Protein Intake of Adults

What We Eat in America, NHANES 2015-2016

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Highlights

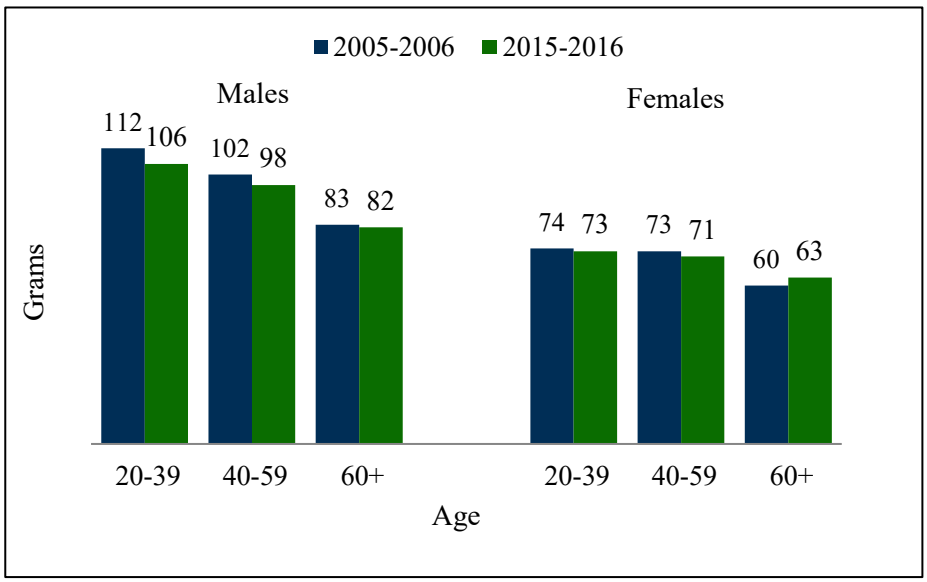
- Protein intakes of adult males were about one-third higher than adult females.
- Protein intakes have not changed significantly in the past 10 years.
- Protein intake of adults decreases with age, primarily as a result of lower energy intake.
- The percentage of energy intake provided by protein was 16% among all adults.
- About three-fourths of total protein intake is consumed at lunch and dinner.
- Animal sources of protein contribute about two-thirds of adults' protein intakes.

Protein is essential in the diet for building and maintaining body cells, and for making hormones and enzymes that regulate metabolic processes. Protein can also be used by the body for energy. The 2015-2020 Dietary Guidelines for Americans[1] (DGA) recommend consuming a variety of protein foods. Such foods include meat and poultry, seafood, dairy products, legumes, nuts and seeds, and soy products. This report describes protein intake of adults in the U.S. using nationally representative dietary intake data from What We Eat in America, NHANES 2015-2016.

How much protein do adults consume on a given day?

Males consumed about one-third more protein than females (97 grams vs 69 grams, respectively). Figure 1 illustrates protein intakes by age, which decreased significantly ($p<0.001$). There were no significant changes in protein intake between 2005-2006 and 2015-2016.

Figure 1. Average protein intake of adults on a given day



SOURCE: What We Eat in America, NHANES 2005-2006 and 2015-2016, day 1, individuals 20+ years

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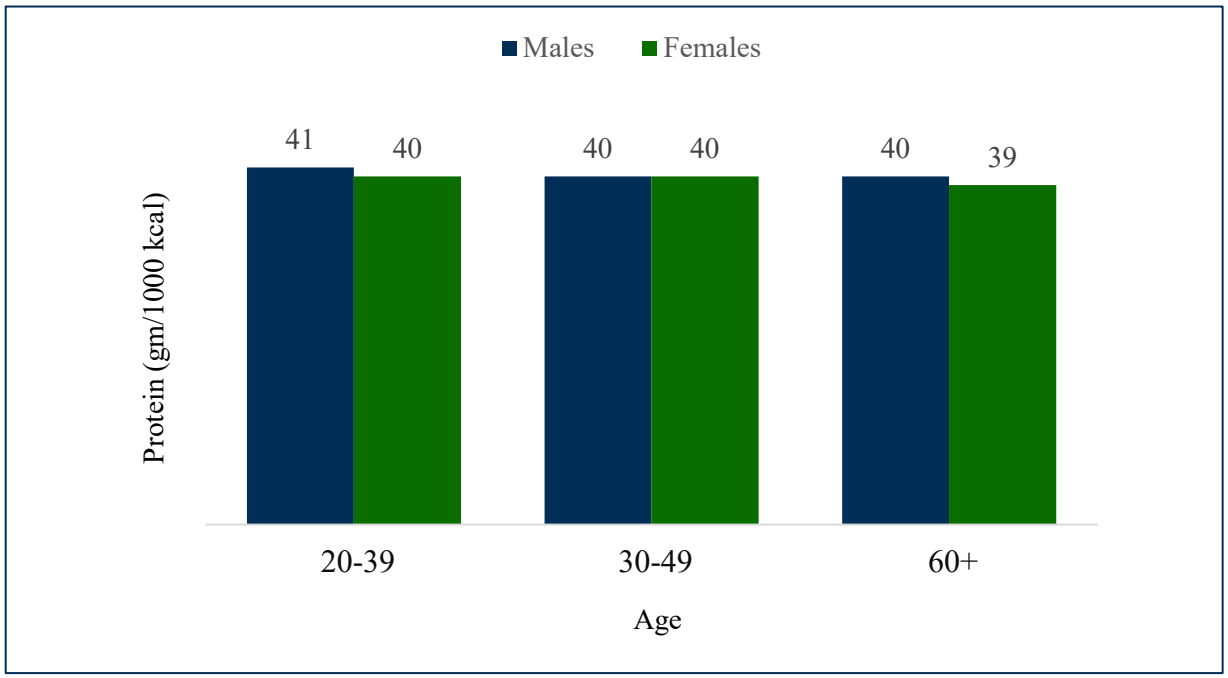
Protein intake of adults is similar when energy intake is considered.

The protein intake of adults is around 40 grams per 1000 kcal of energy intake (protein density) and does not differ between males and females or among all age groups. Protein density also did not differ between 2005-2006 and 2015-2016 (*data not shown*). Since the protein density of the diet is similar by age and gender, the decrease in total protein intake with age is attributable to a decrease in total energy intake. The 2015-2020 DGA recommend that protein provide a range of 10 to 35% of adults' total energy intake. A protein density of 40 grams per 1000 kcal equates to 16% of total energy intake from protein.

Figure 2. Protein density (gm/1000 kcal) intake among adults

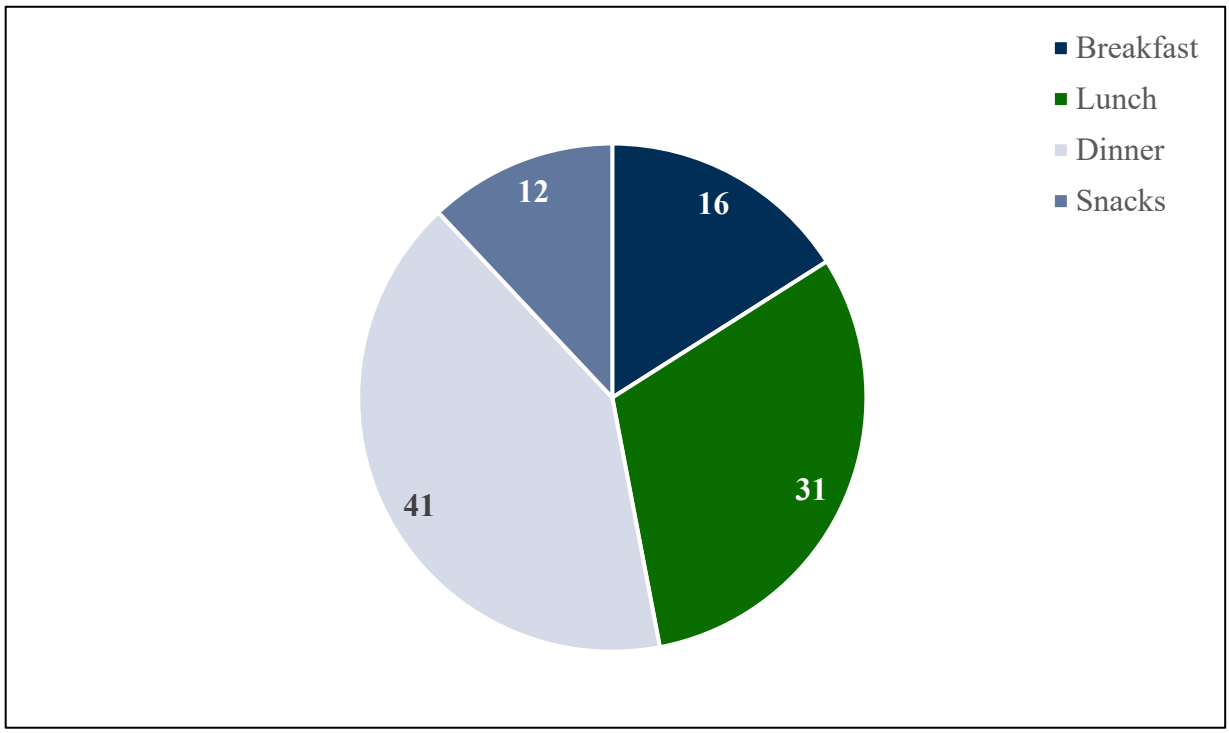


SOURCE: What We Eat in America, NHANES 2015-2016, day 1, individuals 20+ years

How is protein intake distributed among eating occasions?

Almost three-fourths of protein intake by adults was consumed at lunch and dinner, and the remaining intake was distributed between breakfast and snacks.

Figure 3. Distribution of protein intake among eating occasions by adults

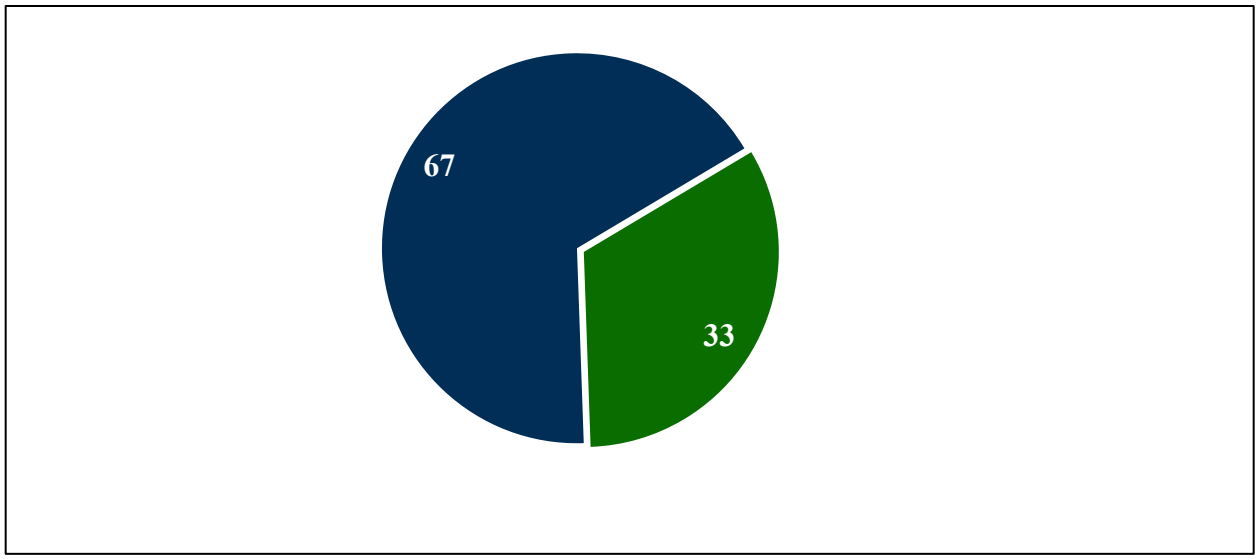


SOURCE: What We Eat in America, NHANES 2015-2016, day 1, individuals 20+ years

What proportions of protein intake are from animal and plant sources?

While the 2015 Dietary Guidelines for Americans encourage protein intake from plant sources, just over two-thirds of protein intake by adults is estimated to come from animal sources. The remaining 33% is from plant sources including grains, soy products, legumes, nuts and seeds, vegetables, and fruit. Proportions were similar between males and females and among all adults by age (*data not shown*). Estimation of protein intake from animal and plant sources is described in "Definitions", page 5.

Figure 4. Percentage of protein intake from animal and plant sources among adults



SOURCE: What We Eat in America, NHANES 2015-2016, day 1, individuals 20+ years

Definitions

Eating occasion: Eating occasions with the following English and Spanish names were grouped together: breakfast, desayuno, and almuerzo; lunch, brunch, and comida; dinner, supper, and cena; and snack, drink, merienda, entre comida, botana, bocadillo, tentempie, bebida, and items consumed over an extended period of time.

Protein: a macronutrient that is a major structural and functional component of body cells; 22 amino acids are building blocks of protein, nine of which are considered essential and must be obtained from foods.

Protein density: grams of protein per 1000 kilocalories (kcal) of energy.

Animal and Plant sources of protein: Proportions of protein intake from animal and plant sources were estimated from the ingredients for the foods in the Food and Nutrient Database for Dietary Studies (FNDDS)[3]. Single ingredient foods such as chicken or beans were classified as 100% animal or plant, respectively. To determine proportions from multi-ingredient foods, amounts of protein from ingredients providing animal protein and those supplying plant protein were summed and each divided by the total protein amount provided by the food. If the ingredients of a multi-ingredient food were not specified, the proportions from a similar food were applied. The proportions for each FNDDS food were applied to the dietary intakes to determine the population intake of protein from animal and plant sources.

Data Sources

Estimates in this report are based on one day of dietary intake data collected in What We Eat in America, the dietary intake interview component of the National Health and Nutrition Examination Survey, in 2005-2006 and in 2015-2016. Dietary data were collected in person using the 5-step USDA Automated Multiple-Pass Method for the 24-hour recall. A total of 4520 individuals 20+ years (2163 males and 2357 females) provided complete and reliable dietary intake data in 2005-2006. A total of 5017 individuals age 20+ years (2415 males and 2602 females) provided complete and reliable dietary intake data in 2015-2016. Sample weights were applied in all analyses to produce nationally representative estimates. USDA's Food and Nutrient Database for Dietary Studies 2015-2016 was used in calculating intakes of energy and nutrients.

References

1. U.S. Department of Health and Human Services and U.S. Department of Agriculture. 2015-2020 *Dietary Guidelines for Americans*. 8th Edition. December 2015. Available at http://health.gov/dietaryguidelines/2015/guidelines/.
2. Institute of Medicine. 2005. *Dietary Reference Intakes for Energy, Carbohydrate, Fiber, Fat, Fatty Acids, Cholesterol, Protein, and Amino Acids*. Washington, DC: The National Academies Press. https://doi.org/10.17226/10490.
3. U.S. Department of Agriculture, Agricultural Research Service. 2018. *USDA Food and Nutrient Database for Dietary Studies 2015-2016.* Food Surveys Research Group Home Page, http://www.ars.usda.gov/nea/bhnrc/fsrg.

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