Question – Human Milk/Infant Formula and Overweight and Obesity

What is the relationship between the duration, frequency, and volume of exclusive human milk and/or infant formula consumption and overweight and obesity?

Approach to Answer Question: NESR Systematic Review
Birth to 24 Months Subcommittee

Presented by Kay Dewey, PhD

Approach for Synthesizing the Evidence

- Examine overweight and obesity starting at age 2 years
- Augment our review of the most recent evidence (i.e., Jan 2011-Sept 2019) with a review of within-family sibling analyses from Jan 1980 to Sept 2019

  Sibling studies help overcome residual confounding, which is pervasive in observational research, because of siblings' shared genetic and environmental factors

  To our knowledge, this is a novel contribution in the field

Description of the Evidence

We specified 6 exposures of interest.
Almost all of the evidence was about the first 2.

1. **Ever vs never consuming human milk**:
   30 articles = 21 independent cohorts, including 4 studies with within-family analyses of siblings
2. **Duration of any human milk consumption among infants fed human milk**:
   21 articles = 1 cluster randomized controlled trial + 18 independent cohorts, including 4 studies with within-family analyses of siblings
3. Duration of exclusive human milk consumption prior to the introduction of infant formula: 2 articles
4. Intensity, proportion, or amount of human milk consumed by mixed-fed infants: 0 articles
5. 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: 0 articles
6. 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: 0 articles

DRAFT Conclusion Statements and Grade:
Exposures With Scant or No Evidence

Conclusion statement:

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

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 2 years of age and older

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 2 years of age and older

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 2 years of age and older

Grade: Grade not assignable

Summary of the Evidence Synthesis:
Ever vs Never Consuming Human Milk

Consistency	14 of the 21 studies reported significant associations, all indicating that ever consuming human milk (vs never) is associated with lower risk of overweight and/or obesity at 2+ years In 5 of 7 studies that compared different durations of "ever" with "never" consuming human milk (e.g., <6 months vs never, ≥6 months vs never), longer durations were associated with significantly lower risk of overweight and/or obesity, but shorter durations were not Within-family analyses of siblings: 1 study reported significant associations in sibling analyses 3 studies suggested an attenuation of the significant associations found in full-sample analyses
Precision	14 of 21 studies had sufficient power to detect significant associations, 1 study reported a marginal association (same direction, similar magnitude), 6 studies likely had insufficient statistical power

Summary of the Evidence Synthesis:
Ever vs Never Consuming Human Milk (continued)

Directness	Most articles reported objectives related to examining human milk consumption and overweight and/or obesity
Generalizability	11 of 21 studies were conducted in the US (nationally representative samples, samples with racial and ethnic diversity, and samples from families with low income) Evidence from the remaining 9 studies (mostly from Europe) may be less generalizable because the US may have higher risk of overweight/obesity Most of the evidence was in children; 5 studies examined outcomes in adolescents and 1 examined outcomes in adults
Risk of bias	4 studies (with within-family analyses of siblings) were designed to reduce bias from confounding but had other risks of bias (e.g., recall bias, self-report of height and weight) None of the remaining 17 studies controlled for all of the key confounders (especially complementary feeding practices and childhood diet)

DRAFT Conclusion Statement and Grade:
Ever vs Never Consuming Human Milk

Conclusion statement:

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

Grade: Moderate

DRAFT Conclusion Statement and Grade:

Duration of Any Human Milk Consumption Among Infants Fed Human Milk

Consistency	5 studies reported significant inverse associations 3 studies reported significant positive associations 1 study reported significant associations in opposite directions at 2 and 6 years of age 10 studies reported no significant associations 4 of the 5 studies reporting significant inverse associations between duration and overweight/obesity were conducted in the US and all 3 studies reporting significant positive associations were conducted in Europe Within-family analyses of siblings: 0 of 4 studies reported significant associations Cluster-RCT (intervention resulted in significantly higher rates of any human milk consumption measured at 3, 6, 9, and 12 months): Reported higher risk of overweight and/or obesity in intervention group, compared with the control group, at 11.5 and 16 years
Precision	Highly inconsistent, lacked precision

Summary of the Evidence Synthesis:

Duration of Any Human Milk Consumption Among Infants Fed Human Milk (cont.)

Directness	Most articles reported objectives related to examining human milk consumption and overweight and/or obesity
Generalizability	7 of 19 studies were conducted in the US and the rest were from Europe (authors of the cluster-RCT specifically noted the difference in obesity prevalence between the US and Belarus) Most of the evidence was for outcomes in children; 6 studies examined outcomes in adolescents and 1 examined outcomes in adults
Risk of bias	4 studies (with within-family analyses of siblings) were designed to reduced bias from confounding but had other risks of bias (e.g., recall bias, self-report of height and weight), 1 study was a cluster-RCT None of the remaining 14 studies controlled for all of the key confounders

DRAFT Conclusion Statement and Grade:

Duration of Any Human Milk Consumption Among Infants Fed Human Milk

Conclusion statement:

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 2 years of age and older; the available evidence was inconsistent.

Grade: Grade not assignable

Question – Seafood during Pregnancy and Neurocognitive Development

What is the relationship between seafood consumption during pregnancy and lactation and neurocognitive development in the child?

Approach to Answer Question: NESR Systematic Review
Dietary Fats and Seafood Subcommittee

Presented by Linda Snetselaar, PhD RDN

Follow-Up from Meeting 5: Revised Conclusion Statements

CS as presented at the March 2020 meeting (Cognitive Development):

Limited evidence suggests that seafood intake during pregnancy may be associated favorably with measures of cognitive development in the child. **Grade:** Limited

Revised CS (Cognitive Development):

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

Question – Seafood during Childhood-Adolescence and Neurocognitive Development

What is the relationship between seafood consumption during childhood and adolescence (up to 18 years of age) and neurocognitive development?

Approach to Answer Question: NESR Systematic Review
Dietary Fats and Seafood Subcommittee

Presented by Linda Snetselaar, PhD RDN

Follow-Up from Meeting 5: Revised Conclusion Statements

CS as presented at the March meeting (Cognitive Development):

- **Insufficient** evidence is available to determine whether seafood intake during childhood and adolescence is favorably associated with measures of cognitive development in children and adolescents. **Grade: Grade not assignable (favorable association)**
- **Moderate** evidence suggests that seafood intake during childhood and adolescence has no unfavorable association with measures of cognitive development in children and adolescents. **Grade: Moderate (no unfavorable association)**

***Revised CS based on committee feedback (Cognitive 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**

Follow-Up from Meeting 5: Revised Conclusion Statements

CS as presented at the March meeting (Language and Communication Development):

- **Insufficient** evidence is available to determine whether seafood intake during childhood and adolescence is favorably associated with measures of language and communication development in children and adolescents. **Grade: Grade not assignable (favorable association)**
- **Moderate** evidence suggests that seafood intake during childhood and adolescence has no unfavorable association with measures of language and communication development in children and adolescents. **Grade: Moderate (no unfavorable association)**

Revised CS based on feedback (Language and Communication Development):

- **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**

Question – Dietary Fat and Cardiovascular Disease

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

Approach to Answer Question: NESR Systematic Review
Dietary Fats and Seafood Subcommittee

Presented by Linda Snetselaar, PhD RDN

Summary of the Evidence Synthesis: Endpoint Outcomes

- **Total:** 94 articles (90 from 47 PCSs, 4 from 3 NCC studies)
- **n-6 PUFA** *(16 articles)*
  - Associations between total n-6 PUFA intake in adults and CVD were predominantly null
  - In the few articles that specifically assessed linoleic acid and arachidonic acid separately, beneficial associations were more often observed for linoleic acid compared to arachidonic acid in adults
- **Dietary Cholesterol** *(11 articles)*
  - Few articles (with inconsistent results) assessed the independent relationship between dietary cholesterol intake in adults and CVD endpoint outcomes, thereby further confounding meaningful conclusions.
  - Due to the co-occurrence of dietary cholesterol and saturated fat in animal source foods, disentangling independent associations between dietary cholesterol in adults and CVD endpoint outcomes in these observational studies is challenging.

DRAFT Conclusion Statement and Grade

Conclusion statements

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

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

Description of the Evidence: Intermediate Outcomes (Blood Lipids)

- **Total:** 97 articles (47 from parallel RCTs, 46 from crossover RCTs, and 5 from non-RCTs) *(Note: one crossover design RCT also analyzed as a parallel design RCT)*
- **Participant characteristics:**
  - Studies primarily conducted in the U.S. (~40%) and a variety of countries across Europe
  - Predominantly middle-aged or older adults with overweight/obesity
- **Interventions:**
  - Foods that varied in fatty acid content
  - 28% were controlled feeding trials

Summary of the Evidence Synthesis: Intermediate Outcomes (Blood Lipids)

- **Replacement of SFA**
  - Over half of articles (*17 of 29*) pertaining to replacement of SFA with MUFA in adults reported a beneficial effect of MUFA intake on total and LDL cholesterol; most articles reported null effects on HDL cholesterol and triglycerides
  - Over half of articles (*6 of 10*) pertaining to replacement of SFA with PUFA in adults reported a beneficial effect of PUFA intake on total and LDL cholesterol; most articles reported null effects on HDL cholesterol and triglycerides
  - Only 2 articles examined replacement of SFA with carbohydrates in adults and effects on blood lipids were mixed
  - This systematic review builds and expands on work of 2015 DGAC and was broadly consistent with conclusions drawn by the 2015 DGAC; the 2020 DGAC concurred with and updated these conclusions regarding replacement of SFA with MUFA, PUFA, or carbohydrates

DRAFT Conclusion Statement and Grade

Conclusion statement

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 Guideline Advisory Committee review, evidence remains inadequate to differentiate among sources of carbohydrate and their impact on blood lipids.

Grade: Strong

Summary of the Evidence Synthesis: Intermediate Outcomes (Blood Lipids)

- **Dietary cholesterol** *(9 articles)*
  - Most articles reported null effects of dietary cholesterol in adults on blood lipids
  - Among the few articles that found significant results, higher intake of dietary cholesterol significantly increased or resulted in higher levels of total and LDL cholesterol
  - In several articles, it was not possible to isolate independent effects of dietary cholesterol on blood lipids due to simultaneous changes in the amount of fat or proportion of different types of fatty acids in the study diet.

DRAFT Conclusion Statement and Grade

Conclusion statement

Limited evidence suggests that lower intake of dietary cholesterol in adults may reduce total and low-density lipoprotein cholesterol.

Grade: Limited

Question – Maternal Diet and Food Allergy and Atopic Allergic Diseases

What is the relationship between maternal diet during pregnancy and lactation and risk of child food allergies and atopic allergic diseases?

Approach to Answer Question: NESR Systematic Review
Pregnancy and Lactation Subcommittee

Presented by Sharon Donovan, PhD, RD

Description of the Evidence: Asthma

- 20 articles from 2 RCTs and 9 prospective cohort studies (PCSs) examined the relationship between maternal diet and risk of asthma in the child from 2-18 y of age
  - 8 PCSs (16 articles) examined diet during pregnancy
  - 2 RCTs (3 articles) examined diet during pregnancy and lactation
  - 1 PCS (1 article) examined diet during lactation

- Studies examined maternal dietary patterns and avoidance and/or consumption of cow milk products, eggs, fish, soybean, peanuts, tree nuts, soybean, wheat, and other foods not commonly considered to be allergens

Summary of the Evidence Synthesis: Asthma

Timing of Exposure

Food	Pregnancy	Preg and Lact	Lactation
Cow Milk Products	**Limited**	Insufficient	Insufficient
Egg	**Limited** (Presented at Mtg 5)	No evidence	No evidence
Fish	**Limited** (Presented at Mtg 5)	No evidence	Insufficient
Peanuts	Insufficient	No evidence	No evidence
Tree Nuts	Insufficient	No evidence	No evidence
Soybean	Insufficient	No evidence	No evidence
Wheat	Insufficient	No evidence	No evidence
Dietary Patterns	Insufficient	No evidence	No evidence
Fruit	Insufficient	No evidence	No evidence
Vegetables	Insufficient	No evidence	No evidence
Beverages	Insufficient	No evidence	No evidence
Margarine	Insufficient	No evidence	Insufficient
Meat and meat products	No evidence	No evidence	Insufficient
Oil, butter and butter-spreads	No evidence	No evidence	Insufficient
Seeds	No evidence	No evidence	No evidence

DRAFT Conclusion Statement and Grade: Cow Milk Products During Pregnancy and Asthma

Conclusion statement

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

Grade: Limited

Question – Omega-3 and Neurocognitive Development

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?

Approach to Answer Question: NESR Systematic Review
Pregnancy and Lactation Subcommittee

Presented by Sharon Donovan, PhD, RD

Description of the Evidence

Omega-3 consumed during pregnancy

- **Cognitive Development** (18 articles)**:** 5 of 8 RCTs found a favorable effect of supplementation on at least one measure
- **Language** (11 articles)**, motor** (8 articles)**, visual** (5 articles)**, and social-emotional** (11 articles) **development:** 9 RCTs
  - Inconsistent findings. Although all studies reported **no effect** on at least one measure, the number and direction of statistically significant findings varied across the body of evidence.
- **Academic Performance** (1 article): 1 RCT
- **ADD/ADHD** (2 articles)**:** 1 RCT
- **ASD** (2 articles)**:** 1 RCT and 1 PCS

Description of the Evidence

Omega-3 consumed during pregnancy and lactation

- **Cognitive** (5 articles)**, language** (1 article)**, motor** (3 articles)**, and social-emotional** (1 article) **development:** 3 RCTs
  - Few studies and inconsistent findings. Although all studies reported **no effect** on at least one measure, the number and direction of statistically significant findings varied across the body of evidence.

Omega-3 consumed during lactation

- **Cognitive, language, motor, and visual development** (2 articles)**:** 1 RCT

Summary of the Evidence Synthesis

Timing of Exposure

Outcome	Pregnancy	Pregnancy and Lactation	Lactation
Cognitive Development	Limited	Insufficient	Insufficient
Language	Insufficient	Insufficient	Insufficient
Motor	Insufficient	Insufficient	Insufficient
Visual	Insufficient	Insufficient	Insufficient
Social-Emotional	Insufficient	Insufficient	No evidence
Academic Performance	Insufficient	No evidence	No evidence
ADD/ADHD	Insufficient	No evidence	No evidence
ASD	Insufficient	No evidence	No evidence
Anxiety/Depression	No evidence	No evidence	No evidence

Omega-3 and Developmental Milestones

2020 Dietary Guidelines Advisory Committee: *Meeting on Draft Report*

DRAFT Conclusion Statements and Grades: Pregnancy and Cognitive Development

Conclusion statement

Limited evidence suggests that omega-3 fatty acid supplements consumed during pregnancy may result in favorable cognitive development in the child.

Grade: Limited

Question – Dietary Patterns and Bone Health

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

Approach to Answer Question: NESR Systematic Review
Dietary Patterns Subcommittee

Presented by Carol Boushey, PhD, MPH, RD

Summary of the Evidence Synthesis – Bone Health

- This systematic review update included 7 prospective cohort studies published between January 2014 and November 2019 that examined dietary patterns in adults and bone health
  - All examined risk of fractures, mainly hip, in older adults
  - The evidence consistently showed that healthier dietary patterns were associated with reduced risk of hip fractures
  - The studies were generalizable, had few risks of bias, and had large analytic sample sizes with a sufficient number of hip fracture cases

DRAFT Conclusion Statement and Grade – Bone Health

Conclusion statement

Dietary Patterns: Adults

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

Grade: Adults: Moderate

Status relative to existing review: This update builds upon the conclusion drawn by the 2015 Committee, which determined that limited evidence suggests a relationship between dietary patterns and bone health in adults

Question – Dietary Patterns and Cardiovascular Disease

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

Approach to Answer Question: NESR Systematic Review
Dietary Patterns Subcommittee

Presented by Carol Boushey, PhD, MPH, RD

Summary of the Evidence Synthesis - CVD

Diets Based on Macronutrient Distribution: Children: No evidence was identified

Diets Based on Macronutrient Distribution: Adults

- 49 articles (19 randomized controlled trials (RCT), 30 prospective cohort studies (PCS)) were included in the review
- Most enrolled participants who were overweight or obese, or had features of metabolic syndrome
- The majority of RCTs reported no significant effects of macronutrient distributions on intermediate cardiovascular disease (CVD) outcomes
- Many PCSs reported no significant associations between macronutrient distributions compared and risk of CVD
- Limitations include:
  - Inconsistent magnitude of effects; Risk of bias (e.g., confounding)
  - Diets based on macronutrient distribution that were associated with favorable CVD outcomes, typically came from dietary patterns or diets with higher relative to poorer diet quality overall, where reported

DRAFT Conclusion Statement and Grade - Diets Based on Macronutrient Distribution and CVD

Conclusion statement

Diets Based on Macronutrient Distribution: Children

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

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

Grade: Children: Grade: Grade Not Assignable; Adults: Limited

Question – Dietary Patterns and Type 2 Diabetes

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

Approach to Answer Question: NESR Systematic Review
Dietary Patterns Subcommittee

Presented by Carol Boushey, PhD, MPH, RD

Summary of the Evidence Synthesis – T2DM

Diets Based on Macronutrient Distribution: Children: No evidence identified

Diets Based on Macronutrient Distribution: Adults

- 23 articles (2 randomized controlled trials (RCT), 21 prospective cohort studies (PCS)) were included in the review
- Reported diets with macronutrient distributions outside the acceptable macronutrient distribution range (AMDR) tended to have higher amounts of saturated fat, trans fat, and/or animal-based sources of protein and fat, such as processed meat, red meat, butter, and cheese, as well as refined grains, sugar-sweetened beverages, and lower-fiber cereals and breads
- Limitations:
  - Studies rarely compared different macronutrients distribution within a constant dietary pattern
  - Risk of bias (e.g., potential for selection bias related to studies excluding participants with prevalent type 2 diabetes (T2DM), CVD, cancer, or other medical conditions at baseline)
  - Macronutrient differences between exposure groups were limited in magnitude, in a similar direction, modestly different from the AMDR, or only relevant for a subset of the population

DRAFT Conclusion Statement and Grade - Diets Based on Macronutrient Distribution and T2DM

Conclusion statement

Diets Based on Macronutrient Distribution: Children

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

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 Acceptable Macronutrient Distribution Range for at least 1 macronutrient and risk of type 2 diabetes, due to methodological limitations and inconsistent results.

Grade: Children: Grade: Grade Not Assignable; Adults: Grade Not Assignable

Question – Dietary Patterns and Growth, Size, Body Composition, and Risk of Overweight or Obesity (GSBCO)

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

Approach to Answer Question: NESR Systematic Review
Dietary Patterns Subcommittee

Presented by Carol Boushey, PhD, MPH, RD

Summary of the Evidence Synthesis - GSBCO

Diets Based on Macronutrient Distribution: Children: No evidence was identified

Diets Based on Macronutrient Distribution: Adults

- 31 articles (22 randomized controlled trials (RCT), 9 prospective cohort studies (PCS)) were included in the review
- Several studies included participants with and without overweight, obesity, or features of metabolic syndrome
- Most articles compared macronutrient distributions that generally compared poorer quality diets to higher quality alternatives
- Limitations:
  - Studies rarely compared a different distribution of macronutrients within a constant dietary pattern
  - Risk of bias (e.g., diet assessed only once at baseline and lack of accounting for possible changes in dietary intake over follow-up)
  - Macronutrient differences between intervention arms were limited in magnitude, in a similar direction (e.g., all arms below the acceptable macronutrient distribution range (AMDR)), modestly different from the AMDR, or only relevant for a subset of the population

DRAFT Conclusion Statement and Grade - Diets Based on Macronutrient Distribution and GSBCO

Conclusion statement

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 or obesity.

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 Acceptable Macronutrient Distribution Range for at least 1 macronutrient and growth, size, body composition, and risk of overweight or obesity, due to methodological limitations and inconsistent results.

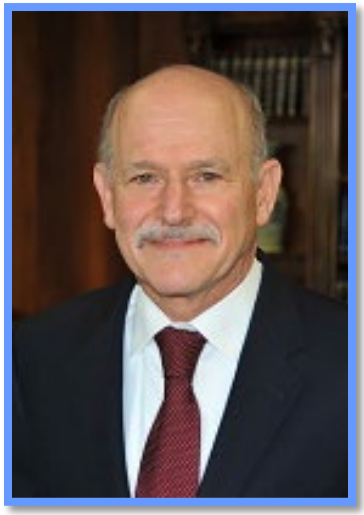
Grade: Children: Grade: Grade Not Assignable; Adults: Grade Not Assignable

Question – Dietary Patterns and Sarcopenia

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

Approach to Answer Question: NESR Systematic Review
Dietary Patterns Subcommittee

Presented by Steve Heymsfield, MD



Summary of the Evidence Synthesis - Sarcopenia

- 2 of 4 studies (all prospective cohort studies) included in the review examined macronutrient distributions and risk of sarcopenia
- In both studies, the % energy from fat was above the acceptable macronutrient distribution range (AMDR)
- Limitations:
  - Relatively small sample sizes with few cases of sarcopenia
  - Risk of bias (e.g., lack of adjustment for all potential confounders; diet assessed only once at baseline; potential for selection bias due to enrolled participants likely representing healthier individuals (e.g., those able to walk, take public transportation, or interested in reducing risk of falling)
  - Studies were inconsistent in how dietary intake was assessed and the results that were reported

DRAFT Conclusion Statement and Grade – Diets Based on Macronutrient Distribution and Sarcopenia

Conclusion statement

Diets Based on Macronutrient Distribution

Insufficient evidence was available to determine the relationship between diets based on macronutrient distribution and sarcopenia.

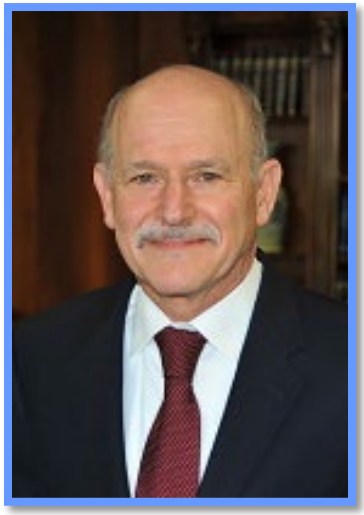
Grade: Grade Not Assignable

Question – Dietary Patterns and Neurocognitive Health

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

Approach to Answer Question: NESR Systematic Review
Dietary Patterns Subcommittee

Presented by Steve Heymsfield, MD



Summary of the Evidence Synthesis – Neurocognitive Health

- 26 articles (4 randomized controlled trials (RCT), 21 prospective cohort studies (PCS); 1 nested-case control) were included
- The majority of significant findings reported healthier dietary patterns were associated with improved measures of cognitive impairment and/or lower risk of cognitive impairment or dementia.
- Non-significant findings or those reporting mixed associations reported dietary patterns consumed during adulthood that did not worsen cognitive outcomes.
- Limitations include:
  - Lack of RCTs
  - Risk of bias (e.g., lack of adjustment for potential confounding)
  - Considerable variation across the body of evidence (e.g. testing methods, dietary patterns examined, outcomes reported)

DRAFT Conclusion Statement and Grade – Dietary Patterns and Neurocognitive Health

Conclusion statement

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

Status relative to existing review: This update concurs and builds upon the conclusion drawn by the 2015 Committee, which conducted a systematic review that identified 30 articles from a wide range of study designs using different methods to measure neurocognitive outcomes, but produced relatively consistent findings.

Question – Alcohol and All-Cause Mortality

What is the relationship between alcohol consumption and all-cause mortality?

Approach to Answer Question: NESR Systematic Review
Beverages and Added Sugars Subcommittee

Presented by Timothy Naimi, MD, MPH

Description of the Evidence

- **60 studies**: 58 prospective cohort studies, 1 retrospective cohort study, 1 Mendelian randomization study
- **Population**: Most studies enrolled broad range of adult ages, though ~1/3 enrolled only adults over age 50
- **Exposure**: Average consumption or pattern of consumption (e.g., number of drinks per drinking day or drinks per drinking occasion)
- **Comparator**:
  - **Primary Comparison:** differing average alcohol consumption or patterns among those who currently drink
  - **Secondary Comparison:** between those who currently drink and those who have never consumed alcohol (i.e., lifetime abstainers)

Summary of the Evidence Synthesis: Primary Comparison

- Studies used widely varying Definitions of 'low' and 'moderate' consumption
- Among those that currently drink, evidence consistently reported that:
  - Higher average volume of alcohol consumption was significantly associated with and higher risk of all-cause mortality
  - More frequent binge drinking was significantly associated with higher risk of all-cause mortality
- Studies directly assessed the relationship between alcohol consumption and all-cause mortality using large samples
- Limitations: generalizability of older cohorts (survival bias), inadequate adjustment for confounders, inconsistency in exposure measurement and definitions

DRAFT Conclusion Statement and Grade

Primary comparison (among those who drink)

Conclusion statement

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

DRAFT Conclusion Statement and Grade

Primary comparison (among those who drink)

Conclusion statement

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

Summary of the Evidence Synthesis: Secondary Comparison

- 25 studies examined never drinkers vs low average consumption
- Roughly half reported significantly reduced risk of all-cause mortality for low average consumption compared with never drinking alcohol (i.e., lifetime abstention)
- About half showed no significant association between low average consumption vs never consuming alcohol on all-cause mortality
- Two studies showed greater all-cause mortality with low average consumption compared to never drinking alcohol
- Limitations: misclassification of 'never' drinkers (e.g., potential inclusion of former drinkers), single exposure assessment, inadequate adjustment for confounders, limited generalizability

DRAFT Conclusion Statement and Grade

Secondary comparison (between those who currently drink and those who never drank)

Conclusion statement

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

Discussion: Secondary Comparison

- Findings don't translate into a recommendation to begin drinking alcohol for better health
  - Initiating alcohol consumption involves risk
  - No RCTs randomizing those who never drank, or don't currently drink, to initiate alcohol consumption for any mortality or morbidity outcome
  - Compared to those who might begin to drink, established low volume drinkers enrolled in cohort studies are a select group who didn't die prematurely, didn't become heavy drinkers, didn't quit drinking
  - In addition to differences in alcohol consumption, lifetime abstainers differ in many ways from established low volume drinkers

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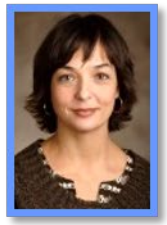

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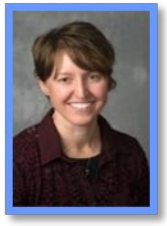

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2020 Dietary Guidelines Advisory Committee: *Meeting on Draft Report*