2025 Dietary Guidelines Advisory Committee: Meeting 3

Janet de Jesus, MS, RD

Designated Federal Officer

Office of Disease Prevention and Health Promotion

Department of Health and Human Services

September 13th, 2023

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Dietary Guidelines Development Process: Step 3

2025 Dietary Guidelines Advisory Committee

Sarah Booth, PhD
Chair

Steven Abrams, MD

Cheryl Anderson, PhD, MPH, MS

Aline Andres, PhD, RD

Carol Byrd-Bredbenner, PhD, RD, FAND

Andrea Deierlein, PhD, MPH, MS

Heather Eicher-Miller, PhD

Angela Odoms-Young, PhD, MS
Vice-Chair

Teresa Fung, ScD, RD

Christopher Gardner, PhD

Edward Giovannucci, MD, ScD

Deanna Hoelscher, PhD, RDN, LD, CNS, FISBNPA

Valarie Blue Bird Jernigan, DrPH, MPH

Jennifer Orlet Fisher, PhD

Cristina Palacios, PhD, MSc

Hollie Raynor, PhD, RD, LDN

Fatima Cody Stanford, MD, MPH, MPA, MBA, FAAP, FACP, FAHA, FAMWA, FTOS

Sameera Talegawkar, PhD

Chris Taylor, PhD, RDN, LD, FAND

Deirdre Tobias, ScD

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Dietary Guidelines for Americans, 2025-2030 Timeline

2022

April 15 – May 16
- Scientific questions for public comment

June 15 – July 15
- 2025 Dietary Guidelines Advisory Committee nominations

2023

Advisory Committee Meetings
- Meeting 1 (February 9–10) ✓
- Meeting 2 (May 10) ✓
- Meeting 3 (September 12-13)

2024

Advisory Committee Meetings
- Meeting 4 (January 25)
- Meeting 5 (May 30)
- Meeting 6 (September 26)

Release Scientific Report

2025 Scientific Report

2025

Release Dietary Guidelines for Americans, 2025-2030

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Step 1: Identify Scientific Questions

Step 2: Appoint the Committee

Step 3: Advisory Committee Reviews Scientific Evidence

Step 4: Develop the Dietary Guidelines

Legend

Opportunity for public input

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2025 Dietary Guidelines Advisory Committee, Meeting 3
Opening Remarks

2025 Dietary Guidelines Advisory Committee Chair and Vice-Chair Remarks

Sarah Booth, PhD

Angela Odoms-Young, PhD, MS

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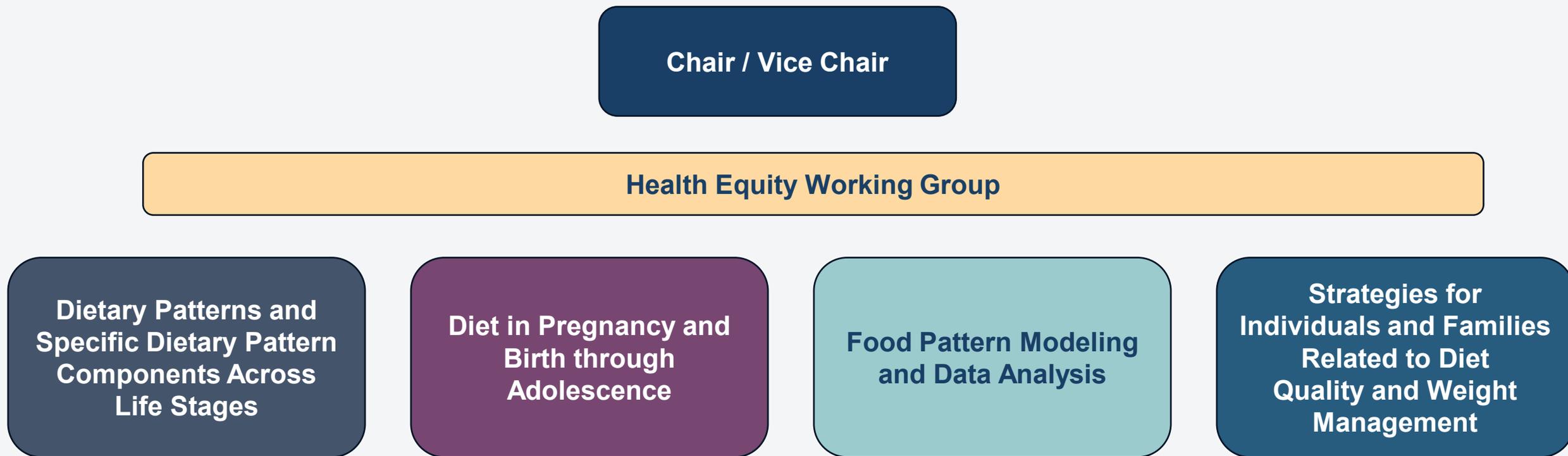
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Overview

o Committee progress since Meeting 2

o Next steps

Subcommittee and Workgroup Structure

Chair / Vice Chair

Health Equity Working Group

Dietary Patterns and Specific Dietary Pattern Components Across Life Stages

Diet in Pregnancy and Birth through Adolescence

Food Pattern Modeling and Data Analysis

Strategies for Individuals and Families Related to Diet Quality and Weight Management

Progress Since Meeting 2

o **Food Pattern Modeling**

   ▪ 3 new protocols

o **Diet in Pregnancy and Birth through Adolescence**

   ▪ New conclusion statements

o **Dietary Patterns and Specific Dietary Pattern Components Across Life Stages**

   ▪ 3 new systematic review protocols
   ▪ New conclusion statement

o **Strategies for Individuals and Families Related to Diet Quality and Weight Management**

   ▪ 2 new evidence scan protocols

Additional prioritization of subcommittee reviews may be needed based on final decisions of protocols.

Healthy Equity Working Group

o Collaborated with subcommittees to ensure appropriate factors are considered in the evidence reviews

o Reviewed systematic review and food pattern modeling protocols

o Identified health equity topics for the report discussion

Protocols for systematic reviews and food pattern modeling

o As needed, protocols will be refined after today's meeting to reflect the Committee discussion

o Will be posted online for the public to view

o Draft protocols are expected to be posted at DietaryGuidelines.gov and NESR.usda.gov by October

For updates, sign up for the Dietary Guidelines listserv on DietaryGuidelines.gov.
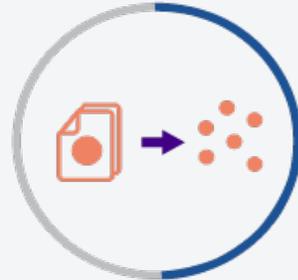
NESR systematic review methodology
https://nesr.usda.gov/methodology-overview

Develop a protocol

Committee *(facilitated and documented by NESR analysts)*
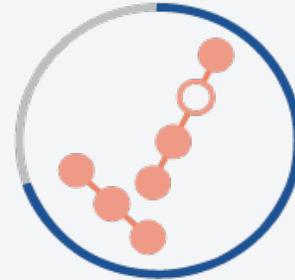
Search for and screen articles

NESR Librarians and Analysts *(with input from the Committee)*

Extract data and assess risk of bias

NESR Analysts *(with input from the Committee)*

Synthesize the evidence

Answer the question and grade evidence

Committee *(facilitated and documented by NESR analysts)*

Recommend future research

Public comments received and considered throughout

Appreciation of Public Comments

o About 82 speakers presented comments yesterday during the public comment session.

o The Committee has received approximately 500 written public comments since January.

o Comments on protocols discussed today are welcome. Please submit them to the Committee by mid-November.

o Written public comment period will remain open throughout the Committee's work, ending in fall 2024.

www.dietaryguidelines.gov/get-involved

We want to HEAR from YOU

Submit public comments to the **2025 Dietary Guidelines Advisory Committee!**

The Committee synthesized the evidence, developed conclusion statements, and graded the strength of the evidence

- A conclusion statement is a summary statement that is carefully constructed, based on the evidence reviewed, to answer the systematic review question.

- Grades are assigned to each conclusion statement based on an assessment of the underlying evidence for 5 elements: consistency, precision, risk of bias, directness, and generalizability.

- The grade communicates the Committee's level of certainty in the evidence

Grade	Definition
Strong	The level of certainty in the conclusion is strong, such that if new evidence emerges, modifications to the conclusion are unlikely to be required.
Moderate	The level of certainty in the conclusion is moderate, such that if new evidence emerges, modifications to the conclusion may be required.
Limited	The level of certainty in the conclusion is limited, such that if new evidence emerges, modifications to the conclusion are likely to be required.
Grade Not Assignable	A conclusion statement cannot be drawn due to either a lack of evidence, or evidence that has severe limitations.

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Today's Agenda

- **Health Equity**, Sarah Booth, PhD and Angela Odoms-Young, PhD, MS

- **Data Analysis**, Heather Eicher-Miller, PhD

- **Food Pattern Modeling**, Chris Taylor, PhD, RDN, LD, FAND

- **Break**

- **Diet in Pregnancy and Birth Through Adolescence**, Jennifer Orlet Fisher, PhD

- **Dietary Patterns and Specific Dietary Components Across Life Stages**, Deanna Hoelscher, PhD, RDN, LD, CNS, FISBNPA

- **Strategies for Individuals and Families Related to Diet Quality and Weight Management**, Cristina Palacios, PhD, MSc

- **Chair/Vice-Chair Wrap up**, Sarah Booth, PhD and Angela Odoms-Young, PhD, MS

Get Involved

Health Equity Working Group

Working Group Chair:
Sameera Talegawkar, PhD

Chair and Vice-Chair:
Sarah Booth, PhD
Angela Odoms-Young, PhD, MS

September 13, 2023

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2025 Dietary Guidelines Advisory Committee: Health Equity Working Group

Working Group Members	
Sameera Talegawkar, PhD*†	Heather Eicher-Miller, PhD*§
Cheryl Anderson, PhD, MPH, MS† ‡	Valarie Blue Bird Jernigan, DrPH, MPH*‡
Sarah Booth, PhD *†	Hollie Raynor, PhD, RD, LDN †‡
Jennifer Orlet Fisher, PhD‡§	Angela Odoms-Young, PhD, MS‡§
Deanna Hoelscher, PhD, RDN, LD, CNS, FISBNPA†‡	

*Food Pattern Modeling and Data Analysis Subcommittee
† Dietary Patterns and Specific Dietary Pattern Components Across Life Stages Subcommittee
‡Strategies for Individuals and Families Related to Diet Quality and Weight Management Subcommittee
§ Diet in Pregnancy and Birth through Adolescence Subcommittee

2025 Dietary Guidelines Advisory Committee: Health Equity Working Group

Support Staff	
Meghan Adler, MS, RDN	Julie Obbagy, PhD, RD
Kara Beckman, PhD	Chinwe Obudulu, MS, RD, LD
Jessica Bluto, MS, RDN, LD, CDCES, CSOWM	Julia Quam, MSPH, RDN
Gisela Butera, MEd, MLIS	Elizabeth Rahavi, RD
Dana DeSilva, PhD, RD	Kelley Scanlon, PhD, RD
Stephenie Fu	Sara Scinto-Madonich, MS
Molly Higgins, MLIS	Colleen Cruz, MPH, RDN
Tessa Lasswell, MPH, RDN	Ali Webster, PhD, RD
Emily Levin, MPH, RD	Janet de Jesus, MS, RD (DFO)
Julie Nevins, PhD	Eve Stoody, PhD (DFO Rep)

The Dietary Guidelines for Americans: A Health Equity Lens

All scientific questions will be reviewed with a health equity lens to ensure that the next edition of the *Dietary Guidelines* is relevant to people with diverse racial, ethnic, socioeconomic, and cultural backgrounds. HHS and USDA will support the Committee to describe and consider factors such as socioeconomic status*, race, ethnicity, and culture, to the greatest extent possible, based on the information provided in the scientific literature and data.

*Updated to socioeconomic position for the review of the evidence and the Scientific Report

Progress Since Meeting 2

Work Under Way

- Provided input on protocols and plans for scientific questions related to health equity
- Incorporated health equity considerations into the Committee's review of the scientific evidence
- Developing an outline for incorporating health equity content into the Scientific Report

Approaches to Examine the Evidence

Data Analysis

A collection of analyses that uses national data sets to describe the current health and dietary intakes of Americans. These data help make the *Dietary Guidelines* practical, relevant, and achievable.

Food Pattern Modeling

Food pattern modeling is a way to evaluate the impact of specific changes in amounts or types of foods and beverages in a dietary pattern on energy and nutrient needs while reflecting health-promoting patterns identified in systematic reviews. These food pattern modeling analyses inform USDA's development of relevant dietary patterns for the American population.
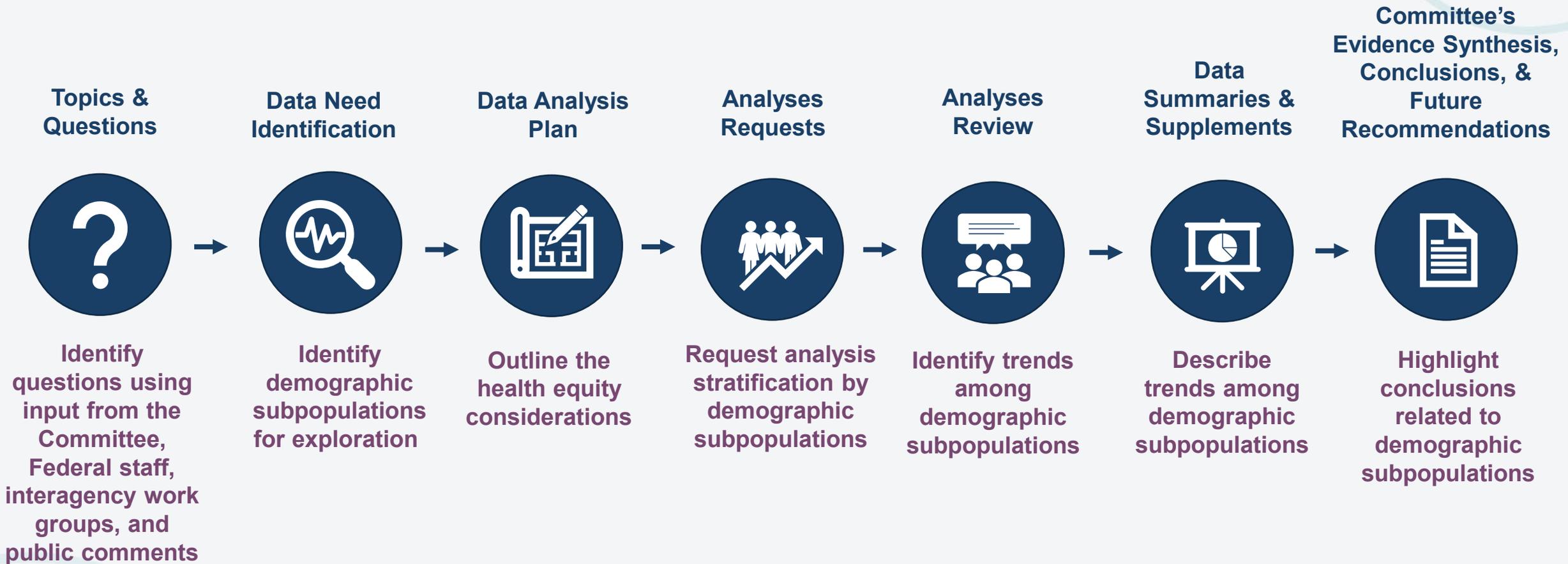
Systematic Review

A gold standard evidence synthesis project that answers a nutrition question of public health importance using systematic, transparent, rigorous, and protocol-driven methods to search for, evaluate, synthesize, and grade the strength of the eligible body of evidence.

Data Analysis

Data Analysis: Opportunities to Consider Health Equity

Topics & Questions

Data Need Identification

Data Analysis Plan

Analyses Requests

Analyses Review

Data Summaries & Supplements

Committee's Evidence Synthesis, Conclusions, & Future Recommendations

Identify questions using input from the Committee, Federal staff, interagency work groups, and public comments

Identify demographic subpopulations for exploration

Outline the health equity considerations

Request analysis stratification by demographic subpopulations

Identify trends among demographic subpopulations

Describe trends among demographic subpopulations

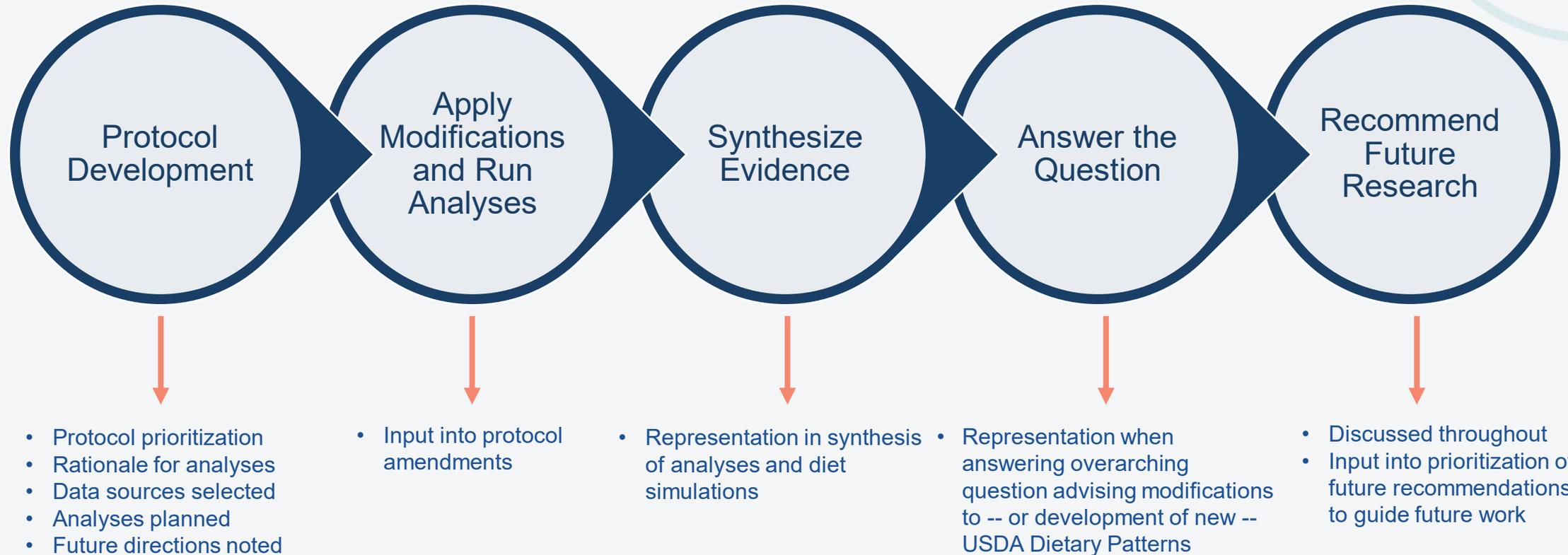**Highlight conclusions related to demographic subpopulations**

Data Analysis: Work Under Way

- **Demographics that the 2025 Committee will continue to examine:**
  - Sex
  - Race and/or ethnicity
  - Socioeconomic position (e.g., family income, poverty income ratio, education)
  - Age/life stage

- **Additional demographics collected by NHANES that the 2025 Committee initially prioritized for further exploration:**
  - Food security category – Household
  - Household food benefit – SNAP
  - Household food benefit – WIC

- **Additional demographics collected by NHANES that the 2025 Committee discussed but <u>did not</u> initially prioritize:**
  - Food security category – Adult, child
  - Country of birth (Born in U.S. or outside of U.S)
  - Health insurance coverage and type
  - Living in urban or rural areas
  - Social vulnerability index
  - Household food benefit – emergency food
  - Disability status (yes, no)
  - Acculturation – language spoken at home (English, Spanish, other)
  - Length of time in U.S.

Food Pattern Modeling

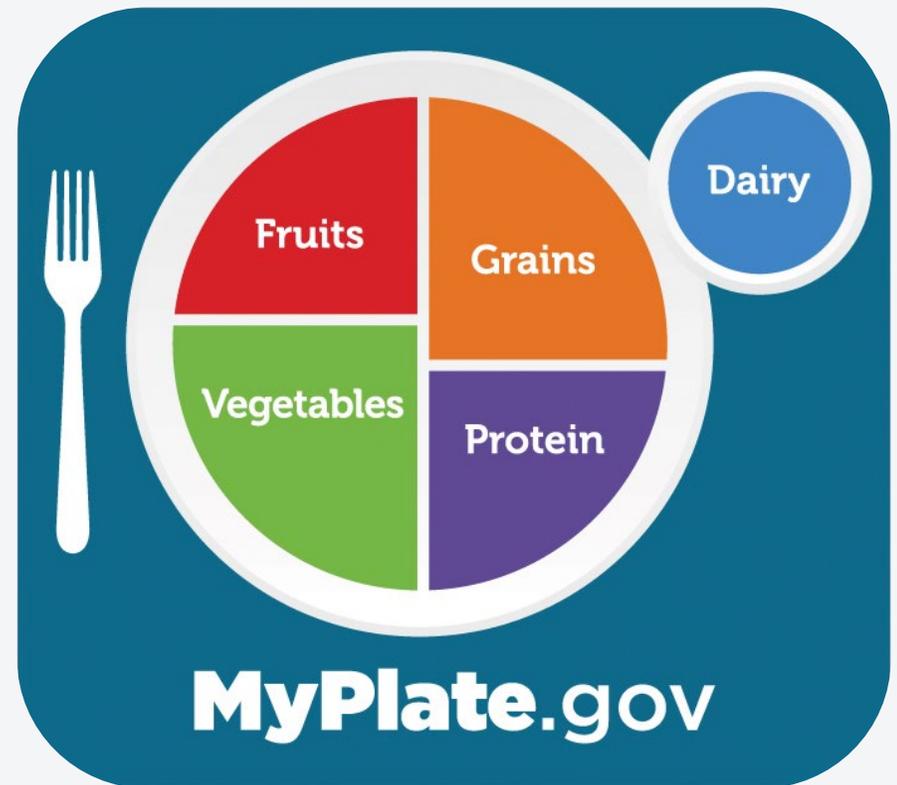# Representation of population subgroups in food pattern modeling

Protocol Development → Apply Modifications and Run Analyses → Synthesize Evidence → Answer the Question → Recommend Future Research

Protocol Development
- Protocol prioritization
- Rationale for analyses
- Data sources selected
- Analyses planned
- Future directions noted

Apply Modifications and Run Analyses
- Input into protocol amendments

Synthesize Evidence
- Representation in synthesis of analyses and diet simulations

Answer the Question
- Representation when answering overarching question advising modifications to -- or development of new -- USDA Dietary Patterns

Recommend Future Research
- Discussed throughout
- Input into prioritization of future recommendations to guide future work

Public comments received and considered throughout

2025 Dietary Guidelines Advisory Committee, Health Equity Working Group
Meeting 3

Example: Staple carbohydrate foods

USDA Dietary Patterns include a variety of foods that could be considered *staple carbohydrate foods:*

- **Grains***, such as breads, rice, pasta, tortillas*
- **Starchy Vegetables***, such as white potatoes, cassava, and plantains*
- **Beans, Peas, and Lentils***, such as pinto, black, and white beans, chickpeas, split peas, and lentils*
- **Red and Orange vegetables***, such as winter squash and sweet potatoes*

Increasing representation of population subgroups in the Staple Carbohydrate Foods Protocol

Draft text from the Staple Carbohydrate Foods protocol:

Due to diverse foodways and dietary preferences and needs of population groups in the U.S. and the varying use of staple carbohydrate foods across food groups and subgroups, these analyses will examine nutrient intake implications of hypothetical modifications to the Grains food group, including replacement of Whole Grains and Refined Grains with other staple grains, along with analyses that reduce Grains and increase Starchy Vegetables; Beans, Peas, and Lentils; and starchy Red and Orange vegetables as main staple carbohydrate food sources in the 2020 Healthy U.S.-Style Dietary Pattern in order to examine nutrient intake implications, the ability to achieve nutrient goals, and assess the potential for the addition of flexibilities in USDA Dietary Patterns.
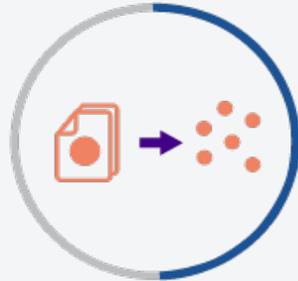
Systematic Review

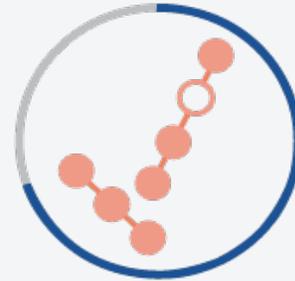# Health equity is being considered throughout the systematic review process

Develop a protocol

Search for and screen articles

Extract data and assess risk of bias

Synthesize the evidence

Answer the question and grade evidence

Recommend future research

Analytic Framework (use of gender inclusive language, selection of key confounders (socioeconomic position, race and ethnicity))

Extract data to describe participants based on health equity priorities; and sub-group analyses

Implement the synthesis plan

Draw conclusions, guided by synthesis plan

Grading criteria: Generalizability

Document gaps and limitations

Inclusion-Exclusion Criteria

Synthesis plan

Resources:
PRISMA Equity Checklist.pdf (prisma-statement.org)
Cochrane Methods: Chapter 16: Equity and specific populations | Cochrane Training

Health equity considerations in the systematic review process: operationalizing the grading of generalizability

- The Health Equity Working Group provided input on how to consistently evaluate generalizability when grading the strength of evidence
  - o Generalizability considers whether the study participants, interventions and/or exposures, comparators, and outcomes examined in the body of evidence are applicable to the US population of interest for the review.
  - o Generalizability can be thought of as external validity or applicability

- Based on this body of evidence, do you think the results can be generalized to the broader **population** of interest (target population of the DGAs)?
- Are the reported results similar or different in different participant populations?
- Are the **interventions or exposures** studied generalizable to the U.S. context?
- Are the **outcomes** applicable to the U.S. population of interest?

Tying it all together

	Past Work	Present Work	Upcoming Work
Overarching	To define the scope of health equity for the 2025 Dietary Guidelines Advisory Committee, ensuring all scientific questions are reviewed in a context that is inclusive of people with all backgrounds and lived experiences		
Systematic Reviews	• Provided input on health equity considerations in the development of systematic review protocols, including the identification and interpretation of key confounders (e.g., socioeconomic position, race and/or ethnicity)	• Provide input on how to consistently evaluate generalizability when grading the strength of evidence • Provide input on protocols with unique considerations related to health equity, such as the cultural and traditional foods evidence scan protocol	• Continue to support health equity considerations throughout the process of conducting systematic reviews
Data Analysis	• Chose demographic subpopulations to examine, including additional NHANES variables to explore in consideration of health equity	• Examine data on dietary intake and nutrition-related health conditions for demographic subpopulations (I.e., sex, race and/or ethnicity, SEP, age/life stage, household food security, household SNAP benefits, household WIC benefits)	• Continue to support health equity considerations throughout the process of completing and synthesizing data analyses
Food Pattern Modeling	• Discussed how to incorporate intake variability considerations across populations, communities, or cultural foodways into the rationale, analyses, and future directions for food pattern modeling	• Discuss representation in developing nutrient profiles	• Continue to support representation throughout the process of food pattern modeling
Scientific Report	• Developed definitions for key health equity terms to guide Committee's three approaches to examine the evidence • Discussed outline for the Scientific Report that centers and integrates health equity	• Outline of health equity in the Scientific Report	• Document Committee's discussions and decisions regarding health equity for incorporation into the Scientific Report

Next Steps

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Next Steps

- Continue to integrate health equity throughout all steps of the three approaches as the work evolves

- Continue developing health equity content for the Scientific Report

Thank you!

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Committee Discussion

Food Pattern Modeling and Data Analysis

Data Analysis

Heather Eicher-Miller, PhD

Data Analysis Subcommittee Chair

September 13, 2023

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Agenda

- Data Analysis Process and Roles

- Data Analysis Progress

- Examples of Available Analyses

- Discussion and Next Steps

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Data Analysis Process and Roles

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Data Analysis Process and Roles

Office of Disease Prevention and Health Promotion and Center for Nutrition Policy and Promotion staff convene Data Analysis Team (DAT) and collaborate with Committee to:

✓ • Identify data analysis topics and questions

✓ • Identify published data analyses and discuss additional data needs

✓ • Develop data analysis plan

✓ • Develop and share requests for new analyses with respective agencies

   • **Interagency partners perform analyses**

• **Obtain and review data analyses**

• Draft summaries of the evidence, and prepare data supplements

The Committee's role is to synthesize the evidence and develop conclusions

Data Analysis Team

Dana DeSilva, PhD, RD
Colleen Cruz, MPH, RDN

Janet de Jesus, MS, RD, *DFO*

Eve Stoody, PhD, *CNPP Division Director*

Kara Beckman, PhD

Kevin Kuczynski, MS, RD

Tessa Lasswell, MPH, RDN

Chinwe Obudulu, MS, RD, LD

TusaRebecca Pannucci, PhD, MPH, RD

Joe Rorabaugh-Irwin, MS, RD, LD, CDE

Interagency Collaborations

ARS
- Jaspreet Ahuja, MS
- Joseph Goldman, MA
- Alanna Moshfegh, MS, RD
- Melissa Nickle, MS
- Donna Rhodes, MS, RD
- Pamela Pehrsson, PhD

CDC
- Namanjeet Ahulwalia, PhD, DSc
- Heather Hamner, PhD, MS, MPH
- Cynthia Ogden, PhD, MRP

FDA
- Kellie Casavale, PhD, RD
- WenYen Juan, PhD

NIH
- Kirsten Herrick, PhD, MSc
- Jill Reedy, PhD, MPH, RDN
- Marissa Shams-White, PhD, MS, MPH

FNS
- Hazel Hiza, PhD, RD
- Kelley Scanlon, PhD, RD

2025 Dietary Guidelines Advisory Committee: Food Pattern Modeling and Data Analysis Subcommittee

Subcommittee Members	
Chris Taylor, PhD, RDN, LD, FAND (FPM Chair)	Valarie Blue Bird Jernigan, DrPh, MPH*
Heather Eicher-Miller, PhD (DA Chair)*	Teresa Fung, ScD, RD
Sarah Booth, PhD*	Sameera Talegawkar, PhD*^
Steve Abrams, MD	Deirdre Tobias, ScD
Carol Byrd-Bredbenner, PhD, RD, FAND	

* Member of the Health Equity Working Group

^ Chair of the Health Equity Working Group

Support Staff	
Meghan Adler, MS, RDN	Verena McClain, MSc**
Colleen Cruz, MPH, RDN	TusaRebecca Pannucci , PhD, MPH, RD
Dana DeSilva, PhD, RD	Kripa Raghavan, DrPH, MPH, MSc
Laural English, PhD	Joe Rorabaugh-Irwin, MS, RD, LD, CDCES^^
Stephenie Fu	Kelley Scanlon, PhD, RD
Hazel Hiza, PhD	Janet de Jesus, MS, RD (DFO)
Kevin Kuczynski, MS, RD	Eve Stoody, PhD (DFO rep)

** Contractor, Panum Telecom, LLC

^^ No longer on detail at HHS Office of Disease Prevention and Health Promotion

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Data Analysis – Scientific Questions*

What are the current intakes of food groups, nutrients, and dietary components?

Which nutrients and/or dietary components present a substantial public health concern because of underconsumption or overconsumption?

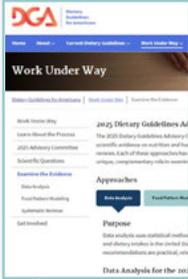**What are the current patterns of food and beverage intake?**

What is the current prevalence of nutrition-related chronic health conditions?

* Additional data analysis questions may be added to complement the Committee's scientific review.

Data Analysis Progress

Data Analysis Progress

Published *Federal Data Analysis Plan for the 2025 Dietary Guidelines Advisory Committee* on DietaryGuidelines.gov

Drafted evidence scan on patterns of dietary intake during the COVID-19 pandemic

Discussed health equity considerations with the Health Equity Working Group

Identified published data analyses and discussed data needs with the Committee

Submitted analysis requests to Data Analysis Team (ARS, CDC, NCI)

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Published Federal Data Analysis Plan on DietaryGuidelines.gov

- Introduction to data analysis

- Data analysis process

- Data analysis strategy

- 2025 Analyses
  - Published analyses (currently available)
  - New analyses requested

The Data Analysis Plan will be updated as additional analysis topics, including those related to health equity, are determined.
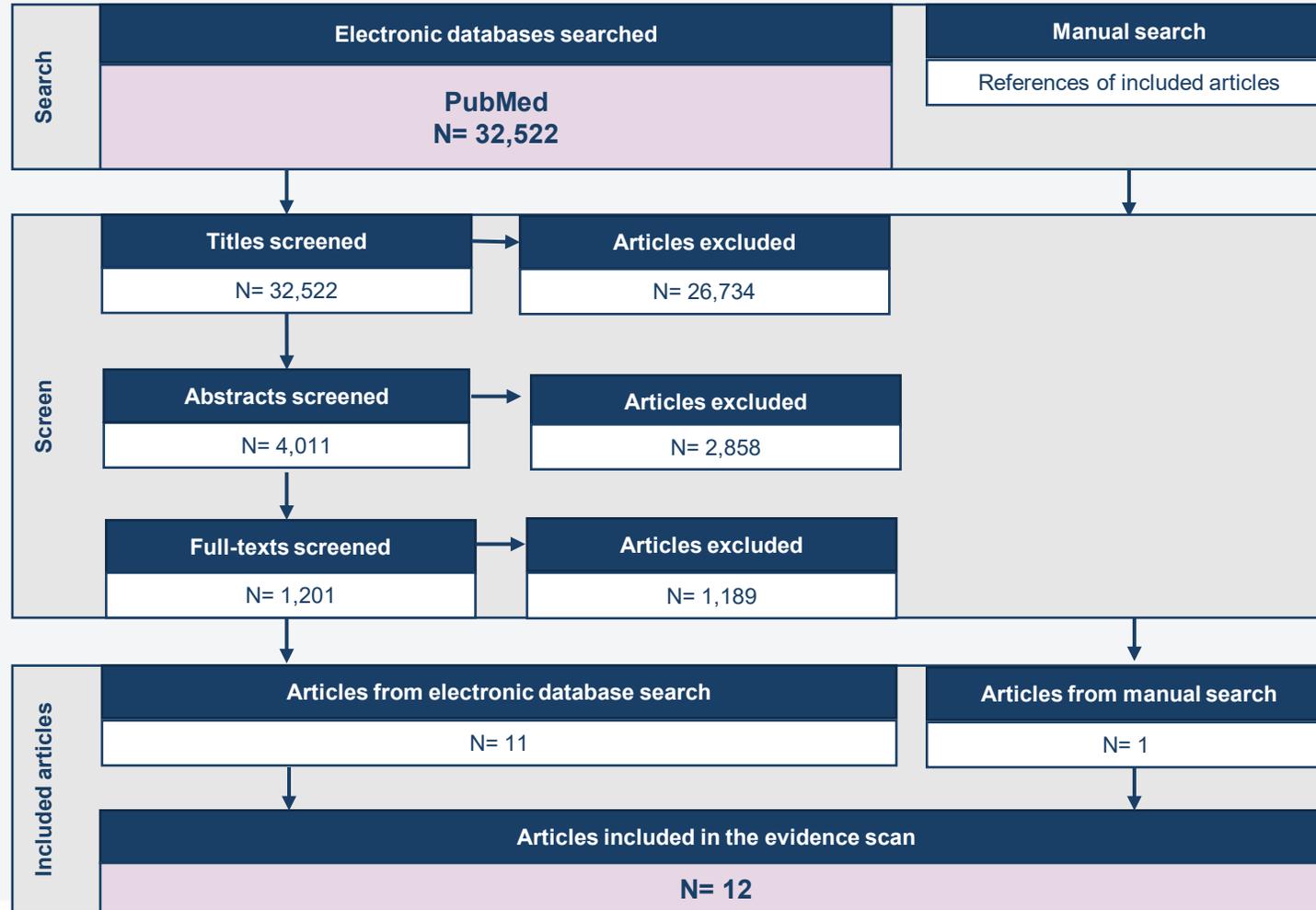
USDA

Federal Data Analysis Plan for the 2025 Dietary Guidelines Advisory Committee

Colleen M. Cruz, MPH, RDN,[a] Dana DeSilva, PhD, RD,[b] Kara Beckman, PhD,[c] Kevin Kuczynski, MS, RD,[d] Tessa Lasswell, MPH, RDN,[d] Chinwe Obudulu, MS, RD, LD,[d] TusaRebecca Pannucci, PhD, MPH RD,[e] Joe Rorabaugh-Irwin, MS, RD, LD, CDE,[c,f] Eve Stoody, PhD,[g] Janet de Jesus, MS, RD[h]

Drafted Evidence Scan:
What are the patterns of food and beverage intake, from March 2020 – December 2022, including potential changes in dietary intake due to COVID-19 (Coronavirus Disease 2019)?

Search

Electronic databases searched	Manual search
PubMed **N= 32,522**	References of included articles

Screen

Titles screened	Articles excluded
N= 32,522	N= 26,734

Abstracts screened	Articles excluded
N= 4,011	N= 2,858

Full-texts screened	Articles excluded
N= 1,201	N= 1,189

Included articles

Articles from electronic database search	Articles from manual search
N= 11	N= 1

Articles included in the evidence scan
N= 12

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Discussed Health Equity in Data Analysis: Considerations

Demographics examined by the 2020 Committee:

- Sex

- Race and/or ethnicity

- Socioeconomic status (e.g., family income, poverty income ratio, education)

- Age/life stage

Additional demographics collected by NHANES that the 2025 Committee discussed:

- Food security category – Household, adult, child

- Country of birth (Born in U.S. or outside of U.S)

- Health insurance coverage and type

- Living in urban or rural areas

- Social vulnerability index

- Household food benefit – SNAP, WIC, emergency food

- Disability status (yes, no)

- Acculturation – language spoken at home (English, Spanish, other)

- Length of time in U.S.

Discussed Health Equity in Data Analysis: Decisions

Demographics that the 2025 Committee will continue to examine:

- Sex

- Race and/or ethnicity

- Socioeconomic position (e.g., family income, poverty income ratio, education)

- Age/life stage

Additional demographics collected by NHANES that the 2025 Committee initially prioritized for further exploration:

- Food security category – Household

- Household food benefit – SNAP

- Household food benefit – WIC

The subpopulations to be examined in each analysis will be determined based on data availability, sample size, and Committee prioritization.

Examples of Available Analyses

Context for Today's Data Analysis Preview

- These examples are setting the stage for the complete collection of data analyses to come. There will be a comprehensive review of all available and requested dietary intake and subpopulation data at future public meetings.

- **The Committee will not draft conclusions until all analyses are available.**

- A full list of available and requested analyses is available in the Federal Data Analysis Plan on DietaryGuidelines.gov.

Current Intakes of Food Groups, Nutrients, and Dietary Components

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Current Intakes of Food Groups, Nutrients, and Dietary Components

Examples of Available Analyses – Select Topics*	Examples of Additional Analyses Forthcoming
• Intakes of FPED quantities • Changes in intakes of FPED quantities • Mean daily nutrient intakes • Usual intakes of nutrients and dietary components compared to recommendations ^	• Food category and subcategory sources of food groups, nutrients, and dietary components • Mean intakes of food groups and subgroups compared to recommendations ^ • Usual intakes of nutrients compared to recommendations (DRIs) ^ • Usual intake distributions of food groups, subgroups, and nutrients ^ • Mean food group and nutrient intakes from complementary foods and beverages (ages 6 through 11 months) • Mean food group and nutrient intakes

^ Analysis is also used to inform nutrients and/or dietary components of public health concern.

*See the *Federal Data Analysis Plan* for the full list of available analyses and new analyses to be requested.

Analyses will be examined by life stage and additional demographic/subpopulation variables to be determined based on data availability, sample size, and Committee prioritization.

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Among Adolescents, Dairy and Vegetables and Fruit Juice Decreased, While Only Fruit Juice Decreased for Adults

Figure 3. Estimated mean intakes of total fruit, 100% fruit juice, vegetables, and dairy by adolescents 12 to 19, from 2003-2004 to 2017-2018, WWEIA, NHANES, day 1

Estimated mean intakes of dairy, vegetables, and fruit juice decreased among adolescents ages 12 to 19 years over time, while total fruit remained the same.

Figure:
https://www.ncbi.nlm.nih.gov/books/NBK588711/figure/usdaddb36.fig3/?report=objectonly

Figure 3. Estimated mean intakes of total fruit, 100% fruit juice, vegetables, and dairy by adults, from 2003-2004 to 2017-2018, WWEIA, NHANES, day 1

Estimated mean intakes of fruit juice decreased among adults over time, while intakes of total fruit, vegetables, and dairy remained the same.

Figure:
https://www.ncbi.nlm.nih.gov/books/NBK588790/figure/usdaddb35.fig3/?report=objectonly

Q: Current intakes of food groups, nutrients, and dietary components

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Among Adolescents & Adults, Refined Grains Slightly Decreased While Whole Grains Slightly Increased Over Time; Only Adults Increased Nuts, Seeds, Soy, & Legumes

Figure 4. Estimated mean intakes of grain and protein foods by adolescents 12 to 19 from 2003-2004 to 2017-2018, WWEIA, NHANES, day 1

Estimated mean intakes of refined grains slightly decreased while whole grains slightly increased among adolescents ages 12 to 19 years over time.

Figure: https://www.ncbi.nlm.nih.gov/books/NBK588711/figure/usdaddb36.fig4/?report=objectonly

Figure 4. Estimated mean intakes of grain and protein foods by adults from 2003-2004 to 2017-2018, WWEIA, NHANES, day 1

Estimated mean intakes of nuts, seeds, soy, and legumes increased among adults over time.

Figure:https://www.ncbi.nlm.nih.gov/books/NBK588790/figure/usdaddb35.fig4/?report=objectonly

Q: Current intakes of food groups, nutrients, and dietary components

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Usual Intakes for Nutrients of Public Health Concern Are Not Meeting DRI Recommendations Among Ages 1+ Years

Percent <u>Not</u> Meeting Recommendation for Calcium *	44%

Percent Meeting Recommendation for Dietary Fiber ^	6%

Percent <u>Not</u> Meeting Recommendation for Vitamin D *	96%

Percent Meeting Recommendation for Potassium ^	29%

* **Percent Less than Estimated Average Requirement** (EAR) from food and beverage intakes

^ **Percent Greater than Adequate Intake** (AI) from food and beverage intakes

Q: Current intakes of food groups, nutrients, and dietary components

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Intakes of Sodium, Saturated Fat, and Added Sugars Exceed DRI & DGA Recommendations

Percent Exceeding Recommended Limit for Sodium	89%
Percent Exceeding Recommended Limit for Saturated Fat	80%
Percent Exceeding Recommended Limit for Added Sugars	63%

Dietary Component Limits

Sodium: <2,300 mg for ages 14 years and older ^

Dietary Reference Intakes (DRI), Chronic Disease Risk Reduction

Saturated Fat: <10% of total daily energy

Dietary Guidelines for Americans (DGA), 2020-2025

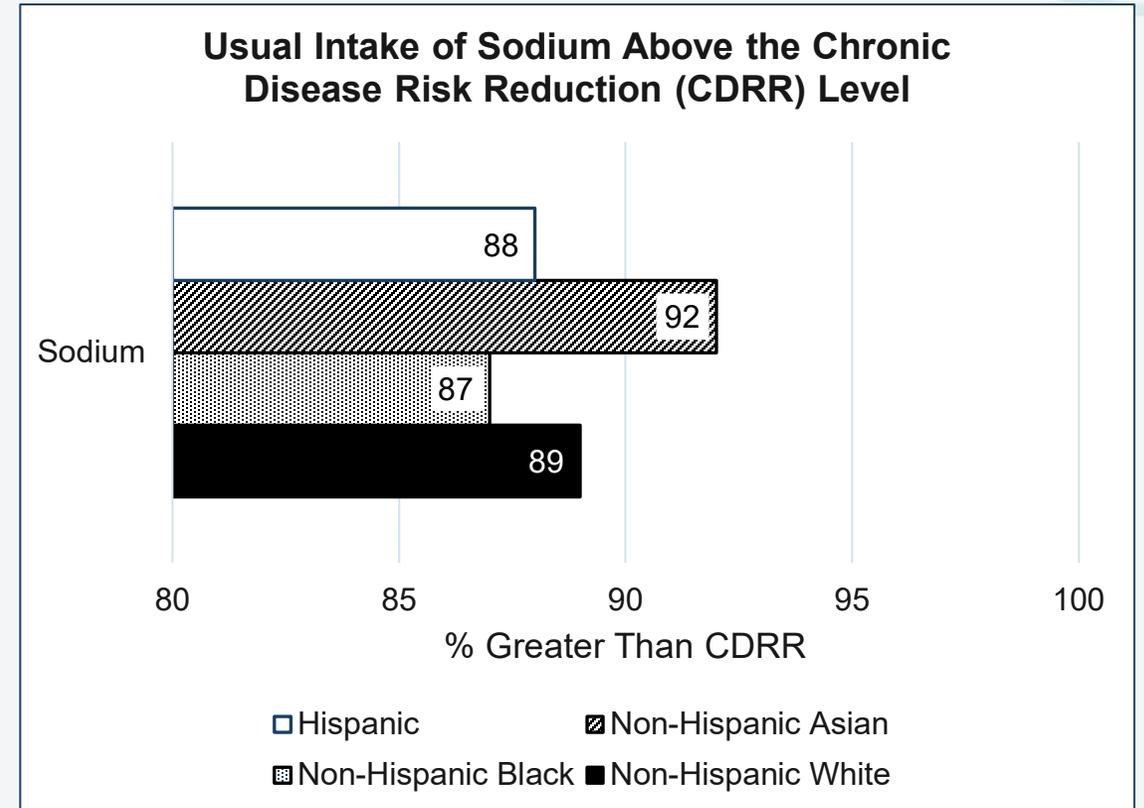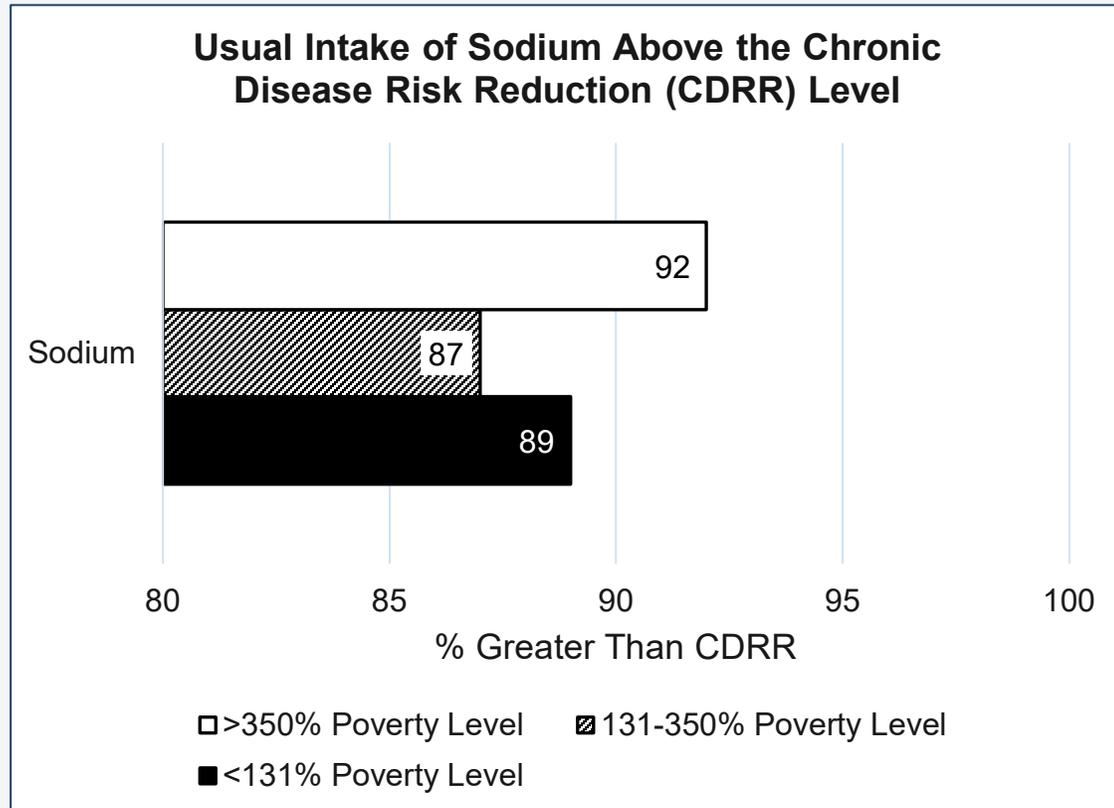**Added Sugars**: <10% of total daily energy

DGA, 2020-2025

^ The CDRR for sodium is lower for children and adolescents younger than 14 years of age.

Q: Current intakes of food groups, nutrients, and dietary components

Data Source: U.S. Department of Agriculture, Agricultural Research Service. *Usual Nutrient Intake from Food and Beverages, What We Eat in America, NHANES 2015-2018*. 2021. https://www.ars.usda.gov/nea/bhnrc/fsrg (Population: Ages 1+ years)

2020 Dietary Guidelines Advisory Committee and Data Analysis Team. *Data Supplement for Food Group and Nutrient Distribution: All Life Stages*. 2020 Dietary Guidelines Advisory Committee Project. Washington, DC: U.S. Department of Agriculture and U.S. Department of Health and Human Services. https://www.dietaryguidelines.gov/sites/default/files/2020-07/DA_Supplement_FoodGroup_NutrientDistribution.pdf (Population: Ages 1+ years)
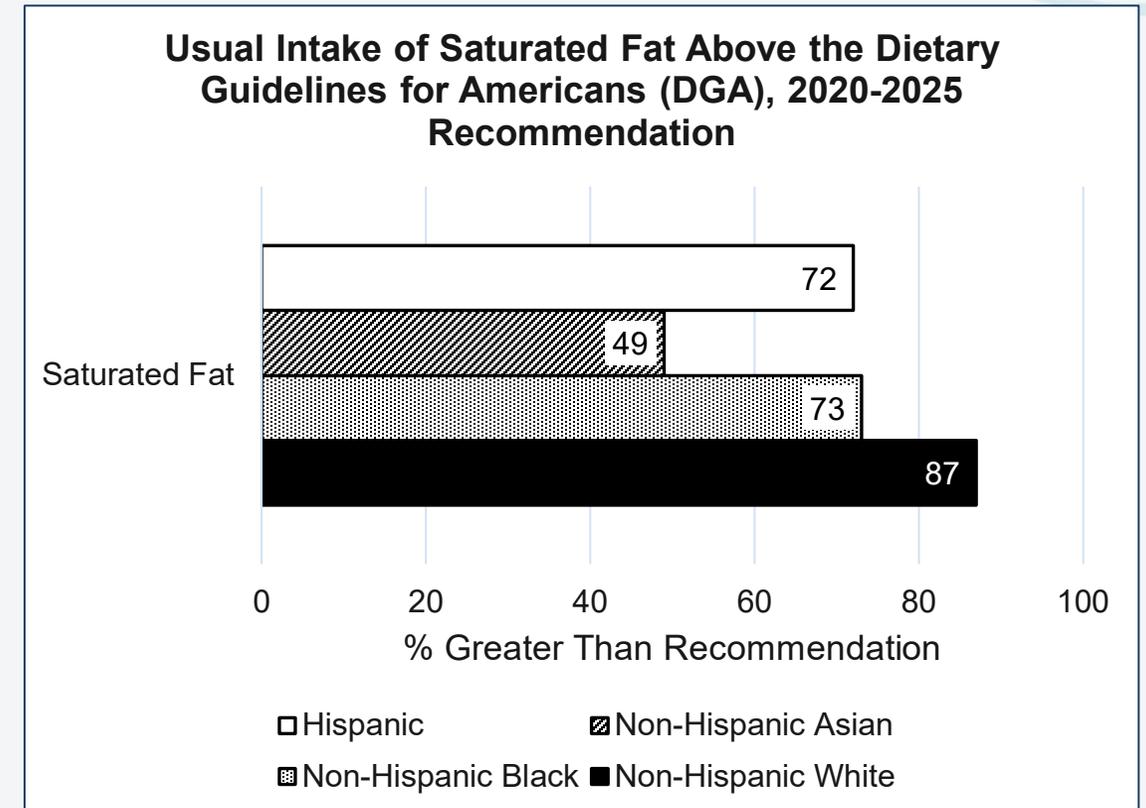
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Usual Intake of Sodium Exceeds Recommendations (CDRR) Among Subpopulations

Usual Intake of Sodium Above the Chronic Disease Risk Reduction (CDRR) Level

Sodium
- 92 — >350% Poverty Level
- 87 — 131-350% Poverty Level
- 89 — <131% Poverty Level

% Greater Than CDRR

□ >350% Poverty Level ▨ 131-350% Poverty Level
■ <131% Poverty Level

Usual Intake of Sodium Above the Chronic Disease Risk Reduction (CDRR) Level

Sodium
- 88 — Hispanic
- 92 — Non-Hispanic Asian
- 87 — Non-Hispanic Black
- 89 — Non-Hispanic White

% Greater Than CDRR

□ Hispanic ▨ Non-Hispanic Asian
▨ Non-Hispanic Black ■ Non-Hispanic White

Q: Current intakes of food groups, nutrients, and dietary components

Data Source: U.S. Department of Agriculture, Agricultural Research Service. *Usual Nutrient Intake from Food and Beverages, What We Eat in America, NHANES 2015-2018.* 2021. https://www.ars.usda.gov/nea/bhnrc/fsrg (Population: Ages 1+ years)

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Usual Intake of Saturated Fat Exceeds Recommendations (DGAs) Among Subpopulations

Usual Intake of Saturated Fat Above the Dietary Guidelines for Americans (DGA), 2020-2025 Recommendation

Saturated Fat
- 82 (>350% Poverty Level)
- 82 (131-350% Poverty Level)
- 77 (<131% Poverty Level)

% Greater Than Recommendation

□ >350% Poverty Level   ▨ 131-350% Poverty Level
■ <131% Poverty Level

Usual Intake of Saturated Fat Above the Dietary Guidelines for Americans (DGA), 2020-2025 Recommendation

Saturated Fat
- 72 (Hispanic)
- 49 (Non-Hispanic Asian)
- 73 (Non-Hispanic Black)
- 87 (Non-Hispanic White)

% Greater Than Recommendation

□ Hispanic   ▨ Non-Hispanic Asian
▥ Non-Hispanic Black   ■ Non-Hispanic White

Q: Current intakes of food groups, nutrients, and dietary components

Data Source: U.S. Department of Agriculture, Agricultural Research Service. *Usual Nutrient Intake from Food and Beverages, What We Eat in America, NHANES 2015-2018*. 2021. https://www.ars.usda.gov/nea/bhnrc/fsrg (Population: Ages 1+ years)
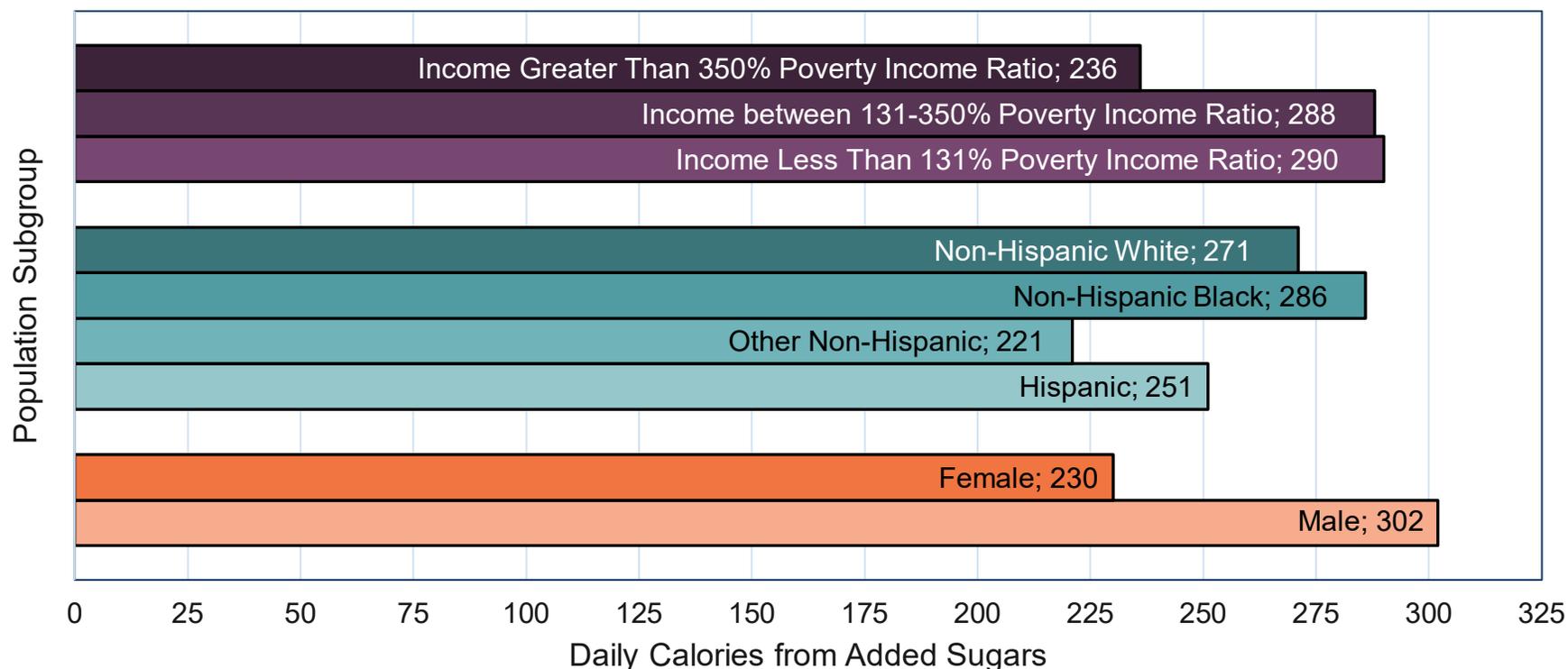
Usual Mean Energy Intake from Added Sugars Varies Among Adult Subpopulations

Usual Mean Energy Intake from Added Sugars Among Adult Subpopulations

- Income Greater Than 350% Poverty Income Ratio; 236
- Income between 131-350% Poverty Income Ratio; 288
- Income Less Than 131% Poverty Income Ratio; 290
- Non-Hispanic White; 271
- Non-Hispanic Black; 286
- Other Non-Hispanic; 221
- Hispanic; 251
- Female; 230
- Male; 302

Y-axis: Population Subgroup
X-axis: Daily Calories from Added Sugars (0, 25, 50, 75, 100, 125, 150, 175, 200, 225, 250, 275, 300, 325)

10% of calories = 200 calories*

*based on a 2,000 calorie per day diet

Q: Current intakes of food groups, nutrients, and dietary components

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Data Source: Lee SH, Zhao L, Park S, Moore LV, Hamner HC, Galuska DA, Blanck HM. High Added Sugars Intake among US Adults: Characteristics, Eating Occasions, and Top Sources, 2015–2018. *Nutrients*. 2023; 15(2):265. doi:10.3390/nu15020265 (Population: Ages 20+ years; Data: WWEIA, NHANES 2015-2018)

Current Patterns of Food and Beverage Consumption

Current Patterns of Food and Beverage Consumption

Examples of Available Analyses – Select Topics*	Examples of Additional Analyses Forthcoming
• Average HEI-2020 scores • Changes in HEI-2020 scores over time	• Food category and subcategory sources of energy • Average HEI-2020 scores • Percent consuming beverage types at least once per day among ages 6 through 23 months • Percent who consumed beverage types in a day • Mean daily beverage intake • Nutritional contributions from beverages • Prevalence of any and exclusive breastfeeding

*See the *Federal Data Analysis Plan* for the full list of available analyses and new analyses to be requested.

Analyses will be examined by life stage and additional demographic variables to be determined based on data availability, sample size, and Committee prioritization.

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Diet Quality (HEI-2020) Has Not Changed Over Time and Is Low Across the Lifespan

HEI-2020 Scores Over Time
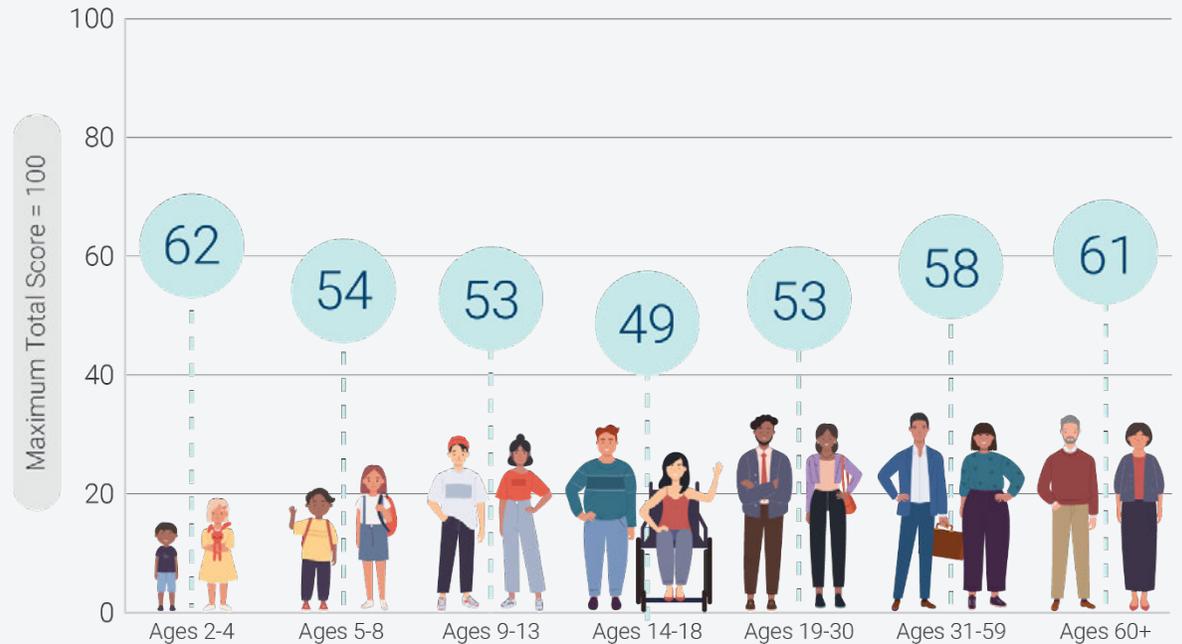
HEI-2020 Scores Across the Lifespan
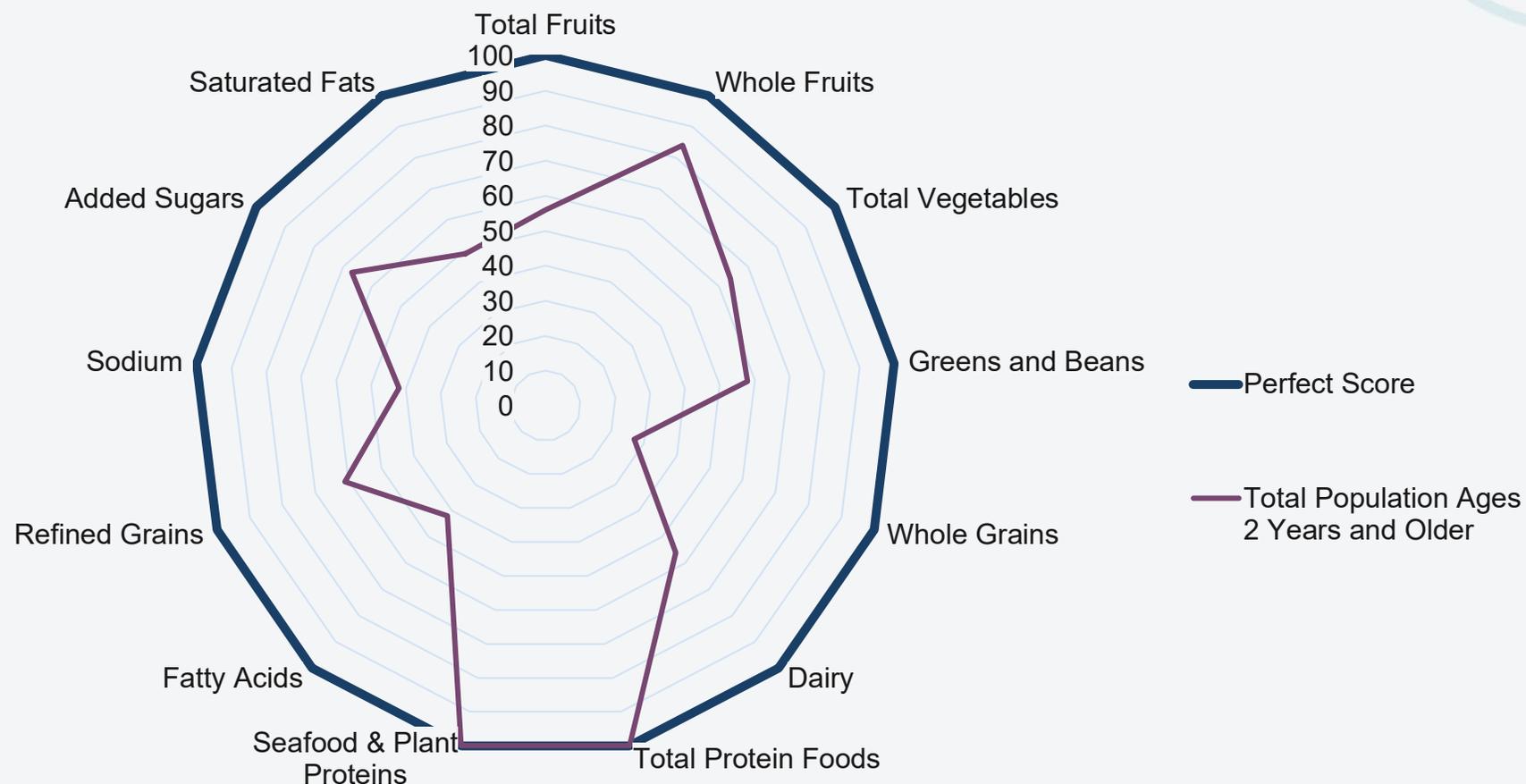
Q: Current patterns of food and beverage consumption

Figures and Data Source: U.S. Department of Agriculture, Food and Nutrition Service, Center for Nutrition Policy and Promotion. *Average Healthy Eating Index-2020 Scores.* 2021. *WWEIA, NHANES 2017-2018.* https://www.fns.usda.gov/cnpp/hei-scores-americans (Population: Ages 2+ Years)

HEI-2020 Scores: Intakes Do Not Align with the *Dietary Guidelines*

58

The Healthy Eating Index Score

shows that Americans do not align their eating choices with the Dietary Guidelines (on a scale from 0-100)

Q: Current patterns of food and beverage consumption

Figure (left) and Data Source: U.S. Department of Agriculture, Food and Nutrition Service, Center for Nutrition Policy and Promotion. *Average Healthy Eating Index-2020 Scores.* 2021. *WWEIA, NHANES 2017-2018.* https://www.fns.usda.gov/cnpp/hei-scores-americans (Population: Ages 2+ Years)

HEI-2020 Scores Differ by Race and/or Ethnicity

Radar chart with axes: Total Fruits, Whole Fruits, Total Vegetables, Greens and Beans, Whole Grains, Dairy, Total Protein Foods, Seafood & Plant Proteins, Fatty Acids, Refined Grains, Sodium, Added Sugars, Saturated Fats. Scale 0–100.

Legend:
- Perfect Score
- Hispanic
- Non-Hispanic Asian
- Non-Hispanic White
- Non-Hispanic Black

Q: Current patterns of food and beverage consumption

Data Source: U.S. Department of Agriculture, Food and Nutrition Service, Center for Nutrition Policy and Promotion. *Average Healthy Eating Index-2020 Scores for Americans by Race/Ethnicity, Ages 2 Years and Older*. 2021. *WWEIA, NHANES 2017-2018*. https://www.fns.usda.gov/cnpp/hei-scores-americans (Population: Ages 2+ Years)

HEI-Toddlers-2020 Scores: Intakes Do Not Align with the *Dietary Guidelines*

Total
HEI-Toddlers-
2020 Score
63

Radar chart axes (clockwise from top): Total Fruits, Whole Fruits, Total Vegetables, Greens and Beans, Whole Grains, Dairy, Total Protein Foods, Seafood & Plant Proteins, Fatty Acids, Refined Grains, Sodium, Added Sugars, Saturated Fats. Scale from 0 to 100 (marked at 10, 20, 30, 40, 50, 60, 70, 80, 90, 100).

Legend: Perfect Score; Young Children Ages 12 through 23 Months

Q: Current patterns of food and beverage consumption

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Prevalence of Nutrition-Related Chronic Health Conditions and Corresponding Measures

Prevalence of Nutrition-Related Chronic Health Conditions and Corresponding Measures

Examples of Available Analyses – Select Topics*	Examples of Additional Analyses Forthcoming
• Obesity • Coronary heart disease • Diabetes • Colon and rectal cancer	• Hypertension • Stroke • Prediabetes • Metabolic Syndrome • Gestational Diabetes • Osteoporosis or low bone mass at the femoral neck or lumbar spine

*See the *Federal Data Analysis Plan* for the full list of available analyses and new analyses to be requested.

Analyses will be examined by life stage and additional demographic variables to be determined based on data availability, sample size, and Committee prioritization.

Obesity Prevalence Among Children and Adolescents Has Increased Over Time
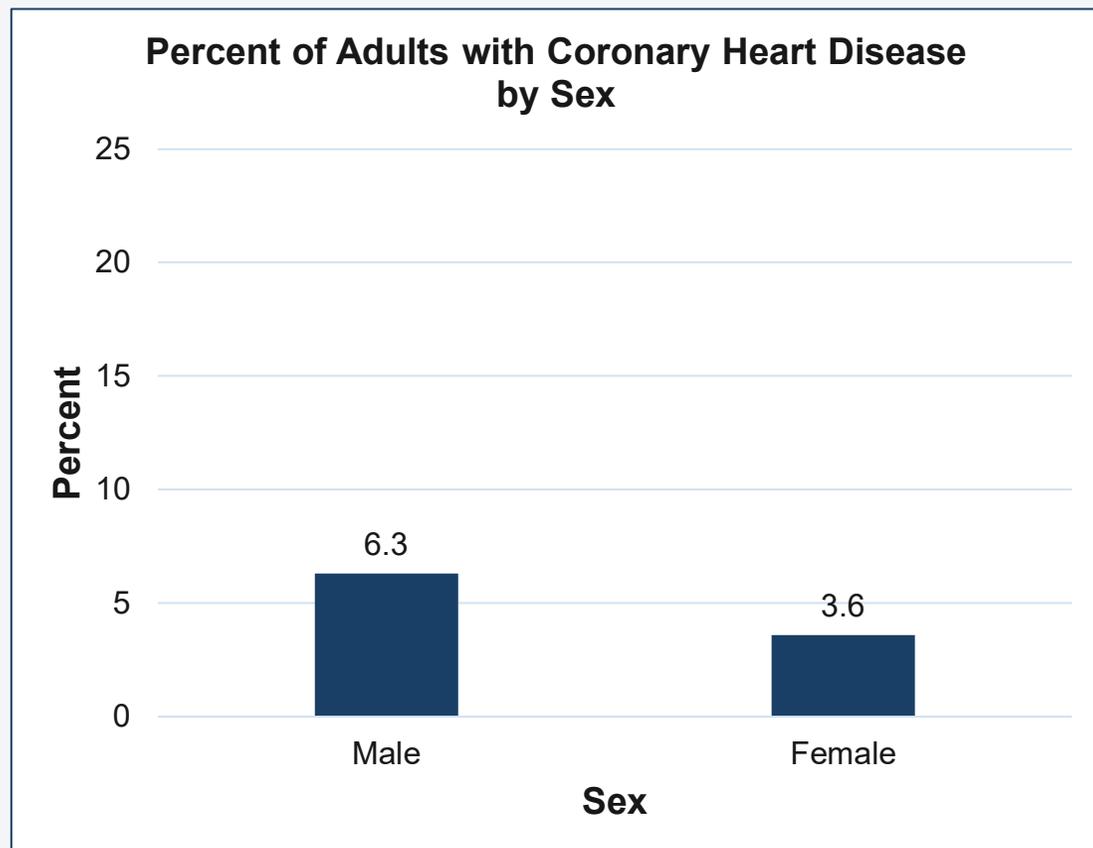

Obesity Prevalence Among Children and Adolescents

Values shown (Percent):
- Total: 2-5 years 13.4; 6-11 years 20.3; 12-19 years 21.2
- Male: 2-5 years 14.7; 6-11 years 21.3; 12-19 years 22.5
- Female: 2-5 years 12.2; 6-11 years 19.2; 12-19 years 19.9

Legend: ☐ 2-5 years ▨ 6-11 years ■ 12-19 years
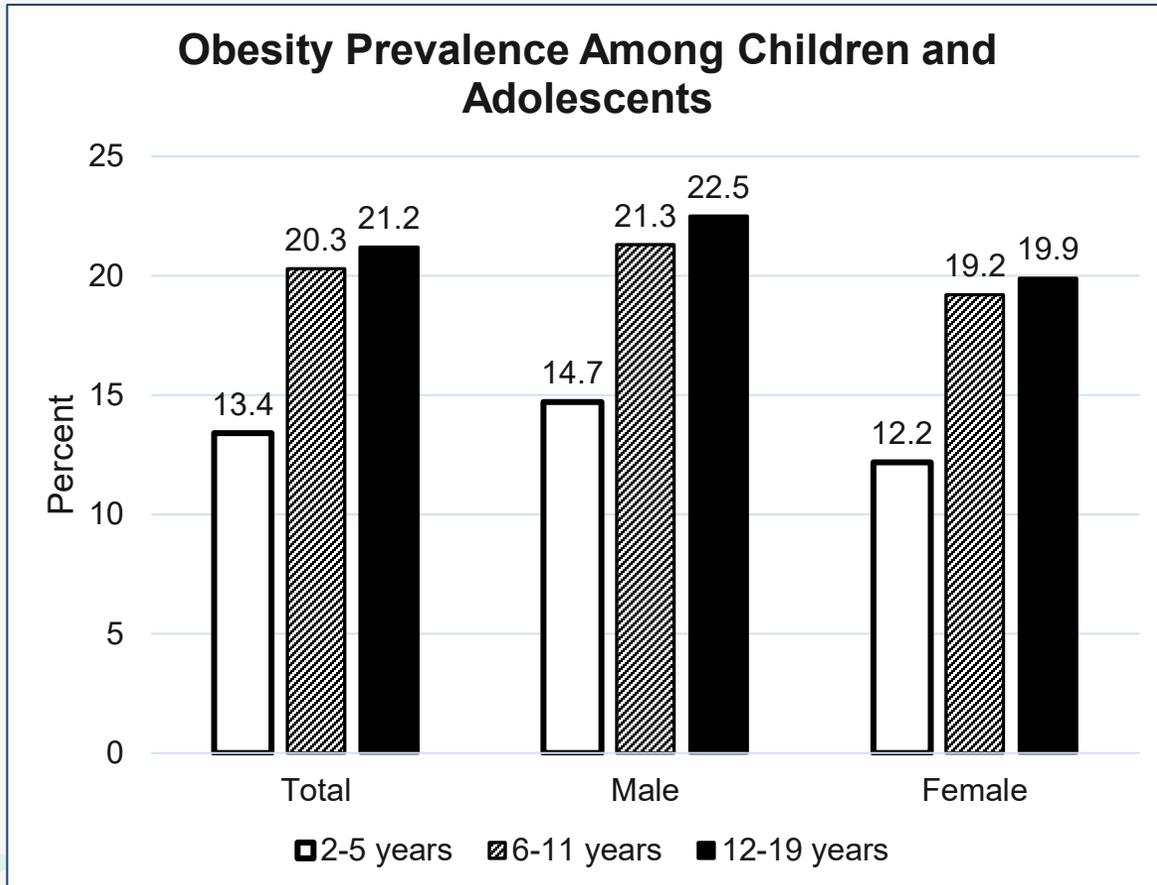
Trends in obesity prevalence: 1963-1965 through 2017-2018

Obesity prevalence among children and adolescents ages 2-19 years has increased over time.

Figure: https://www.cdc.gov/nchs/data/hestat/obesity-child-17-18/overweight-obesity-child-H.pdf
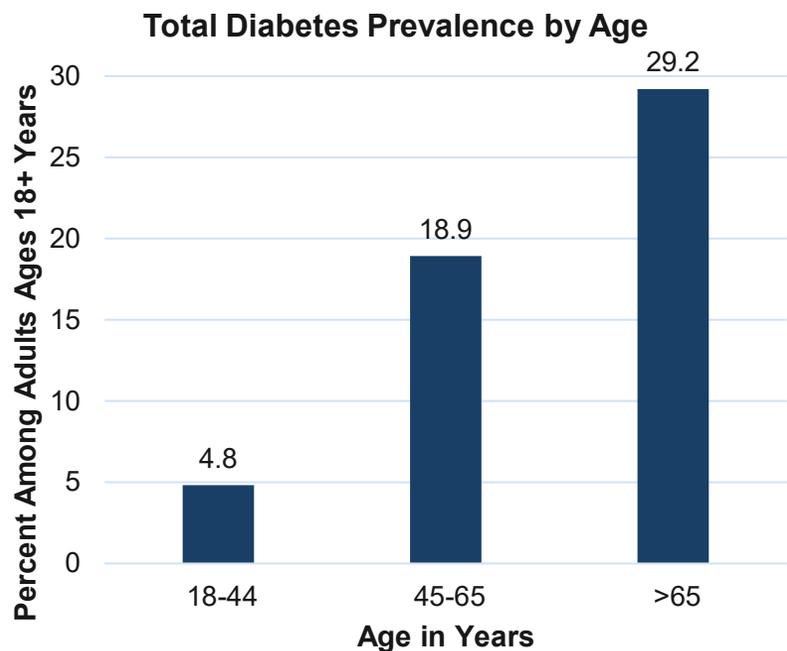
Q: Prevalence of nutrition-related chronic health conditions and corresponding measures

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Prevalence of Coronary Heart Disease Is Higher in Males and Older Adults Ages 75+ Years
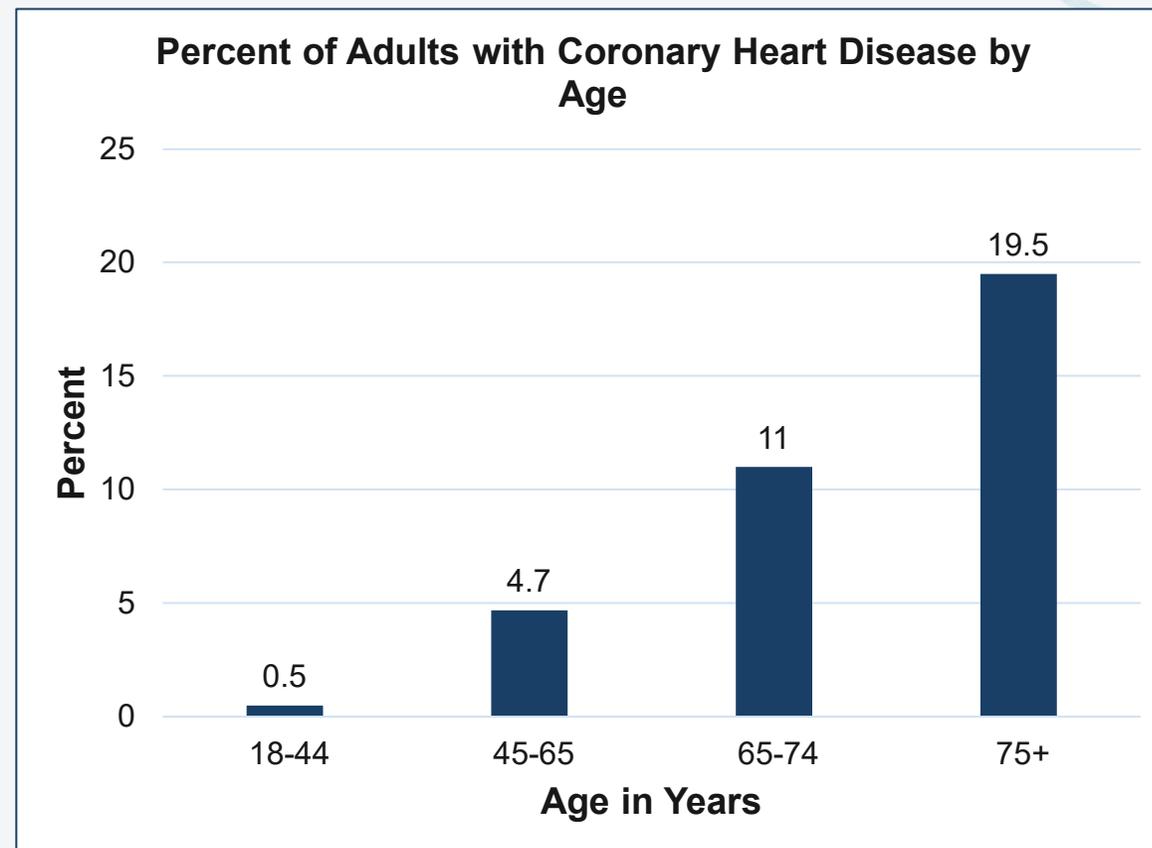
Percent of Adults with Coronary Heart Disease by Sex

- Male: 6.3
- Female: 3.6

(Percent on y-axis, Sex on x-axis)

Percent of Adults with Coronary Heart Disease by Age

- 18-44: 0.5
- 45-65: 4.7
- 65-74: 11
- 75+: 19.5

(Percent on y-axis, Age in Years on x-axis)

Q: Prevalence of nutrition-related chronic health conditions and corresponding measures

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Total Prevalence of Diagnosed and Undiagnosed Diabetes Increased with Age

Total Diabetes Prevalence by Age

Percent Among Adults Ages 18+ Years

- 18-44: 4.8
- 45-65: 18.9
- >65: 29.2

Age in Years

Total Diabetes Prevalence by Sex

Percent Among Adults Ages 18+ Years

- Male: 15.4
- Female: 14.1

Sex

Total Diabetes Prevalence by Race and/or Ethnicity

Percent Among Adults Ages 18+ Years

- Non-Hispanic White: 13.6
- Non-Hispanic Black: 17.4
- Non-Hispanic Asian: 16.7
- Hispanic: 15.5

Race and/or Ethnicity

Q: Prevalence of nutrition-related chronic health conditions and corresponding measures

Data source: Department of Health and Human Services, Centers for Disease Control and Prevention. National Diabetes Statistics Report. https://www.cdc.gov/diabetes/data/statistics-report/index.html (Population: Ages 18+ years; Data: NHANES 2017-March 2020)

Colon and Rectal Cancer Incidence Differs by Age and Race and/or Ethnicity

Colon and Rectum
SEER 5-Year Age-Adjusted Incidence Rates, 2016-2020
By Age, Both Sexes, All Races / Ethnicities, All Stages
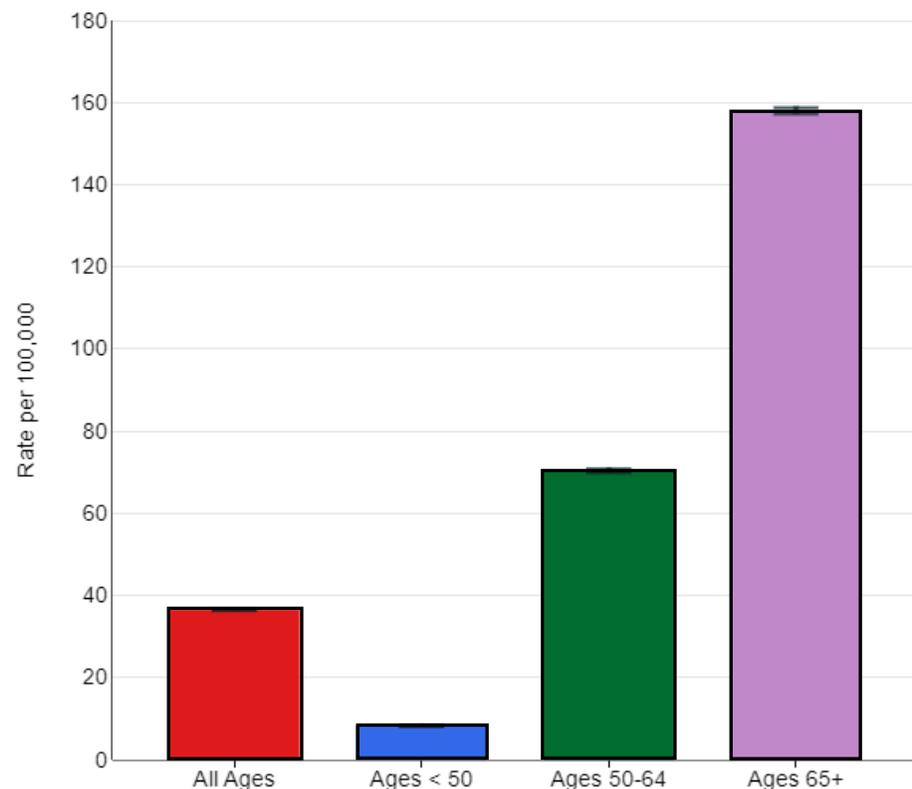
Colon and Rectum
SEER 5-Year Age-Adjusted Incidence Rates, 2016-2020
By Race/Ethnicity, Both Sexes, All Ages, All Stages

Q: Prevalence of nutrition-related chronic health conditions and corresponding measures

Figures and Data Source: Department of Health and Human Services, National Institutes of Health, National Cancer Institute, Surveillance Research Program. SEER Explorer: SEER Incidence Data, November 2022 Submission (1975-2020), SEER 22 Registries. Accessed May 12, 2023. https://seer.cancer.gov/statistics-network/explorer/ (Population: Ages 19+ Years, Age-Adjusted)

Discussion and Next Steps

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Next Steps

| Staff to request and receive additional analyses from Federal Data Analysis Team (ARS, CDC, NIH) | → | Staff to draft summaries of analysis results for Committee review | → | Committee to review analysis results, draft conclusions, and determine future directions |

The Data Analysis Plan will be updated to reflect new or revised analyses as needed.

2025 Dietary Guidelines Advisory Committee: Food Pattern Modeling and Data Analysis Subcommittee

Subcommittee Members	
Chris Taylor, PhD, RDN, LD, FAND (FPM Chair)	Valarie Blue Bird Jernigan, DrPh, MPH*
Heather Eicher-Miller, PhD (DA Chair)*	Teresa Fung, ScD, RD*
Sarah Booth, PhD*	Sameera Talegawkar, PhD*^
Steve Abrams, MD	Deirdre Tobias, ScD
Carol Byrd-Bredbenner, PhD, RD, FAND*	

*Member of the Health Equity Working Group
^Chair of the Health Equity Working Group

2025 Dietary Guidelines Advisory Committee:
Food Pattern Modeling and Data Analysis Subcommittee

Support Staff	
Meghan Adler, MS, RDN	Emily Madan, PhD^*
Dana DeSilva, PhD, RD	Verena McClain, MSc*
Colleen Cruz, MPH, RDN	TusaRebecca Pannucci, PhD, MPH, RD
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Stephenie Fu	Kelley Scanlon, PhD, RD
Hazel Hiza, PhD	Elizabeth Rahavi, RD
Joe Rorabaugh-Irwin, MS, RD, LD, CDCES**	Janet de Jesus, MS, RD (DFO)
Kevin Kuczynski, MS, RD	Eve Stoody, PhD (DFO rep)

*Contractor, Panum Telecom, LLC
**No longer on detail at HHS Office of Disease Prevention and Health Promotion
^No longer at USDA Center for Nutrition Policy and Promotion

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Food Pattern Modeling progress since Meeting 2

1 Nutrient profile development

2 Analyze hypothetical modifications to food groups and/or dietary patterns

3 Evaluate and refine draft dietary patterns

Basis — A

➢ Synthesize results
➢ Develop nutrient profiles

WWEIA Population Subgroups — A

B Protein Foods

C Vegan

B Dairy and Fortified Soy Alternatives

C Low carbohydrate

➢ Synthesize results: *all* evidence bases
➢ Implications within population subgroups
➢ Draft dietary patterns

B Staple Carbohydrate Foods

C Different ranges of nutrient density

C Diet Simulations

C Vegetables

C Fruit

Protocol status

A — Ready for analysis after Meeting 3

B — Ready for analysis developing after nutrient profiles

C — Prioritized protocol to be developed

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Food Pattern Modeling Discussion Agenda

1. Nutrient Profile Development
Nutrient Profiles – WWEIA Population Subgroups

2. Food Group Modifications
Protein Foods
Dairy and Fortified Soy Alternatives
Staples Carbohydrate Foods

3. Next Steps
Remaining protocols

New Protocol
Nutrient Profiles
WWEIA Population Subgroups

New Protocol Question
Nutrient Profiles – WWEIA Population Subgroups

- What are the differences in nutrient profiles when calculated using the dietary intakes of U.S. population subgroups?
  - Population subgroups are defined in the publicly available WWEIA, NHANES datasets.

Nutrient Profile Development – WWEIA, Population Subgroups^{82}

1 Nutrient profile development

Basis

➢ Synthesize results
➢ Develop nutrient profiles

WWEIA Population Subgroups

1. Current method
2. Revised nutrient profile

1. **Base population**
2. **By Race:**
   Non-Hispanic Black
   Non-Hispanic Asian
   Non-Hispanic White
3. **By Ethnicity:**
   Hispanic
4. **By Poverty Level:**
   Under 131% poverty
   131-350% poverty
   Over 350% poverty
5. **By Age**

New Protocols
Food Group Modifications

New Protocols: Food Group Modifications

Protein Foods

Dairy and Fortified Soy Alternatives

Staple Carbohydrate Foods

Protocols presented today will be available at DietaryGuidelines.gov in the next month.

Discussion Topics Planned for New Protocols

- Rationale

- Key definitions pertinent to analyses

- Analysis questions

- Summary of each analysis

- Methods that differ between protocols
    e.g., population

Food pattern modeling protocol: Nutrient Profile Development

Table of contents

New Protocol: Protein Foods

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New Protocol: Protein Foods Rationale

- Protein Foods group is comprised of a variety of foods from plant and animal sources
  - Meats, Poultry, and Eggs
  - Seafood
  - Nuts, Seeds, and Soy products
  - Beans, Peas, and Lentils
- Animal/plant sources may be modified by need (e.g., allergies), budget, cultural/religious norms
- Dietary patterns with relatively higher intakes of red and processed meats linked to higher risk of:
  - all-cause mortality
  - certain chronic diseases
- Analyses will more equitably consider the diverse scope of population norms/preferences/needs

New Protocol: Protein Foods Questions

Healthy U.S.-Style, 12 - 23 months, 800 calories

Food Group / *Subgroup*	Quantity	How often?
Protein Foods	2 oz eq	Daily
Meats, Poultry	7 oz eq	Weekly
Eggs	2 ¾ oz eq	Weekly
Seafood	2-3 oz eq	Weekly
Nuts, Seeds, Soy	1 oz eq	Weekly
Vegetables	¾ cup eq	Daily
Beans, Peas, Lentils	$^1/_3$ cup eq	Weekly

Healthy U.S.-Style, Ages 2+ years, 2000 calories

Food Group / *Subgroup*	Quantity	How often?
Protein Foods	5 ½ oz eq	Daily
Meat, Poultry, Eggs	26 oz eq	Weekly
Seafood	8 oz eq	Weekly
Nuts, Seeds, Soy	5 oz eq	Weekly
Vegetables	2 ½ cup eq	Daily
Beans, Peas, Lentils	1 ½ cup eq	Weekly

oz eq = ounce equivalents; cup eq = cup equivalents

What are the implications for nutrient intakes when **modifying** the **Protein Foods group** and **subgroup quantities** within the Healthy U.S.-Style Dietary Pattern or Healthy Vegetarian Dietary Pattern?

What are the implications for nutrient intakes when proportions of **animal-based** Protein Foods subgroups are **reduced** and proportions of **plant-based** Protein Foods subgroups are **increased**?

Find all patterns at DietaryGuidelines.gov: *Dietary Guidelines, 2020-2025* Appendix 3: USDA Dietary Patterns
https://www.dietaryguidelines.gov/sites/default/files/2021-03/Dietary_Guidelines_for_Americans-2020-2025.pdf

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New Protocol: Protein Foods Key Definitions *(new for 2025)*

Animal-based Protein Foods: For the purposes of these analyses, animal-based Protein Foods are defined as foods originating from animal sources that count toward the Protein Foods group in the 2020 USDA Dietary Patterns (e.g., meat, poultry, eggs, and seafood).

Plant-based Protein Foods: For the purposes of these analyses, plant-based Protein Foods are defined as foods originating from plant sources that count toward the Protein Foods group in the 2020 USDA Dietary Patterns (e.g., beans, peas, lentils, nuts, seeds, and soy products).

Soy Products: Soy Products are foods made from soybeans that contribute to the Protein Foods group as a subgroup. Soy Products include tofu, tempeh, texturized vegetable protein (TVP), and processed soy products. Cooked soybeans or immature soybeans (i.e., edamame) are counted in the Beans, Peas, Lentils subgroup and do not contribute to the Nuts, Seeds, and Soy Products subgroup.

Pescatarian diet: A pescatarian diet is defined in the dictionary as a diet that includes fish but no other meat. For the purposes of these analyses, a pescatarian diet includes foods from all major food groups but only certain Protein Foods subgroups. Pescatarians typically consume all plant-based Protein Foods subgroups (i.e., Beans, Peas, and Lentils; Nuts, Seeds, and Soy Products), Seafood, and sometimes Eggs, while excluding intake of Meat and Poultry.

New Protocol: Protein Foods
Summary of Analyses (Objective 1 of 5)

Objective 1: Analysis to understand the nutritional contribution of the food group

1. Understand the nutritional composition of the food group alone and within the pattern
2. Understand the nutritional contribution of the food group compared to current intakes

Partial draft objective:

Objective 1: Identify the nutritional composition and contribution of the Protein Foods group and subgroups in current dietary intakes, relative to the 2020 Healthy U.S.-Style Dietary Pattern goals for ages 12 months and older.

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New Protocol: Protein Foods
Summary of Analyses (Objective 2 of 5)

Objective 2: Analyses modifying quantities and proportions of the food group and subgroups

1. Incrementally reduce quantities of the food subgroups in the Dietary Pattern
2. Evaluate nutrient intake implications of the hypothetical reductions

Partial draft objective:

Objective 2: Estimate the implications on meeting nutritional goals for each ½ or 1 ounce equivalent (oz eq) increment shift of Protein Foods subgroup quantities, from 0 to the current quantity for a given calorie level in the 2020 Healthy U.S.-Style Dietary Pattern.

New Protocol: Protein Foods
Analysis Overview (Objective 3 of 5)

Objective 3: Analyses modifying quantities and proportions of animal-based vs. plant-based subgroups

1. Incrementally reduce animal-based Protein Foods subgroup quantities
   + increase plant-based Protein Foods subgroup quantities
2. Evaluate nutrient intake implications of the hypothetical shifts

Partial draft objective:

Objective 3: Evaluate implications on meeting nutritional goals when the proportions of animal-based Protein Foods subgroups (i.e., Meats, Poultry, and Eggs; and Seafood) are reduced by ½ or 1 oz eq increments and the proportions of plant-based Protein Foods subgroups (i.e., Beans, Peas, and Lentils; and Nuts, Seeds, and Soy Products) are increased by ½ or 1 oz eq increments in each calorie level of the 2020 Healthy U.S.-Style Dietary Pattern.

New Protocol: Protein Foods
Analysis Overview (Objective 4 of 5)

Objective 4: Analyses modifying quantities and proportions of animal-based vs. plant-based subgroups

1. Incrementally reduce animal-based Protein Foods subgroup quantities
   + increase plant-based Protein Foods subgroup quantities **+** maintain Seafood*
2. Evaluate nutrient intake implications of the hypothetical shifts

Partial draft objective:

Objective 4: Evaluate implications on meeting nutritional goals when the proportions of animal-based Protein Foods subgroups (i.e., Meats, Poultry, and Eggs; and Seafood) are reduced by ½ or 1 oz eq increments and the proportions of plant-based Protein Foods subgroups (i.e., Beans, Peas, and Lentils; and Nuts, Seeds, and Soy Products) are increased by ½ or 1 oz eq increments in each calorie level of the 2020 Healthy U.S.-Style Dietary Pattern.

*Seafood will remain constant for the calorie levels in which 8 oz or less is recommended per week and will not be reduced below 8 oz for the calorie levels in which greater than 8 oz is recommended per week.

![DGA DietaryGuidelines.gov]

New Protocol: Protein Foods
Analysis Overview (Objective 5 of 5)

Objective 5: Analyses modifying quantities and proportions of animal-based vs. plant-based subgroups

1. Model two subgroup scenarios to represent hypothetical pescatarian diets:
   - Eggs **+** Seafood **+** Nuts and Seeds **+** Soy Products **+** Beans, Peas, and Lentils
   - Seafood **+** Nuts and Seeds **+** Soy Products **+** Beans, Peas, and Lentils
2. Evaluate nutrient intake implications of the hypothetical scenarios

Partial draft objective:

Objective 5: Evaluate implications on meeting nutritional goals when the proportions of Protein Foods subgroups are modified to include animal-based Protein Foods from Seafood and Eggs subgroups only or Seafood only (i.e., no Meat or Poultry), while maintaining the plant-based Protein Foods subgroups (i.e., Beans, Peas, and Lentils; Nuts and Seeds; Soy Products) in each calorie level of a modified version of the 2020 Healthy Vegetarian Dietary Pattern.

New Protocol: Dairy and Fortified Soy Alternatives

New Protocol: Dairy and Fortified Soy Alternatives Rationale

- The Dairy and Fortified Soy Alternatives food group is comprised of a variety of choices
  - Includes fat-free or low-fat fluid, dry, or evaporated cow milk, including lactose-free and lactose-reduced
  - Includes fortified soy beverages (soy milk) and fortified soy yogurt
  - Includes buttermilk, yogurt, kefir, frozen yogurt, dairy desserts, and cheeses
  - Includes fortified soy beverages and yogurt
  - Does not include other non-dairy alternatives (e.g., almond milk; oat milk)

- Previous systematic reviews have linked healthy dietary patterns (which include low-fat dairy as a component or were lower in high-fat dairy) with lower risk of certain chronic diseases

- Source of three nutrients of public health concern: calcium, potassium, and vitamin D

- Intakes below recommended levels in the *Dietary Guidelines*

- Includes major food allergens (i.e., cow milk and soy) and intolerances

- Hypothetical modifications proposed to examine potential flexibilities that more equitably consider the range of population norms, preferences, and needs

New Protocol: Dairy and Fortified Soy Alternatives Key Definitions *(new for 2025)*

Non-dairy alternatives: For the purposes of these analyses, non-dairy alternatives are defined as foods and beverages that may be marketed to the public as milk, yogurt, or cheese alternatives originating from plant foods (e.g., almond, coconut, pea, and oat beverages; non-dairy yogurts and cheeses). For these analyses non-dairy alternatives do not include fortified soy alternatives as they are already a component of the Dairy and Fortified Soy Alternatives food group.

Fortification: The addition of nutrients to a food to correct a dietary insufficiency; to restore nutrient(s) to a level(s) representative of the food prior to storage, handling, and processing; and/or to balance the vitamin, mineral and protein content in proportion to the total caloric content of the food. The terms "enriched," "fortified," or similar terms may be used interchangeably to indicate that one or more essential nutrients were added to a food unless an applicable Federal regulation requires the use of specific words or statements. The standard of identity for milk notes that if vitamins A and D are added to milk, they shall be present in such a quantity that each quart contains ≥2000 IU of vitamin A and ≥400 IU of vitamin D. The *Dietary Guidelines for Americans, 2020-2025* notes that soy milk and yogurt included in the Dairy and Fortified Soy Alternatives food group were fortified with calcium, vitamin A and vitamin D in levels similar to dairy products.

New Protocol: Dairy and Fortified Soy Alternatives Questions

Healthy U.S.-Style, Ages 2 Years and Older

Calorie Level**	Food Group^	Quantity	How often?
1,000	Dairy & Fortified Soy Alternatives	2 cup eq*	Daily
1,400	Dairy & Fortified Soy Alternatives	2 ½ cup eq	Daily
2,000	Dairy & Fortified Soy Alternatives	3 cup eq	Daily
3,000	Dairy & Fortified Soy Alternatives	3 cup eq	Daily

^This food group does not include subgroups in the *Dietary Guidelines, 2020-2025*
* The established 1,400 calorie level is not intended for children ages 10 and older or adults.

What are the implications for nutrient intakes when **modifying** the **Dairy and Fortified Soy Alternatives** food group **quantities** within the Healthy U.S.-Style Dietary Pattern?

What are the implications for nutrient intakes when **dairy food and beverage** sources are **replaced with non-dairy alternatives**?

New Protocol: Dairy and Fortified Soy Alternatives Population

Analyses will be applied to the 2020 Healthy U.S.-Style Dietary Pattern for ages 2+ only

Rationale:

- 2020 Dietary Guidelines Advisory Committee developed the 2020 Healthy U.S.-Style Dietary Pattern for ages 12 through 23 months
  - Dairy and Fortified Soy Alternatives nutrient profile modeled:
    - whole milk, reduced fat yogurt/cheese, fortified soy milk
  - Due to unique considerations for this life stage (e.g., adequate fat intake)
- American Academy of Pediatrics: unsweetened non-dairy alternatives are not recommended for exclusive consumption in place of dairy milk (with the exception of soy milk); consume only when medically indicated or to meet specific dietary preferences for those ages 1-5 years

New Protocol: Dairy and Fortified Soy Alternatives Summary of Analyses (Objective 1 of 7)

Objective 1: Analysis to understand the nutritional contribution of the food group

1. Understand the nutritional composition of the food group alone and within the pattern
2. Understand the nutritional contribution of the food group compared to current intakes

Partial draft objective:

Objective 1: Identify the nutritional composition and contribution of the Dairy and Fortified Soy Alternatives group in current dietary intakes, relative to the 2020 Healthy U.S.-Style Dietary Pattern goals for ages 2 and older.

New Protocol: Dairy and Fortified Soy Alternatives Summary of Analyses (Objective 2 of 7)

Objective 2: Analysis to understand the nutritional contribution of the food group

1. Incrementally reduce quantity of the food group recommended
2. Evaluate nutrient intake implications of the hypothetical reductions

Partial draft objective:

Objective 2: Evaluate nutrient intake implications when the quantity of Dairy and Fortified Soy Alternatives food group in the patterns are reduced by ¼ cup eq increments for 1,000, 1,200, and 1,400 calorie levels and ½ cup eq increments for 1,600 to 3,200 calories levels, starting with the current maximum quantity in each calorie level in the 2020 Healthy U.S.-Style Dietary Pattern for ages 2 and older.

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New Protocol: Dairy and Fortified Soy Alternatives Summary of Analyses (Objective 3 of 7)

Objective 3: Analysis to understand the nutritional contribution of the food group

1. Remove food group
2. Evaluate nutrient intake implications of the hypothetical removal

Partial draft objective:

Objective 3: Evaluate nutrient intake implications when the Dairy and Fortified Soy Alternatives food group is removed from the 2020 Healthy U.S.-Style Dietary Pattern for ages 2 and older.

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New Protocol: Dairy and Fortified Soy Alternatives
Summary of Analyses (Objective 4 of 7)

Objective 4: Analyses modifying food group quantities and proportions

1. Create draft subgroups and model proportions:
   - milk (dairy and fortified soy); cheese; yogurt (dairy and fortified soy)
2. Evaluate nutrient intake implications of the hypothetical proportions

Partial draft objective:

Objective 4: Evaluate implications on meeting nutritional goals by modifying the proportions of foods (i.e., milk (dairy and fortified soy), cheese, yogurt (dairy and fortified soy) contributing to the food group nutrient profile by creating and modeling various proportions of draft subgroups within the Dairy and Fortified Soy Alternatives group...

New Protocol: Dairy and Fortified Soy Alternatives Summary of Analyses (Objective 5 of 7)

Objective 5: Analyses modifying representative foods

1. Evaluate the nutrient composition of non-dairy alternatives
   - fortified; unfortified; calorically sweetened; unsweetened

Partial draft objective:

Objective 5: Compare and contrast the nutrient composition of non-dairy alternatives with existing dairy foods

New Protocol: Dairy and Fortified Soy Alternatives Summary of Analyses (Objective 6 of 7)

Objective 6: Analyses modifying representative foods

1. Replace representative foods with nutrient-dense non-dairy alternatives
2. Model various proportions using hypothetical subgroups for non-dairy milk, yogurt, and cheese
3. Evaluate nutrient intake implications of the hypothetical replacement

Partial draft objective:

Objective 6: Evaluate implications on meeting nutritional goals by replacing current representative foods with non-dairy alternatives not included in the food group and examining implications of modeling varying proportions of non-dairy alternatives. Models will use draft subgroups using current intake proportions of overall dairy and alternative proportions covering a range of possible intakes…

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New Protocol: Dairy and Fortified Soy Alternatives Summary of Analyses (Objective 7 of 7)

Objective 7: Analyses modifying representative foods

1. Replace plain/non-fat milk, yogurt, cheese representative foods with:
   - reduced fat <or full fat> choices
2. Model hypothetical subgroups and various proportions
3. Evaluate nutrient intake implications of the hypothetical replacement

Partial draft objective:

Objective 7: Evaluate implications on meeting nutritional goals when the current fat-free representative foods for fluid milk and yogurt are replaced with low-fat fluid milk and yogurt and the fat free cheese is replaced with reduced fat <or full fat> choices.

New Protocol: Staple Carbohydrate Foods

New Protocol: Staple Carbohydrate Foods Rationale

- USDA Dietary Patterns include a variety of foods that could be considered *staple carbohydrate foods:*
    - *Grains, such as breads, rice, pasta, tortillas*
    - *Starchy Vegetables, such as white potatoes, cassava, and plantains*
    - *Beans, Peas, and Lentils, such as pinto, black, and white beans, chickpeas, split peas, and lentils*
    - *Red and Orange vegetables, such as winter squash and sweet potatoes*

- Organization within the patterns may not accurately reflect how staple carbohydrate foods are typically consumed in some populations, communities, or cultural foodways or by those who avoid gluten (e.g., allergies; gastrointestinal sensitivity)

- Whole grain and vegetable intakes below recommended levels in the *Dietary Guidelines*

- Systematic reviews have linked healthy dietary patterns (which include whole grains as a component) with lower risk of certain chronic diseases and fortified/enriched refined grains serve a role in health (e.g., reduction in neural tube defects)

- Hypothetical modifications proposed to examine potential flexibilities that more equitably consider the range of population norms, preferences, and needs

- Analyses supported by public request and the wide spectrum of intake

New Protocol: Staple Carbohydrate Foods
Key Definitions *(new for 2025)*

Staple Carbohydrate Foods: For the purposes of these analyses, staple carbohydrates include foods that contribute to the Grains food group, the Starchy Vegetables subgroup, the Beans, Peas, and Lentils vegetable subgroup, and starchy vegetables from the Red and Orange vegetable subgroup (i.e., calabaza, pumpkin, winter squash, and sweet potatoes).

Fortification: The addition of nutrients to a food to correct a dietary insufficiency in the target population; to restore nutrient(s) to a level(s) representative of the food prior to storage, handling, and processing; and/or to balance the vitamin, mineral and protein content in proportion to the total caloric content of the food. The terms "enriched," "fortified," or similar terms may be used interchangeably to indicate that one or more essential nutrients were added to a food unless an applicable Federal regulation requires the use of specific words or statements.

New Protocol: Staple Carbohydrate Foods Questions

Healthy U.S.-Style Dietary Patterns

Food Group / *Subgroup*	Quantity 800 calories	Quantity 2,000 calories	How often?
Grains	2 ¼ oz eq	6 oz eq	Daily
Whole Grains	2 oz eq	3 oz eq	Daily
Refined Grains	¼ oz eq	3 oz eq	Daily
Vegetables	¾ cup eq	2 ½ cup eq	Daily
Starchy	1 ½ cup eq	5 cup eq	Weekly
Beans, Peas, Lentils	⅓ cup eq	1 ½ cup eq	Weekly
Red and Orange	1 ¾ cup eq	5 ½ cup eq	Weekly

oz eq = ounce equivalents; cup eq = cup equivalents

What are the implications for nutrient intakes when **modifying** the **quantities** of the **Grains food group** within the Healthy U.S.-Style Dietary Pattern?

What are the implications for nutrient intakes when **specific individual staple grains are emphasized**; or when **Grains** are **replaced** with **other staple carbohydrate foods** (i.e., Starchy Vegetables; Beans, Peas, and Lentils; starchy Red and Orange vegetables)?

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Grains		Other Staple Carbohydrate Foods		
Whole Grains	Amaranth Barley, whole Barley flour/meal (whole) Brown rice Brown rice flour Buckwheat groats Bulgur Corn, whole grain Corn meal or flour (whole) Millet Oats Oat flour / Oatmeal Popcorn Quinoa Rye, whole grain Rye flour (dark) Triticale Wheat Whole wheat flour Whole grain cracked Wheat Wild rice	**Starchy Vegetables**	Breadfruit Burdock Cassava (Yuca blanca) Corn, sweet (raw) Dasheen Green bananas Hominy Jicama (Yam beans) Lima beans, immature Lotus root Parsnips	Immature peas (e.g., cowpeas, blackeye, green, pigeon peas) Plantains Salsify Tannier Tapioca Taro Water Chestnuts White potatoes White potato flour/flakes Yams
Refined Grains	Barley (pearled) Barley flour (pearled) Bran (all grains) Corn flour/meal (degermed) Corn grits Cream of wheat Couscous Farina Masa Oat four (debranned) Rice (milled, not whole grain) Rye flour (light/medium) Semolina Wheat flour Cracked wheat Wheat germ	**Beans, Peas, & Lentils**	**Beans**: Black, brown, bayo, calico, carob, garbanzo (chickpeas), fava, kidney, lima (mature), mung, navy, pink, pinto, red, soybeans, white	**Peas**: Blackeye peas, Cowpeas, Split peas **Lentils**
		Red & Orange Vegetables	**Calabaza** **Pumpkin** **Sweet potatoes** **Winter squash**	Carrots Carrot Juice Peppers, red/orange/yellow Tomatoes, raw/cooked/canned Tomatoes, dried Tomato juice Tomato paste/puree/sauce

New Protocol: Staple Carbohydrates
Summary of Analyses (Objective 1 of 5)

Objective 1: Analysis to understand the nutritional composition and contribution of staple carbohydrates

1. Understand the nutritional composition of the food group in the pattern
2. Understand the nutritional contribution of the food group compared to current intakes
3. Understand the nutritional composition of the specific individual grains

Partial draft objective:

Objective 1: Identify the nutritional composition and contribution of the Grains and other staple carbohydrate foods in current dietary intakes, relative to the 2020 Healthy U.S.-Style Dietary Pattern goals. Compare the nutritional composition of specific individual Grains across subgroups (i.e., Whole Grains; Refined Grains) and by fortification/enrichment levels. This comparison is proposed to understand the nutrient intake implications of consuming specific individual grains over others and in relation to the nutrient profile of the Grains food group overall.

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Objective 2: Analysis to understand the nutritional composition and contribution of staple carbohydrates

1. Compare the nutritional composition of nutrient profiles along and within the pattern for the…

…Grains food group

…Starchy Vegetables; and Beans, Peas, and Lentils subgroups

…starchy Red and Orange vegetables

Partial draft objective:

Objective 2: Compare the nutrient profiles of the Grains food group to the nutrient profiles of the Starchy Vegetable subgroup; Beans, Peas, and Lentils subgroup; and starchy vegetables from the Red and Orange vegetable subgroup (i.e., calabaza, pumpkin, winter squash, and sweet potatoes). Comparisons will begin by analyzing nutrient profiles at 2 oz eq of Grains vs. 1 cup eq of Vegetables. Subsequent analyses may adjust quantities to examine potential equivalencies between these food groups and subgroups. Comparisons proposed to understand the nutrient intake implications of selecting more or less of one group over others.

New Protocol: Staple Carbohydrates
Summary of Analyses (Objective 3 of 5)

Objective 3: Analysis to understand the nutritional contribution of the food group

1. Incrementally reduce quantity of the food group recommended
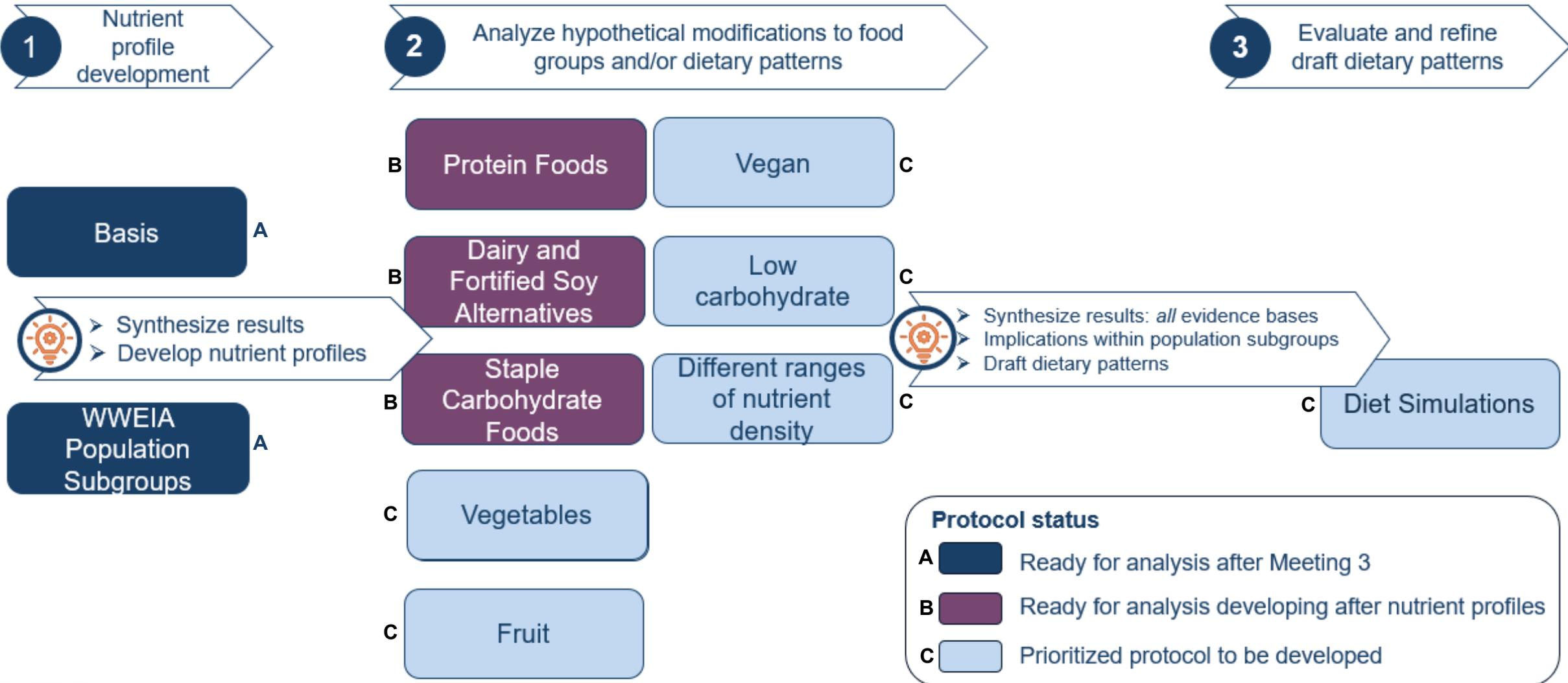2. Evaluate nutrient intake implications of the hypothetical reductions

Partial draft objective:

Objective 3: Evaluate implications on meeting nutritional goals when the Grains subgroups (i.e., Whole Grains; Refined Grains) quantities in the 2020 Healthy U.S.-Style Dietary Pattern are reduced by ¼ or ½ oz eq increments, starting with the current quantity for a given calorie level in the pattern and reducing it to 0. Each Grains subgroup will be modified individually… then simultaneously

New Protocol: Staple Carbohydrates
Summary of Analyses (Objective 4 of 5)

Objective 4: Analyses modifying food group quantities and proportions

- Reduce (Refined **or** Whole) Grains **+** increase Starchy Vegetables
- Reduce (Refined **or** Whole) Grains **+** increase Beans, Peas, Lentils
- Reduce (Refined **or** Whole) Grains **+** increase starchy Red & Orange
- Reduce (Refined **or** Whole) Grains **+** increase Starchy Vegetables + starchy Red & Orange
- Reduce (Refined **or** Whole) Grains **+** increase all

Partial draft objective:

Objective 4: Evaluate implications on meeting nutritional goals when the proportions of Grains subgroups (i.e., Refined Grains; Whole Grains) in the 2020 Healthy U.S.-Style Dietary Pattern are reduced by ½ or 1 oz eq increments and the proportions of other staple carbohydrate foods (i.e., Starchy Vegetables; Beans, Peas, and Lentils; starchy Red and Orange vegetables) are increased by ¼ or ½ cup eq increments. Each Grains subgroup will be modified individually…

Note: reducing Whole Grains will be examined despite evidence supporting increased consumption to understand nutrient intake implications if whole grains are not consumed in various foodways or are not readily accessible in certain communities

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New Protocol: Staple Carbohydrates
Summary of Analyses (Objective 5 of 5)

Objective 5: Analyses modifying food group quantities and proportions

- Reduce Grains **+** increase Starchy Vegetables
- Reduce Grains **+** increase Beans, Peas, Lentils
- Reduce Grains **+** increase starchy Red & Orange
- Reduce Grains **+** increase Starchy Vegetables + starchy Red & Orange
- Reduce Grains **+** increase all

Partial draft objective:

Objective 5: Evaluate implications on meeting nutritional goals when both Grains subgroups (i.e., Whole Grains; Refined Grains) in the 2020 Healthy U.S.-Style Dietary Pattern are reduced by 1 or 2 oz eq increments and the proportions of other staple carbohydrates (i.e., Starchy Vegetables; Beans, Peas, and Lentils; starchy Red and Orange vegetables; Starchy Vegetables plus starchy Red and Orange vegetables) are increased by ½ to 1 cup eq increments.

Next Steps

Next Steps for Food Pattern Modeling

1 Nutrient profile development

2 Analyze hypothetical modifications to food groups and/or dietary patterns

3 Evaluate and refine draft dietary patterns

Basis **A**

➢ Synthesize results
➢ Develop nutrient profiles

WWEIA Population Subgroups **A**

B Protein Foods

C Vegan

B Dairy and Fortified Soy Alternatives

C Low carbohydrate

➢ Synthesize results: *all* evidence bases
➢ Implications within population subgroups
➢ Draft dietary patterns

B Staple Carbohydrate Foods

C Different ranges of nutrient density

C Diet Simulations

C Vegetables

C Fruit

Protocol status

A ☐ Ready for analysis after Meeting 3

B ☐ Ready for analysis developing after nutrient profiles

C ☐ Prioritized protocol to be developed

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Committee Discussion

Meeting Break

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Diet in Pregnancy and Birth through Adolescence

Subcommittee Chair: Jennifer Orlet Fisher, PhD

Additional Presenter: Aline Andres, PhD, RD

September 13, 2023

2025 Dietary Guidelines Advisory Committee:
Diet in Pregnancy and Birth through Adolescence Subcommittee

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2025 Dietary Guidelines Advisory Committee:
Diet in Pregnancy and Birth through Adolescence Subcommittee

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Progress Since Meeting 2

Systematic Reviews Under Way

- Repeated exposure to food and:
  - Food acceptance
- Complementary Feeding and:
  - Growth, body composition, and risk of obesity
- Parental and caregiver feeding styles and practices during childhood and adolescence and:
  - Growth, body composition, and risk of obesity;
  - Consuming a dietary pattern that is more aligned with the Dietary Guidelines for Americans
- Dietary patterns consumed during pregnancy and:
  - Risk of gestational diabetes mellitus;
  - Risk of hypertensive disorders of pregnancy;
  - Gestational age at birth;
  - Birth weight

Progress Since Meeting 2: Evidence Synthesis Under Way

Systematic Reviews Under Way

- **Repeated exposure to food and:**
  - **Food acceptance**
- Complementary Feeding and:
  - Growth, body composition, and risk of obesity
- Parental and caregiver feeding styles and practices during childhood and adolescence and:
  - Growth, body composition, and risk of obesity;
  - Consuming a dietary pattern that is more aligned with the Dietary Guidelines for Americans
- **Dietary patterns consumed during pregnancy and:**
  - **Risk of gestational diabetes mellitus;**
  - Risk of hypertensive disorders of pregnancy;
  - Gestational age at birth;
  - Birth weight

Evidence Review

- Review protocol
- Description of the studies
- Synthesis of the evidence
- Grading of the evidence

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Repeated Exposure and Food Acceptance

Repeated exposure to food and food acceptance: Protocol (Analytic Framework)

Approach: Update to Existing NESR Systematic Review

Population	Intervention/ exposure	Comparator	Outcome	Key confounders
Infants and toddlers (birth up to 24 months) Young children (2 up to 6 years)	Repeated exposure to food or food-type – child is exposed to a target food multiple times	• Pre-exposure versus post-exposure (within-subject) • No exposure versus exposure (between subjects) • Taste exposure versus non-taste exposure	Food acceptance of the exposed food (in infants, toddlers, young children, school-aged children) • Amount or rate of target or novel food consumed • Length of feeding of target or novel food during infant-led feeding • Facial or body response (expressions made during feeding/eating of target or novel food) • Caregiver's or investigator's perception of infants' enjoyment of the target or novel food • Willingness to try or taste the target or novel food • Hedonic responses • Child's verbal indication of liking of food	• Race and/or ethnicity • Socioeconomic position (SEP) and/or parental education

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Repeated exposure to food and food acceptance: Protocol

- **Electronic data bases searched:**
  - PubMed, Embase, CINAHL, Scopus

- This review updates the systematic review conducted as part of the Pregnancy and Birth to 24 Months Project

Population	Publication date	Update/new review
Birth to 24 month	January 1980 – May 31, 2023*	Update
2 up to 6 y	January 2000 – May 31, 2023	New review

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

Repeated exposure to food and food acceptance: Description of the evidence (Birth to 24 months) - Population

20 articles from 19 trials: 16 RCT, 3 NRCT

Population

- Sample size: n=20-267, n<50 (8 articles), n=50-100 (9), n>100 (3)

- Countries: UK (9 articles); U.S. (6); UK, Greece and Portugal (1); France; Germany; Netherlands; Norway (1 each)

- Age: Mean age ranged from 27-32 years (caregiver), 4.6 months - 24 months (child)

- Socioeconomic position: 11 out of 20 articles reported parental education and/or household income
  - 7 of 11 had ≥50% with college degree, 3 of 11 had >40% with lower income, 1 article reported 54% of sample working outside the home

- Race and/or ethnicity: 7 out of 20 articles reported race and/or ethnicity
  - 4 of 7 had majority (>80%) White participants, 3 of 7 had more diverse samples (<50% White, 10-60% Black, 2-27% Hispanic, 1-18% other)

Repeated exposure to food and food acceptance: Description of the evidence (Birth to 24 months) - Intervention/ Comparator & Outcomes

20 articles from 19 trials: 16 RCT, 3 NRCT

Intervention & Comparator

- <u>Type of exposure</u>: Taste exposure (14 articles), Non-taste exposure (3), Taste and non-taste exposure (3)

- <u>Number, frequency, and duration of exposure</u>: 5-16 exposures; 1x/day to 2x/week; 8 to 28 days

- <u>Number and types of foods</u>: Single or multiple vegetables (20 articles) and fruits (8 articles)

- <u>Comparator</u>: Pre-exposure vs post-exposure (14 articles), no exposure versus exposure (8)

Outcomes

- Food acceptance: Intake (18 articles), perceived liking (11), willingness to taste (4), rate of feed (4), duration of feed (2), facial/body responses (1)

Repeated exposure to food and food acceptance: Birth to 24 months - Vegetables

Conclusion Statement and Grade	Moderate evidence indicates that repeated taste exposure to a single or multiple novel or familiar vegetable(s) is likely to increase acceptance of the target vegetable(s) in infants and toddlers 4 to 24 months old. (Grade: Moderate)	Moderate evidence indicates that repeated taste exposure to a vegetable is likely to increase acceptance of a different vegetable, but not a fruit, in infants and toddlers 4 to 24 months old. (Grade: Moderate)
Body of evidence	12 articles: 10 RCT, 2 NRCT	11 articles: 10 RCT, 1 NRCT
Consistency	Studies were consistent in direction, 12 of 12 demonstrated effects on 1 or more indicators of acceptance	Studies were reasonably consistent in direction, 8 of 11 demonstrated effects on 1 or more indicators of acceptance
Precision	Some concerns due to small sample sizes and lack of power analysis	Some concerns due to small sample sizes and lack of power analysis
Risk of bias	Some concerns due to lack of reporting of randomization process, pre-analysis plan, and potential for confounding.	Some concerns due to lack of reporting of randomization process, pre analysis plan, and potential for confounding.
Directness	Studies were directly designed to answer the question	Studies were directly designed to answer the question
Generalizability	Some concerns due to a lack of diversity in participant characteristics; most participants were from relatively high socioeconomic backgrounds, with little racial/ethnic diversity reported.	Some concerns due to a lack of diversity in participant characteristics; most participants were from relatively high socioeconomic backgrounds, with little racial/ethnic diversity reported.

Repeated exposure to food and food acceptance: Birth to 24 months - Fruits

Conclusion Statements and Grades	Moderate evidence indicates that repeated taste exposure to a single fruit is likely to increase acceptance of the target fruit in infants and toddlers 4 to 24 months old. (Grade: Moderate)	Limited evidence suggests that repeated taste exposure to a fruit is likely to increase acceptance of a different fruit, but not a vegetable, in infants and toddlers 4 to 24 months old. (Grade: Limited)
Body of evidence	4 articles: 3 RCT, 1 NRCT	3 articles: 2 RCT, 1 NRCT
Consistency	Studies were consistent in direction; 4 of 4 studies demonstrated effects on 1 or more indicators of acceptance	Studies lacked consistency
Precision	Some concerns due to small sample sizes and lack of power analysis	Some concerns due to small sample sizes and lack of power analysis
Risk of bias	Some concerns due to lack of reporting of randomization process, pre-analysis plan and potential for confounding.	Some concerns due to lack of reporting of randomization process, pre analysis plan and potential for confounding.
Directness	Studies were directly designed to answer the question	Studies were directly designed to answer the question
Generalizability	Some concerns due to a lack of diversity in participant characteristics; most participants were from relatively high socioeconomic backgrounds, with little racial/ethnic diversity reported.	Some concerns due to a lack of diversity in participant characteristics; most participants were from relatively high socioeconomic backgrounds, with little racial/ethnic diversity reported

Repeated exposure to food and food acceptance: Birth to 24 months - Repeated Non-Taste Exposure

Conclusion Statement and Grade	Insufficient evidence is available to determine the effect of <u>repeated non-taste exposure</u>, either alone or together with taste exposure, on food acceptance in infants and toddlers 4 to 24 months old. (Grade: Grade not assignable)
Body of evidence	6 articles: 4 RCT, 1 NRCT
Consistency	Studies were less consistent in direction
Precision	Some concerns due to small sample sizes and lack of power analysis
Risk of bias	Some concerns due to lack of reporting of randomization process, pre analysis plan, issues with outcome measurement, and potential for confounding
Directness	Some concerns with the way of testing the effects of repeated non-taste exposure in the body of evidence
Generalizability	Some concerns due to a lack of diversity in participant characteristics; most participants were from relatively high socioeconomic backgrounds, with little racial/ethnic diversity reported.

Dietary Patterns During Pregnancy

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Approach: Update to Existing NESR Systematic Review

Population	Intervention/ Exposure	Comparator	Outcome	Key confounders
Individuals during pregnancy	Consumption of a dietary pattern	Different dietary pattern(s) Different adherence/ consumption levels to the same dietary pattern	In individuals during pregnancy: • Hemoglobin A1C • Fasting blood glucose • Glucose tolerance/insulin resistance • Gestational diabetes mellitus	• Age • Physical activity • Race and/or ethnicity • Socioeconomic position • Anthropometry (pre-pregnancy BMI) • Smoking • Parity • History of gestational diabetes mellitus

Synthesis organization:

I. **Population**: Individuals during pregnancy

    I. **Outcome:** Hemoglobin A1C; Fasting blood glucose; Glucose tolerance/insulin resistance; Gestational diabetes mellitus (GDM)

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.

Dietary patterns during pregnancy and gestational diabetes mellitus: Protocol (Inclusion/Exclusion criteria)

	Inclusion Criteria	Exclusion Criteria
Intervention/ exposure	• Studies that examine consumption of and/or adherence to a dietary pattern [i.e., the quantities, proportions, variety, or combination of different foods, drinks, and nutrients (when available) in diets, and the frequency with which they are habitually consumed], including, at a minimum, a description of the foods and beverages in the pattern of each intervention/exposure and comparator group. • Dietary patterns may be measured or derived using a variety of approaches, such as adherence to a priori patterns (indices/scores), data driven patterns (factor or cluster analysis), reduced rank regression, or other methods, including clinical trials • Multi-component intervention in which the isolated effect of the dietary pattern on the outcome(s) of interest is provided or can be determined	• Studies that do not provide a description of the dietary pattern, which at minimum, must include the foods and beverages in the pattern (i.e., studies that examine a labeled dietary pattern, but do not describe the foods and beverages consumed in each intervention/exposure and comparator group) • Multi-component intervention in which the isolated effect of the dietary pattern on the outcome(s) of interest is not analyzed or cannot be determined (e.g., due to multiple intervention components within groups)
Comparator	• Consumption of and/or adherence to a different dietary pattern • Different levels of consumption of and/or adherence to a dietary pattern	• Consumption of and/or adherence to a similar dietary pattern of which only a specific component or food source differs between groups
Confounders	• Studies that control for at least one of the key confounders listed in the analytic framework	• Studies that do not control for any of the key confounders listed in the analytic framework

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Dietary patterns during pregnancy and gestational diabetes mellitus: Protocol

- **Electronic data bases searched**:
  - PubMed, Embase, Cochrane, CINAHL

- This review updates the systematic review conducted as part of the Pregnancy and Birth to 24 Months Project

Publication date	Update or New review
January 1980 – May 31, 2023*	Update

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

Dietary patterns during pregnancy and gestational diabetes mellitus: Description of the evidence - Population

- 45 included articles from 28 prospective cohort studies (PCS), 6 randomized controlled trials (RCT), 1 non-randomized controlled trial (NRCT), 1 retrospective cohort study (RCS)

Population

- <u>Sample size</u>: Analytic N=40 to 974 for intervention studies; Analytic N=103 to 8,359 for observational studies

- <u>Country</u>: U.S. (11 articles); China (10); Spain (7); Australia, Brazil, Canada, Finland, Greece, Iceland, Iran, Malaysia, Norway, U.K., group of countries in the Mediterranean region (1-3 each)

- <u>Age</u>: Mean age ranged from 26-34y

- <u>Pre-pregnancy BMI</u>: Most articles enrolled participants with majority or mean BMI <25 kg/m^2

- <u>Race and/or ethnicity</u>: 1/3 of articles did not report race and/or ethnicity data
  - White: 1/3 of articles reported predominantly White participants
  - Asian: 8 articles reported 1-~44% Asian participants; 6 articles reported predominantly Asian participants
  - Hispanic: 12 articles reported 6-43% Hispanic participants; 1 article reported 100% Hispanic participants
  - Black: 10 articles reported 2-~30% Black participants

- <u>Socioeconomic position</u>: Most articles reported majority participants were well educated, employed, and/or >"middle" class income

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Dietary patterns during pregnancy and gestational diabetes mellitus: Description of the Evidence – I/E and Outcome

- 45 included articles from 28 prospective cohort studies (PCS), 6 randomized controlled trials (RCT), 1 non-randomized controlled trial (NRCT), 1 retrospective cohort study (RCS)

Intervention/Exposure

- DP approaches: Index/score (21 articles); Factor/cluster analysis (16); Experimental diet (8)

Outcome

- Risk of GDM or dysglycaemia (38 articles); Fasting blood glucose (10); Insulin resistance and glucose tolerance (8 each); HbA1C (6)

- >1/2 of articles reported GDM incidence >10%. Of those, almost 1/2 reported GDM incidence of >20%

Dietary patterns during pregnancy and gestational diabetes mellitus: Evidence Synthesis

Conclusion Statement and Grade	Limited evidence suggests that dietary patterns during pregnancy are associated with lower risk of GDM. These patterns are characterized by: • higher intakes of vegetables, fruits, nuts and seeds, whole grains, legumes, fish/seafood, and unsaturated fats • lower intakes of red and processed meat, added sugars, and saturated fats (Grade: Limited)
Body of Evidence	45 articles: 28 PCS, 6 RCT, 1 NRCT, 1 RCS

Evidence Synthesis	• 24 DP (23 articles, 17 unique cohorts/trials) were associated with lower risk of a GDM outcome
	  o DP characterized by intakes of food groups reflected in the conclusion statement
	• 10 DP (8 articles, 8 unique cohorts) were associated with higher risk of a GDM outcome
	  o DP tended to be less aligned with the intakes of food groups in the conclusion statement
	• 54 DP (36 articles, 30 unique cohorts/trials) showed no statistically significant association with a GDM outcome
	  o Results tended to be in the same direction as the statistically significant results

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Dietary patterns during pregnancy and gestational diabetes mellitus: Conclusion Statement and Grade

Conclusion Statement and Grade	Limited evidence suggests that dietary patterns during pregnancy are associated with lower risk of GDM. These patterns are characterized by: • higher intakes of vegetables, fruits, nuts and seeds, whole grains, legumes, fish/seafood, and unsaturated fats • lower intakes of red and processed meat, added sugars, and saturated fats (Grade: Limited)
Body of evidence	45 articles: 28 PCS, 6 RCT, 1 NRCT, 1 RCS
Consistency	Results were somewhat consistent in direction and magnitude of effect across significant and non-significant results. Some of the inconsistencies could be explained by methodological differences.
Precision	Results were limited in precision, with a small number of studies demonstrating sufficient power, as well as wide variance around the effect estimates.
Risk of bias	Most studies had overall high risk of bias due to confounding, deviations from intended interventions, post-exposure interventions, exposure assessment methods, selection bias, missing data, and selective reporting of the results.
Directness	Majority of studies were designed to directly examine the relationship between dietary patterns and gestational diabetes mellitus.
Generalizability	Limited generalizability to the U.S. population when considering country, socioeconomic position, and DPs studied. Among studies in the U.S. and U.K., there was some racial and ethnic diversity.

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Next Steps

- Protocols presented today will be available at DietaryGuidelines.gov in the next month
- Continue work on systematic reviews:
  - Repeated exposure to foods and:
    - o Food acceptance
  - Complementary Feeding and:
    - o Growth, body composition, and risk of obesity
  - Parental and caregiver feeding styles and practices during childhood and adolescence and:
    - o Growth, body composition, and risk of obesity;
    - o Consuming a dietary pattern that is more aligned with the Dietary Guidelines for Americans
  - Dietary patterns consumed during pregnancy and:
    - o Risk of hypertensive disorders of pregnancy;
    - o Gestational age at birth;
    - o Birth weight

Thank you!

Committee Discussion

Dietary Patterns and Specific Dietary Pattern Components Across Life Stages

Subcommittee Chair: Deanna Hoelscher, PhD, RDN, LD, CNS, FISBNPA

Additional Presenters: Sarah Booth, PhD, Teresa Fung, ScD, RD, Christopher Gardner, PhD, Andrea Deierlein, PhD, MPH, MS

September 13, 2023

2025 Dietary Guidelines Advisory Committee: Dietary Patterns and Specific Dietary Pattern Components Across Life Stages Subcommittee

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2025 Dietary Guidelines Advisory Committee: Dietary Patterns and Specific Dietary Pattern Components Across Life Stages Subcommittee

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Progress Since Meeting 2: Dietary Patterns

New Systematic Review Protocols

- Dietary patterns and risk of **cognitive decline, dementia, and Alzheimer's disease**
- Dietary patterns and **bone health**

Systematic Reviews Under Way

- Dietary patterns and **growth, body composition, and risk of obesity**
- Dietary patterns and risk of **cardiovascular disease**
- Dietary patterns and risk of **type 2 diabetes**
- Dietary patterns with **varying amounts of ultra-processed foods** and **growth, body composition, and risk of obesity**
- Dietary patterns and risk of **breast cancer**
- Dietary patterns and risk of **colorectal cancer**
- Dietary patterns and risk of **prostate cancer**

Deprioritized Systematic Review

- Dietary patterns and risk of **depression**

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Progress Since Meeting 2: Specific Dietary Pattern Components

New Systematic Review Protocols

- **Food sources of saturated fat** and risk of **cardiovascular disease**

Systematic Reviews Under Way

- Reviews with **growth, body composition, and risk of obesity** outcomes
  - Dairy milk and milk alternatives
  - 100% juice
  - Sugar-sweetened beverages (SSB)
  - Low- and no-calorie sweetened beverages (LNCSB)
  - Coffee and/or tea
- Reviews with **risk of type 2 diabetes** outcomes
  - Dairy milk and milk alternatives
  - 100% juice
  - Sugar-sweetened beverages (SSB)
  - Low- and no-calorie sweetened beverages (LNCSB)
  - Coffee and/or tea

Protocol Revisions

Protocol Revisions: Reviews that examine "Dietary Patterns"

Date	Protocol revision	Rationale	Systematic reviews that the revision applies to
July 2023	Inclusion/exclusion criteria for confounders was added: • Studies must control for at least one key confounder listed in the analytic framework to be included.	This change was made to focus on a stronger body of evidence.	• Dietary patterns and o cardiovascular disease o type 2 diabetes o growth, body composition, and risk of obesity o breast, colorectal and prostate cancer o gestational diabetes mellitus* o hypertensive disorders of pregnancy* o gestational age* o birth weight* • Dietary patterns with varying amount of ultra-processed foods and growth, body composition, and risk of obesity
July 2023	Inclusion/exclusion criteria for the intervention/exposure and comparator were clarified: • Studies must describe the foods and beverages in <u>each</u> intervention/exposure and comparator group to be included. • Studies that examine consumption of and/or adherence to similar dietary patterns where only a specific component or food source differs between groups are excluded.	These revisions were made to clarify the intent of the intervention/exposure and comparator criteria, but do not represent a change in how the criteria were applied.	

*Reviews conducted by SC2

Protocol Revisions: Reviews with "Growth, Body Composition, and Risk of Obesity" as an outcome

Date	Protocol revision	Rationale	Systematic reviews that the revision applies to
July 2023	Inclusion/exclusion criteria for intervention study duration • Intervention length must be ≥12 weeks for all GBCO outcomes (in children, adolescents, adults, and older adults only).	This change will maintain consistency among all GBCO outcomes. Longer-term studies on weight loss and weight loss maintenance will be prioritized in evidence synthesis.	Beverages and growth, body composition and risk of obesity: • Beverage patterns • Dairy milk and milk alternatives • 100% juice • SSB • LNCSB • Coffee and/or tea Dietary patterns and growth, body composition and risk of obesity Dietary patterns with varying amount of ultra-processed foods and growth, body composition, and risk of obesity
July 2023	Inclusion/exclusion criteria for the outcome of gestational weight gain was revised: • Studies must report adequacy of total gestational weight gain (i.e., in relation to recommendations based on pre-pregnancy BMI) to be included.	This change was made to focus on the most clinically meaningful measure for gestational weight gain.	
Sept. 2023	Exclusion criteria for the outcome of weight loss was added: • Studies that only report unintentional weight loss (i.e., a component of frailty) will be excluded.	This revision was made to clarify the intent of the outcome criteria but does not represent a change in how the criteria were applied.	

Committee Discussion

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New Protocols

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New Protocols for Committee Review

- Dietary patterns and:
  - Risk of cognitive decline, dementia, and Alzheimer's disease
  - Bone health

- Food sources of saturated fat consumed and:
  - Risk of cardiovascular disease

Protocols presented today will be available at DietaryGuidelines.gov in the next month.

Standard Inclusion/Exclusion Criteria

- All protocols presented today use standard criteria for:
    - Study design
    - Population: Study participants
    - Publication status
    - Language
    - Country
    - Population: Health Status

Inclusion/Exclusion Criteria: Standard criteria applied across the Committee's reviews

Category	Inclusion Criteria	Exclusion Criteria
Study design	• Randomized controlled trials • Non-randomized controlled trials[1] • Prospective cohort studies • Retrospective cohort studies • Nested case-control studies	• Uncontrolled trials[2] • Case-control studies • Cross-sectional studies • Ecological studies • Modeling and simulation studies • Narrative reviews • Systematic reviews • Meta-analyses
Population: Study participants	Human	Non-human
Publication status	Peer-reviewed articles published in research journals	Non-peer reviewed articles, unpublished data or manuscripts, pre-prints, reports, and conference abstracts or proceedings
Language	Published in English	Not published in English
Country	Studies conducted in countries classified as high or very high on the Human Development Index the year(s) the intervention/exposure data were collected	Studies conducted in countries classified as medium or low on the Human Development Index the year(s) the intervention/exposure data were collected

[1] Including quasi-experimental and controlled before-and-after studies;
[2] Including uncontrolled before-and-after studies;

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Inclusion/Exclusion Criteria: Standard criteria applied across the Committee's reviews, continued....

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Category	Inclusion Criteria	Exclusion Criteria
Population: Health status This criteria has been tailored to each question to ensure its applicability to the life stages of interest.	Studies that <u>exclusively</u> enroll participants not diagnosed with a disease Studies that enroll <u>some</u> participants: • diagnosed with a disease; • diagnosed with a disorder that affects feeding/eating (e.g., autism, eating disorders) or growth; • with severe undernutrition, failure to thrive/underweight, stunting, or wasting; • born preterm, with low birth weight, and/or small for gestational age; • and/or with the outcome of interest	Studies that <u>exclusively</u> enroll participants: • diagnosed with a disease*; • diagnosed with a disorder that affects feeding/eating (e.g., autism, eating disorders) or growth; • with severe undernutrition, failure to thrive/underweight, stunting, or wasting; • born preterm, with low birth weight, and/or small for gestational age; • and/or with the outcome of interest (i.e., studies that aim to treat participants who have already been diagnosed with the outcome of interest) • who become pregnancy using Assisted Reproductive Technologies; • with multiple gestation pregnancies; • receiving pharmacotherapy to treat obesity; • pre- or post-bariatric surgery • and/or hospitalized for an illness, injury, or surgery *Studies that exclusively enroll participants with obesity will be included

New Protocols: Dietary Patterns
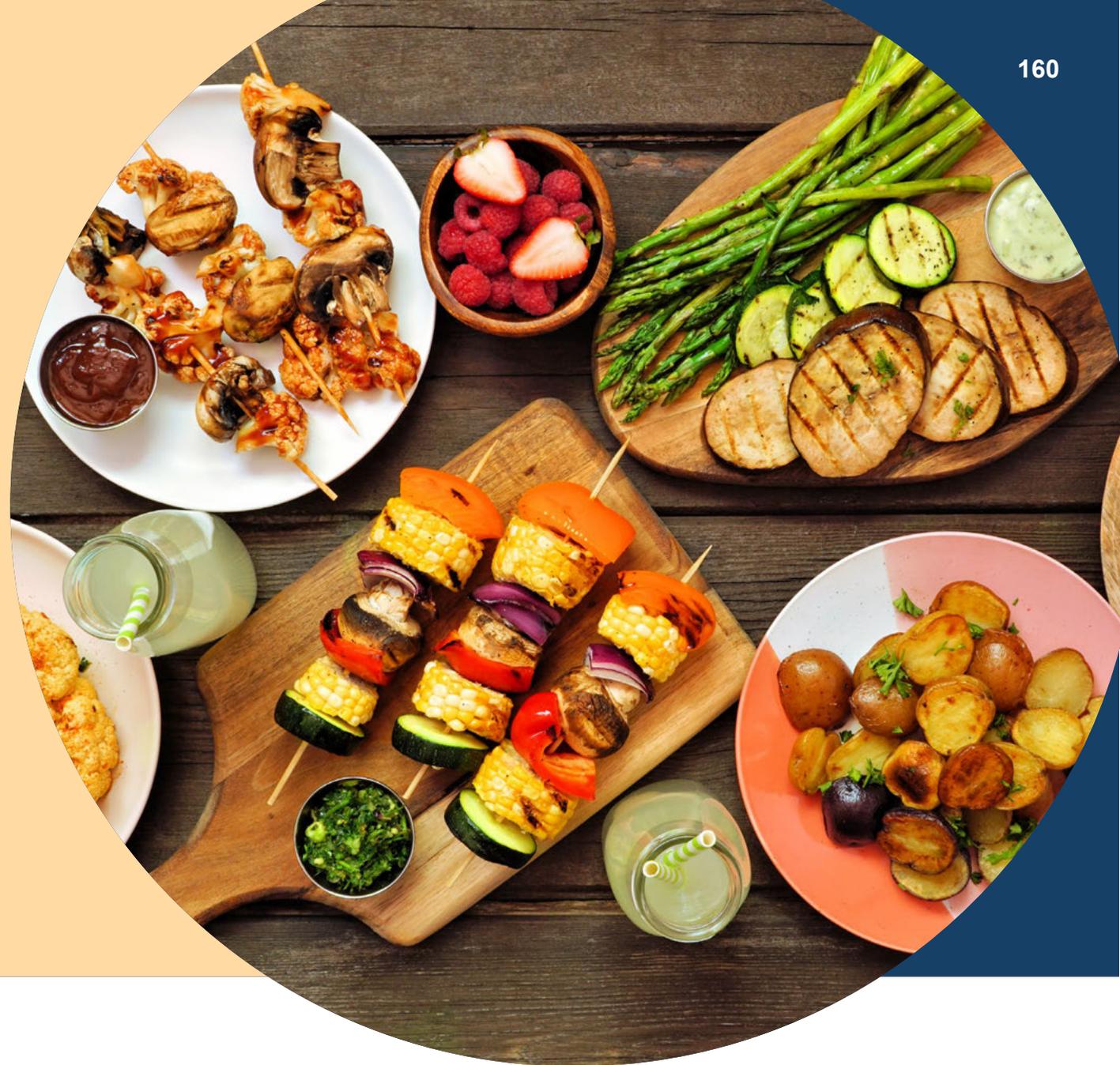
Key Definition: Dietary Patterns

- 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.

Inclusion/Exclusion Criteria: Dietary Patterns

Category	Inclusion Criteria	Exclusion Criteria
Intervention/ Exposure - Dietary Patterns	• Studies that examine consumption of and/or adherence to a dietary pattern [i.e., the quantities, proportions, variety, or combination of different foods, drinks, and nutrients (when available) in diets, and the frequency with which they are habitually consumed], including, at a minimum, a description of the foods and beverages in the pattern of each intervention/exposure and comparator group. • Dietary patterns may be measured or derived using a variety of approaches, such as adherence to a priori patterns (indices/scores), data driven patterns (factor or cluster analysis), reduced rank regression, or other methods, including clinical trials • Multi-component intervention in which the isolated effect of the dietary pattern on the outcome(s) of interest is provided or can be determined	• Studies that do not provide a description of the dietary pattern, which at minimum, must include the foods and beverages in the pattern (i.e., studies that examine a labeled dietary pattern, but do not describe the foods and beverages consumed in each intervention/exposure and comparator group) • Multi-component intervention in which the isolated effect of the dietary pattern on the outcome(s) of interest is not analyzed or cannot be determined (e.g., due to multiple intervention components within groups)
Comparator	• Consumption of and/or adherence to a different dietary pattern • Different levels of consumption of and/or adherence to a dietary pattern	• Consumption of and/or adherence to a similar dietary pattern of which only a specific component or food source differs between groups

Approach: Update to Existing NESR Systematic Review

Population	Intervention/ Exposure	Comparator	Outcome	Key Confounders
Children and adolescents (2 up to 19 years) Adults and older adults (19 years and older)	Consumption of a dietary pattern	Different dietary pattern(s) Different adherence/ consumption levels to the same dietary pattern	In adults and older adults: • Cognitive decline • Mild cognitive impairment • Dementia • Alzheimer's disease	• Sex • Age • Physical activity • Anthropometry • Race and/or ethnicity • Socioeconomic position • Education • Smoking • Alcohol intake

Inclusion/Exclusion Criteria: What is the relationship between dietary patterns consumed and **risk of cognitive decline, dementia, and Alzheimer's disease?**

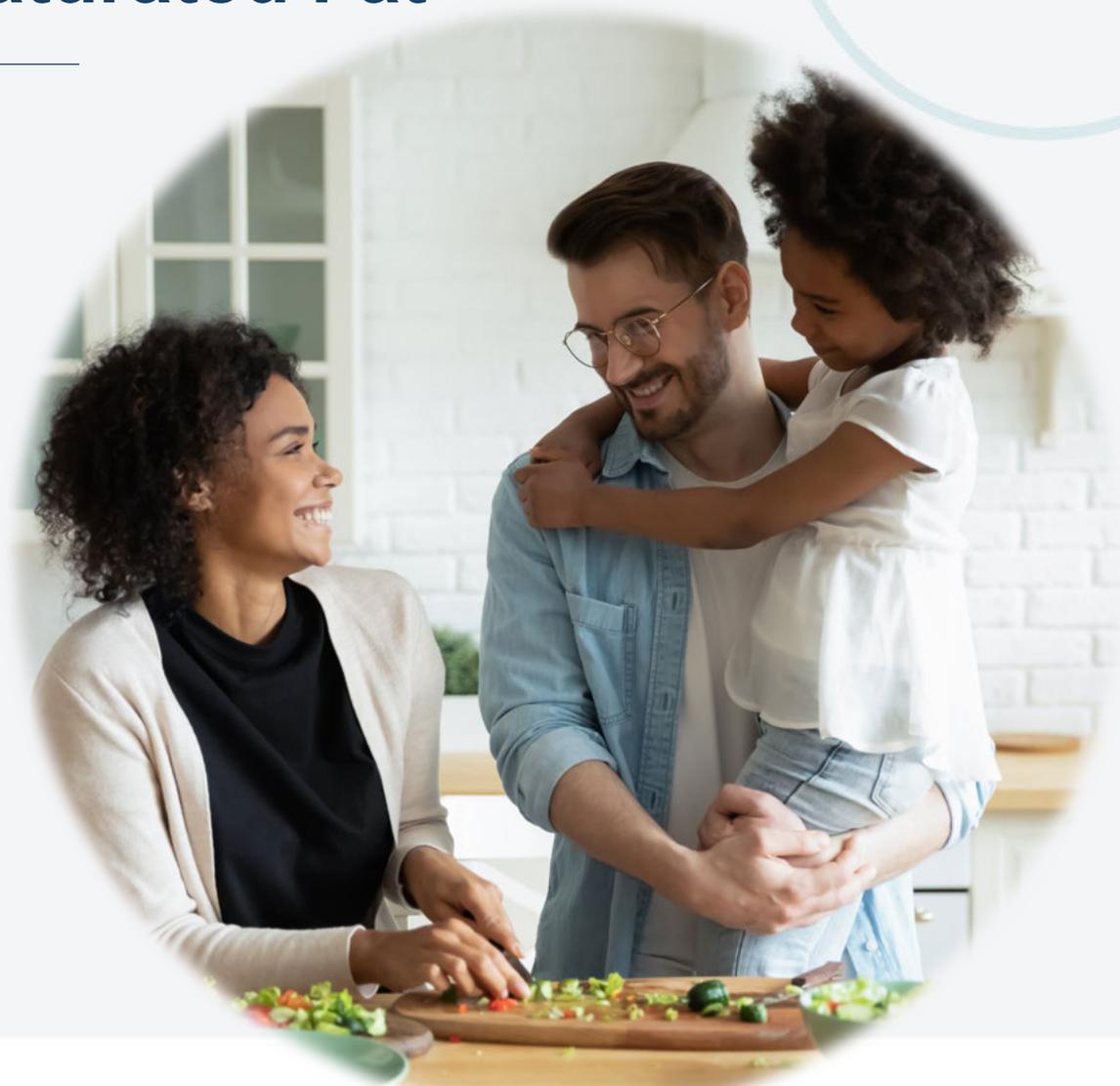| Category	Inclusion Criteria	Exclusion Criteria
Publication Date	January 1980—Present	Before January 1980
Study Duration	Intervention length ≥12 weeks	Intervention length <12 weeks
Size of Study Groups	For intervention studies: • ≥30 participants per study group for between-subject analyses, • or a power calculation indicating that the study is appropriately powered for the outcome(s) of interest	For intervention studies: • <30 participants per study group for between-subject analyses, • and no power calculation indicating that the study is appropriately powered for the outcome(s) of interest

Analytic Framework: What is the relationship between dietary patterns consumed and **bone health?**

Approach: Update to Existing NESR Systematic Review

Population	Intervention / Exposure	Comparator	Outcome	Key Confounders

Infants and toddlers (Birth up to 24 months)
 	
Children and adolescents (2 up to 19 years)
	Consumption of a dietary pattern	Different dietary pattern(s)
		
		Different adherence/ consumption levels to the same dietary pattern
			In infants and toddlers, children and adolescents:
			• Bone mass
			  • Bone mineral density
			  • Bone mineral content
			• Fracture
			• Rickets
				• Sex
				• Age
				• Anthropometry
				• Socioeconomic position
				• Race and/or ethnicity
				• Physical activity
				• Smoking (adults, older adults)
				• Alcohol intake (adults, older adults)
				• Estrogen use (adults, older adults)

Adults and older adults (19 years and older)			In adults and older adults:
			• Bone mass
			  • Bone mineral density
			  • Bone mineral content
			• Fracture
			• Osteoporosis
			• Osteopenia	

Inclusion/Exclusion Criteria: What is the relationship between dietary patterns consumed and **bone health**?

Category	Inclusion Criteria	Exclusion Criteria
Publication Date	January 2000—Present	Before January 2000
Study Duration	Intervention and follow-up length ≥ 6 months for < 19-year-olds Intervention and follow-up length ≥ 1 year for > 19-year-olds	Intervention and follow up length < 6 months for <19-year-olds Intervention and follow up length < 1 year for > 19-year-olds
Size of Study Groups	For intervention studies: • ≥30 participants per study group for between-subject analyses, • or a power calculation indicating that the study is appropriately powered for the outcome(s) of interest	For intervention studies: • <30 participants per study group for between-subject analyses, • and no power calculation indicating that the study is appropriately powered for the outcome(s) of interest

Committee Discussion

New Protocol: Specific Dietary Pattern Components

Key Definition: Food Sources of Saturated Fat

- Food sources of saturated fatty acids considered include:
  - Animal sources of saturated fat:
    - Meat (e.g., white meat, red meat, processed meat)
    - Dairy products (e.g., milk, cheese, yogurt, ice cream)
    - Solid fats (e.g., butter, ghee, tallow, lard)
  - Plant sources of saturated fat:
    - Tropical food sources/oils (e.g., palm oil, coconut oil, cocoa butter, coconut)
  - Mixed/other food sources (e.g., shortening, baked goods)

Inclusion/Exclusion Criteria: Food Sources of Saturated Fat Intervention/Exposure

Category	Inclusion Criteria	Exclusion Criteria

Intervention/ Exposure	Consumption of food sources of saturated fatty acids:
	• Animal sources of saturated fat
	    ○ Dairy products (e.g., milk, cheese, yogurt, ice cream)
	    ○ Meat (e.g., white meat, red meat, processed meat)
	    ○ Solid fats (e.g., butter, ghee, tallow, lard)
	• Plant sources of saturated fat
	    ○ Tropical food sources / oils (e.g., palm oil, coconut oil, cocoa butter, coconut)
	• Mixed/other food sources (e.g., shortening, baked goods)
		• Studies that do not assess consumption of food source(s) of saturated fat (e.g., studies that only examined biomarkers for consumption)
		• Studies that only assess total saturated fat intake, total fat intake or overall macronutrient composition
		• Studies that only examine % of total energy intake from or grams/day of saturated fatty acids
		• Studies that examine food sources not widely available to U.S. consumers
		• Multi-component interventions that do not isolate the impact of specific source(s) of saturated fat
		• Studies evaluating only non-fat dairy products

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Inclusion/Exclusion Criteria: Food Sources of Saturated Fat Comparator

Category	Inclusion Criteria	Exclusion Criteria
Comparator	• Consumption of a different amount of the same food source (including no consumption) • Consumption of different food source(s) of saturated fatty acids (e.g., dairy vs meat; butter vs chocolate) • Consumption of food source(s) of monounsaturated, and/or polyunsaturated fatty acids (e.g., oils, nuts, fish) • Consumption of similar food sources with different amounts of saturated fatty acids (lean vs. non-lean beef; low-fat vs full-fat dairy; low-fat vs full-fat milk; low consumption vs high consumption of whole milk) • Replacement with food sources of carbohydrate (consider type e.g., simple or complex) and/or protein	• No comparator • Studies that compare to food sources of *trans* fatty acids (e.g., partially hydrogenated oils)

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Analytic Framework: What is the relationship between **food sources of saturated fat** consumed and **risk of cardiovascular disease?**

Approach: New NESR Systematic Review

Population	Intervention/ Exposure	Comparator	Outcome	Key Confounders
Infants and toddlers (Birth up to 24 months) Children and adolescents (2 up to19 years) Adults and older adults (19 years and older)	Consumption of food sources of saturated fatty acids: • Animal sources of saturated fat 　•Dairy products (e.g., milk, cheese, yogurt, ice cream) 　•Meat (e.g., white meat, red meat, processed meat) 　•Solid fats (e.g., butter, ghee, tallow, lard) • Plant sources of saturated fat 　•Tropical food sources / oils (e.g., palm oil, coconut oil, cocoa butter, coconut) • Mixed/other food sources (e.g., Shortening, baked goods)	• Consumption of a different amount of the same food source (including no consumption) • Consumption of different food source(s) of saturated fatty acids • Consumption of similar food sources with different amounts of saturated fatty acids (e.g., low fat dairy vs full fat dairy) • Replacement with food sources of carbohydrate and/or protein • Consumption of food sources of monounsaturated, polyunsaturated fatty acids (e.g., oils, nuts, fish)	In infants, toddlers, children and adolescents, adults and older adults • LDL cholesterol • HDL cholesterol • Triglycerides • Hyperlipidemia • Blood pressure (systolic, diastolic) • Hypertension In adults and older adults • CVD morbidity (e.g., myocardial infarction, coronary heart disease, coronary artery disease, congestive heart failure, peripheral artery disease, stroke) or composite CVD morbidity and CVD mortality • CVD-related mortality	• Sex • Age • Race and/or ethnicity • Socioeconomic position • Physical activity • Anthropometry • Smoking (adults) • Alcohol intake (adults) • Diet quality • Total energy intake

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Inclusion/Exclusion Criteria

Category	Inclusion Criteria	Exclusion Criteria
Publication Date	January 1990 —TBD	Before January 1990, after TBD
Study Duration	Intervention length ≥ 4 weeks	Intervention length < 4 weeks
Population: Health Status	In addition to standard criteria: Studies that <u>exclusively</u> enroll participants with elevated blood pressure or high cholesterol and are evaluating cardiovascular disease endpoint outcomes	In addition to standard criteria: Studies that <u>exclusively</u> enroll participants with elevated blood lipids or blood pressure levels that are or should be treated clinically/pharmacologically and only report on the specific outcome of blood lipids or blood pressure, respectively

Deprioritized Protocol
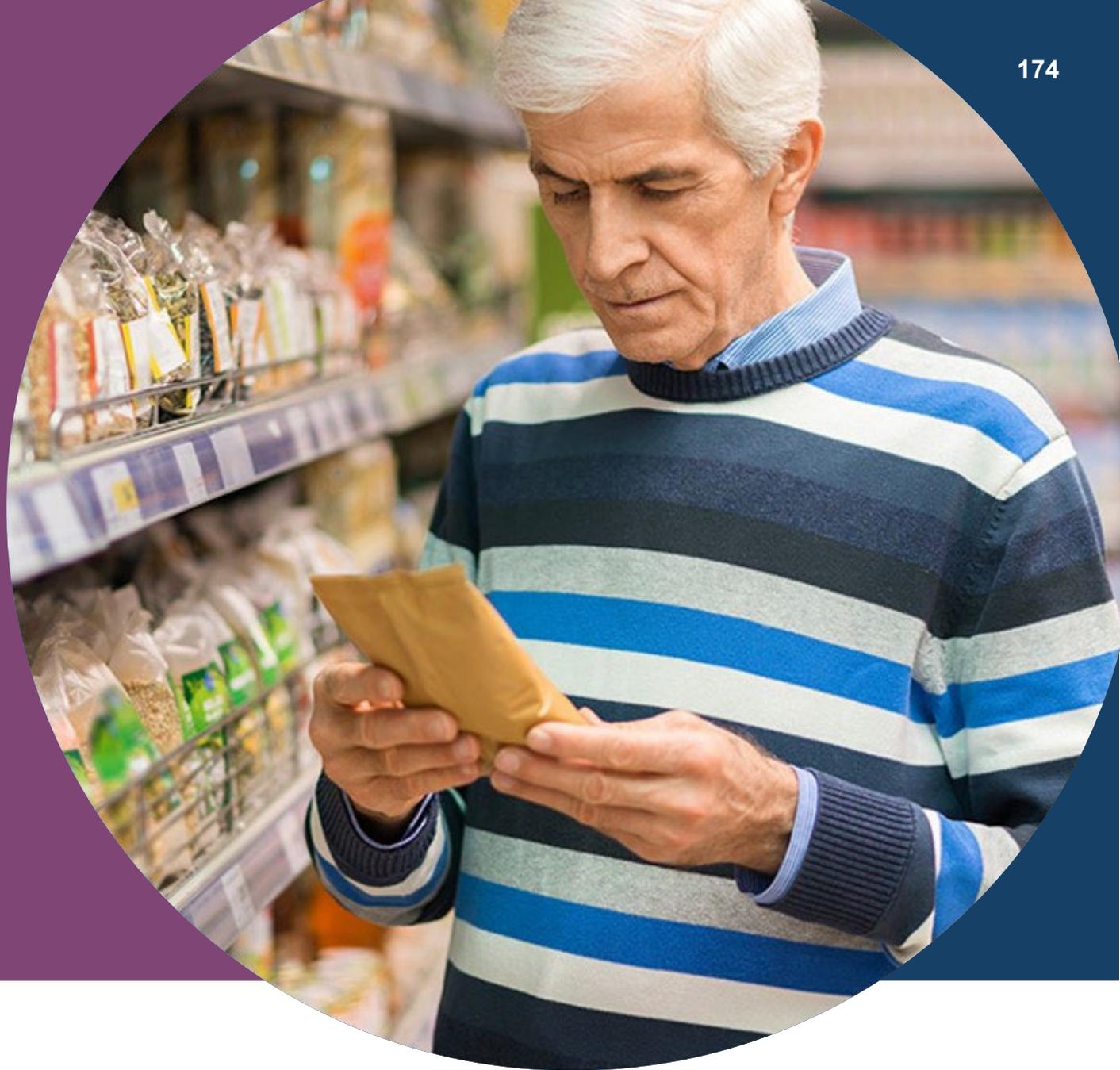
What is the relationship between dietary patterns consumed and **<u>risk of depression</u>?**

- The Subcommittee requested input on this protocol from federal subject matter experts:
  - o National Institutes of Mental Health (NIMH)
  - o Substance Abuse and Mental Health Services Administration (SAMHSA)

- Subject matter experts from NIMH and SAMHSA expressed concerns about reverse causality and/or plausibility of the relationship between dietary patterns and risk of depression.
  - o Given that depression may be episodic and/or not assessed at baseline, it is likely that depression influences dietary patterns.
  - o The Subcommittee and subject matter experts from NIMH and SAMHSA recognized the importance of depression as a public health concern.

Committee Discussion

Evidence Review

Dietary Patterns and Gestational Weight Gain

- The question on the relationship between **dietary patterns** consumed and **gestational weight gain** is part of the dietary patterns and growth, body composition, and risk of obesity question

- Existing NESR systematic review on this topic was completed by the 2020 Dietary Guidelines Advisory Committee

- The 2025 Committee is using Option 1 to update this review: Synthesize evidence from existing NESR review and new search as one body of evidence

Population	Intervention/ Exposure	Comparator	Outcome		Key Confounders
Infants and toddlers (Birth to 24 months)	Consumption of a dietary pattern	Different dietary pattern(s) Different adherence/ consumption levels to the same dietary pattern	**Growth** (in infants; toddlers; children; adolescents)**:** • Height, length/stature-for-age • Weight, weight-for-age • Stunting, failure to thrive, wasting • BMI-for-age, weight-for-length/stature • Body circumferences (arm, neck, thigh) • Head circumference	**Body Composition** (in infants; toddlers; children; adolescents; adults; older adults)**:** • Skinfold thickness • Fat mass, ectopic fat • Fat-free mass or lean mass • Waist circumference, waist-to-hip-ratio	•Sex •Age •Physical activity •Anthropometry at baseline •Race/ethnicity •Socioeconomic position •Smoking (adults, older adults, pregnancy) •Alcohol intake (adults, older adults) •Parity (pregnancy, postpartum) •Diabetes mellitus in the current pregnancy (pregnancy) •Hypertensive disorders in the current pregnancy (pregnancy) •Human milk feeding (postpartum)
Children and adolescents (2 to up to 19 years)			**Growth** (in children; adolescents) **:** list of outcomes as stated above **Body Composition** (in children; adolescents; adults; older adults)**:** list of outcomes as stated above	**Risk of Obesity** (in children; adolescents; adults; older adults)**:** • BMI • Underweight • Normal weight • Overweight and/or obesity • Weight gain	
Adults and older adults (19 years and older)			**Body Composition** (in adults; older adults)**:** list of outcomes as stated above **Risk of Obesity** (in adults; older adults)**:** list of outcomes as stated above • Weight loss, maintenance		
Individuals during pregnancy and during postpartum			**Pregnancy and Postpartum-Related Weight Change:** • Gestational weight gain (during pregnancy) • Postpartum weight change (during postpartum)		

Synthesis organization
- *Population*: Individuals during pregnancy
- *Outcome*: Excessive GWG, Inadequate GWG

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What is the relationship between dietary patterns consumed and growth, body composition, and risk of obesity? Dietary Patterns and GWG: Protocol

- **Electronic data bases searched**:
  - PubMed, Cochrane, Embase, CINAHL

- DP-GWG sub-question updates the systematic review conducted by the 2020 Dietary Guidelines Advisory Committee

Publication date[1,2]	January 2000 – May 2023

[1]The search date range for the full dietary patterns and growth, body composition, and risk of obesity systematic review is Jan 1890-May 2023
[2]The search date range for the existing dietary patterns and gestational weight gain systematic review is Jan 2000-Nov 2019 and the updated search range was from Nov 2019-May 2023

Dietary Patterns and Excessive Gestational Weight Gain: Description of the evidence - Population

- 21 included articles from 3 randomized controlled trials (RCT) and 17 prospective cohort studies (PCS) and 1 retrospective cohort study (RCS)

- **Population**
  - **Sample size**: 114 to 56,629 participants/study
  - **Country**: Conducted in the U.S. (n=4), Spain (n=3), China (n=3), UAE (n=2), Norway (n=2), Australia, Canada, Iceland, Iran, Malaysia, Mexico and Netherlands (1 each)
  - **Age**: Most of the participants were between ~18-35 y
  - **Race and/or ethnicity**: >1/3 of the studies enrolled predominantly or exclusively White participants; ~1/3 of the studies did not report race/ethnicity
  - **Socioeconomic position**: Many studies did not report socioeconomic position. In those that reported, studies generally included participants that were at least middle-class and had university education or higher.
  - **Pre-pregnancy BMI**: 1 trial enrolled participants with overweight or obesity; Mean pre-pregnancy BMI in a few studies were ~25 and ~28 kg/m^2; ~1/3rd of the articles reported that the mean BMI was 18.5-<25 kg/m^2

What is the relationship between dietary patterns consumed and growth, body composition, and risk of obesity?: Conclusion Statement and Grade for DP and Excessive Gestational Weight Gain

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Conclusion Statement and Grade	Limited evidence suggests that dietary patterns during pregnancy may be associated with a lower risk of excessive gestational weight gain. These patterns tend to emphasize higher intakes of fruits, vegetables, whole grains, legumes/nuts, dairy and fish and lower intakes of added sugar. (Grade: Limited)
Body of evidence	21 articles: 3 RCT, 17 PCS and 1 RCS

Evidence Synthesis	• 12 dietary patterns from 9 PCS and 1 RCT were associated with lower risk of excessive gestational weight gain
	  • DP characterized by intakes of food groups reflected in the conclusion statement
	• 1 dietary pattern from 1 PCS was associated with higher risk of excessive gestational weight gain
	• 23 dietary patterns from 10 PCS, 1 RCS and 2 RCT showed no statistically significant association with excessive gestational weight gain
	  • Results tended to be in the same direction as the statistically significant results

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Dietary Patterns and Excessive Gestational Weight Gain: Description of the evidence – Intervention/Exposures and Outcomes

- 21 included articles from 3 randomized controlled trials (RCT) and 17 prospective cohort studies (PCS) and 1 retrospective cohort study (RCS)

- **Intervention/Exposures**
  - o Dietary patterns were assessed using index/score (n=13), factor analysis or principal component analysis (n=6) and experimental diets (n=3)

- **Outcomes**
  - o Excessive total gestational weight gain (in relation to recommendations based on pre-pregnancy BMI)

What is the relationship between dietary patterns consumed and growth, body composition, and risk of obesity?: Conclusion Statement and Grade for DP and excessive gestational weight gain

184

Conclusion Statement and Grade	Limited evidence suggests that dietary patterns during pregnancy may be associated with a lower risk of excessive gestational weight gain. These patterns tend to emphasize higher intakes of fruits, vegetables, whole grains, legumes/nuts, dairy and fish and lower intakes of added sugar. (Grade: Limited)
Body of evidence	21 articles: 3 RCT, 17 PCS and 1 RCS
Consistency	Limited consistency across trials, partially explained by participant pre-pregnancy BMI. Heterogeneity in the dietary patterns across cohort studies. Yet, many showed favorable associations, with non-significant findings pointing to favorable association.
Precision	Few trials, with studies not reporting power for GWG. Despite adequate power and sample size, cohort studies reported results with wide confidence intervals and values close to 1.0.
Risk of bias	Trials generally had high risk of bias with concerns around deviations from intended interventions and selection of reported results. Most cohort studies had high or serious risk of bias because of confounding, missing data and selection of reported results.
Directness	Only one trial was designed to study the effect of dietary patterns on GWG. Most observational studies had GWG as the primary outcome. However, definitions of dietary patterns were not consistent and GWG were measured at different time points.
Generalizability	Only one trial was conducted in the U.S. Although studies conducted in other populations were included, they did not fully reflect the diversity of the U.S. population

Dietary Patterns and Inadequate Gestational Weight Gain: Description of the evidence - Population

- 17 included articles from 2 RCT, 14 PCS and 1 RCS

- **Population**
  - **Sample size**: 170 to 56,629 participants/study
  - **Country**: Conducted in the U.S. (n=3), China (n=3), Spain (n=2), UAE (n=2), Norway (n=2), Australia, Iran, Malaysia, Mexico and Netherlands (1 each)
  - **Age**: Most of the participants were between ~18-35 y
  - **Race and/or ethnicity**: ~1/3 of the studies enrolled predominantly or exclusively White participants; ~1/3 of the studies did not report race/ethnicity.
  - **Socio-economic position**: Many studies did not report socio-economic position. In those that reported, studies generally included participants that were at least middle-class and had university education or higher.
  - **Pre-pregnancy BMI**: Mean pre-pregnancy BMI in a few studies were ~25 and ~28 kg/m^2;1/2 of the articles reported that the mean BMI was 18.5-<25 kg/m^2

Dietary Patterns and Inadequate Gestational Weight Gain: Description of the evidence – Intervention/Exposures and Outcomes

- 17 included articles from 2 RCT, 14 PCS and 1 RCS

- **Intervention/Exposures**
  - o Dietary patterns were assessed using index/score (n=11), factor analysis or principal component analysis (n=5) and experimental diets (n=2)

- **Outcomes**
  - o Inadequate total gestational weight gain (in relation to recommendations based on pre-pregnancy BMI)

What is the relationship between dietary patterns consumed and growth, body composition, and risk of obesity?: Conclusion Statement and Grade for DP and inadequate gestational weight gain

Conclusion Statement and Grade	Insufficient evidence is available to determine the relationship between dietary patterns during pregnancy and inadequate gestational weight gain.
Body of evidence	*17 articles including 2 RCT, 14 prospective cohort studies, 1 retrospective cohort study*
Evidence Synthesis	• 9 dietary patterns from 7 PCS were associated with lower risk of inadequate gestational weight gain • 2 dietary patterns from 1 PCS and 1 RCS were associated with higher risk of inadequate gestational weight gain • 21 dietary patterns from 10 PCS and 2 RCT showed no statistically significant association with excessive gestational weight gain • Overall, there were inconsistencies in the dietary patterns studied, as well as the direction and magnitude of findings

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Next Steps

Continue work on systematic reviews:

Dietary Patterns

o Dietary patterns and growth, body composition, and risk of obesity

o Dietary patterns with varying amounts of ultra-processed foods and growth, body composition, and risk of obesity

o Dietary patterns and risk of type 2 diabetes

o Dietary patterns and risk of cardiovascular disease

o Dietary patterns and risk of cognitive decline, dementia, and Alzheimer's disease

o Dietary patterns and risk of breast cancer

o Dietary patterns and risk of colorectal cancer

o Dietary patterns and risk of prostate cancer

o Dietary patterns and bone health

Specific Dietary Pattern Components

o Beverage patterns and growth, body composition, and risk of obesity

o Dairy milk and milk alternatives and growth, body composition, and risk of obesity

o 100% juice and growth, body composition, and risk of obesity

o Sugar-sweetened beverages and growth, body composition, and risk of obesity

o Low- and no-calorie sweetened beverages and growth, body composition, and risk of obesity

o Coffee and/or tea and growth, body composition, and risk of obesity

o Dairy milk and milk alternatives and risk of type 2 diabetes

o 100% juice and risk of type 2 diabetes

o Sugar-sweetened beverages and risk of type 2 diabetes

o Low- and no-calorie sweetened beverages and risk of type 2 diabetes

o Coffee and/or tea and risk of type 2 diabetes

o Food sources of saturated fat and risk of cardiovascular disease

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Thank you!

Committee Discussion

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Strategies for Individuals and Families Related to Diet Quality and Weight Management

Subcommittee Chair: Cristina Palacios, PhD, MSc

September 13, 2023

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2025 Dietary Guidelines Advisory Committee: Strategies for Individuals and Families Related to Diet Quality and Weight Management Subcommittee

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2025 Dietary Guidelines Advisory Committee: Strategies for Individuals and Families Related to Diet Quality and Weight Management Subcommittee

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Scientific Questions

Protocol Revisions: Reviews with "Growth, Body Composition, and Risk of Obesity" as an outcome

Date	Protocol revision	Rationale	Systematic reviews that the revision applies to
July 2023	Inclusion/exclusion criteria for intervention study duration • Intervention length must be ≥12 weeks for all GBCO outcomes (in children, adolescents, adults, and older adults only).	This change will maintain consistency among all GBCO outcomes. Longer-term studies on weight loss and weight loss maintenance will be prioritized in evidence synthesis.	Frequency of meals and/or snacking and growth, body composition and risk of obesity Portion size and growth, body composition, and risk of obesity
July 2023	Inclusion/exclusion criteria for the outcome of gestational weight gain was revised: • Studies must report adequacy of total gestational weight gain (i.e., in relation to recommendations based on pre-pregnancy BMI) to be included.	This change was made to focus on the most clinically meaningful measure for gestational weight gain.	

Progress Since Meeting 2

Systematic Reviews Under Way

- Frequency of meals and/or snacking and growth, body composition, and risk of obesity

- Frequency of meals and/or snacking and energy intake

- Frequency of meals and/or snacking and diet quality

- Portion size and growth, body composition, and risk of obesity

- Portion size and energy intake

New Evidence Scan Protocols

- Culturally tailored dietary interventions and diet-related psychosocial factors, dietary intake, diet quality, and health outcomes

- Home food availability in adults and diet-related psychosocial factors, dietary intake, diet quality, and health outcomes

Evidence Scan Methodology

Evidence Scan Methodology

o Evaluates volume and characteristics of evidence available on a question or topic

o *Describes* the evidence, rather than working toward a graded conclusion statement

o Established approach used by NESR in previous projects

o **Evidence scans generally include:**
 – Developing a protocol
 – Searching for/screening studies
 – Extracting minimal data

o **They *do not* include:**
 – Extraction of study results
 – Risk of bias assessment
 – Evidence synthesis
 – Graded conclusion statements

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Evidence Scan Methodology

How can evidence scans inform the Committee's work?

- Explore availability and characteristics of studies that have been published on intervention/exposure(s) and outcome(s)

- Can be used as an initial step before conducting a systematic review

- Align food-based strategies work with the health equity focus

- Inform research recommendations on strategies to improve implementation and uptake of DGA recommendations

Draft Protocols

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New Draft Protocols for Committee Review

- Culturally Tailored Dietary Interventions and Diet-Related Psychosocial Factors, Dietary Intake, Diet Quality, and Health Outcomes: An Evidence Scan

- Home Food Availability in Adults and Diet-Related Psychosocial Factors, Dietary Intake, Diet Quality, and Health Outcomes: An Evidence Scan

Protocols presented today will be available at DietaryGuidelines.gov in the next month.

Rationale for Culturally Tailored Dietary Interventions Evidence Scan

- Subcommittee 4 prioritized "cultural and traditional foods" as a topic for review, then refined to "culturally tailored dietary interventions"

- Intervention studies demonstrate approaches taken to tailor dietary recommendations for cultural groups and communities

- This information is important for understanding implementation strategies aligned with the DGA recommendation to, "Customize and enjoy nutrient-dense food and beverage choices to reflect personal preferences, cultural traditions, and budgetary considerations."

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Population	Intervention	Outcome	
Children and adolescents (2 up to 19 years)	Interventions that have been culturally tailored, modified, or adapted to alter intake of foods	Diet-related psychosocial factors, including norms, attitudes, values, and self-efficacy Dietary intake Diet quality Energy intake Risk of CVD • HDL cholesterol • LDL cholesterol • Triglycerides • Hyperlipidemia • Blood pressure (systolic, diastolic) • Hypertension Risk of T2D • Fasting blood glucose • Fasting insulin • Glucose tolerance/insulin resistance • HbA1C • Prediabetes	Growth (in children and adolescents): • Height • Weight • Stunting, failure to thrive, wasting • BMI-for-age • Body circumference (arm, neck, thigh) Body composition (in children and adolescents, adults and older adults): • Skinfold thickness • Fat mass, ectopic fat • Fat-free mass or lean mass • Waist circumference, waist-to-hip-ratio Risk of obesity (in children and adolescents, adults and older adults): • BMI • Underweight • Normal weight • Overweight and/or obesity • Weight gain • Weight loss and maintenance (in adults, older adults)
Adults and older adults (19 years and older)			
Individuals during pregnancy and postpartum		Diet-related psychosocial factors, dietary intake, diet quality, and energy intake as described above. Pregnancy and postpartum-related weight change • Adequacy of total gestational weight gain (i.e., in relation to recommendations based on pre-pregnancy BMI) • Postpartum weight change	

Inclusion/Exclusion Criteria: Culturally Tailored Dietary Interventions

Category	Inclusion Criteria	Exclusion Criteria
Study design	• Randomized controlled trials • Non-randomized controlled trials	• Uncontrolled trials • Case-control studies • Cross-sectional studies • Ecological studies • Narrative reviews • Systematic reviews • Meta-analyses • Modeling and simulation studies • Prospective cohort studies • Retrospective cohort studies • Nested case-control studies
Publication date	• January 1980 – present (TBD)	• Before January 1980, after Month YYYY
Publication status	• Peer-reviewed articles published in research journals	• Non-peer-reviewed articles, unpublished data or manuscripts, pre-prints, reports, editorials, retracted articles, and conference abstracts or proceedings
Language	• Published in English	• Not published in English
Country	• Studies conducted in the United States and/or Canada	• Studies conducted outside of the United States or Canada

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Inclusion/Exclusion Criteria: Culturally Tailored Dietary Interventions

Category	Inclusion Criteria	Exclusion Criteria
Population: Study participants	• Human • People living in the United States or Canada	• Non-human • People living outside of the United States or Canada

Population: Life stage	**Diet-related psychosocial factors, dietary intake; diet quality; energy intake; growth, body composition, and risk of obesity:**
	
	• At intervention and outcome:
	   o Children and adolescents (2 up to 19 years)
	   o Adults and older adults (19 years and older)
	   o Individuals during pregnancy
	   o Individuals during postpartum
	
	Risk of CVD and Risk of T2D:
	
	• At intervention and outcome:
	   o Children and adolescents (2 up to 19 years)
	   o Adults and older adults (19 years and older)
	• At intervention:
	   o Individuals during pregnancy
	   o Individuals during postpartum
		At intervention and outcome:
		• Infants and toddlers (birth up to 24 months)
		
		Risk of CVD and Risk of T2D:
		
		• At outcome:
		   o Individuals during pregnancy
		   o Individuals during postpartum

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Inclusion/Exclusion Criteria: Culturally Tailored Dietary Interventions

Category	Inclusion Criteria	Exclusion Criteria

Population: Health status	• Studies that <u>exclusively</u> enroll participants not diagnosed with a disease
	• Studies that enroll <u>some</u> participants:
	  o diagnosed with a disease;
	  o with severe undernutrition, failure to thrive/underweight, stunting, or wasting;
	  o who became pregnant using Assisted Reproductive Technologies;
	  o with multiple gestation pregnancies;
	  o receiving pharmacotherapy to treat obesity;
	  o pre- or post-bariatric surgery;
	  o and/or hospitalized for an illness, injury, or surgery
		• Studies that <u>exclusively</u> enroll participants:
		  o diagnosed with a disease;
		  o with severe undernutrition, failure to thrive/underweight, stunting, or wasting;
		  o who became pregnant using Assisted Reproductive Technologies;
		  o with multiple gestation pregnancies;
		  o receiving pharmacotherapy to treat obesity;
		  o pre- or post-bariatric surgery;
		  o and/or hospitalized for an illness, injury, or surgery

Intervention	• Interventions that have been culturally tailored, modified, or adapted to alter intake of foods	• Studies with interventions that have not been culturally tailored, modified, or adapted • Studies with interventions that change consumption of a single food
Comparator	• N/A	• No comparator

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Inclusion/Exclusion Criteria: Culturally Tailored Dietary Interventions

Category	Inclusion Criteria		Exclusion Criteria
Outcomes	Dietary intake assessed by intake of foods or food group(s) Diet quality Energy intake Diet-related psychosocial factors, including norms, attitudes, values, and self-efficacy Risk of CVD • HDL cholesterol • LDL cholesterol • Triglycerides • Hyperlipidemia • Blood pressure (systolic, diastolic) • Hypertension Risk of T2D • Fasting blood glucose • Fasting insulin • Glucose tolerance/insulin resistance • HbA1C • Prediabetes	Growth (in children, adolescents) • Height • Weight • Stunting, failure to thrive, wasting • BMI-for-age • Body circumferences (arm, neck, thigh) Body composition (in children, adolescents, adults, older adults) • Skinfold thickness • Fat mass, ectopic fat • Fat-free mass, lean mass • Waist circumference, waist-to-hip ratio Risk of obesity (in children, adolescents, adults, older adults) • BMI • Underweight • Normal weight • Overweight and/or obesity • Weight gain • Weight loss and maintenance (in adults, older adults) Pregnancy- and postpartum-related weight change (adults during pregnancy or postpartum) • Adequacy of total gestational weight gain (i.e., in relation to recommendations based on pre-pregnancy BMI) • Postpartum weight change	• Dietary intake assessed only by intake of individual nutrient(s) • Urinary measures of glucose • Non-fasting blood glucose • Non-fasting insulin • Gestational weight gain only during certain time periods or trimesters of pregnancy • Absolute total gestational weight gain (i.e., not in relation to recommendations based on pre-pregnancy BMI)

Committee Discussion

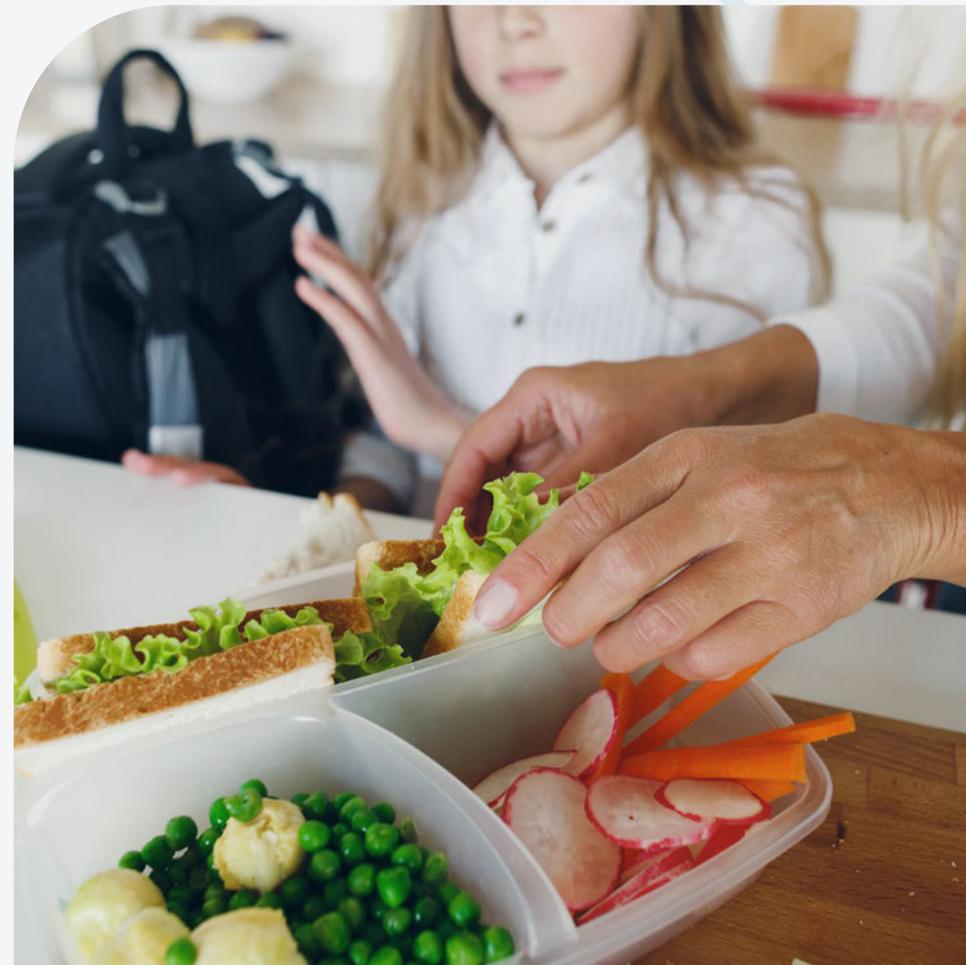# Rationale for Home Food Availability Evidence Scan

- SC4 prioritized home food availability as a food-based strategy for review, then refined to the adult population

- Home food availability and accessibility for children is one component of the systematic review on parental and caregiver feeding styles and practices, led by Subcommittee 2

- The extent of the scientific literature on home food availability and accessibility *in adults* is less clear

Key Definitions: Home Food Availability Evidence Scan

Accessibility: availability of food in a form, place, and time that facilitates its consumption; i.e., it is retrievable and ready to eat

Availability: the physical presence of food in a home or living space, regardless of whether it is readily visible or accessible

Analytic Framework: What evidence has been published on the relationship between home food availability in adults and dietary intake, diet quality, health outcomes, and psychosocial factors?

Population	Intervention / Exposure	Comparator	Outcome	
Adults and older adults (19 years and older)	Availability or accessibility of different types and amounts of foods and beverages in the home	Different availability or accessibility of different types and amounts of foods and beverages	Diet-related psychosocial factors, including norms, attitudes, values, and self-efficacy Dietary intake Diet quality Energy intake Risk of CVD • HDL cholesterol • LDL cholesterol • Triglycerides • Hyperlipidemia • Blood pressure (systolic, diastolic) • Hypertension • CVD morbidity (e.g., myocardial infarction, coronary heart disease, coronary artery disease, congestive heart failure, peripheral artery disease, stroke) or composite CVD morbidity and mortality • CVD-related mortality	Risk of T2D • Fasting blood glucose • Fasting insulin • Glucose tolerance/insulin resistance • HbA1C • Prediabetes • T2D Body composition (in adults and older adults): • Skinfold thickness • Fat mass, ectopic fat • Fat-free mass or lean mass • Waist circumference, waist-to-hip-ratio Risk of obesity (in adults and older adults): • BMI • Underweight • Normal weight • Overweight and/or obesity • Weight gain • Weight loss and maintenance
Individuals during pregnancy and postpartum			Diet-related psychosocial factors, dietary intake, diet quality, and energy intake as described above. Pregnancy and postpartum-related weight change • Adequacy of total gestational weight gain (i.e., in relation to recommendations based on pre-pregnancy BMI) • Postpartum weight change	

Inclusion/Exclusion Criteria: Home Food Availability

Category	Inclusion Criteria	Exclusion Criteria	
Study design	- Randomized controlled trials - Non-randomized controlled trials - Prospective cohort studies - Retrospective cohort studies - Nested case-control studies	- Uncontrolled trials - Case-control studies - Cross-sectional studies - Ecological studies - Narrative reviews - Systematic reviews	- Meta-analyses - Modeling and simulation studies
Publication date	January 2000 – present (TBD)	Before January 2000, after Month YYYY	
Publication status	Peer-reviewed articles published in research journals	Non-peer-reviewed articles, unpublished data or manuscripts, pre-prints, reports, editorials, retracted articles, and conference abstracts or proceedings	
Language	Published in English	Not published in English	
Country	Studies conducted in countries classified as high or very high on the Human Development Index the year(s) the intervention/exposure data were collected	Studies conducted in countries classified as medium or low on the Human Development Index the year(s) the intervention/exposure data were collected	

Inclusion/Exclusion Criteria: Home Food Availability

Category	Inclusion Criteria	Exclusion Criteria
Population: Study participants	• Human	• Non-human

Population: Life stage	**Diet-related psychosocial factors, dietary intake; diet quality; energy intake; body composition and risk of obesity:**
	
	• At intervention and outcome:
	    o Adults and older adults (19 years and older)
	    o Individuals during pregnancy
	    o Individuals during postpartum
	
	Risk of CVD and Risk of T2D:
	
	• At intervention and outcome:
	    o Adults and older adults (19 years and older adults)
	• At intervention:
	    o Individuals during pregnancy
	    o Individuals during postpartum
		At intervention and outcome:
		• Infants and toddlers (birth up to 24 months)
		• Children and adolescents (2 up to 19 years)
		
		Risk of CVD and Risk of T2D:
		• At outcome:
		    o Individuals during pregnancy
		    o Individuals during postpartum

Inclusion/Exclusion Criteria: Home Food Availability

Category	Inclusion Criteria	Exclusion Criteria
Population: Health status	- Studies that <u>exclusively</u> enroll participants not diagnosed with a disease - Studies that enroll <u>some</u> participants: - diagnosed with a disease; - with severe undernutrition, failure to thrive/underweight, stunting, or wasting; - who became pregnant using Assisted Reproductive Technologies; - with multiple gestation pregnancies; - receiving pharmacotherapy to treat obesity; - pre- or post-bariatric surgery; - and/or hospitalized for an illness, injury, or surgery	- Studies that <u>exclusively</u> enroll participants: - diagnosed with a disease; - with severe undernutrition, failure to thrive/underweight, stunting, or wasting; - who became pregnant using Assisted Reproductive Technologies; - with multiple gestation pregnancies; - receiving pharmacotherapy to treat obesity; - pre- or post-bariatric surgery; - and/or hospitalized for an illness, injury, or surgery
Intervention	Availability or accessibility of different types and amounts of foods and beverages in the home	N/A
Comparator	Different availability or accessibility of different types and amounts of foods and beverages	No comparator

Inclusion/Exclusion Criteria: Home Food Availability

Category	Inclusion Criteria		Exclusion Criteria
Outcomes	Diet-related psychosocial factors, including norms, attitudes, values, and self-efficacy Dietary intake assessed by intake of foods or food group(s) Diet quality Energy intake Risk of CVD • HDL cholesterol • LDL cholesterol • Triglycerides • Hyperlipidemia • Blood pressure (systolic, diastolic) • Hypertension • CVD morbidity (e.g., myocardial infarction, coronary heart disease, coronary artery disease, congestive heart failure, peripheral artery disease, stroke) or composite CVD morbidity and mortality • CVD-related mortality Risk of T2D • Fasting blood glucose • Fasting insulin • Glucose tolerance/insulin resistance • HbA1C • Prediabetes • T2D	Body composition (in adults, older adults) • Skinfold thickness • Fat mass, ectopic fat • Fat-free mass, lean mass • Waist circumference, waist-to-hip ratio Risk of obesity (in adults, older adults) • BMI • Underweight • Normal weight • Overweight and/or obesity • Weight gain • Weight loss and maintenance (in adults, older adults) Pregnancy- and postpartum-related weight change (adults during pregnancy or postpartum) • Adequacy of total gestational weight gain (i.e., in relation to recommendations based on pre-pregnancy BMI) • Postpartum weight change	• Dietary intake assessed only by intake of individual nutrient(s) • Urinary measures of glucose • Non-fasting blood glucose • Non-fasting insulin • Gestational weight gain only during certain time periods or trimesters of pregnancy • Absolute total gestational weight gain (i.e., not in relation to recommendations based on pre-pregnancy BMI)

Committee Discussion

Next Steps

- Refine and implement the evidence scan protocols discussed:
  - Culturally tailored dietary interventions
  - Home food availability

- Continue work on systematic reviews:
  - Frequency of meals and/or snacking and:
    - Growth, body composition, and risk of obesity
    - Consuming a dietary pattern that is aligned with the *Dietary Guidelines for Americans*
    - Energy intake
  - Portion size and:
    - Growth, body composition, and risk of obesity
    - Energy intake

Committee Discussion

Thank you!

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2025 Dietary Guidelines Advisory Committee, Meeting 3
Opening Remarks

Thank You

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