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Healthy Eating Index-2020: Review and Update Process to Reflect the Dietary Guidelines for Americans, 2020–2025

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Abstract

The purpose of this paper is to share the process for reviewing, updating, and developing the most recent version of the Healthy Eating Index (HEI) for ages 2 and older, the HEI-2020, following the release of the *Dietary Guidelines for Americans (DGA), 2020–2025*. The overall review process

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included: 1) gathering information from the updated DGA, experts, and federal stakeholders; 2) considering substantive changes and needs for new development, keeping in mind the HEI's key features and guiding principles, the USDA Dietary Patterns that serve as the foundation for the HEI, and scoring considerations; and 3) completing evaluation analyses, including the examination of content validity. The review process led to the development of the HEI-2020; a separate HEI-Toddlers-2020 was developed for ages 12 through 23 months. The 13 components and scoring standards of the HEI-2020 fully align with the HEI-2015, though the index was renamed to clarify that it aligned with the most recent 2020–2025 DGA. As the evidence informing the DGA continues to evolve, various aspects of the HEI may need to evolve in the future as well. Further methodological research is encouraged to add to the scientific evidence base on dietary patterns, to examine needs specific to each life stage, and to model optimal trajectories of healthy dietary patterns over the lifespan.

Keywords

Healthy Eating Index; diet quality; dietary intake; diet indices

Introduction

The *Dietary Guidelines for Americans* (DGA) are the basis of nutrition policy for the U.S. government and the foundation of all federal nutrition guidance.¹ Since 1980, the DGA have undergone evidence-based review and updates every five years to reflect the current evidence in nutrition science.² The Healthy Eating Index (HEI) is a measure of overall diet quality, independent of quantity, that can be used to assess alignment with the DGA; since 2005, the HEI has been similarly revised and standards and algorithms refined to reflect changes in dietary guidance.^{3–5} The HEI has been used widely in surveillance, epidemiologic, and intervention research to study diet quality among populations, the associations between diet quality and health outcomes, and the impact of interventions on diet quality, as well as in economic and food environment-based research.^{5,6}

The first HEI was released in 1995 by the U.S. Department of Agriculture (USDA) Center for Nutrition Policy and Promotion (CNPP).⁷ In 2005, a collaboration was formed between researchers at the U.S. Department of Health and Human Services (HHS), National Cancer Institute (NCI) and CNPP to significantly revise the HEI based on updates to the DGA. This new version of the HEI was designed to use a scoring system with density-based standards (a common set of standards expressed per 1,000 calories with the exception of Fatty Acids, which is a ratio of unsaturated to saturated fatty acids) and thus allows for the study of diet quality independent of diet quantity and enables application across all levels of the food system.^{4,8} This revision also provided an opportunity to evaluate the psychometric properties of the new index.⁹ With each subsequent update to the DGA, NCI and CNPP released an updated HEI, HEI-2010 and HEI-2015, to align with the most current guidance.^{3,5} All versions of the HEI through the HEI-2015 were created for those ages 2 and older. The recently released 2020–2025 DGA included USDA Dietary Patterns for toddlers for the first time,¹ necessitating a review, update, and development process of the HEI to reflect healthy eating across the lifespan. Additionally, the Scientific Report of the 2020 Dietary

Guidelines Advisory Committee identified the development of a scoring system (such as the HEI) for infants and toddlers as a research recommendation,¹⁰ given comparisons of diet quality using the HEI have thus far only been possible for Americans ages 2 and older. Thus, in addition to the HEI-2020 for those ages 2 and older, a separate index, the HEI-Toddlers-2020 for ages 12 through 23 months, was developed.¹¹ As described below, the update process led to no changes between the HEI-2015 and HEI-2020; the naming convention, HEI-2020, reflects that the index aligns with the 2020–2025 DGA.

The purpose of this paper is to share the process for reviewing, updating, and developing the most recent version of the HEI, the HEI-2020. Although this review process led to the development of two HEIs – the HEI-2020 for populations ages 2 and older and the HEI-Toddlers-2020 for ages 12 through 23 months – this paper will primarily focus on the HEI-2020. Further details can be found in other publications on the development and evaluation of the HEI-Toddlers-2020;^{11,12} a summary of key considerations and caveats are also described elsewhere.¹³

Overarching update process

To update the HEI-2015 to the HEI-2020, the steps for reviewing and revising the HEI based on the 2020–2025 DGA were similar with the process from past iterations. Briefly, the overall process included: 1) gathering information from the updated dietary guidelines, experts, and federal stakeholders; 2) considering substantive changes and needs for new development; and 3) completing evaluation analyses. Each of these phases are described in more detail below.

Gathering information

A working group co-led by NCI and CNPP was developed, with expertise in nutrition, biostatistics, index development, and other necessary content areas (e.g., early childhood nutrition due to expanded guidelines in the DGA for birth–24 months of age). The group reviewed the DGA after its release and convened a meeting with federal stakeholders, including partners from the Centers for Disease Control and Prevention, U.S. Food and Drug Administration, National Institutes of Health (NIH), U.S. Agency for International Development, and USDA. Historically, this meeting occurred in-person at USDA, but due to the on-going COVID-19 pandemic, the 2021 meeting was held virtually as a webinar. The goals for NCI and CNPP's meeting were to 1) share the HEI's features and guiding principles, constraints (e.g., considering what is available in the U.S. food supply, food supply sustainability metrics), and opportunities (e.g., considering needs of diverse populations); 2) learn more about how federal partners have used the HEI; and 3) discuss the HEI development process and future considerations.

The NCI and CNPP working group then met weekly throughout the HEI development process. In discussion areas where the group recognized additional subject matter expertise would be beneficial, such as in early childhood development and pediatric nutrition, experts were contacted for additional feedback.

Considering substantive changes

Features and principles informing changes to the HEI: Throughout the aforementioned information gathering process, the working group considered if and what substantive changes were needed to update the HEI to align with the 2020–2025 DGA. Although the DGA and the HEI are expected to be revised as the scientific evidence evolves (the expectation of evolution), the HEI aims to maintain continuity across its iterations, reflecting the consistency of recommendations over time (evolutionary and not revolutionary changes). There are six features that have been reviewed and affirmed since 2005 (Figure 1). Three guiding principles have defined previous HEIs and were followed again for the HEI-2020: 1) focus on key recommendations of the DGA, only making changes to the HEI that have a strong rationale; 2) limit the number of components as much as possible while still capturing key guidance from the DGA; and 3) avoid an unduly complex algorithm for calculating the total HEI score. A fourth guiding principle was added for the HEI-2020 to acknowledge the importance of the bridging of components to examine healthy eating trajectories across the lifespan (Figure 1). Following these principles supported maximum transparency and required the working group to be as explicit as possible in how the guidelines were interpreted and operationalized.

Dietary patterns: The USDA Dietary Patterns, including the Healthy US-Style, Healthy Vegetarian, and Healthy Mediterranean-Style Dietary Patterns, serve as the foundation for the HEI and provide standards for operationalizing alignment with the DGA.¹ These patterns serve as a framework that can be customized based on a number of factors, including cultural foodways and budgetary considerations. Given that the USDA Dietary Patterns (for the 1,000 to 3,200 calorie levels) remained virtually the same in the 2015–2020 and 2020–2025 DGA, there were no major changes in the key recommendations for children and adults ages 2 and older, and the state of the U.S. diet did not change significantly since 2015, few changes were considered.

Scoring considerations: Components and the standards did not change between the HEI-2015 and HEI-2020. Keeping the components and the standards the same aligns with the HEI's guiding principles (Figure 1), as any changes could imply the emergence of new evidence that does not exist. For both the HEI-2015 and HEI-2020 the maximum standards for all components except Sodium are based on the least-restrictive recommendations among the 1,200 to 2,400 calorie levels (Sodium is based on the recommended limit of 2,300 mg). This provides a consistent approach across components and avoids having any standard based on a relatively high (2,600 to 3,200 calories) or low (1,000 calorie) energy level that although appropriate for a few age/sex groups, would be extreme for others. Minimum standards are based on an amount of zero per 1,000 kcal for Total Fruits, Whole Fruits, Total Vegetables, Greens and Beans, Whole Grains, Dairy, Total Protein Foods, and Seafood and Plant Proteins. However, some components—Fatty Acids, Refined Grains, Sodium, Added Sugars, and Saturated Fats—do not have an obvious value to serve as the minimum standard from the USDA Dietary Patterns. As with previous editions, these standards are set at approximately the 15th (for Fatty Acids) or 85th to 90th (for others) percentiles of 1-day intake distributions from the most recent National Health and Nutrition Examination Survey (NHANES).^{14,15} Similar to previous HEIs, we re-examined the distributions, comparing

the most current 1-day intake distributions in NHANES 2017–2018 with results from NHANES 2011–2012 (i.e., what guided standards for the HEI-2015). This aligns with the least restrictive approach previously mentioned. As we did not see significant changes in distributions (data not shown), no changes were made to the index.

Evaluation analyses

Evaluation is often the final step in the development of the HEI. To examine content validity, the key recommendations from the 2020–2025 DGA that correspond to related components of the HEI-2020, are shown in Figure 2. All of the key recommendations that relate to diet quality through food choices (“what” is eaten) are reflected in the HEI-2020 components. Except for content validity, the HEI for ages 2 and older was not evaluated further given no changes were made between the HEI-2015 and HEI-2020. A detailed overview of the steps taken to evaluate the validity and reliability of the HEI-2015 is available in a previous publication.¹⁴

Release of the HEI-2020

The 13 components and scoring standards of the HEI-2020 are detailed in Figure 3. For the first time, there are no changes to the index: the scoring for the HEI-2020 fully aligns with the HEI-2015. Further details about each of the components are described in the HEI-2015 update paper by Krebs-Smith et al.,⁵ including considerations regarding alcohol (Figure 2). However, although no changes were incorporated, the index was renamed to clarify that it aligned with most current guidance (i.e., the HEI-2020 for the 2020–2025 DGA).

Depicting HEI scores using radar plots

The components of the HEI can be visualized together in radar plots to illustrate the multidimensionality and patterns of diet quality. As an example, Figure 4 used nationally representative data (NHANES 2011–18) for children (ages 2–4, 5–8, 9–13, 14–18) and adults (ages 19–59, 60+) to illustrate by age group each HEI-2020 component score as a percentage of its maximum points on 13 different axes (the HEI-Toddlers-2020¹¹ was applied to children 12 through 23 months and included in the figure to visualize distributions and changes across the lifespan). The Markov Chain Monte Carlo method used to estimate the HEI components and total scores and to create radar plots is available on the NCI website.^{16,17} The plotted points are connected to highlight patterns; a green line around the perimeter of the graph indicates a perfect score. Although the overall mean total HEI scores are U-shaped across the lifespan (with higher scores – reflecting greater alignment with the DGAs – at younger and older ages), the radar plots provide additional context for each life stage and across the lifespan. Among children, Total Fruits, Whole Fruits, and Dairy component scores decrease with age, as do the scores for Added Sugars, Refined Grains, and Sodium components, elucidating why total scores decreased with age. Among adults, the figure illustrates that older adults had higher scores for many components compared to those ages 19–59, including Whole Fruits, Total Fruits, Total Vegetables, and Whole Grains, while some components such as Total Protein Foods, Greens and Beans, and Dairy were similar between groups.

Applying the HEI-2020: Considerations and Future Opportunities

The HEI-2020 was designed to align with the 2020–2025 DGA.¹ The HEI is a common metric that has resonated with researchers, particularly as the concept of dietary patterns has grown and continues to evolve. The HEI is used widely in different types of research, spanning surveillance, epidemiology, and intervention research, among various U.S. populations and with many applications across the food stream.¹⁸ The growing use of the HEI illustrates its utility and emergence as a common construct of dietary patterns to represent total diet. Although there are other dietary indices (e.g., Alternate Healthy Eating Index,^{19,20} Mediterranean Diet scores^{21,22}) used in research, they were developed and updated based on different summaries of scientific evidence, distinct guiding principles and goals, and with varying scoring and weighting approaches. When choosing the most appropriate dietary index, important considerations are the main research question, population, and timepoints of data capture (i.e., the HEI-2020 reflects alignment with the 2020–2025 DGA). Additional details on how the HEI is applied are included in previous publications.⁶

As the evidence informing the DGA continues to evolve, various aspects of the HEI may need to evolve in the future as well. One area that will continue to be revisited with future HEI updates is the evaluation process. For example, as more researchers have adapted and applied the U.S. HEI to other cultures and populations and followed its evaluation process, country-specific HEIs have been developed and, in doing so, adhered to the HEI's evaluation approach.^{23–29} However, there are unique issues that should be considered among populations with varying food supply systems and different underlying dietary patterns. As the HEI may evolve and as more diet quality indices continue to be developed, evaluated, and applied, future considerations will be needed to ensure the best approach is taken to define core features and guiding principles and assess the validity and reliability of diet quality indices.

Additionally, research efforts are needed to help address future methodological questions, including bridging across life stages. Although there is a current separation at 2 years with the HEI-Toddlers-2020 and the HEI-2020, differences at other life stages (e.g., in adolescence or older adulthood) may need to be considered in the future as well.

Lastly, questions remain regarding how to best capture the multidimensionality and dynamism of dietary patterns for the multiple layers of who, what, where, when, why, and how people eat,³⁰ with particular considerations for infants and toddlers from birth to 24 months of age.³¹ By design, though, the HEI reflects alignment with the DGA, or what has been constrained to the “what” level in dietary patterns. For example, the HEI did not include key recommendations in previous DGA regarding related constructs such as food safety, body weight, and physical activity. As dietary guidance continues to evolve and the “what” level is increasingly intermingled with other aspects of dietary patterns, along with sustainability issues and other lifestyle factors, the HEI will also continue to consider these varying aspects. Future efforts will be informed by ongoing research (either considering indices that may examine additional constructs separately or collectively); strategies for examining validity and reliability may thus evolve as well.

Conclusions

The HEI-2020 is a valuable tool that can be used in many different types of nutrition research to assess alignment with the 2020–2025 DGA. The HEI review and update process allows for analyses and applications of guidance-based HEI scores across the lifespan with nationally representative data, diverse cohorts, and at different levels of the food system. There is continued support and encouragement for further methodological research to add to the scientific evidence base on dietary patterns, to examine needs specific to each life stage, and to model optimal trajectories of healthy dietary patterns over the lifespan.

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Research Snapshot

Research question:

What is the process for reviewing, updating, and developing the Healthy Eating Index (HEI)? What updates were made to the HEI following the release of the *Dietary Guidelines for Americans (DGA), 2020–2025*?

Key Findings:

The review process for the HEI includes: gathering information from the updated DGA, experts, and federal stakeholders; considering substantive changes and needs for new development; and completing evaluation analyses. The review process led to the HEI-2020 for populations 2 and older. Though the HEI-2020 fully aligns with the HEI-2015, the index was renamed to clarify its alignment with the most recent 2020–2025 DGA.

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| Features | Rationale |
|---|--|
| Assesses diet quality with regard to recommendations of the <i>Dietary Guidelines for Americans</i> | The <i>Dietary Guidelines for Americans</i> are the evidence-based foundation for nutrition policy of the US government |
| Assesses diet—foods, beverages, and select nutrients—and not supplement intake For 12 through 23 months, diet refers to complementary foods and beverages (it does not include human milk or formulas). ^a | Is consistent with fundamental premise of <i>Dietary Guidelines for Americans</i> to meet nutrient needs primarily from foods and beverages For 12 through 23 months, this guidance refers to a healthy dietary pattern of age-appropriate foods and beverages that is intended for toddlers who no longer consume human milk or infant formula. However, because the index is density based and a healthy dietary pattern should include a similar combination of nutrient-dense complementary foods and beverages it can be applied even if toddlers are also consuming human milk or infant formula ^a |
| Captures balance among food groups, including foods to encourage and foods to reduce and/or moderate | Reflects <i>Dietary Guidelines for Americans</i> Considers gaps between intakes and recommendations |
| Uncouples dietary quality from quantity, employing a density-based approach | Indicates appropriate mix of, or balance among, food groups Enables application to various levels, including groups of people, environments, food supply |
| Employs a least restrictive approach to setting standards for maximum scores by using the recommendations that are easiest to achieve among those that vary by age and sex | Results in highest possible scores, with potential error in the same direction for everyone Because very high scores for many components are rare among the US population, the score is optimized for sensitivity to improvement |
| Requires no single food or commodity to be indispensable to a perfect score | Accommodates a variety of eating patterns, reflecting cultural, ethnic, traditional, and personal preferences and tolerances and food |

| | |
|---|--|
| | costs and availability |
| | |
| Guiding principles for updates of the HEI | Rationale |
| Focus on key recommendations of the <i>Dietary Guidelines for Americans</i> , making only changes to the index that have a strong rationale | Stability of the HEI should reflect consistency of recommendations over time Unsubstantiated changes in the HEI may imply emergence of new evidence that does not exist |
| Limit the number of components | Each component should assess a critical aspect of diet quality |
| Avoid an unduly complex algorithm | The index should be transparent and straightforward to explain and apply |
| Allow for bridging of components ^a | The index should be flexible to support examination of a healthy eating trajectory across the lifespan ¹ |

Figure 1.

Features of the Healthy Eating Index (HEI) and guiding principles for development and updates.

^a Added to align with *Dietary Guidelines for Americans, 2020–2025*

| Key recommendations from the DGA ^b | Components of HEI-2020 | Comments |
|--|---|---|
| <p>Follow a healthy dietary pattern at every life stage</p> <ul style="list-style-type: none"> From 12 months through older adulthood, follow a healthy dietary pattern across the lifespan to meet nutrient needs, help achieve a healthy body weight, and reduce the risk of chronic disease. | <p>All 13 components: Total Fruits Whole Fruits Total Vegetables Greens and Beans Whole Grains Dairy Total Protein Foods Seafood and Plant Proteins Fatty Acids Refined Grains Added Sugars Saturated Fats Sodium</p> | <p>These components are consistent across every life stage</p> |
| <p>Customize and enjoy nutrient-dense food and beverage choices to reflect personal preferences, cultural traditions, and budgetary considerations</p> | <p>All 13 components</p> | <p>Requires no single food or commodity to be indispensable to a perfect score</p> |
| <p>Focus on meeting food group needs with nutrient-dense foods and beverages, and stay within calorie limits</p> <ul style="list-style-type: none"> Nutritional needs should be met primarily from nutrient-dense foods and beverages A healthy dietary pattern consists of nutrient-dense forms of foods and beverages across all food groups in recommended amounts, and within calorie limits Core elements that make up a healthy dietary pattern include: <ul style="list-style-type: none"> Vegetables of all types – dark green, red and orange, beans, peas, and lentils, starchy and other vegetables Fruits, especially whole fruit Grains, at least half of which are whole grain Dairy, including milk, yogurt, and cheese, and/or lactose free versions and | <p>Adequacy components: Total Fruits Whole Fruits Total Vegetables Greens and Beans Whole Grains Dairy Total Protein Foods Seafood and Plant Proteins Fatty Acids</p> | <p>Within a given energy level, the comprehensive nature and density basis of the HEI accounts for all foods and beverages (except alcohol, human milk, and formula)</p> <p>The HEI does not explicitly assess individual energy needs or appropriateness of energy intake.</p> |

| | | |
|---|--|--|
| <p>fortified soy beverages and yogurt as alternatives</p> <ul style="list-style-type: none"> ○ Protein foods, including lean meats, poultry, and eggs, seafood, beans, peas, and lentils, and nuts, seeds and soy products ○ Oils, including vegetable oils and oils in food, such as seafood and nuts | | |
| <p>Limit foods and beverages higher in added sugars, saturated fats, and sodium, and limit alcoholic beverages</p> <ul style="list-style-type: none"> ● A healthy dietary pattern doesn't have much room for extra added sugars, saturated fats, sodium, or for alcoholic beverages. Limits are: <ul style="list-style-type: none"> ○ Added sugars – less than 10% of calories per day starting at age 2. Avoid foods and beverages with added sugars for those younger than age 2. ○ Saturated fat – less than 10% of calories per day starting at age 2 ○ Sodium – less than 2,300 milligrams per day – and even less for children younger than age 14 ○ Alcoholic beverages – Adults of legal drinking age can choose not to drink, or to drink in moderation by limiting intake to 2 drinks or less in a day for men and 1 drink or less in a day for women, when alcohol is consumed. Drinking less is better for health than drinking more. There are some adults who should not drink alcohol, such as women who are pregnant. | <p>Moderation components: Sodium Refined Grains Saturated Fats Added Sugars</p> | <p>The limit of less than 10% of total energy from saturated fats does not apply to children younger than age 2. However, because saturated fats cannot be unlimited within each energy level without displacing the energy available to achieve other food group and subgroup goals, saturated fats is also scored as a moderation component for HEI-Toddlers-2020.</p> <p>Alcohol is not included as its own component, but calories from alcohol continue to be included in total energy calculations used to score the HEI. Alcohol can be assessed separately and included in statistical modeling based on the research question or purpose.</p> |

Figure 2.

Components mapped to key dietary recommendations for HEI-2020^a

^a HEI-2020, Healthy Eating Index-2020. The HEI-2020 is designed for Americans ages 2 and older. For those less than 2 years of age, see the HEI-Toddlers-2020.^{11,12}

^b DGA, *Dietary Guidelines for Americans*. The text in this column reflects exact language from the DGA.¹

| Component | Maximum points | Standard for maximum score | Standard for minimum score of zero |
|--|----------------|---|-------------------------------------|
| HEI-2020 Applies to ages 2 and older | | | |
| Adequacy components | | | |
| Total Fruits^b | 5 | ≥0.8 cup equiv. per 1,000 kcal | No Fruit |
| Whole Fruits^c | 5 | ≥0.4 cup equiv. per 1,000 kcal | No Whole Fruit |
| Total Vegetables^d | 5 | ≥1.1 cup equiv. per 1,000 kcal | No Vegetables |
| Greens and Beans^d | 5 | ≥0.2 cup equiv. per 1,000 kcal | No Dark Green Vegetables or Legumes |
| Whole Grains | 10 | ≥1.5 oz equiv. per 1,000 kcal | No Whole Grains |
| Dairy^e | 10 | ≥1.3 cup equiv. per 1,000 kcal | No Dairy |
| Total Protein Foods^d | 5 | ≥2.5 oz equiv. per 1,000 kcal | No Protein Foods |
| Seafood and Plant Proteins^f | 5 | ≥0.8 oz equiv. per 1,000 kcal | No Seafood or Plant Proteins |
| Fatty Acids^g | 10 | (PUFAs ^h + MUFAs ⁱ)/SFAs ^j ≥2.5 | (PUFAs + MUFAs)/SFAs ≤1.2 |
| Moderation components | | | |
| Refined Grains | 10 | ≤1.8 oz equiv. per 1,000 kcal | ≥4.3 oz equiv. per 1,000 kcal |
| Sodium | 10 | ≤1.1 gram per 1,000 kcal | ≥2.0 grams per 1,000 kcal |
| Added Sugars | 10 | ≤6.5% of energy | ≥26% of energy |
| Saturated Fats | 10 | ≤8% of energy | ≥16% of energy |

Figure 3. Healthy Eating Index-2020 (HEI-2020) components and scoring standards^a

^a The HEI-2020 components and scoring standards are the same as the HEI-2015. Intakes between the minimum and maximum standards are scored proportionately. Component scores are summed to create the total score.

^b Includes 100% fruit juice.

^c Includes all forms except juice.

^d Includes beans, peas, and lentils.

^e Includes all milk products, such as fluid milk, yogurt, and cheese, and fortified soy beverages.

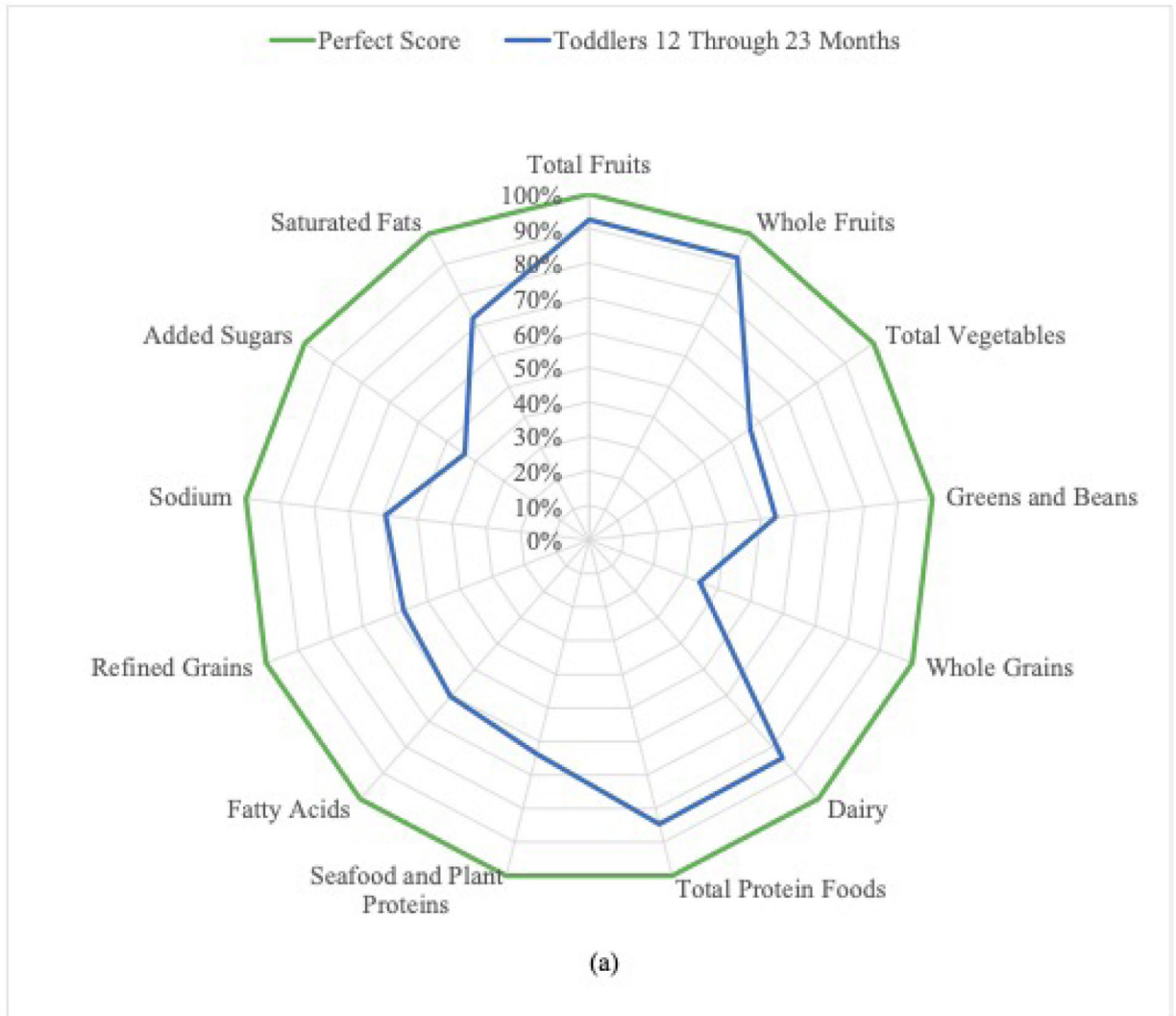
^f Includes seafood, nuts, seeds, soy products (other than beverages), and beans, peas, and lentils.

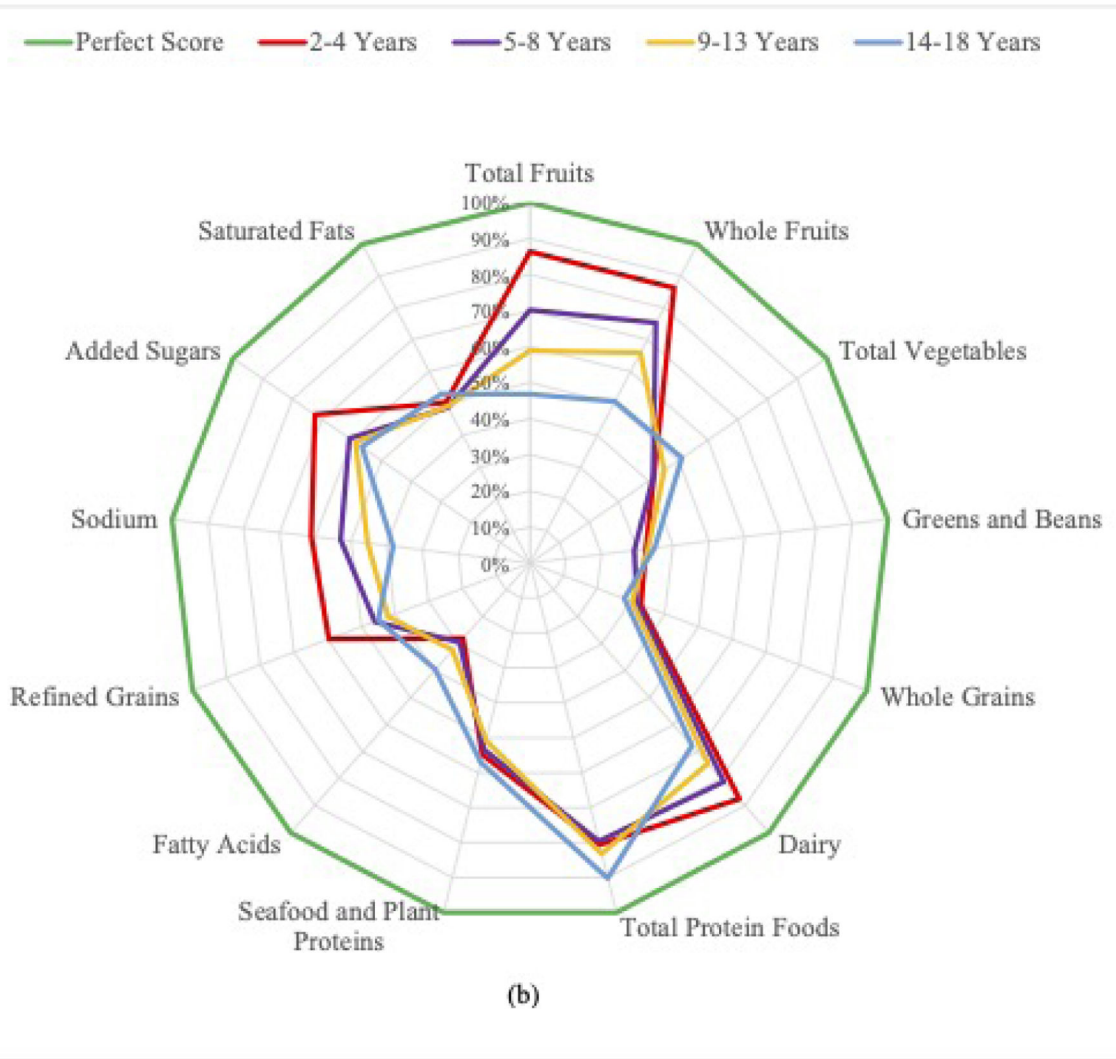
^g Ratio of poly- and monounsaturated fatty acids (PUFAs and MUFAs) to saturated fatty acids (SFAs).

^h PUFAs = polyunsaturated fatty acids

ⁱ MUFAs = monounsaturated fatty acids

^j SFAs = saturated fatty acids





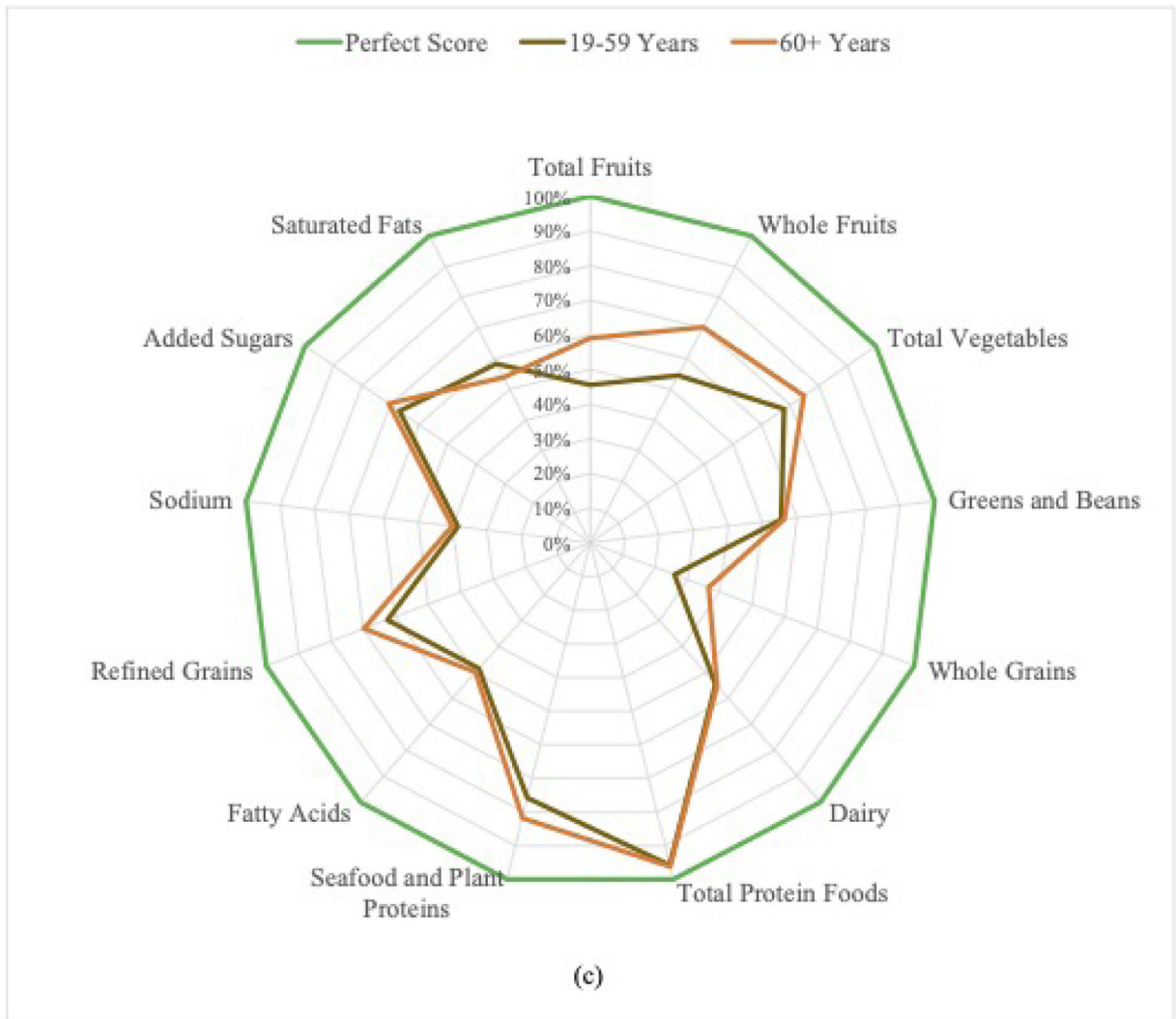


Figure 4.

Healthy Eating Index-2020 (HEI-2020) radar plots across the lifespan, National Health and Nutrition Examination Survey 2011–2018, with (a) HEI-Toddlers-2020 for toddlers (12 through 23 months); (b) HEI-2020 for children (2–18 years); (c) HEI-2020 for adults (19 years).^{a-c}

^a The HEI-Toddlers-2020 for 12 through 23 months is included to illustrate radar plots across the lifespan, however components and scoring approaches differ from the HEI-2020 for ages 2 and older. Further details on the HEI-Toddlers-2020 and scoring of each component are provided in the HEI-Toddlers-2020 Development paper.¹¹

^b On the radar plots, each component score is plotted as a percentage of its maximum points on 13 different axes. The outer edge of the radar represents 100% of the maximum score for that component; the center represents 0% of the maximum score for any component. Additional information on HEI visualization and radar plots can be found on the NCI website.¹⁷

^c Total HEI Scores (out of 100 points) with (a): HEI-Toddlers-2020 for toddlers, 12 through 23 months = 63.4; (b) HEI-2020 for children, 2–4 years = 58.3; 5–8 years = 52.6; 9–13 years

= 50.1; 14–18 years = 49.3; and (c) HEI-2020 for adults: 19–30 years = 55.3; 31–59 years = 55.3; 60 years = 59.5. Due to the overlapping, consistent results between age groups 19–30 years and 31–59 years, they are combined in the radar plot.