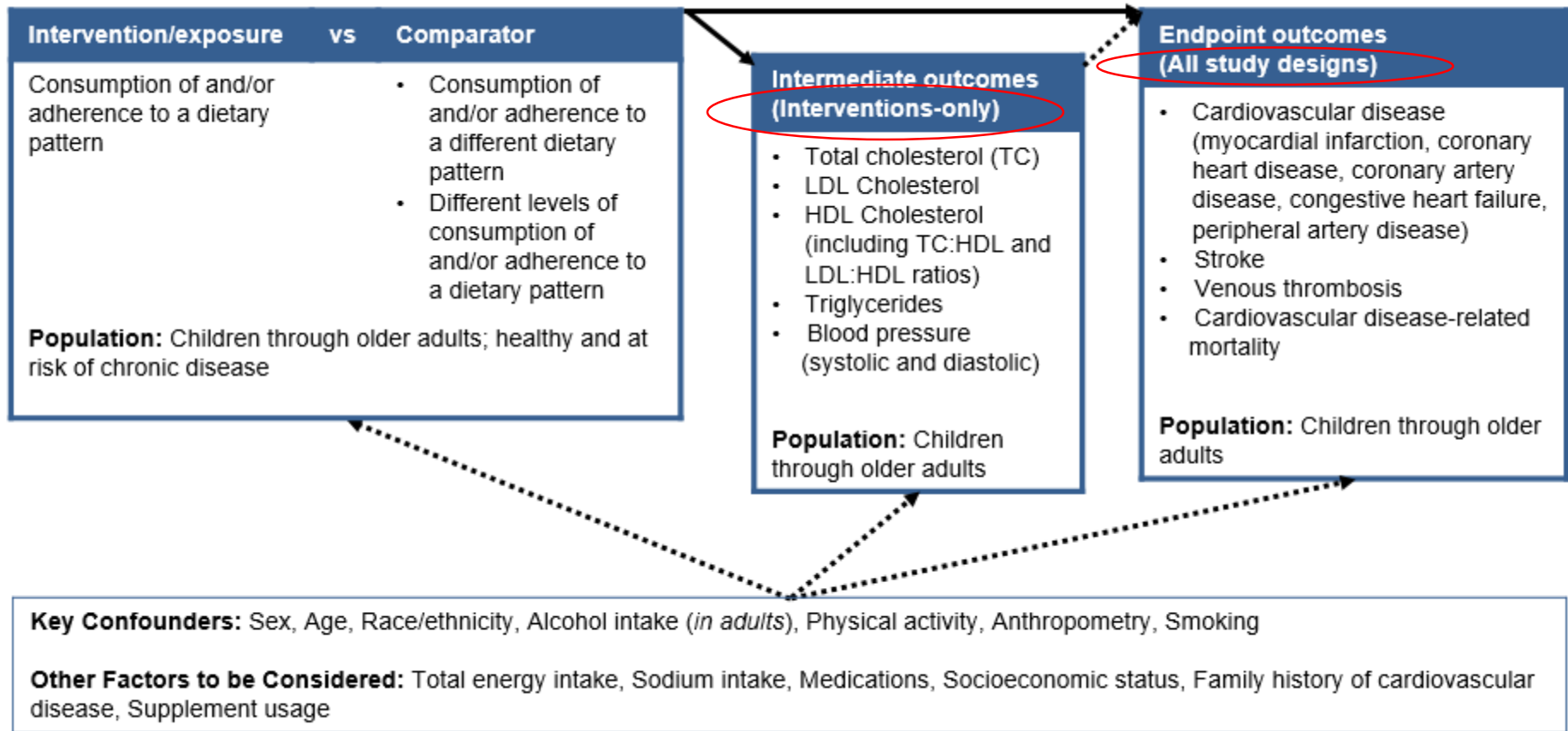
# Literature Search and Screening Results





Dietary patterns and Cardiovascular Disease,  
Dietary patterns and Growth, Size, Body composition, and risk of Overweight or Obesity, and  
Dietary patterns and Type 2 Diabetes



# Analytic Framework: Dietary Patterns and Cardiovascular Disease



 The relationship of interest in the systematic review  
 Factors that may impact the relationship of interest in the systematic review

# Description of the Evidence:

## Dietary Patterns and Cardiovascular Disease

- 185 articles were identified that met inclusion criteria for this update to an existing systematic review
- 4 articles were from studies conducted in children, which are new to the existing review
- 181 articles were from studies conducted in adults
  - Dietary patterns were examined using various methods in 147 articles, published between January 2013 and October 2019, which updates the evidence included prior to 2013 in the existing review
  - Diets based on macronutrient distribution were examined in 45 articles, published between January 2000 and November 2019, from 19 RCT's and 26 articles from prospective cohort studies, which are new to the existing review

# Summary of the Evidence Synthesis:

## Dietary Patterns and Cardiovascular Disease - Children

- All studies in children were from prospective cohort studies
  - Two identified dietary patterns with factor and cluster analyses
  - Two examined adherence using index or score analyses
  - All examined intermediate CVD outcomes such as blood pressure (BP), low-density lipoprotein (LDL) cholesterol, total cholesterol (TC), with one reporting incident CVD
- Associations were reported suggesting limited evidence of protective dietary patterns and improved intermediate CVD outcomes
  - Studies adjusted for a number of potential confounders, but not all key confounders, such as race/ethnicity, physical activity, or baseline anthropometry
  - The magnitude of effects were relatively inconsistent
  - Analytic sample sizes ranged from 1,419 to 42,112 with follow-up ranging from age 10y to 17y

# Summary of the Evidence Synthesis: Dietary Patterns and Cardiovascular Disease - Adults

- Among the studies reporting macronutrient distributions, proportions outside the AMDR ranged between exposure groups as follows:
  - Carbohydrate (CHO) below: 25.3% and 44.9%; CHO above: 66% and 72.7%
    - No studies identified that met inclusion criteria examined CHO distributions below 25.3%
  - Fat above: 35.2% and 46.1%; Fat below: 13.1% and 18.9%
  - Protein above AMDR in one study at 43.5%
  - Most of the studies examined CHO below the AMDR in at least one exposure group
- Significant associations were reported in the majority of articles that examined macronutrient distribution and CVD
  - Direction of findings were relatively consistent suggesting decreased risk of CVD-mortality, other endpoint CVD outcomes (e.g., lower risk of incident CHD), as well as, intermediate-CVD outcomes (e.g., lower BP)
  - The magnitude of effects were relatively inconsistent
  - Studies adjusted for a number of potential confounders, but not all key confounders, such as race/ethnicity
  - Analytic sample sizes ranged from 16 to 131,342 with follow-up ranging from 12wk to 32y

# DRAFT Conclusion Statement:

## Dietary Patterns and Cardiovascular Disease

### Conclusion statement

Dietary patterns in children: Limited evidence suggests that dietary patterns in childhood or adolescence that are higher in added sugars, refined grains, fried potatoes, and processed meats while being lower in fruits, vegetables, whole grain, and low-fat dairy are associated with higher blood pressure and triglyceride levels in children and adolescents.\*

Dietary patterns in adults: Strong and consistent evidence demonstrates that dietary patterns associated with decreased risk of CVD 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.

Diets based on macronutrient distribution: Under review

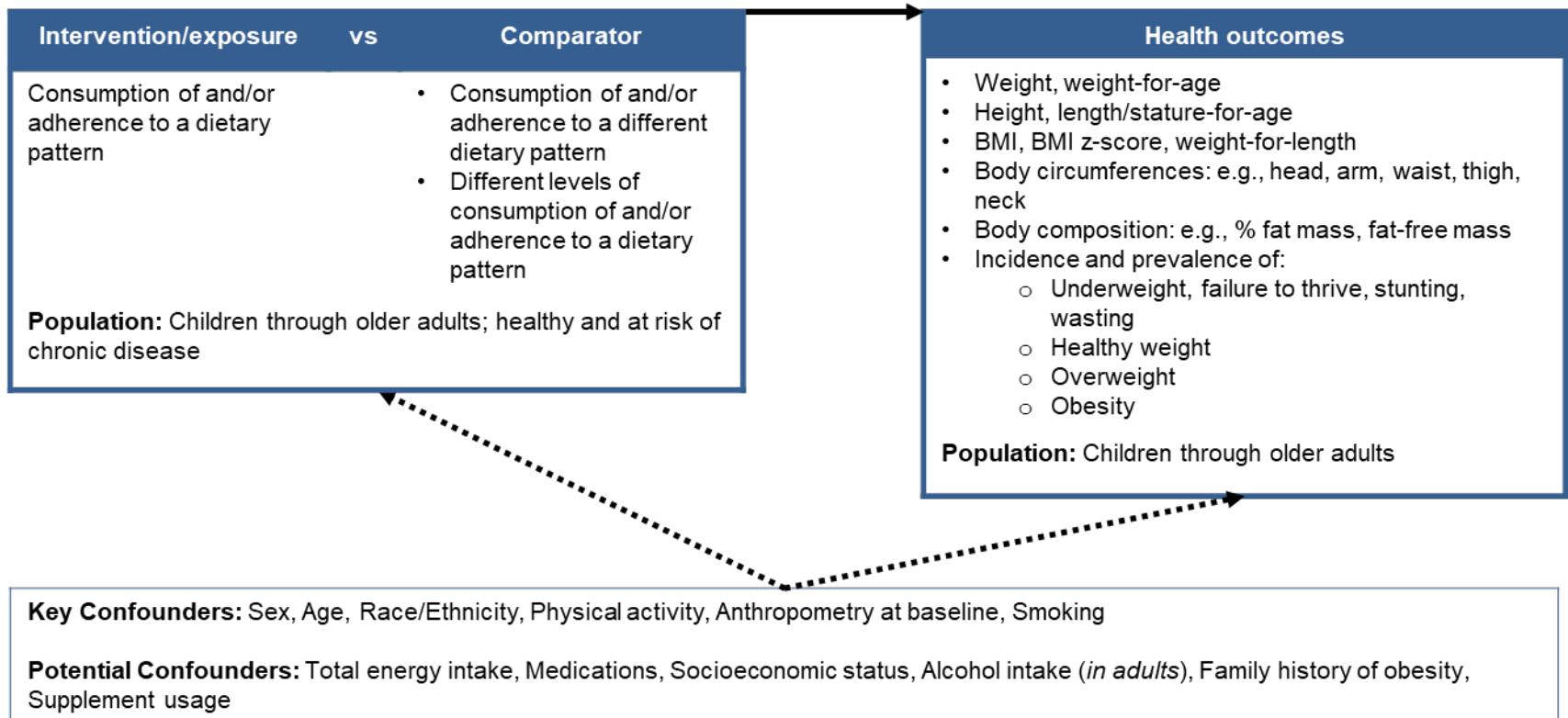
**Grade: Limited (Children), Strong (DP-Adults)**

**Status relative to conclusions reached in the existing review: Builds upon, and concurs**

*\* This conclusion statement was edited to reflect the Committee's discussion*

**Dietary patterns and Cardiovascular disease**  
**2020 Dietary Guidelines Advisory Committee: Meeting 5**

# Analytic Framework: Dietary Patterns and Growth, Size, Body Composition, and Risk of Overweight or Obesity



## Legend

- The relationship of interest in the systematic review
- Factors that may impact the relationship of interest in the systematic review

# Description of the Evidence: Dietary Patterns and ... Obesity

- 88 articles were identified that met inclusion criteria for this update to an existing systematic review
- 12 from prospective cohort studies examined dietary patterns in children and these outcomes, which updates evidence in the existing review
- 76 articles from studies conducted in adults
  - Dietary patterns were examined using various methods in 45 articles, published between January 2013 and October 2019, which updates the evidence included prior to 2013 in the existing review
  - Diets based on macronutrient distribution were examined in 31 articles from 22 RCT's and 9 articles from prospective cohort studies, published between January 2000 and November 2019, which is new to the existing review

# Summary of the Evidence Synthesis: Dietary Patterns and ... Obesity - Children

- Among the studies in children, dietary patterns were assessed using a variety of methods including factor/cluster analysis, indices or scores, latent class analysis, and reduced rank regression
- Significant associations were reported in several included articles, but the direction of the results were mixed with small and inconsistent magnitude
  - No significant associations were also reported depending on the dietary pattern or specific outcome examined within studies, with no clear patterns across studies
  - Studies adjusted for most potential confounders, but did not adjust for all key confounders, such as race/ethnicity
  - Analytic sample sizes ranged from 1,018 to 10,918
  - Follow-up ranging from age 4y to 25y +



# Summary of the Evidence Synthesis: Dietary Patterns and ... Obesity - Adults

- Among the macronutrient distributions reported, the proportions of energy falling outside of the AMDR were as follows:
  - CHO below AMDR: 25.3% to 44.9%; CHO above AMDR: 66% to 77.5%
    - No studies identified that met inclusion criteria examined CHO proportions below 25.3%
  - Fat above AMDR: 35.2% and 47%; Fat below AMDR: 9.9% and 19.3%
  - Protein above AMDR: 43.5% (1 study)
- Results were mixed among the included studies, with inconsistent direction and magnitude of effects
  - Studies adjusted for many potential confounders, but not all key confounders, such as race/ethnicity
  - Analytic sample sizes ranged from 16 to 131,342 with follow-up ranging from 12wk to 32y
  - Many studies emphasized one particular macronutrient of interest, such as “low-carbohydrate”, but the proportion reported for that macronutrient was not necessarily below the AMDR.
  - Confidence in the reported proportions falling outside the AMDR is limited, due to variation in nutrient intake methods or estimation between studies.

# DRAFT Conclusion Statement: Dietary Patterns and ... Obesity

## Conclusion statement

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

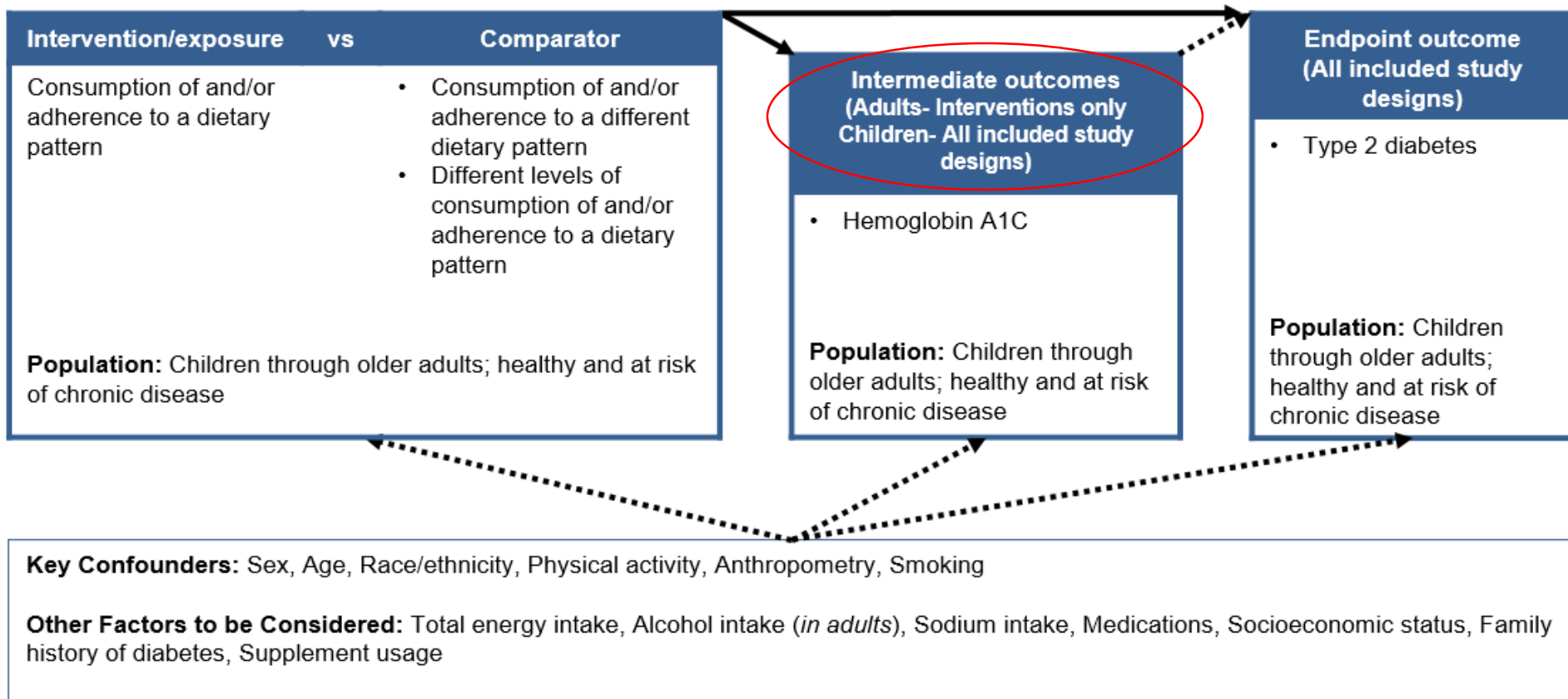
Dietary patterns in adults: Moderate evidence indicates dietary patterns emphasizing vegetables, fruits, and whole grains; seafood and legumes; moderate in dairy products (particularly low and non-fat dairy) and alcohol; lower in meats (including red and processed meats), and low in sugar-sweetened foods 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.

Diets based on macronutrient distribution: Under review

**Grade: Limited (Dietary Patterns-Children); Moderate (Dietary Patterns-Adults)**

**Status relative to conclusions reached in the existing review: Updates, builds upon, and concurs**

# Analytic Framework: Dietary Patterns and Type 2 Diabetes



## Legend

- The relationship of interest in the systematic review  
 Factors that may impact the relationship of interest in the systematic review

# Description of the Evidence:

## Dietary Patterns and Type 2 Diabetes

- 73 articles were identified that met inclusion criteria for this update to an existing systematic review
- 1 prospective cohort study was conducted in children, which adds new evidence to the existing review
- 72 articles were from studies conducted in adults
  - Dietary patterns were examined using various methods in 54 articles, published between January 2013 and October 2019 , which updates the evidence included prior to 2013 in the existing review
  - Diets based on macronutrient distribution were examined in 23 articles, published between January 2000 and November 2019, from 2 RCT's and 21 articles from prospective cohort studies, which adds new evidence to the existing review

# Summary of the Evidence Synthesis: Dietary Patterns and Type 2 Diabetes

- Among the macronutrient distributions reported, the proportions of energy falling outside of the AMDR were as follows:
  - CHO below AMDR: 29.6% to 44.8%; CHO above AMDR: 65% to 80.5%
    - No studies identified that met inclusion criteria examined CHO distributions below 29.6%
  - FAT above AMDR: 35.1% to 46.3%; FAT below AMDR: 8.1% to 19%
  - Most of the studies examined CHO below the AMDR in at least one exposure group
- In the majority of these studies, diets based on macronutrient distributions within or closer to the AMDR limits compared to outside the AMDR were significantly associated with lower risk of T2D.
  - Studies adjusted for many potential confounders, but not all key confounders, such as race/ethnicity
  - Analytic sample sizes ranged from 418 to 92,088 with follow-up ranging from 16wk to 19y
  - Confidence in the reported proportions falling outside the AMDR is low, due to variation in nutrient intake methods or estimation between studies.
  - Many studies reported to be examining one particular macronutrient of interest, such as “low-carbohydrate” or “high-protein” intake, but the proportion for that nutrient was within or near the AMDR.

# DRAFT Conclusion Statement:

## Dietary Patterns and Type 2 Diabetes

### **Conclusion statement**

Dietary patterns in children: Insufficient evidence is available to determine the relationship between dietary patterns consumed in children and risk of type 2 diabetes.

Dietary patterns in adults: 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.

Diets based on macronutrient distribution: Under review

**Grade: Grade Not Assignable (Dietary Patterns-Children); Moderate (Dietary Patterns-Adults)**

**Status relative to conclusions reached in the existing review: Updates, builds upon, and concurs**

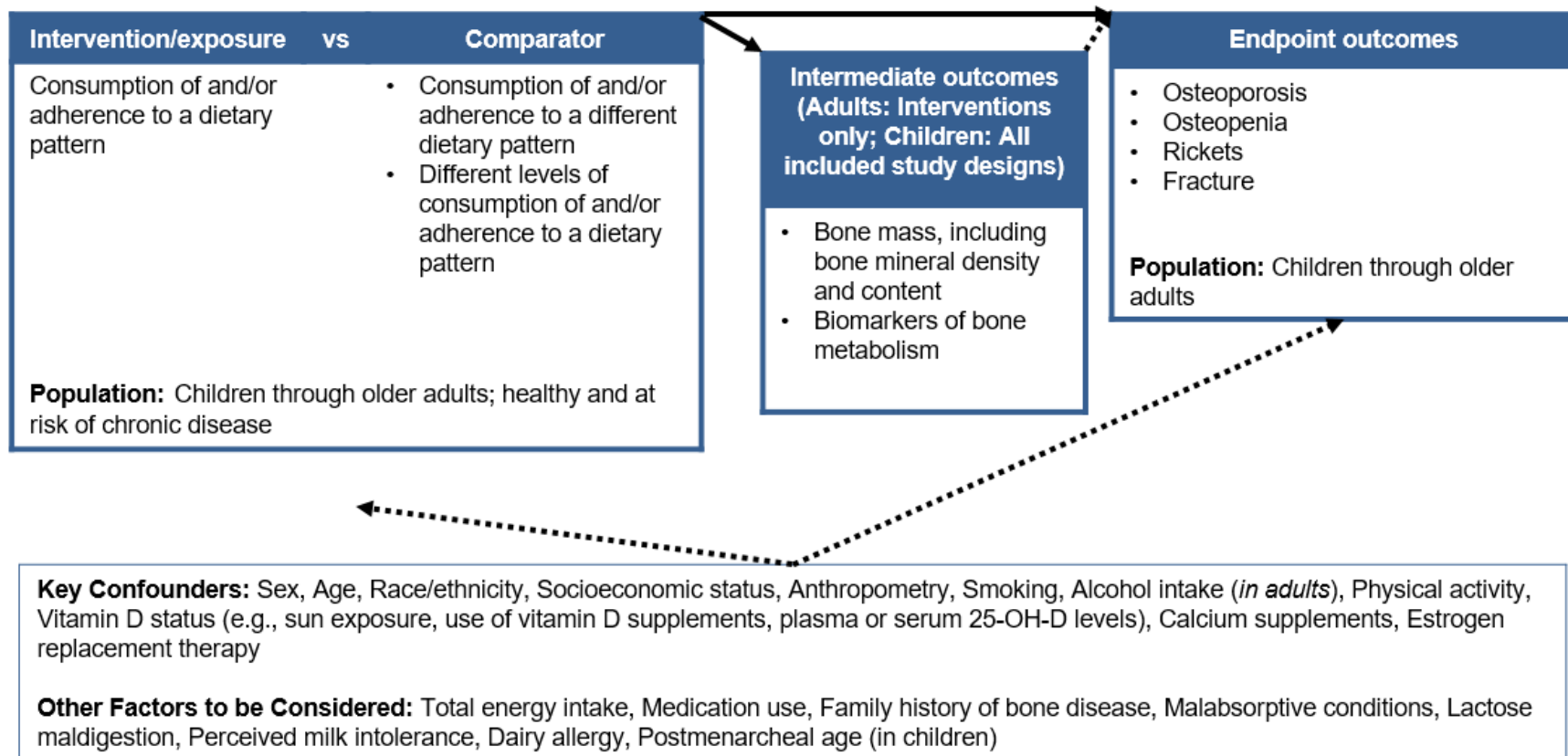
# Question – bone health

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

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Approach to Answer Question: Update to an existing NESR  
Systematic Review

# Analytic Framework: Dietary Patterns and Bone Health

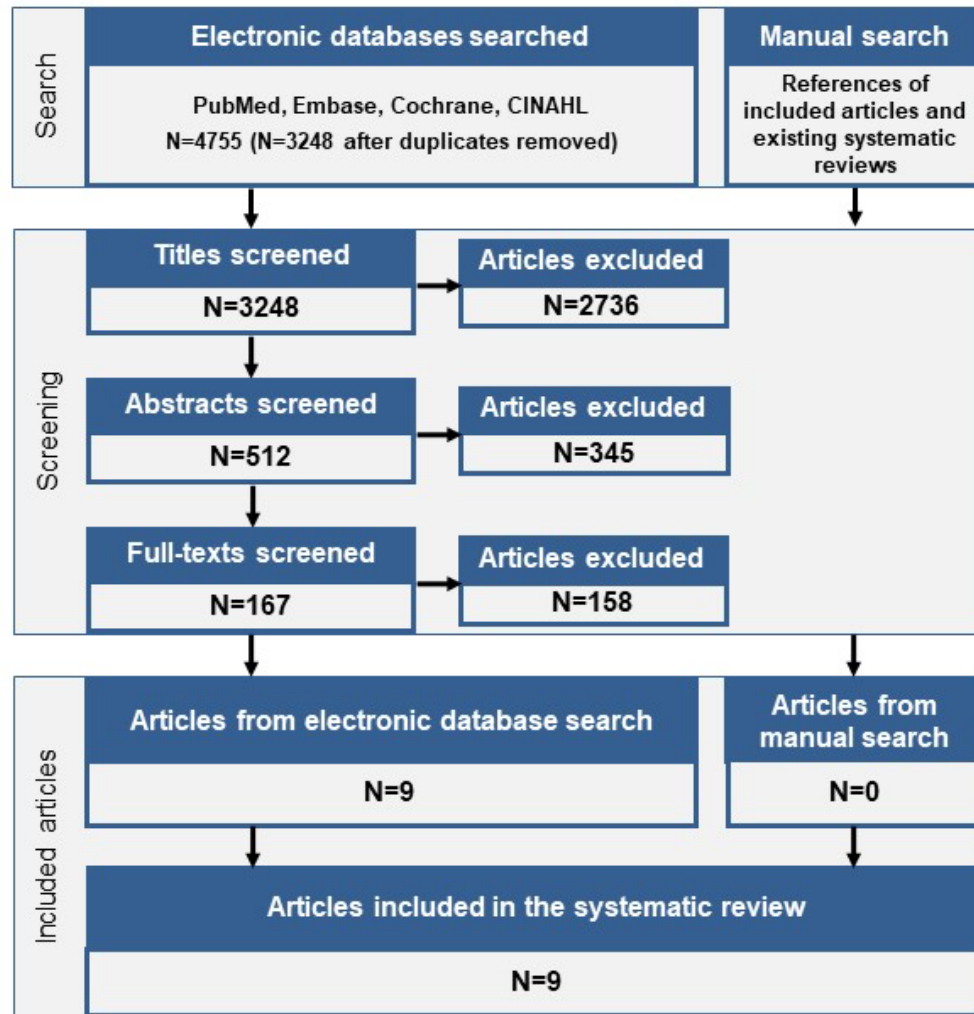


## Legend

- The relationship of interest in the systematic review
- Factors that may impact the relationship of interest in the systematic review



# Literature Search and Screening Results: Dietary Patterns and Bone Health



# Description of the Evidence: Dietary Patterns and Bone Health

- 9 prospective cohort studies were identified that met inclusion criteria, and were published between March 2014 and September 2019
  - 2 studies were conducted in children/adolescents
  - 7 studies were conducted in adults
- Dietary patterns were examined using various methods:
  - Five studies examined adherence to dietary patterns using different indices or scores
  - Three studies examined patterns by factor and cluster analysis
  - One study identified dietary patterns using reduced rank regression
- Included articles examined risk of hip fracture, osteoporotic fracture, or total fracture risk, and in adolescents, bone mineral density

# Summary of the Evidence Synthesis: Dietary Patterns and Bone Health

- Several risks of bias were identified including:
  - lack of adjustment for all potential confounders, such as race/ethnicity, socioeconomic status, and vitamin D status, and
  - possible changes in dietary intake over follow-up and dietary patterns earlier in life not accounted for
- Majority of studies reported that dietary patterns of higher diet-quality were associated with significant reduction in hip fracture risk and those patterns classified as less healthy were significantly associated with increased risk of hip fracture
  - Magnitude and direction of effects were somewhat consistent across the evidence
  - Narrow width of confidence intervals indicates relative precision
  - Analytic sample sizes ranged from 1,007 to 140,755 with sufficient cases over follow-up (range from 4y to 32y)
  - Studies were direct but may not be completely generalizable to the U.S. population

# DRAFT Conclusion Statement: Dietary Patterns and Bone Health

## **Conclusion statement**

Dietary patterns in adults: Under review

Dietary patterns in children: Insufficient evidence was available to determine the relationship between dietary patterns in children and bone health outcomes.

**Grade: Under review (Adults); Grade Not Assignable (Children)**

## **Status relative to conclusions reached in the existing review:**

- This systematic review updates and builds upon the conclusion drawn by the 2015 Dietary Guidelines Advisory Committee
  - Limited evidence suggests that a dietary pattern higher in vegetables, fruits, grains, nuts, and dairy products, and lower in meats and saturated fat, is associated with more favorable bone health outcomes in adults, including decreased risk of fracture and osteoporosis, as well as improved bone mineral density. Although a growing number of studies are examining the relationship between dietary patterns and bone health in adults, the number of high-quality studies is modest and those available employ a wide range of methodologies in study design, dietary assessment techniques, and varying bone health outcomes.
  - Definitive conclusions regarding the relationship between dietary patterns and bone health outcomes (bone mineral density and bone mineral content) in children and adolescents cannot be drawn due to the limited evidence from a small number of studies with wide variation in study design, dietary assessment methodology, and bone health outcomes. 2015
  - Grade: Adults - Limited; Children and Adolescents -Grade not assignable

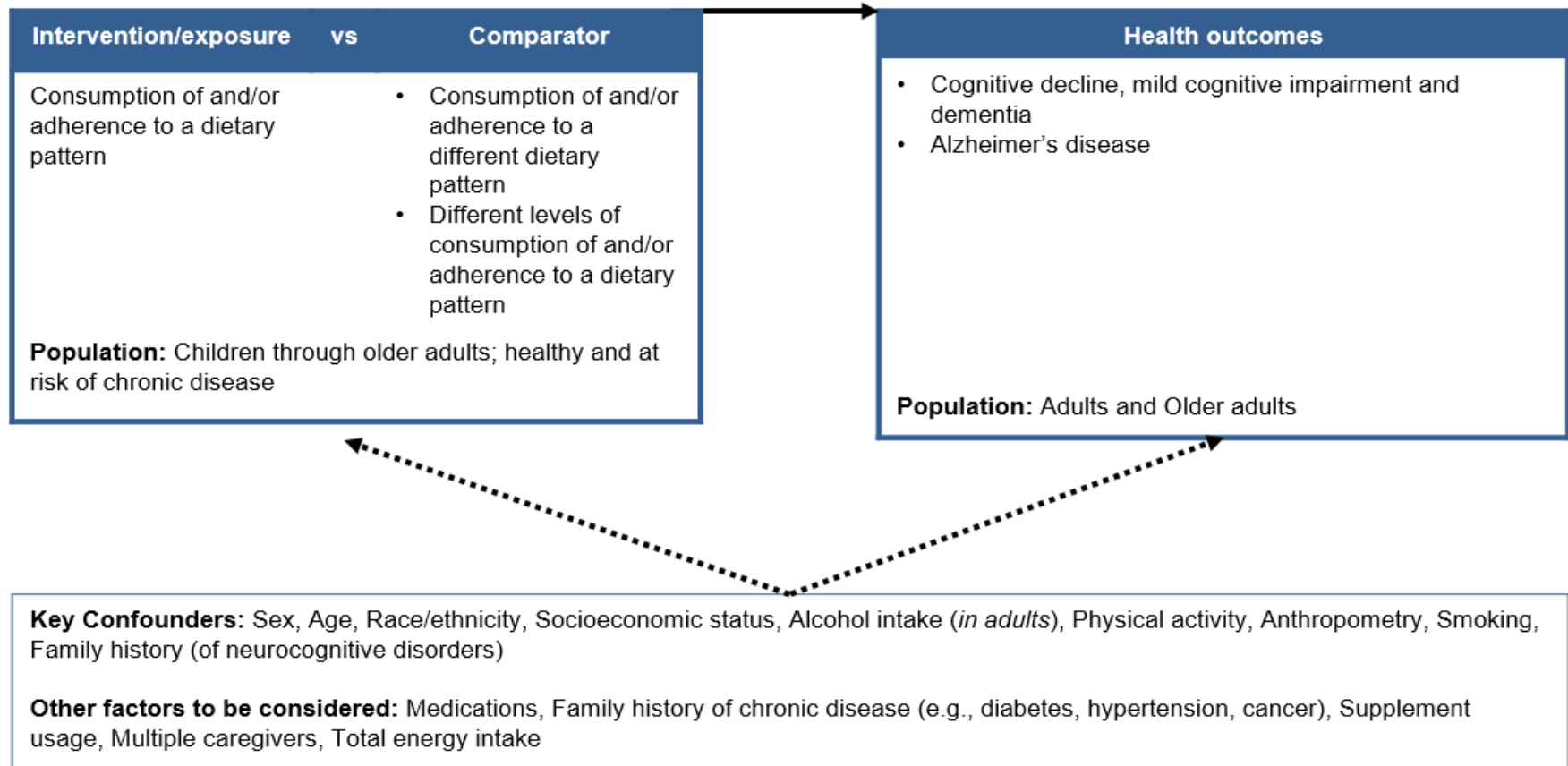
# Question – neurocognitive health

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



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Approach to Answer Question: Update to an existing NESR  
Systematic Review

# Analytic Framework: Dietary Patterns and Neurocognitive Health



## Legend

-  The relationship of interest in the systematic review
-  Factors that may impact the relationship of interest in the systematic review

# Description of the Evidence:

## Dietary Patterns and Neurocognitive Health

- 28 articles were identified that met inclusion criteria and examined the relationship between dietary patterns and cognitive impairment, dementia, and/or Alzheimer's disease
  - 4 RCT's
  - 24 prospective cohort studies
- Dietary patterns were examined using various methods articles:
  - Indices or scores
  - Factor or cluster analysis
  - Other methods
- Included articles examined dementia, cognitive decline, cognitive impairment, cognitive function
- Body of evidence is still under review

# **DRAFT Conclusion Statement: Dietary Patterns and Neurocognitive Health**

## **Conclusion statement**

Under review

## **Status relative to conclusions reached in the existing review:**

- This systematic review updates and builds upon the conclusion drawn by the 2015 Dietary Guidelines Advisory Committee



# Next Steps

- Refine evidence synthesis and conclusion statements based on feedback received
- Refine the conceptual framework for the subcommittee to facilitate the evidence synthesis based on dietary patterns and their components, which may include foods and beverages, food groups and macronutrient distribution in the context of diet quality
- Prepare scientific report chapter based on conclusion statements reached

# Dietary Patterns Subcommittee: Members and Staff



## **Members:**

Carol Boushey  
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Steven Heymsfield  
Elizabeth Mayer-Davis

Joan Sabaté  
Linda Snetselaar  
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## **Support Staff:**

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