The U.S. Diet and The Role of Beverages

Dr. Barry Popkin

The Beverage Panel
The University of North Carolina at Chapel Hill
Food and Beverage Trends

• The number of eating occasions is increasing
• Portion sizes of actual meals consumed is increasing
• Away from home eating continues to increase
• Adult consumption patterns differ on weekends
• Snacks have increased in number significantly over time and are consistently more energy dense and less nutrient dense (calcium, fiber, folate) than meals

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Beverage Trends

- The major beverage shifts: increased calorically-sweetened beverages and alcohol; shift from whole to reduced fat milks; no data on water, tea or coffee trends
- The beverage trends are comparable across all age-gender groups; levels are higher in some age groupings
The % of total daily calorie intake from each beverage for all Americans aged 2 and older

Beverage Consumption 1999-2001
Calorie Proportions Per Beverage


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Average Beverage Intake Patterns for U.S. Adults Aged 19 and Older, 1999-2002

a. Fluid Ounces Consumed
Total 114 FL OZ

- WATER (46 FL OZ)
- TEA/COFFEE, UNSWEETENED (15 FL OZ)
- CALORIC BEVERAGES WITH SOME NUTRIENTS (15 FL OZ)
- CALORICALLY-SWEETENED BEVERAGES (20 FL OZ)
- NONCALORICALLY-SWEETENED BEVERAGES (5 FL OZ)
- LOW FAT MILK (3 FL OZ)

b. Kcal Consumed per day
Total 464 KCALS

- WATER (0 KCALS)
- TEA/COFFEE, UNSWEETENED (11 KCALS)
- LOW FAT MILK (29 KCALS)
- CALORICALLY-SWEETENED BEVERAGES (211 KCALS)
- CALORIC BEVERAGES WITH SOME NUTRIENTS (213 KCALS)
- CALORICALLY-SWEETENED BEVERAGES (20 FL OZ)
- NONCALORICALLY-SWEETENED BEVERAGES (5 FL OZ)

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Liquid Calories Linked To Weight Gain

- Liquid calories do not affect food intake [No adjustment for food intake to compensate for liquid calories]
- Clinical and epidemiological studies show the link between liquid calories and weight gain
Our Goal

Create a uniform guidance system to help consumers make healthy beverage choices

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The Healthy Beverage Guidelines were funded by the Unilever Health Institute and created by a panel of leading nutrition experts:

- **Barry Popkin** – Panel Head: Professor of Nutrition, University of North Carolina-Chapel Hill; Head of the Division of Nutrition Epidemiology, UNC-CH Schools of Public Health and Medicine; Director, UNC-CH’s Interdisciplinary Center for Obesity

- **Benjamin Caballero** – Professor of International Health, Johns Hopkins University Bloomberg School of Public Health; Professor of Pediatrics, Johns Hopkins School of Medicine

- **Walter Willett** – Professor, Harvard University, senior diet and chronic disease epidemiologist

- **George Bray** – Professor, Louisiana State University, major obesity scholar

- **Balz Frei** – Professor, Oregon State University, key scholar on micronutrients, phytochemicals and beverages and health

- **Lawrence Armstrong** – Professor, University of Connecticut, exercise physiologist, caffeine, hydration, performance scholar
The Research

• Review the science about each beverage and consider what is known about the health benefits and risks of each beverage category
• Classify beverages based on calories, nutrient content and potential health benefits and/or risks
The Findings

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Energy Consumption from Beverages

• Today 23% of kcal from beverages. Need to reduce this level
Level I: Water

- Essential for life
- Needed for adequate hydration
- Dehydration: impaired cognition, moodiness, physical work performance, increased risk of bladder, colon, breast cancer
Level II: Tea and Coffee

• Tea and Coffee: Selected benefits on chronic health effects in terms of weight gain and chronic diseases. The only issue is for high added cream and sugar such as for gourmet coffees.

• Tea: In animal research, tea has protective role against selected cancers; unclear benefits in humans. Potential health benefits of flavonoids in tea are unclear.

• Coffee: Mild antidepressant, some evidence lowers risk of Type 2 diabetes.

• Caffeine: 400 mg limit. 32 ounce limit coffee [limit if pregnant]

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Level III: Low Fat, Skim Milk and Fortified Soy Beverages

- Skim Milk – unclear benefits on weight loss and bone density and fractures. Important benefits as protein source for child linear growth. Also major provider of calcium and vitamin D

- Current consumption patterns indicate milk products are important contributors of many key nutrients

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Level IV: Non-Calorically Sweetened Beverages

- High sweetness in these beverages holds the possibility that consumption of these sweet beverages may condition a preference for sweetness
Level V: Caloric Beverages
With Some Nutrients

- Fruit juices: High in energy content, contribute limited nutrients
- Vegetable juices: Fewer calories, significant amounts of sodium
- Alcohol: Consumed in moderation has some health benefits
- Whole milk: Saturated fats are not needed
- Sports drinks: Reduced energy density over soft drinks, helpful for hydrating endurance athletes
Level VI: Calorically Sweetened Beverages

- Calorically-sweetened beverages are associated with increased energy intake
- Poor source of essential nutrients

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Example of Acceptable Beverage Pattern - 2200 Calories

- **Level 1:** Water 20-50 fl oz/d
- **Level 2:** Tea and Coffee (unsweetened) 0-40 fl oz/d (can replace water; caffeine is a limiting factor–up to 400 mg/d or about 32 fl oz/d of coffee)
- **Level 3:** Low Fat and Skim Milk and Soy Beverages 0-16 fl oz/d
- **Level 4:** Noncalorically-Sweetened Beverages 0-32 fl oz/d (could substitute for tea and coffee with the same limitations regarding caffeine)
- **Level 5:** Caloric Beverages with Some Nutrients: 100% fruit juices 0-8 fl oz/d, alcoholic beverages 0-1 drink per day for women and 0-2 drinks per day for men (one drink = 12 fl oz of beer, 5 fl oz of wine, or 1.5 fl oz of distilled spirits), whole milk 0 fl oz/d
- **Level 6:** Calorically-Sweetened Beverages 0-8 fl oz/d
Graphic worked out for the public
You can select beverages from the different levels – just be sure to watch calories and caffeine. If you are consuming 2,000 calories per day, you can consume 200-300 calories from beverages each day.

- **Soft Drinks, Juice Drinks**
  - Up to 1 Serving (110 calories)

- **100% Fruit Juices, Whole Milk, Sports Drinks**
  - Up to 1 Serving (115 calories)

- **Diet Soft Drinks, Calorie Free Tea/Coffee with Sugar Substitutes**
  - Up to 4 Servings (0 calories)

- **Skim/low-fat Milk, Unsweetened Fortified Soy Beverages**
  - Up to 2 Servings (100 calories per serving)

- **Unsweetened Coffee (Flavored, Non-Flavored)**
  - Up to 4 Servings of Coffee (0 calories)
  - Up to 8 Servings of Tea (0 calories)

**Caffeine Chart**

- **Green Tea**: 45mg
- **Black Tea**: 55mg
- **Drip Coffee**: 100mg

Average in milligrams per 8-ounce serving.

- **Water**
  - Up to 9 Servings for Women, 13 Servings for Men
  - (0 calories)
GUÍA DIARIA PARA UN CONSUMO SALUDABLE DE BEBIDAS

Propuestas por un panel de expertos en nutrición

**JUGOS, REFRESCOS**
- Hasta 1 porción (110 calorías)

**JUGOS DE FRUTAS EN UN 100%, LECHE ENTERA, BEBIDAS DEPORTIVAS**
- Hasta 1 porción (115 calorías)

**REFRESCOS DE DIETA, TÉ O CAFÉ SIN CALORÍAS CON SUSTITUTOS DEL AZÚCAR**
- Hasta 4 porciones (0 calorías)

**LECHE DESCREMADA O BAJA EN GRASAS*, BEBIDAS DE SOYA ENRIQUECIDAS NO AZUCARADAS**
- Hasta 2 porciones (100 calorías por porción)

**CAFÉ NO AZUCARADO (CON O SIN SABOR)**
- Hasta 4 porciones de Café (0 calorías)
- Hasta 8 porciones de Té (0 calorías)

**TÉ NO AZUCARADO (NEGRO, VERDE, BLANCO, ROJO, DE HIERBAS)**
- Hasta 9 porciones las mujeres, 13 porciones los hombres (0 calorías)

**AGUA**