



Nutrition for Family Living

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May, 2002 Topics

- Larger portions may contribute to larger Americans
- For Your Use: Portion size and the American diet
- Clarifying the controversies about caffeine
- The colors of nature's functional foods: Carotenoids

Larger portions may contribute to larger Americans

Whatever you want to call it – “portion distortion,” “super-size eyes” or another catchy phrase you hear this week – Americans are finding larger and larger amounts of food on their plates and larger packages of food at the store. This is a problem since Americans are eating more and exercising less, and becoming larger themselves.

Consider that:

- Today’s “small” order of McDonald’s fries was considered “large” back in the ‘70’s.
- A 32-ounce fountain soda – a quart! – costs only a few cents more than a 12-ounce can at some convenience stores.
- Everyone loves a bargain. If a larger size is only a few cents more, people will often choose the better deal, even if it’s more food than they need or really want.
- We don’t see SuperSize yogurts or bonus bags of baby carrots. The inexpensive foods with the expanding portion sizes are often not the healthiest choices.

Very young children tend to decide how much to eat by the cues their bodies give them – when they’re full, they stop eating, and if they’re not hungry, they push away the bottle or spoon. By school age, children start to do what the people around them are doing: if everyone else is having a snack, they want one too. If they always get a treat at the grocery store, they will ask for a treat even if they’re not really hungry. Research has shown that by the time they turn five, the amount children are served influences the amount they eat at a meal. This could be a good thing if it meant they were eating more broccoli; however, it applies to less nutritious foods as well. If there are more fries on their plate, kids will eat them until they’re gone.

Adults have the same tendency. A study conducted by the American Institute for Cancer Research found that 56% of adults decide how much to eat based on how hungry they are; 34% decide based on how much they are used to eating, and 26% by how much is served to them on their plate. If their eye, rather than their stomach, decides how much to eat, then seeing larger portion sizes day after day could have a major impact on people’s calorie intake over time.

How can educators teach about portion size?

- Use the Food Guide Pyramid as the basis for talking about portions and servings. Start by talking about how a person’s lifestyle and activity level determines their calorie needs, which determines how many servings they need from each pyramid group. (see pages 8 and 14 of



Nutrition for Family Living May, 2002

the Dietary Guidelines for Americans book HG232, or Chart 1 from Using the Dietary Guidelines for Americans program aid 1676 that was sent in bulk to each WNEP coordinator this spring).

- The distinction between portions and servings may be hard for some people to understand. When we talk about *servings* size, we mean the amount referred to by the Food Guide Pyramid – which may or may not be the same amount on a food's Nutrition Facts Label. *Portion* size is the amount of food we put on our plate and actually eat. Some examples:
 - The portion of cereal that a child eats might equal a Food Guide Pyramid serving, but the portion that a construction worker eats could be several servings.
 - The portion of meat in a double hamburger equals several servings from the meat group.
 - A 20-ounce bottle of soda is considered 2-1/2 8-ounce servings! So drinking an entire bottle of sugared soda would provide 375 calories!
 - A single large bagel – one *portion*, for many people - can be as many as four servings from the grain group!
- Point out that because many people aren't familiar with serving sizes and household measures, they are likely to OVER estimate how much they're eating when they talk about fruits, vegetables and milk, but UNDER estimate how much they're eating when asked about meat, cheese, or snack foods.
- Some simple comparisons are:

Food	Serving Size	Easy Measure
Breakfast cereal	1 ounce	Volume varies with brand and type – 1 cup is roughly the size of an adult's fist
Cooked cereal, rice or pasta	½ cup	½ baseball
Meat	2-3 ounces	Deck of playing cards, or a cassette tape
Fruit	1 medium piece of fruit ½ cup canned or cut up	Size of a baseball ½ baseball
Vegetables	½ cup cooked vegetables 1 cup raw vegetables or salad	½ baseball Size of an adult's fist
Cheese	1-1/2 ounce	Four stacked dice
Milk	8 ounces	½ pint carton
Peanut butter	2 tablespoons (equals 1 ounce of meat or ½ meat group serving)	Size of a ping pong ball

The take-home message is that people don't need to start measuring their cereal in the morning, but they should be aware that it's easy to lose track of how much they are eating when food is served and available in larger quantities. Helping people to take a good look at how much they are eating is a first step toward balancing food intake and energy needs.

Portion sizes and weight management

One way to think about weight control is to think about portion control. To keep your weight from increasing, keep your portions from increasing!



Nutrition for Family Living May, 2002

Some tips you can suggest:

- Decide how much food to cook based on how much you plan to eat, rather than automatically cooking the entire package – especially for foods like pasta, which are easy to pile on your plate.
- If you're cooking extra for leftovers, put the food into portion-size containers and put them in the fridge before you eat your meal. You'll be less tempted to go back for more.
- Put your food on your plate in the kitchen and eat at the table.
- Allow other family members to put food on their plates, but leave the serving dishes in the kitchen.
- If your plate looks empty with less food on it, try a smaller plate, or try a larger portion of vegetables.
- Eat slowly and enjoy your food. Listen to your body – when you're full, stop eating, even if you haven't cleaned your plate.
- Don't eat chips or snack foods out of the bag or box. Put a small handful in a dish, close the bag or box and put it away.
- At restaurants, check out appetizers as entrees, share an entrée with a friend, or bring half your meal home and put it in the fridge for lunch the next day.
- At fast food restaurants, order the kids' meal. Choose "regular" or "small" size sandwiches, burgers, fries and beverages.
- If you drink sugared soda, buy cans rather than fountain drinks because even with ice, fountain cups hold more. Better still, drink low-fat or skim milk, or water – and drink as much as you want!

Special Considerations

- The Children's Food Guide Pyramid recommends slightly smaller servings for children age 2-4. You can refer to this when talking with parents about feeding young children. (see link below)
- Serving sizes for the diabetic exchange system are somewhat different from the Food Guide Pyramid serving sizes for some foods. If a person with diabetes who uses the exchange system for meal planning or carbohydrate counting wants to discuss specific questions on serving sizes, they should consult their registered dietitian.

Rolls BJ, Engel D, Birch LL. Serving portion size influences 5-year-old but not 3-year-old children's food intakes. *J Am Diet Assn.* 2000; 100(2); 232-234.

Young LR and Nestle M. The contribution of expanding portion sizes to the US obesity epidemic. *Am J Public Health.* 2002;92(2); 246-249.

The Children's Food Guide Pyramid can be found at:

<http://www.usda.gov/cnpp/KidsPyra/LittlePyr.pdf>

Watch for a new flier on portion sizes, "How Much Are You Eating?" that will soon be available from USDA/CNPP, most likely in a form that can be printed from the web. www.usda.gov/cnpp.



For your use: Portion Sizes and the American Diet

Contributed by Katie Leischer, undergraduate dietetics student

Have you seen all those advertisements for “super-sized” fries, “big-gulp” drinks, and triple-decker hamburgers? If so, you’ve probably thought about whether to order the larger amount or a smaller amount. If you’re like most Americans, the thought of getting more food for your money is appealing.

More may not be better. Larger portions contain more calories, and encourage people to eat more. According to the American Cancer Institute, one in four Americans belongs to the “Clean Plate Club,” which means you eat all that’s on your plate, even if you’d feel full with less. These extra calories increase your chances of becoming overweight, and developing other chronic diseases including cancer, coronary heart disease, and diabetes.

Studies have shown that people care about what they eat, but they don’t always think about how much they eat. The U.S. Department of Agriculture reports that people are eating less fat, as recommended by health experts, but their calorie intakes have stayed the same or have increased. A few extra spoonfuls can add up over the course of several months or a year. For example, just eating an extra 150 calories a day (the amount in one can of soda) can lead you to gain an extra 15 pounds in one year.

It can be challenging to know how much food your body needs. As adults, we tend to be influenced by our emotions, what people around us are eating, and the time of day. To avoid overeating, eat more slowly, and stop eating when you no longer feel hungry. Also, be especially careful to limit portion sizes when selecting foods that are high in calories, such as cookies, cakes, French fries, soft drinks, and snack chips.

Most of us eat more than we really need. Learning about portion sizes can help us make sure we get enough nutrient rich foods, like fruits, vegetables, and dairy, to follow the recommendations of the Food Guide Pyramid. Also, instead of giving up our favorite foods, we can choose smaller portions. So the next time you’re in the drive-thru, take a second to think about what is influencing your decision: your stomach or the colorful advertisement.

If you would like to get this piece in MSWord format, please email Betsy Kelley at Kelley@nutrisci.wisc.edu.



Clarifying the Controversies about Caffeine

Foods and beverages with caffeine have been consumed by many cultures throughout history. Thousands of studies have examined the connection between caffeine and health. Some studies have appeared to contradict others, and have received lots of attention from the media. Media attention, as well as the public's interest in diet and health, has led to much confusion about the facts surrounding the safety of caffeine. A recent review in *Nutrition Today* summarizes the research.

Common questions about caffeine:

Where is caffeine found? Caffeine is a naturally-occurring substance in the leaves, seeds, or fruits of more than 60 different plants, including coffee and cocoa beans, kola nuts, and tea leaves. Most Americans get most of their caffeine from coffee, tea, soft drinks, and chocolate.

How much is safe? Moderate intake of caffeine is considered to be 300 mg/day, which is about the amount in 3 cups of coffee. People's response to "moderate" intake can vary, however, and is influenced by the amount and frequency of caffeine consumption, metabolism, body weight, and physical condition. Sticking to moderate amounts of caffeine each day should be safe.

What about caffeine for kids? Children metabolize and excrete caffeine more quickly than adults, making the effects shorter-lived. Children are not more sensitive to caffeine than adults, despite their smaller size. The biggest issue regarding caffeine for children is the possibility that caffeinated beverages would take the place of more nutritious beverages in the child's diet.

What about caffeine for women? A very small amount of caffeine is passed to the infant through breast milk. The American Academy of Pediatrics confirms that moderate consumption, <300 mg/day, has no adverse affect on the infant. Data are mixed on the relationship between caffeine and the probability of conception, and on the probability of miscarriage. Experts continue to debate the safety of caffeine during pregnancy, but the FDA advises women who choose to consume caffeine to do so in moderation. There appear to be no long-term effects on the fetus. The National Cancer Institute examined the potential relationship between caffeine and fibrocystic breast disease and found no association.

Does caffeine cause cancer? Many, many studies have investigated the potential connection between caffeine and cancer. The evidence to date shows no relationship between caffeine and the development of cancer and the American Cancer Society has affirmed this in their Guidelines on Diet, Nutrition and Cancer.

What is the relationship between caffeine and osteoporosis? The concern here is that caffeine has a small tendency to increase calcium excretion. Many studies have been conducted and the most recent results do not show any relationship between caffeine intake and decreased bone density when all other factors are controlled. The amount of caffeine in a single cup of brewed coffee causes a small reduction in calcium absorption, which can be easily offset by adding a tablespoon or two of milk.

What about caffeine and heart disease? Research has shown no association between caffeine consumption and increased risk for heart disease, high blood pressure, cardiac arrhythmias, or increased serum lipids. Caffeine may temporarily raise the blood pressure of some individuals, but not any more than daily activities such as climbing stairs.

Does caffeine really improve alertness? Studies have shown that caffeine does improve mental alertness, memory, mood, and reasoning. Individuals vary widely, but caffeine's effect on the



Nutrition for Family Living May, 2002

central nervous system may make people feel like they have more energy because it makes them feel less tired.

Is caffeine addictive? Caffeine may feel addictive to people who experience headaches, lethargy or reduced concentration when they stop consuming it, but it does not meet the American Psychiatric Association criteria for an addictive substance.

As long as new research on caffeine is published in scientific journals, the media will continue to report that research to the public. Consumers will have questions about the latest study in the news. This summary and the citations below are intended to help educators feel prepared with some answers.

Hogan EH, Hornick BA, Bouchoux A. Communicating the message: Clarifying the controversies about caffeine. *Nutrition Today*. 2002; 37(1); 28-35.

For more information about caffeine:

International Food Information Council www.ific.org. Search for *caffeine*; several good articles and studies.

The American Dietetic Association www.eatright.org. Search for *caffeine*.



The colors of nature's functional foods: CAROTENOIDS

Brought to you by Kirsten Molldrem, graduate student in Nutritional Sciences, and Sherry Tanumihardjo.

Carotenoids are pigments that give most fruits and vegetables their bright red, orange, and yellow colors. They are also present in green vegetables, but the pigment is masked by chlorophyll. Over 600 carotenoids have been identified in nature. While you may know that vitamin A can be derived from beta-carotene, did you know that about 50 other carotenoids can be converted to vitamin A? The following carotenoids have been found in human circulation. Good food sources for these carotenoids include:

- beta-carotene: sweet potato, kale, carrots, pumpkin, apricots, raw spinach, squash, turnip greens, collards, beet greens, red peppers
- alpha-carotene: pumpkin, carrots, squash
- beta-cryptoxanthin: red peppers, papayas, tangerines, mandarin oranges, peaches, oranges
- lycopene: marinara sauce, canned tomatoes, tomato juice, watermelon, fresh tomatoes, grapefruit
- lutein and zeaxanthin: kale, spinach, turnip greens, collards, romaine lettuce, broccoli, zucchini, peas, brussel sprouts.

By now many of you have heard about rainbow carrots. In a few years, we hope to have these multicolored carrots available in the market. Each of these carrots has a predominant carotenoid responsible for their color.



Lutein rich



alpha- and beta-
Carotene rich



Lycopene rich

Carotenoids dissolve in fat, so absorption of carotenoids from plants can be improved by eating some fat with the food. A teaspoon is all that you need. Also, processing food, such as mashing, cooking and canning, increases availability of the carotenoids for absorption. For example, marinara sauce has more available carotenoids than fresh tomatoes. Processing breaks the plant matrix, releasing the carotenoids for absorption. The forms of carotenoids found in supplements are usually absorbed more efficiently because they have been extracted from this matrix or commercially synthesized.



Nutrition for Family Living May, 2002

While some carotenoids can be converted to active vitamin A, the other purposes of carotenoids are not fully known or understood. However, some of the believed health-related activities of carotenoids include enhancement of immunity, protection to the skin from sunlight damage, and protection from heart disease, cancer, and age-related eye diseases.

Because of carotenoids' possible role in disease prevention and in health improvement, carotenoids are widely available in supplement form either as an individual carotenoid or as a mixture of carotenoids. But, are carotenoid supplements a good idea? Do carotenoids from plants and carotenoids from supplements offer the same benefits?

Research has shown that there is a very strong correlation between increased fruit and vegetable intake and decreased risk for disease. Results from studies that look at carotenoid intake do not consistently find this same strong preventative correlation. When studying carotenoid impact on health (versus studying fruit and vegetable impact on health), results from epidemiological studies are not being matched by results from clinical trials. Some reasons for this could be that there are some other phytochemicals present in fruits and vegetables that are not being considered or are not understood; or that preventive effects come from a combination or interaction of different carotenoids and other phytochemicals. Moreover, other lifestyle factors that are associated with a diet rich in fruits and vegetables may be responsible for the decreased disease risk.

Because it is unknown if humans will benefit from supplementing isolated carotenoids, and that in some populations (i.e. smokers and people with coronary heart disease) supplementation may be detrimental, supplementation with large amounts of isolated carotenoids is not recommended. Instead, it is recommended to eat a diet with many fruits and vegetables, including those that are rich in carotenoids.

For more information on carotenoids, please see the following articles:

The Dietary Supplement, issue number 8, October-December 2001 pages 1-11.

Tanumihardjo, S.A. Factors Influencing the Conversion of Carotenoids to Retinol: Bioavailability to Bioconversion to Bioefficacy. *International Journal of Vitamin and Nutrition Research* 72: 40-45, 2002.