The U.S. Diet and The Role of Beverages

Dr. Barry Popkin

The Beverage Panel

The University of North Carolina at Chapel Hill

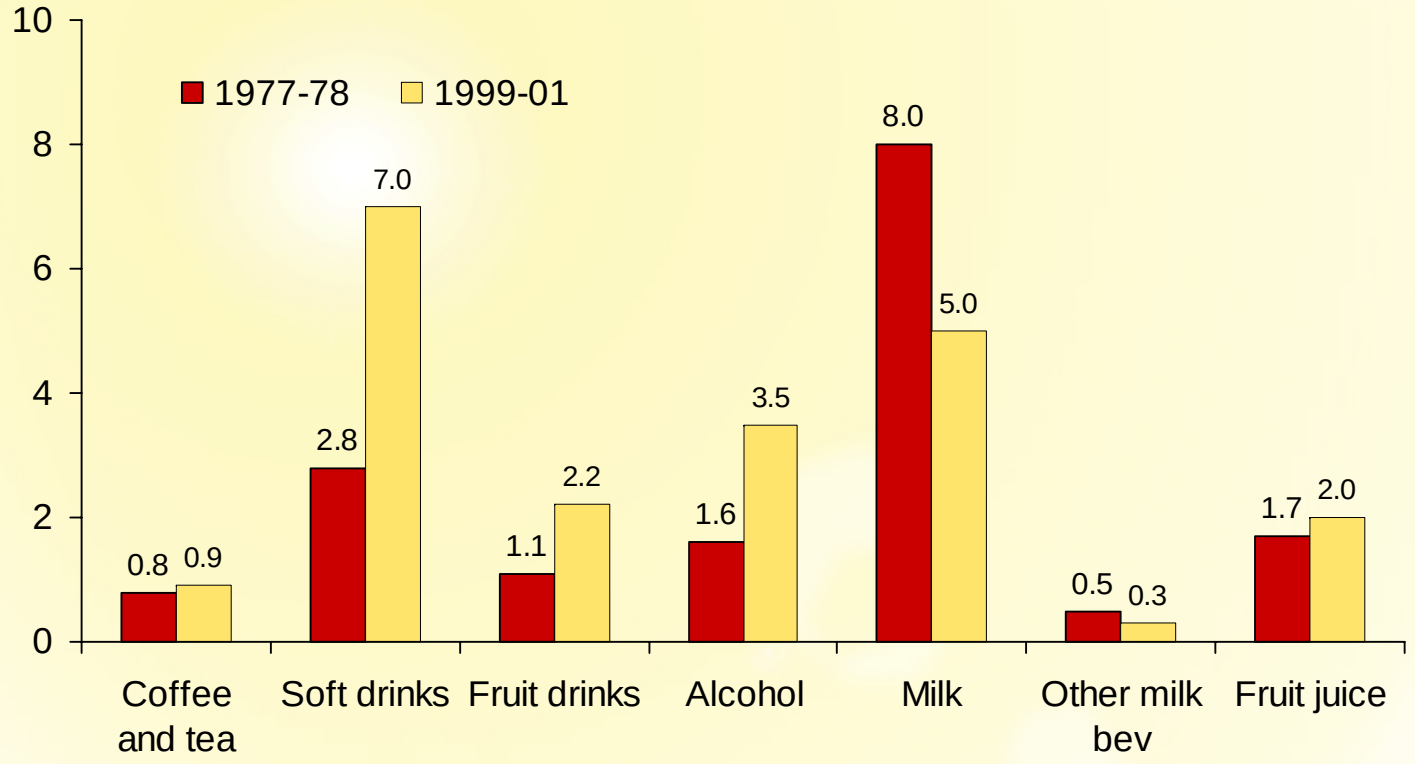
Food and Beverage Trends

- 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

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

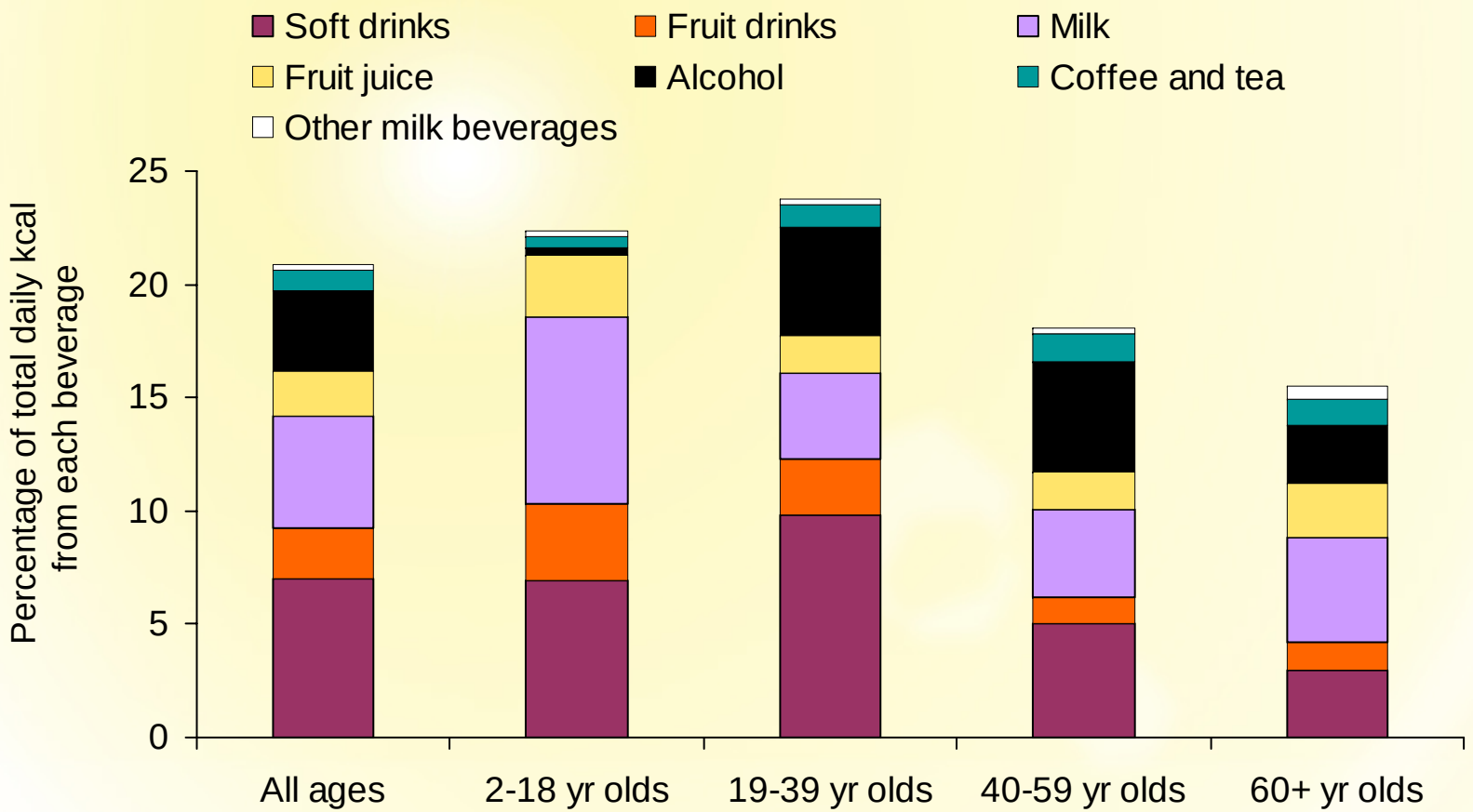
Trends in Beverage Consumption from 1977-2001



The % of total daily calorie intake from each beverage for all Americans aged 2 and older

Source:Nielsen & Popkin 2004 Am J Prev Med 27: 205-10. *All changes significant at the 0.01 level between 1977-78 and 1999-2001

Beverage Consumption1999-2001
Calorie Proportions Per Beverage



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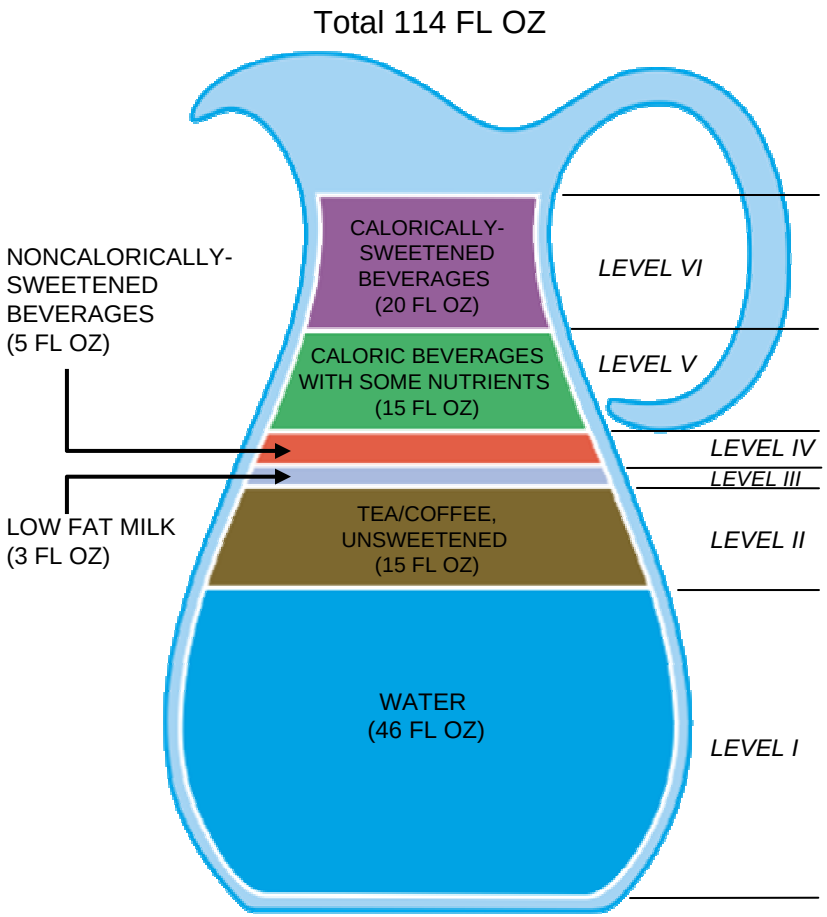
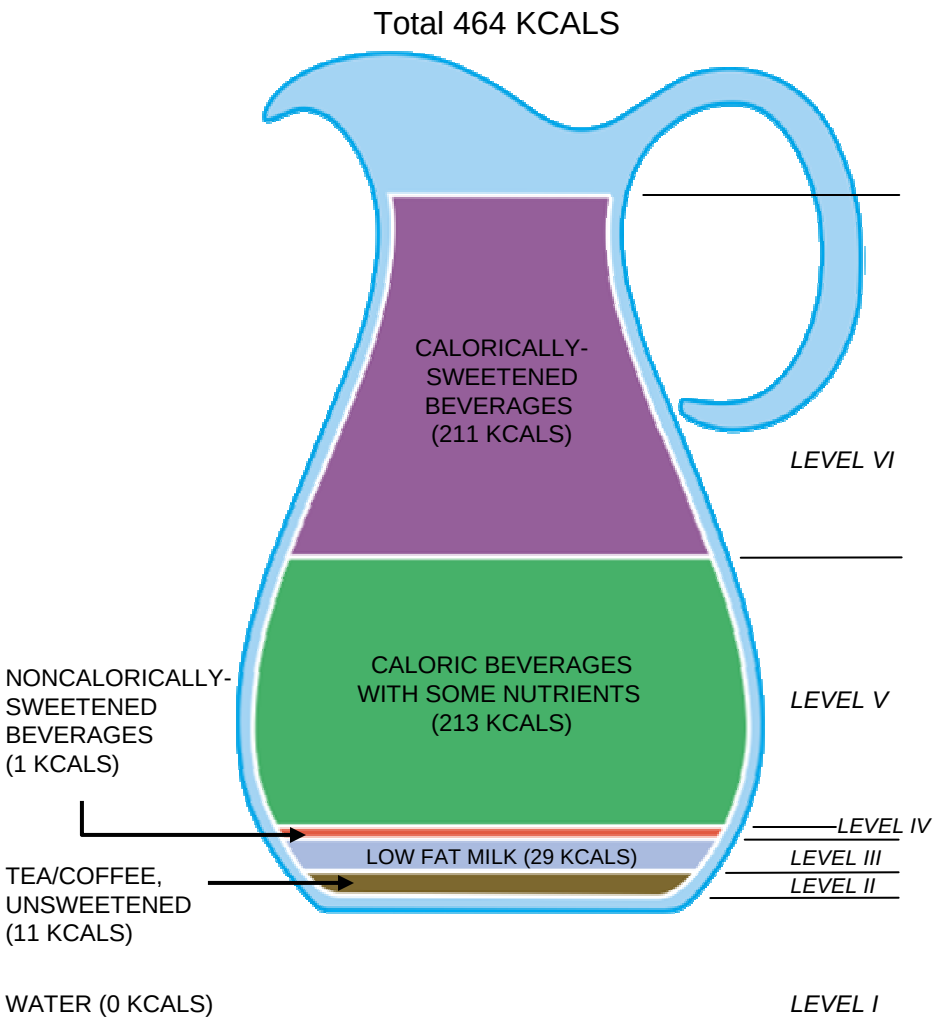
Source:Nielsen & Popkin 2004 Am J Prev Med 27: 205-10.

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

a. Fluid Ounces Consumed



b. Kcal Consumed per day



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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

The Panel

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

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 chronics, no adverse 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]

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

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

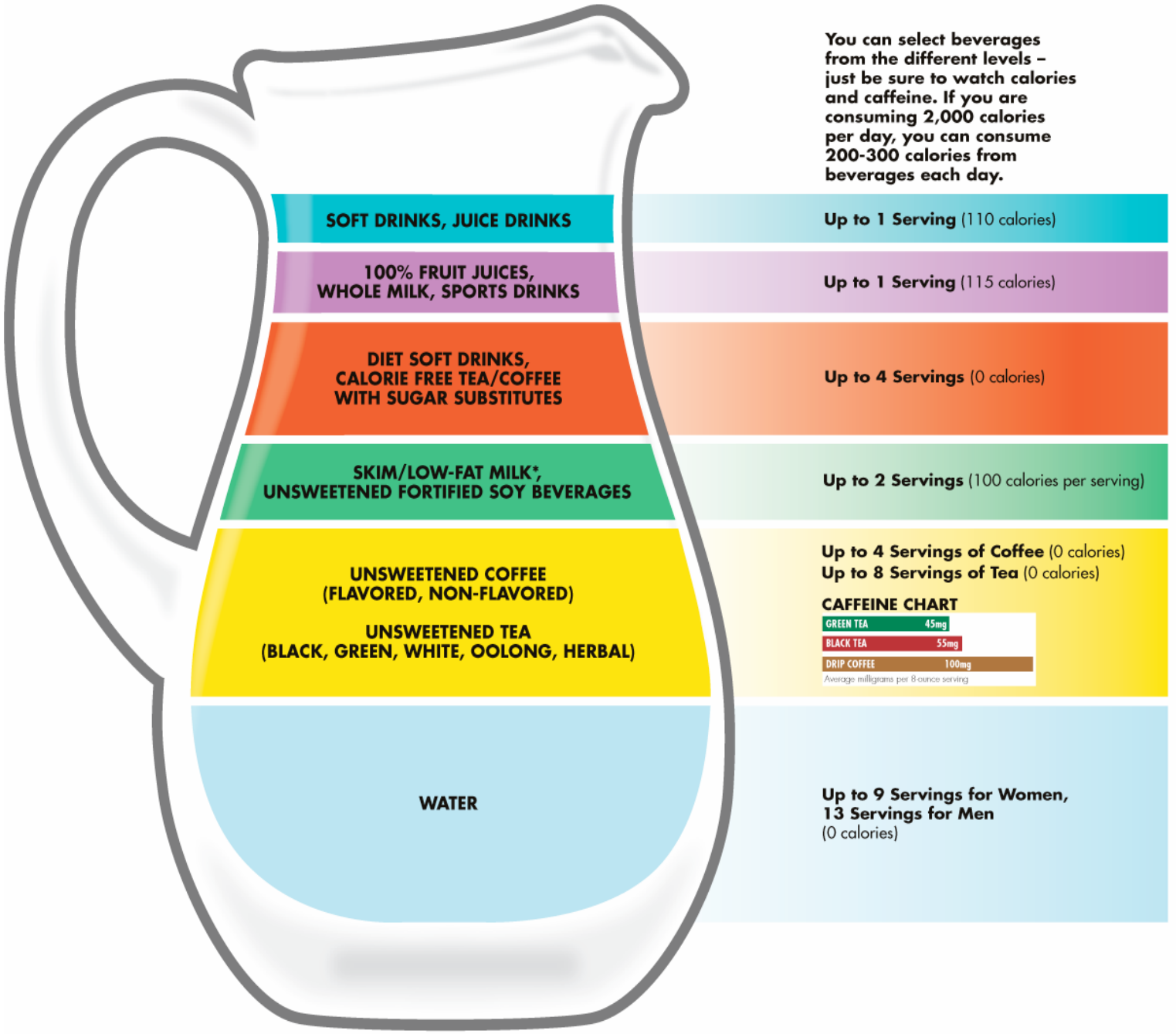
Level VI: Calorically Sweetened Beverages

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

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)
UNSWEETENED TEA (BLACK, GREEN, WHITE, OOLONG, HERBAL)
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 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