

Global Understanding and Approaches for Optimal Diet and Health Outcomes

Considering the Future of Nutrition and Chronic Disease Using Obesity
as a Framework

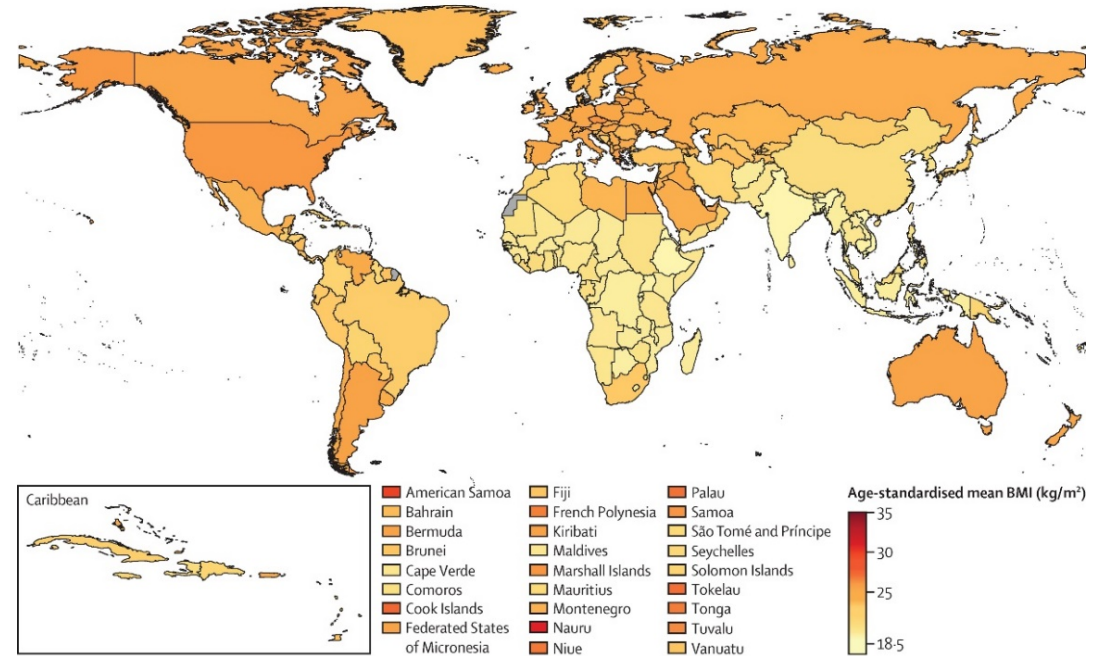
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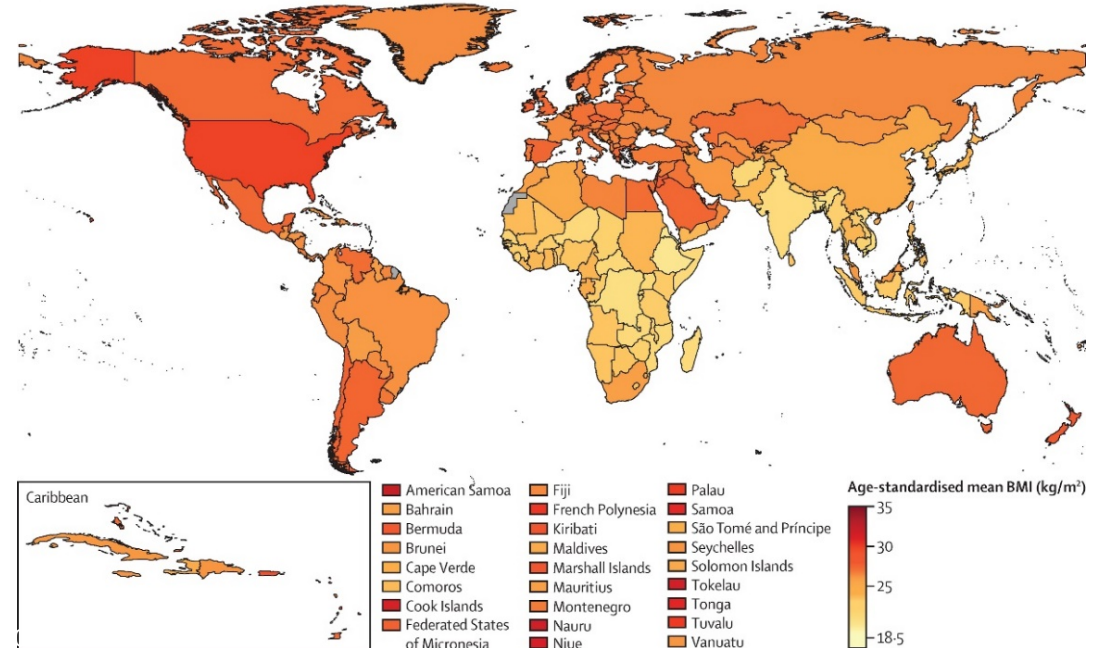
Wake Forest School of Medicine

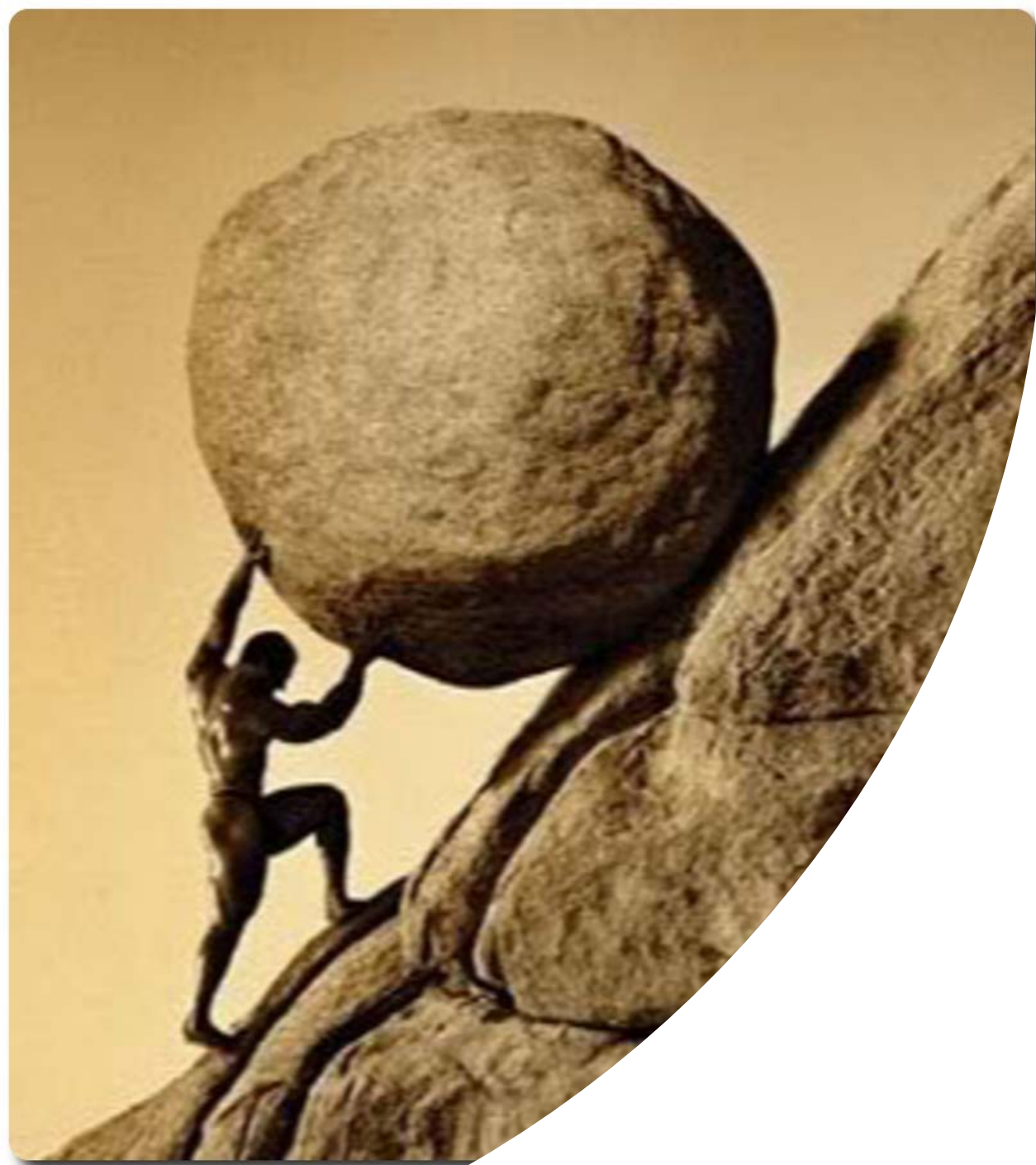
The global prevalence of obesity has been increasing for the last 4 decades at a rapid pace

1975



2014

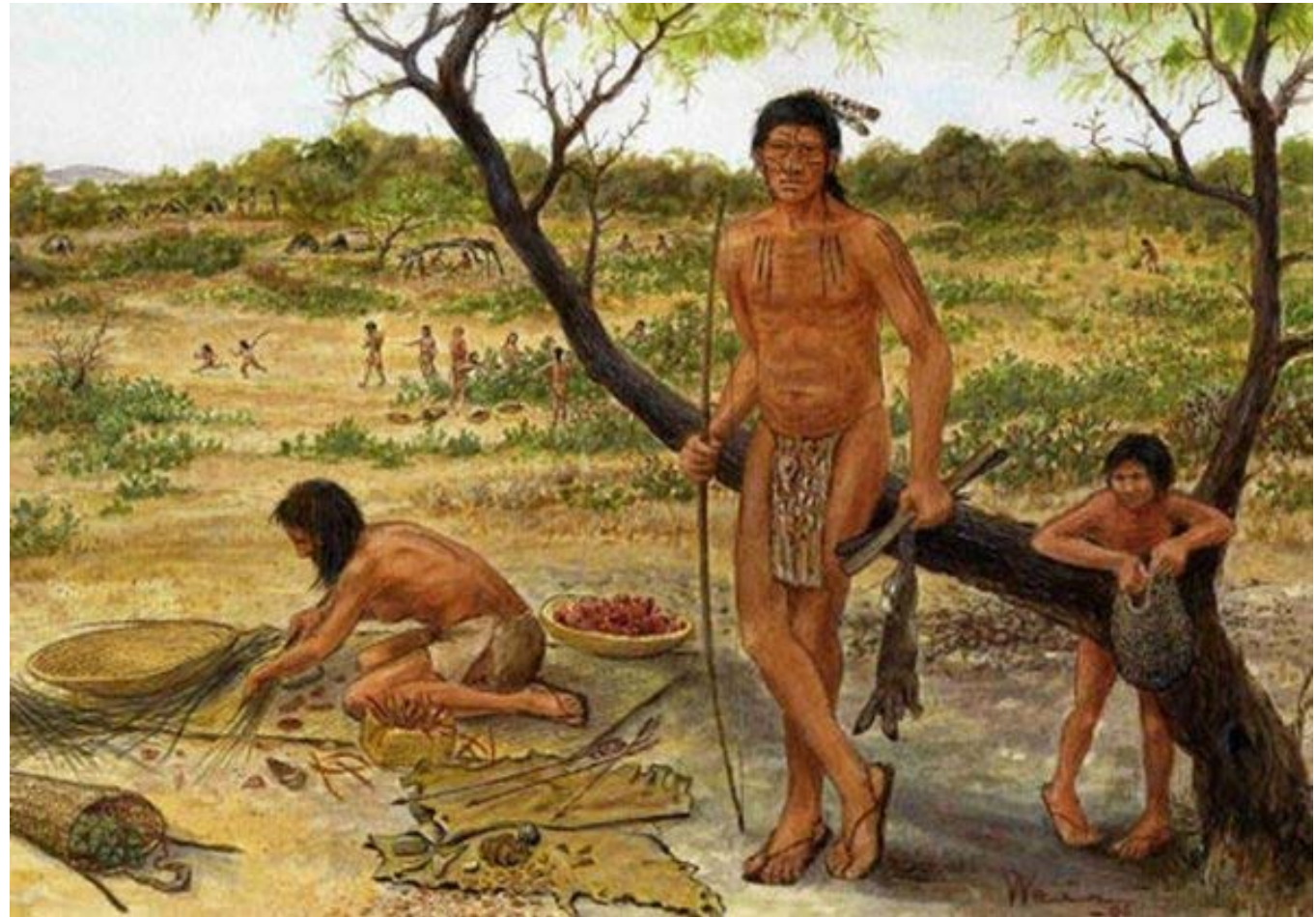




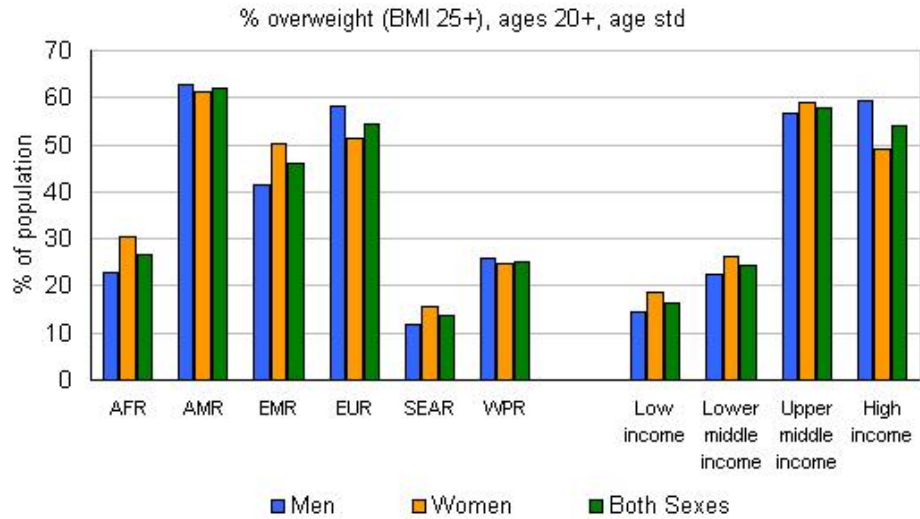
Challenges of Solving Obesity

Is there a realistic path to mitigate the challenge of obesity globally?

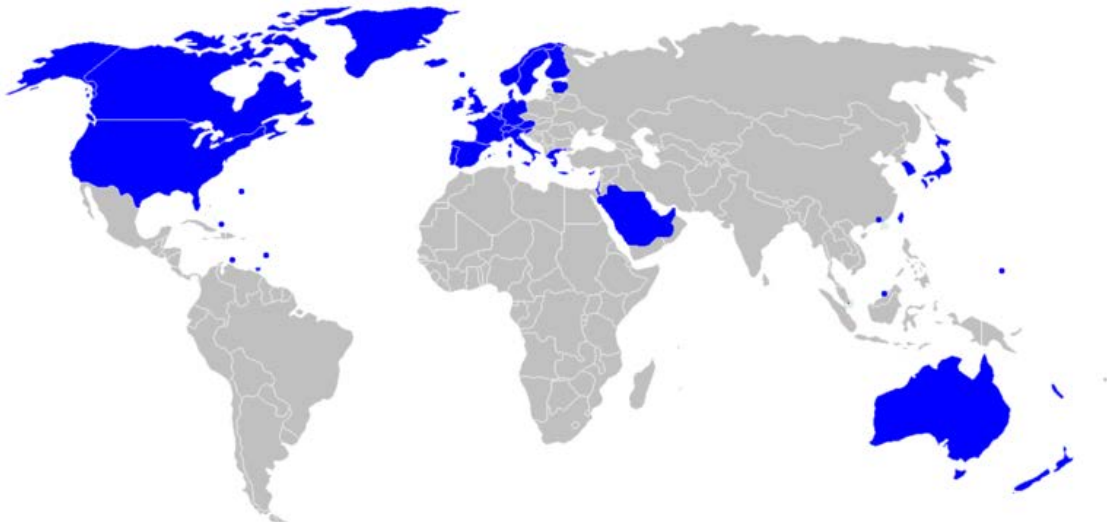
Food scarcity has been the primary challenge for most of our existence



The inverse is true in high-income countries

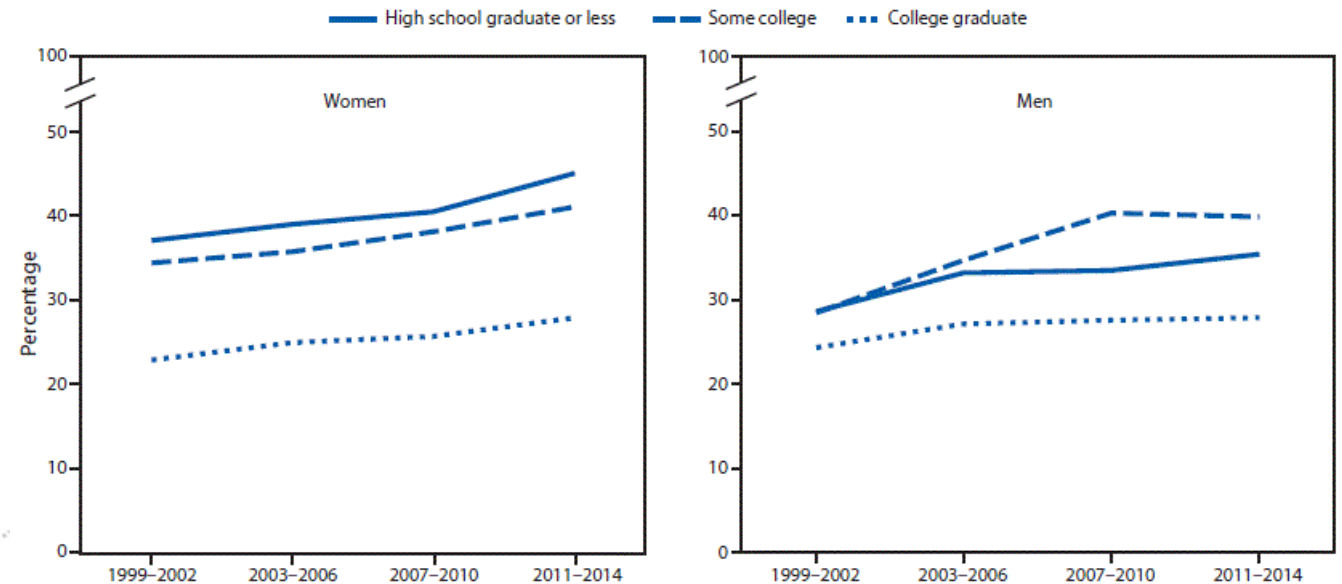


https://www.who.int/gho/ncd/risk_factors/bmi_text/en/



While the prevalence of obesity is highest in high-income countries...

A disproportionate share of the burden of disease is in lower SES individuals





Health and Wellness Have Become Status Symbols that You Can Buy

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Peloton's \$2,245 exercise bike is a 'new' kind of status symbol: Brand consultant



Jennifer Shanker
Segment Producer

Yahoo Finance September 26, 2019

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Consumers were asked to choose the healthier of two similar chicken wraps.

Condition #1: Roasted Chicken (\$8.95) or Chicken Balsamic (\$6.95) Wrap

Versus

Condition #2: Roasted Chicken (\$6.95) or Chicken Balsamic (\$8.95) Wrap

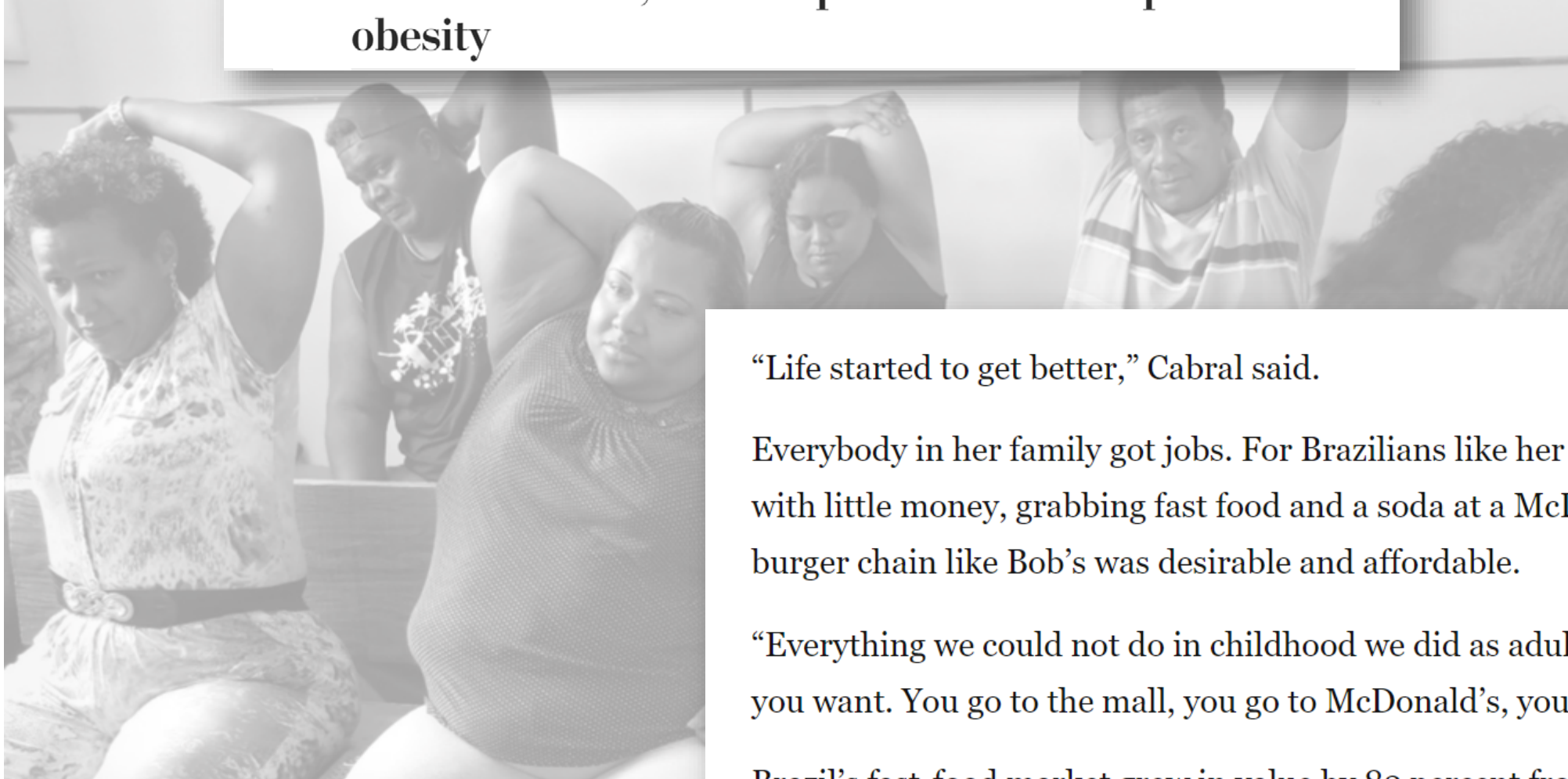
We have linked healthy → expensive

“Overall, the healthy = expensive intuition has a powerful influence on consumer decision making, with significant implications for both consumers and marketers.”

Kelly L Haws, Rebecca Walker Reczek, Kevin L Sample

Journal of Consumer Research, Volume 43, Issue 6, April 2017, Pages 992–1007,

Once underfed, Brazil's poor have a new problem: obesity



“Life started to get better,” Cabral said.

Everybody in her family got jobs. For Brazilians like her who had grown up with little money, grabbing fast food and a soda at a McDonald’s or a Brazilian burger chain like Bob’s was desirable and affordable.

“Everything we could not do in childhood we did as adults,” she said. “Eat what you want. You go to the mall, you go to McDonald’s, you go to Bob’s.”

Brazil’s fast-food market grew in value by 82 percent from 2008 through 2013. Even as the recession bit, the number of fast-food restaurants rose 11 percent in

Food Security in America



88.2%

A pie chart with a large blue section representing 88.2%, and two smaller white sections. The chart is surrounded by icons of a tomato, grapes, and a carrot.



7.5%

A pie chart with a small blue section representing 7.5%, and a larger white section. An arrow points from the white section to the blue section. The chart is surrounded by icons of grapes, a carrot, and a leafy vegetable.



4.3%

A pie chart with a very small blue section representing 4.3%, and a larger white section. An arrow points from the white section to the blue section. The chart is surrounded by icons of grapes, a carrot, and a leafy vegetable.

Food Insecurity Leads to *Chronic Disease*

Food Security

No reported indications of food-access problems or limitations.

Low Food Security

Reports of reduced quality, variety, or desirability of diet. Little or no indication of reduced food intake.

Very Low Food Security

Reports of multiple indications of disrupted eating patterns and reduced food intake.

Disparities Transformed: Undernutrition to Excess

Food manufacturers meet a demand for rewarding foods for those with increasing incomes



Commercial interests for monetizing health and wellness



Food insecurity paradoxically compounds the problem

Solve for how to make access to high quality diets equitable in the setting of abundance and a broad set of stakeholders that benefit from the commercialization of healthy eating

Diabetes

Non-alcoholic fatty liver disease

Prevalence and incidence of NAFLD

The prevalence of NAFLD is increasing at approximately the same rate as obesity.^{12,13} In fact, the global prevalence of NAFLD in the general population has been estimated to be 25% whereas the global prevalence of NASH has been estimated to range from 3% to 5%.^{15,16,19}

Non-alcoholic fatty liver disease – A global public health perspective

Zobair M. Younossi^{1,2,*}

(ages 20–69) attributable to high blood glucose increased for both sexes across all WHO regions, except among women in the WHO European Region (Figure 3). The increase in the proportion of deaths attributable to high blood glucose was highest in the WHO Western Pacific Region, where the total number of deaths attributable to high blood glucose during this period also increased from 490 000 to 944 000.

1.2 PREVALENCE OF DIABETES AND ASSOCIATED RISK FACTORS

WHO estimates that, globally, 422 million adults aged over 18 years were living with diabetes in 2014. (more details

Pacific Regions (see Table 2), accounting for approximately half the diabetes cases in the world.

The number of people with diabetes (defined in surveys as those having a fasting plasma glucose value of greater than or equal to 7.0 mmol/L or on medication for diabetes/raised blood glucose) has steadily risen over the past few decades, due to population growth, the increase in the average age of the population, and the rise in prevalence of diabetes at each age. Worldwide, the number of people with diabetes has substantially increased between 1980 and 2014, rising from 108 million to current numbers that are around four times higher (see Table 2). Forty per cent of this increase is estimated to be due to population growth alone, 28% from a rise in specific prevalences, and 32% from the interaction of the two (4).

In 2014

422 million
adults had diabetes

TABLE 2. NUMBER OF PEOPLE WITH DIABETES (ADULTS 18+ YEARS)

Prevalence (%)		Number (millions)	
1980	2014	1980	2014
10.8	42.2	108	422



GLOBAL REPORT ON DIABETES

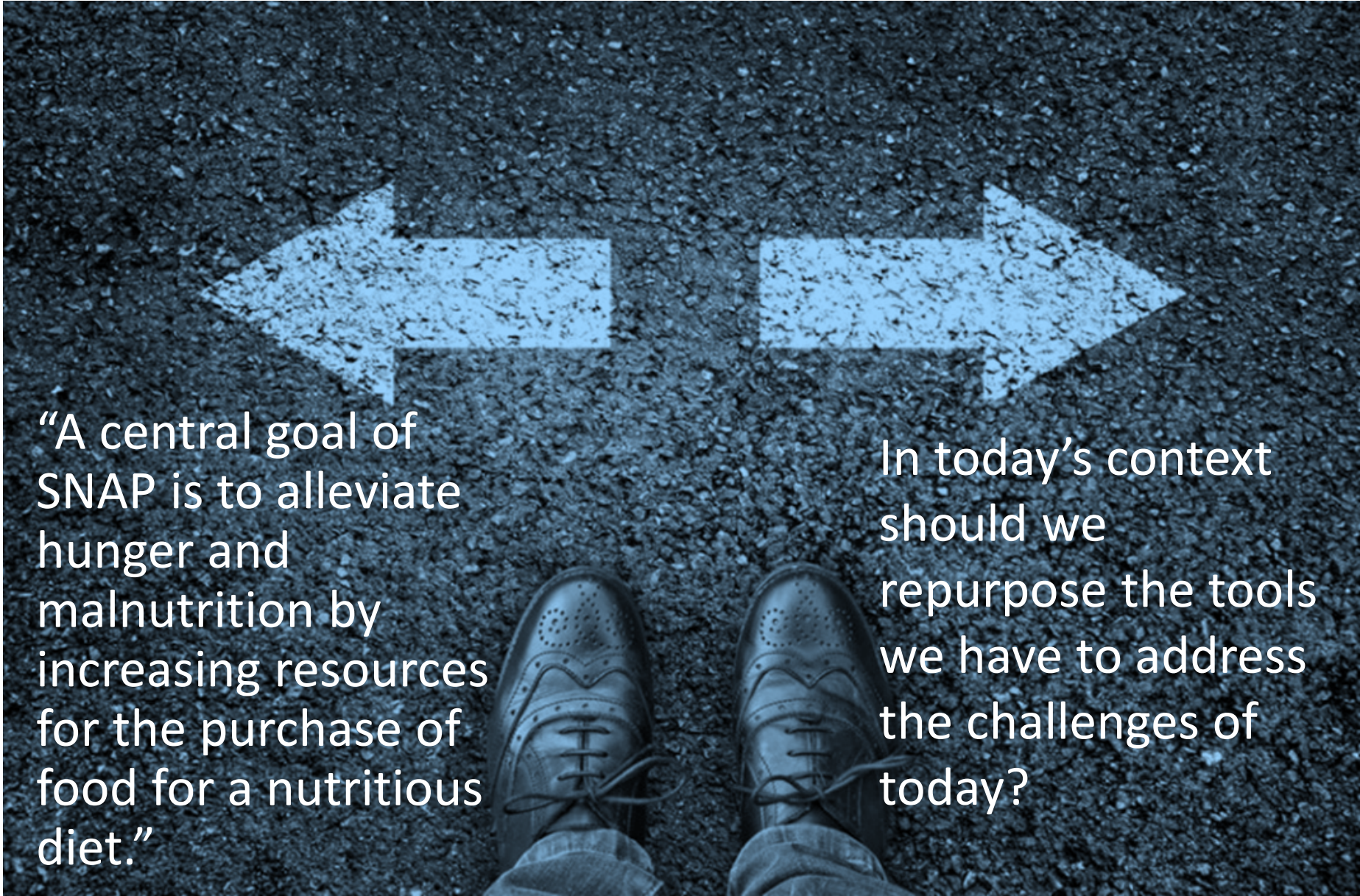


JOURNAL OF HEPATOLOGY

Time for Realignment?

Committee on Examination of the Adequacy of Food Resources and SNAP Allotments; Food and Nutrition Board; Committee on National Statistics; Institute of Medicine; National Research Council; Caswell JA, Yaktine AL, editors.

Washington (DC): [National Academies Press \(US\)](#); 2013 Apr 23.




“A central goal of SNAP is to alleviate hunger and malnutrition by increasing resources for the purchase of food for a nutritious diet.”

In today's context should we repurpose the tools we have to address the challenges of today?

Time for Major Realignment?

Committee on Examination of the Adequacy of Food Resources and SNAP Allotments; Food and Nutrition Board; Committee on National Statistics; Institute of Medicine; National Research Council; Caswell JA, Yaktine AL, editors.

Washington (DC): [National Academies Press \(US\)](#); 2013 Apr 23.



A central goal of SNAP is to promote health in all Americans by providing key foods that are the basis of a nutritious diet.

Could SNAP be repurposed to a "Universal Basic Diet" provided to all Americans?

Powerful Potential

- Modeled impact from 3 policy interventions for 14.5 mil adult SNAP participants focused on incentivizing healthier choices suggested the most comprehensive policy intervention over 5 years would
 - Prevent 117,000 CVD events
 - Save \$5.3 billion
 - Gain 56,000 QALYs



Mozaffarian D, Liu J, Sy S, Huang Y, Rehm C, Lee Y, et al. (2018) Cost-effectiveness of financial incentives and disincentives for improving food purchases and health through the US Supplemental Nutrition Assistance Program (SNAP): A microsimulation study. PLoS Med 15 (10)

The FNB Leading Change



Tough Tasks Ahead

