Dietary Guidance:
Why Are We Being Ignored? What Can We Do About It?

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Gershoff Professor of Nutrition Science and Policy
Tufts University
Objectives

• Discuss the societal challenges associated with improving eating behaviors

• Briefly review summary of approaches used to normalize body weight in the young adults

• Discuss an approach to educate children to develop lifelong healthy eating habits
### Societal Challenges Associated With Eating Behaviors

#### Portion Sizes (% change) – 1989 to 1996

<table>
<thead>
<tr>
<th>Item</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soft drinks</td>
<td>12%</td>
</tr>
<tr>
<td>Crackers</td>
<td>14%</td>
</tr>
<tr>
<td>Cookies</td>
<td>12%</td>
</tr>
<tr>
<td>Ready-to-eat cereal</td>
<td>10%</td>
</tr>
<tr>
<td>Pasta</td>
<td>12%</td>
</tr>
<tr>
<td>Pizza</td>
<td>-14%</td>
</tr>
<tr>
<td>French fries</td>
<td>8%</td>
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</tbody>
</table>

Smiciklas-Wright et al. JADA 2003;103:41
## Portion Size Drift

<table>
<thead>
<tr>
<th></th>
<th>Size 1998 (oz or fl oz)</th>
<th>Size 2002 (oz or fl oz)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>McDonald's (drinks)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12 Child</td>
<td>12 Child</td>
<td>12 Child</td>
</tr>
<tr>
<td>16 Small</td>
<td>16 Small</td>
<td>16 Small</td>
</tr>
<tr>
<td>21 Medium</td>
<td>21 Medium</td>
<td>21 Medium</td>
</tr>
<tr>
<td>32 Large</td>
<td>32 Large</td>
<td>32 Large</td>
</tr>
<tr>
<td></td>
<td>42 Supersize</td>
<td></td>
</tr>
<tr>
<td><strong>Wendy's (drinks)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12 Kid</td>
<td>12 Kid</td>
<td>12 Kid</td>
</tr>
<tr>
<td>16 Small</td>
<td>16 Small</td>
<td>20 Medium</td>
</tr>
<tr>
<td>22 Medium</td>
<td>20 Medium</td>
<td>32 Biggie</td>
</tr>
<tr>
<td>32 Biggie</td>
<td>32 Biggie</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>42 Supersize</td>
</tr>
<tr>
<td><strong>McDonald's (fries)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.4 Small</td>
<td>2.4 Small</td>
<td>5.3 Medium</td>
</tr>
<tr>
<td>5.3 Large</td>
<td></td>
<td>6.3 Large</td>
</tr>
<tr>
<td>6.3 Supersize</td>
<td></td>
<td>7.1 Supersize</td>
</tr>
<tr>
<td><strong>Wendy's (fries)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.2 Small</td>
<td>3.2 Kids' meal</td>
<td></td>
</tr>
<tr>
<td>4.6 Medium</td>
<td></td>
<td>5.0 Medium</td>
</tr>
<tr>
<td>5.6 Biggie</td>
<td></td>
<td>5.6 Biggie</td>
</tr>
<tr>
<td>6.7 Great Biggie</td>
<td></td>
<td>6.7 Great Biggie</td>
</tr>
</tbody>
</table>
Expanding food supply;

Per capita energy availability increased 15% between 1970 and 1994.

Increased Energy Intake


NHANES ('71-'75) | NHANES ('05-'06)
Increased Energy Intake

U.S. per capita loss-adjusted food availability: Total Calories: All (Daily calories)

http://www.ers.usda.gov/Data/FoodConsumption/app/reports/displayCommodities.aspx?reportName=Total Calories&id=36#startForm
Societal Challenges Associated With Eating Behaviors

Food Expenditures
Share of Disposable Personal Income
1929 - 2008

Source: USDA
Mean And Median Calories Per Unit Cost (Kcal/$) for Major Food Groups

- Vegetables
- Fruits
- Meat, poultry and fish
- Milk and milk products
- Eggs
- Sugars, sweets, and beverages
- Dry beans, legumes, nuts, seeds
- Grain products
- Fats, oils and salad dressings

Eating out;

Eating in fast-food and other restaurants increased by 200% and 150%, respectively, between 1974 and 1995.

Food Expenditures Share of Disposable Personal Income

Food expenditures (% disposable income)

1940 1960 1980 2000

All food
Food at home

Food away from home

Barnard, N. D. Am J Clin Nutr 2010;91:1530S-1536S
Relationship Between Energy and Nutrient Density

Advertising;

Food most heavily advertised are those with marginal nutritional value (i.e. sweets, snacks, pre-sweetened cereals, soft drinks).
Societal Challenges Associated With Eating Behaviors

Liquid calories - soda;

In 1970 about 25 gallons per person per year. This figure has doubled to 50 gallons/person/year by 2000.

Societal Challenges Associated With Eating Behaviors

Public Health Leaders Propose Soda Tax
Opponents Say Tax Won't Stop Obesity Epidemic

By Joseph Brownstein
ABC News Medical Unit

Sept. 17, 2009
NEW YORK (CBS news) – The New York City Health Department is launching a new campaign to show just how much sugar is in a can of soda.

October 25, 2011

1 Soda/Day = 50 lb Sugar/Year
New York City Wants To Ban Food Stamps For Sodas

By Scott Hensley
U.S.D.A. Rejects Mayor’s Plan to Ban Use of Food Stamps to Buy Soda

By Patrick Mcgeeohan

August 19, 2011
Experts Urge Testing of Ban on Use of Food Stamps for Soda

By Patrick Mcgeehan
The toxic truth about sugar

Added sweeteners pose dangers to health that justify controlling them like alcohol.

Robert H. Lustig, Laura A. Schmidt, Claire D. Brindis
“Let me state the obvious: there is no nutritional need for foods with added sugar.”
Fad Diets

*First Law of Thermodynamics*

“Total inflow of energy into a system must equal the total outflow of energy from the system, plus the change in the energy contained within the system.”
Burn Fat Fast
Eating ONLY the Foods You Love!

- NO dieting or pills
- NO prepackaged meals
- NO exercise required
- NO failures guaranteed!

Learn More

Detox

Detoxification is the secret tool you can use to boost weight loss. Many of us are toxic, holding wastes and even parasites, that hinder our weight loss goals. Learn how to detox safely and you can experience easier weight loss than ever before.

Zone Diet

The key factor in Zone Diet is the hormonal balance you achieve while eating each skillfully prepared meal. With a food plan comprising an accurate balanced ratio of carbohydrates (40%), fat (30%) and proteins (30%); you actually get to eat foods, which control your body’s insulin production. This means that no meal or snack is forbidden in the Zone Diet and yet you can lose weight or fat while Zone dieting.
Low Fat

Low Carbohydrate (1970’s)
Fad Diets

Low Fat
(1990’s)

Low Carbohydrate
Fad Diets

- Low Fat
- Low Carbohydrate (2000’s)
Low Carbohydrate Diets

1972

The Original Atkins Diet
It's the only one you need

Dr Atkins
New Diet
Revolution

- Atkins Made Easy 2-week Induction Plan
- Lifetime Maintenance Plan
- Tips for safe and healthy dieting
“Dr. Atkins made the controversial argument that the low-carbohydrate diet produces a metabolic advantage in which the body burns more calories, overall, than on normal diets, and also expels some unused calories.”

Excretion of ketone bodies;
• Maximum ~25g/day or ~100 kcal/day

Wikipedia Wesite
Potential Low Carbohydrate Options
Alternate Low Carbohydrate Options

Country Snacks

FRIED PORK RINDS

Country Snacks

FRIED PORK RINDS Salt & Vinegar

Country Snacks

FRIED PORK RINDS Sweet Mild Barbary
Macronutrient Distribution

- Low Fat
  - (1990’s)
- Low Carbohydrate
Low Fat Diets

1994
Potential Low Fat Options
Alternate Low Fat Options
Macronutrient Distribution

Low Fat

Low Carbohydrate

(2000’s)
Low Carbohydrate Diets
Potential Low Carbohydrate Options
Low Carbohydrate Diets
Macronutrient Distribution

Current Era

Low Fat

Low Carbohydrate
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Funnel plot: Childhood obesity interventions versus control by age groups 0-5, 6-12 and 13-18 years
Outcome: Standardised mean change in Body Mass Index (BMI/zBMI) from baseline to post-intervention.

<table>
<thead>
<tr>
<th>Physical activity alone</th>
<th>Dietary modification alone</th>
<th>Physical activity and dietary modification</th>
</tr>
</thead>
</table>


Objectives

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- Briefly review summary of approaches used to normalize body weight in the young adults

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Potential Solutions
Potential Solutions

Ronald McDonald Kidnapped, Held Hostage by Fringe Group... Seriously

http://www.minyanville.com/dailyfeed/ronald-mcdonald-kidnapped-held-hostage-1/
Potential Solutions

Ronald McDonald Kidnapped, Held Hostage by Fringe Group...Seriously

http://www.minyanville.com/dailyfeed/ronald-mcdonald-kidnapped-held-hostage-1/
Social Ecological Framework for Nutrition and Physical Activity Decisions

- Belief Systems
- Heritage
- Religion
- Priorities
- Lifestyle
- Body Image

- Government
- Public Health and Health Care Systems
- Agriculture
- Marketing/Media

- Demographic Factors (e.g., age, gender, socioeconomic status, race/ethnicity, disability status)
- Psychosocial Factors
- Knowledge and Skills
- Gene-Environment Interactions
- Other Personal Factors

Sectors of Influence

Environmental Settings

Social and Cultural Norms and Values

Individual Factors

Food and Beverage Intake
Physical Activity
Commentary

Bring Back Home Economics Education

Alice H. Lichtenstein and David S. Ludwig
Lack of basic food preparation skills
  - Fewer role models
  - Lack of universal instruction in schools
  - Reliance on quick fixes (e.g., appliances featuring ‘smart’ options)

Obesity-hunger paradox
  - Food deserts
  - Proliferation quick-serve outlets
Value of Providing Food Preparation and Acquisition Skills

- ‘Provide fishing rod rather than fish’
- Dispel myth that food preparation takes too much time or skill
- Dispel myth that nutritious food tastes bad
- Provide confidence in selecting, handling and preparing food
Value of Providing Food Preparation and Acquisition Skills

• Facilitate transition into adulthood
• Influence next generation’s eating behaviors
• Create purchasing habits to encourage industry to develop healthful choices
• Encouraging children to take control of their food choices
Challenges to Increasing Preparation and Acquisition Skills

• Con’s –
  – Economic barriers to redesigning school facilities
  – Limited time in the school curriculum

• Pro’s –
  – Economic incentives in terms of healthcare expenditures
  – Improved quality of life
  – Potential environment benefits
Experimental instructional approaches

• Group 1 - Discussion-Decision (interactive)
• Group 2 - Lecture (passive audience)
• Group 3 - Control
Changing Food Choices – Healthy Lunches

Experimental instructional approaches

• Group 1 – 49% increase
• Group 2 – 31% increase
• Group 3 – 10% increase

Radke M & Caso EK Lecture and discussion-decision as methods of influencing food habits. JADA 1948;24:23
“Hunting and Gathering in the 21st Century”

- Demystify meal planning and food preparation
- Develop skills to navigate complex food market
- Harness modern conveniences while avoiding modern nutritional traps
- Take advantage of nutrition information readily available

Lichtenstein AH and Ludwig DS. JAMA 2010;303:1857
Front-of-Package Nutrition Rating Systems and Symbols

Nutrition Highlights

- Calories: 100
- Fat: 5%
- Sat Fat: 0g
- Sodium: 190mg
- Sugars: 1g
- Fiber: 3g
- Calcium: 100mg

Amount and % Daily Value per serving

- LOW FAT: 7.7g
- LOW SAT FAT: 2.0g
- HIGH SUGAR: 42.2g
- MED SALT: 2.0g

Calorie Count

- Calories: 200
- Total Fat: 4g
- Sodium: 5mg
- Sugars: 12g
- Fiber: 6g
- Magnesium: 15g

Each serving provides these percentages of the RDA based on a 2,000 calorie diet.

Sea side panel for nutrition information.

100%

WHOLE GRAIN

EAT 48g OR MORE OF WHOLE GRAINS DAILY

WholeGrainsCouncil.org

Guiding Stars®

Nutritious choices made simple®

MyPyramid.gov

STARTMAKINGCHOICES.com

Health Check

HEART & STROKE FOUNDATION

1-100

Nutrition made easy.

CHOICES

Based on International Dietary Guidelines

NuVal

American Heart Association
heartcheckmark.org

Products with this mark meet criteria for

Saturated Fat & Cholesterol
Front-of-Package Nutrition Rating Systems and Symbols

Promoting Healthier Choices
Nutrients of concern:

- Saturated fat
- Trans fat
- Sodium
- ‘Added sugars’
Two Step Process

- Step 1 – Eligibility criteria
- Step 2 – Qualifying criteria
Recommended criteria be based on current definitions;

- FDA and USDA health claim guidance
- Dietary Guidelines for Americans
- Dietary Reference Intake levels
- Others
## Nutrition Facts

**Serving size** 1 Cup (59 g)

**Servings Per Container** 12

<table>
<thead>
<tr>
<th>Amount per serving</th>
<th>% Daily Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Calories</strong></td>
<td>190</td>
</tr>
<tr>
<td><strong>Total Fat</strong></td>
<td>1g</td>
</tr>
<tr>
<td><strong>Saturated Fat</strong></td>
<td>0g</td>
</tr>
<tr>
<td><strong>Trans Fat</strong></td>
<td>0g</td>
</tr>
<tr>
<td><strong>Cholesterol</strong></td>
<td>0mg</td>
</tr>
<tr>
<td><strong>Sodium</strong></td>
<td>250mg</td>
</tr>
<tr>
<td><strong>Total Carbohydrate</strong></td>
<td>46g</td>
</tr>
<tr>
<td><strong>Dietary Fiber</strong></td>
<td>7g</td>
</tr>
<tr>
<td><strong>Sugars</strong></td>
<td>17g</td>
</tr>
<tr>
<td><strong>Protein</strong></td>
<td>5g</td>
</tr>
</tbody>
</table>

**Vitamins and Minerals:**
- **Vitamin A:** 10%
- **Vitamin C:** 0%

**Calcium:** 2%
- **Iron:** 25%

*Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs.*

<table>
<thead>
<tr>
<th>Calories</th>
<th>2,000</th>
<th>2,500</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Fat</td>
<td>Less than 65g</td>
<td>80g</td>
</tr>
<tr>
<td>Sat Fat</td>
<td>Less than 20g</td>
<td>25g</td>
</tr>
<tr>
<td>Cholesterol</td>
<td>Less than 300mg</td>
<td>300mg</td>
</tr>
<tr>
<td>Sodium</td>
<td>Less than 2,400mg</td>
<td>2,400mg</td>
</tr>
<tr>
<td>Potassium</td>
<td>3,500mg</td>
<td>3,500mg</td>
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<tr>
<td>Total Carbohydrate</td>
<td>300g</td>
<td>375g</td>
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<tr>
<td>Dietary Fiber</td>
<td>25g</td>
<td>30g</td>
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<tr>
<td>Calories per gram:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fat</td>
<td>9</td>
<td>Carbohydrate</td>
</tr>
<tr>
<td>Protein</td>
<td>4</td>
<td></td>
</tr>
</tbody>
</table>
Front-of-Package Nutrition Rating Systems and Symbols

- *Simple*: not requiring specific or sophisticated nutritional knowledge to understand

- *Interpretive*: nutrition information is provided as guidance rather than as specific facts

- *Ordinal*: offering nutritional guidance using a scaled or ranked approach

- *Supported by communication*: with readily remembered names or identifiable symbols
New USDA Nutrition Labels for Meat, Poultry
More Nutrition Info on Ground Meat/Poultry and Popular Cuts

by Daniel J. DeNoon
WebMD Health News

March 1, 2012
<table>
<thead>
<tr>
<th>Nutrition Facts</th>
<th>Nutrition Facts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Serving Size: 4 oz (112g) raw, as packaged. Servings Per Container varied.</td>
<td>Serving Size: 4 oz (112g) raw, as packaged. Servings Per Container varied.</td>
</tr>
<tr>
<td><strong>Amount Per Serving</strong></td>
<td><strong>Amount Per Serving</strong></td>
</tr>
<tr>
<td>Calories: 200 Calories from Fat 100</td>
<td>Calories: 370 Calories from Fat 300</td>
</tr>
<tr>
<td>% Daily Value*</td>
<td>% Daily Value*</td>
</tr>
<tr>
<td>Total Fat: 11g</td>
<td>Total Fat: 34g</td>
</tr>
<tr>
<td>Saturated Fat: 4.5g</td>
<td>Saturated Fat: 13g</td>
</tr>
<tr>
<td>Cholesterol: 75mg</td>
<td>Cholesterol: 85mg</td>
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<tr>
<td>Sodium: 75mg</td>
<td>Sodium: 75mg</td>
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<tr>
<td>Total Carbohydrate: 0g</td>
<td>Total Carbohydrate: 0g</td>
</tr>
<tr>
<td>Protein: 22g</td>
<td>Protein: 16g</td>
</tr>
<tr>
<td>Iron: 15%</td>
<td>Iron: 10%</td>
</tr>
</tbody>
</table>

Not a significant source of dietary fiber, sugars, vitamin A, vitamin C, and calcium. 
* Percent Daily Values are based on a 2,000-calorie diet.
## Nutrition Labeling – Fresh Meat

### Beef, ground
- **90% lean/10% fat, raw**

### Turkey, ground
- **92% lean/8% fat, raw**

<table>
<thead>
<tr>
<th>Nutrition Facts</th>
<th>4 oz (112g)</th>
<th>Calories from Fat 100%</th>
<th>% Daily Value*</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Beef, ground</strong></td>
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<td></td>
<td></td>
</tr>
<tr>
<td><strong>Calories</strong></td>
<td>200</td>
<td>Calories from Fat 100%</td>
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</tr>
<tr>
<td><strong>Total Fat</strong></td>
<td>11g</td>
<td>17%</td>
<td></td>
</tr>
<tr>
<td><strong>Saturated Fat</strong></td>
<td>4.5g</td>
<td>23%</td>
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<tr>
<td><strong>Cholesterol</strong></td>
<td>75mg</td>
<td>24%</td>
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<tr>
<td><strong>Sodium</strong></td>
<td>75mg</td>
<td>3%</td>
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</tr>
<tr>
<td><strong>Total Carbohydrate</strong></td>
<td>0g</td>
<td>0%</td>
<td></td>
</tr>
<tr>
<td><strong>Protein</strong></td>
<td>22g</td>
<td>45%</td>
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</tr>
<tr>
<td><strong>Iron</strong></td>
<td>15%</td>
<td>15%</td>
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</tr>
<tr>
<td>Not a significant source of dietary fiber, sugars, vitamin A, vitamin C, and calcium</td>
<td></td>
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</tr>
<tr>
<td>*Percent Daily Values are based on a 2,000-calorie diet</td>
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<table>
<thead>
<tr>
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<th>Calories from Fat 80%</th>
<th>% Daily Value*</th>
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<tbody>
<tr>
<td><strong>Turkey, ground</strong></td>
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</tr>
<tr>
<td><strong>Calories</strong></td>
<td>170</td>
<td>Calories from Fat 80%</td>
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</tr>
<tr>
<td><strong>Total Fat</strong></td>
<td>9g</td>
<td>14%</td>
<td></td>
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<tr>
<td><strong>Saturated Fat</strong></td>
<td>2.5g</td>
<td>12%</td>
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<tr>
<td><strong>Cholesterol</strong></td>
<td>85mg</td>
<td>28%</td>
<td></td>
</tr>
<tr>
<td><strong>Sodium</strong></td>
<td>75mg</td>
<td>3%</td>
<td></td>
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<tr>
<td><strong>Total Carbohydrate</strong></td>
<td>0g</td>
<td>0%</td>
<td></td>
</tr>
<tr>
<td><strong>Protein</strong></td>
<td>21g</td>
<td>42%</td>
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</tr>
<tr>
<td><strong>Iron</strong></td>
<td>8%</td>
<td>8%</td>
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<td>Not a significant source of dietary fiber, sugars, vitamin A, vitamin C, and calcium</td>
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