Do clean labels have unintended health consequences?

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Competing interests

Dr. Slavin thanks the following organizations for providing research funds for her laboratory the past 5 years. American Pulse Association, ILSI-NA, MNDrive Global Food Ventures, United States Department of Agriculture, the Mushroom Council, GSK, Pepsico, Coca-Cola, Danone, Welch’s, Nestle Health Sciences, DSM, Nexira, and Taiyo.

These research projects are in the areas of dietary fiber, whole grains, legumes, FODMAPS, nutrient losses in deep winter greenhouses, mushrooms, digestive health, protein needs, carbohydrate needs, and snacking.

She serves on the scientific advisory board for Tate and Lyle and Atkins Nutritionals.

She owns a 1/3 share of the Slavin Sisters Farm LLC, a 119 acre farm in Walworth, WI that is currently rented.
Outline

• Dietary recommendations for clean eating are consumer driven and not backed by science
• Dietary recommendations (low sodium, added sugar, saturated fat), support for plant-based diets, short ingredient lists, and kitchen cupboard/non-chemical ingredients drive clean label challenges
• Unintended health consequences of clean eating (avoid ultra-processing) include eating disorders, nutrient deficiencies, and false hopes
Dietary Guidance—A Historical Perspective

1894 - Dr. W.O. Atwater specified amount of protein and total calories in a good diet, but left unspecified the division of calories between fats and carbohydrates.

1902 - “evils of overeating may not be felt at once, but sooner or later they are sure to appear – perhaps in general debility, perhaps in actual disease.”

1902 - “ordinary food materials…make a fitting diet, and the main question is to use them in the kinds and proportions fitted to the actual needs of the body.”

Recommended variety, proportionality and moderation, measuring calories, and an affordable diet focused on nutrient-rich foods, less fat, sugar and starch.
Nutritional science – focus on nutrients to prevent deficiency diseases (1941)

- National Academy of Sciences began issuing “Recommended Dietary Allowances” – quantity of nutrients to consume daily to ensure basic good health, proper growth and reproductive success, and to prevent nutrient deficiency diseases.

- Nutritional deficiency diseases have been virtually eliminated in the U.S., thanks to enrichment (refined grains) and other fortification strategies.

- Nutrients are chemicals – not familiar ingredients found in your kitchen cupboard.
Politicians get involved

• The US Senate Select Committee on Nutrition and Human Needs led by Senator George McGovern issued the Dietary Goals for Americans (1977).

• The underlying premise for the work was that “too much fat, too much sugar or salt, can be and are linked directly to heart disease, cancer, obesity, and stroke, among other killer diseases”.
Senate Select Committee on Nutrition and Human Needs – Dietary Goals the United States (1977)

- Increase carbohydrates to 55%–60% of energy
- Reduce fat to 30% of energy
- SF, MF, PUFAs – 10%/10%/10%
- Reduce cholesterol to 300 mg/day
- Reduce sugar consumption by 40%
- Reduce salt consumption to 3 g/day – 1200 mg sodium
Toward Healthful Diets, Food and Nutrition Board, 1980

• “The Board expresses its concern over excessive hopes and fears in many current attitudes toward food and nutrition. Sound nutrition is not a panacea. Good food that provides appropriate proportions of nutrients should not be regarded as a poison, a medicine, or a talisman. It should be eaten and enjoyed.”

From the Science to Me
Dietary Guidelines for Americans 1980 - 2010
Comparison of Consumption to Recommendations

**FIGURE 5-1. How Do Typical American Diets Compare to Recommended Intake Levels or Limits?**

**Usual intake as a percent of goal or limit**

**Eat more of these:**
- Whole grains: 15% (Goal: 59%)
- Vegetables: 42% (Goal: 59%)
- Fruits: 52% (Goal: 61%)
- Dairy: 44% (Goal: 61%)
- Seafood: 42% (Goal: 59%)
- Oils: 40% (Goal: 59%)
- Fiber: 56% (Goal: 56%)
- Potassium: 28% (Goal: 75%)
- Vitamin D: 28% (Goal: 75%)
- Calcium: 28% (Goal: 75%)

**Eat less of these:**
- Calories from SoFAS*: 280% (Limit: 100%)
- Refined grains: 200% (Limit: 100%)
- Sodium: 149% (Limit: 100%)
- Saturated fat: 110% (Limit: 100%)

**Percent of goal or limit**

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*SoFAS: Saturated fat, cholesterol, alcohol, sodium, sugars.*
What is clean label?

• Michael Pollan, 2008, *In Defense of Food*
  – Consumers should not “eat anything with more than five ingredients, or ingredients you can’t pronounce”

• Ingredion (2014)
  – recommends to consumers that “a clean label means the product can be positioned as “natural”, “organic”, and/or free from additives/preservatives
  – Clean labels means using ingredients that are generally accepted by consumers – those they might find in their kitchen cupboards. The ingredient list should be short, simple and feature minimally processed ingredients where possible.
We conclude that unhealthy commodity industries should have no role in the formation of national or international NCD policy. Despite the common reliance on industry self-regulation and public-private partnerships, there is no evidence of the effectiveness or safety. Public regulation and market intervention are the only evidence-based mechanisms to prevent harm caused by the unhealthy commodity industries.

Panel 2: Ultra-processed products

• Ultra-processed products are made from processed substances extracted or refined from whole foods – eggs, oils, hydrogenated oils, and fats, flours and starches, variants of sugar, and cheap parts or remnants of animals foods – with little or no whole foods. Products include burgers, frozen pizza and pasta dishes, nuggets and sticks, crisps, biscuits, confectionery, cereal bars, carbonated and other sugared drinks, and various snack products
Ultra-processed foods: Definitions & policy issues

- Four categories of foods proposed in NOVA food classification, which seeks to relate food processing as the primary driver of diet quality
- Category 4 NOVA - Ultra-processed: industrial formulations typically with 5 or more and usually many ingredients
- Public health advice of NOVA is that ultra-processed foods should be avoided to achieve improvements in nutrient intakes with an emphasis on fat, sugar, and salt
- Disease links between intakes of ultra-processed foods and BMI are lacking
- Gibney MJ. Current Developments in Nutrition 2019;3:nzy077
• 2015 DGAC report was controversial
  • Suggestions of the 2015 DGAC including sustainability and taxation policies were considered outside their scope and resulted in congressional hearings on the DGA process
  • USDA/HHS held listening sessions to respond to congressional request to only make dietary recommendations when the relationship between dietary exposure and health outcome is strong
  • National Academy of Medicine, (formerly IOM), committee to discuss issues with the DGA process and the composition of the DGA committee (Optimizing the Process for Establishing the Dietary Guidelines for Americans. The Selection Process. 2017, National Academies Press)
• 2020-2025 DGAs will include from birth – 24 months – new challenges
The Purpose of the Dietary Guidelines for Americans

“Designed for professionals to help all individuals ages 2 years and older ... consume a healthy, adequate diet.”

“Develop food, nutrition and health policies and programs.”
The Dietary Guidelines for Americans: The Cornerstone of US Nutrition Policy & Regulation
The Science Behind the *Guidelines*

**Dietary Guidelines Advisory Committee considers:**

- Original systematic scientific reviews
- Existing systematic reviews, meta-analyses and scientific reports
- Dietary data analyses
- Food pattern modeling analyses

**Issues technical report with nutrition and health recommendations**

**DHHS/USDA uses technical report and comments to develop updated *Dietary Guidelines***

- Scientific rationale based on various research methods:
Provides 5 Overarching Guidelines:

1. Follow a healthy eating pattern across the lifespan.
2. Focus on variety, nutrient density, and amount.
3. Limit calories from added sugars and saturated fats and reduce sodium intake.
4. Shift to healthier food and beverage choices.
5. Support healthy eating patterns for all.

A healthy pattern includes:

- A variety of vegetables
- Fruits, especially whole fruits
- Grains, at least half of which are WG
- Fat-free /low-fat dairy, including milk & yogurt
- A variety of protein foods
- Oils

A healthy pattern limits:

- Sat fat: <10% of calories/day
- Trans fat: keep as low as possible
- Added sugars: <10% of calories/day
- Sodium: < 2,300 mg of sodium/day

Shift from Individual Foods and Ingredients to Healthy Eating Patterns!
2020-2025 Dietary Guidelines for Americans

• The 2020 Dietary Guidelines Advisory Committee will review scientific evidence on pre-selected topics listed on dietaryguidelines.gov

• Topics were identified by USDA and HHS

• The Committee will limit its review and advice to dietary guidance for human nutrition on the topics and scientific questions specified by the Departments

• New to the charter for the 2020 DGAC is the addition of dietary guidance for women who are pregnant and infants and toddlers from birth to 24 months of age.
Nutritional and health challenges to clean eating

• Orthorexia Nervosa: “fixation on the virtue of food or unhealthy obsession with healthy eating” (Bratman, 1997)

• Clean eating – disease disguised as a virtue: people with orthorexia feel a sense of satisfaction and control with extremely restricted and ordered healthy eating

• More research is needed to determine the prevalence of pathologically unhealthy, obsessive, “self-defined healthy” eating behaviors and to determine if ON is a unique eating disorder or just a subset of another disorder

Considering Protein Quality

The PDCAAS of plant proteins is generally lower than that of animal proteins. An exception is soy protein.\textsuperscript{21}
Other nutritional challenges of clean label

• Required vitamins and minerals for enrichment and fortifications cannot meet rules of clean label
• Nutrients of concern – fiber, potassium, calcium, and Vitamin D – intakes will only get worse by clean label rules
• Improvements in digestion and absorption – plant-based proteins – are only realized with food processing
• Improvements in healthy ingredients – whole grains, vegetables, fruits, pulses – made possible by food processing
• Removal of added sugar, sodium, saturated and trans fats – made possible by food processing
Food advice: Evolution of USDA’s Food Guidance – Moderation and Variety

1916

Food for Young Children

1940s

1950s-1960s

1970s

1992

2005
1943: Basic Seven

Margaret Mead: “People don’t eat nutrition – they eat food”

Basic 7 did not specify the number of servings of each food group needed daily
Conclusions

• Clean eating is a strong consumer trend with developing support in national dietary guidelines
• Movement to greater support for plant-based dietary patterns over nutrients will continue
• Ultra-processing is the new villain in the food world
• Much distrust of food technology as the solution for nutrition problems – even if that technology solves nutrition issues – decreases sodium, added sugar, saturated fat or increases fiber, vitamins, minerals.
• Critical to have those skilled in food technology and production on scientific panels that determine nutrition policy