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Protein Intake of Adolescents

What We Eat in America, NHANES 2015-2016

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Highlights

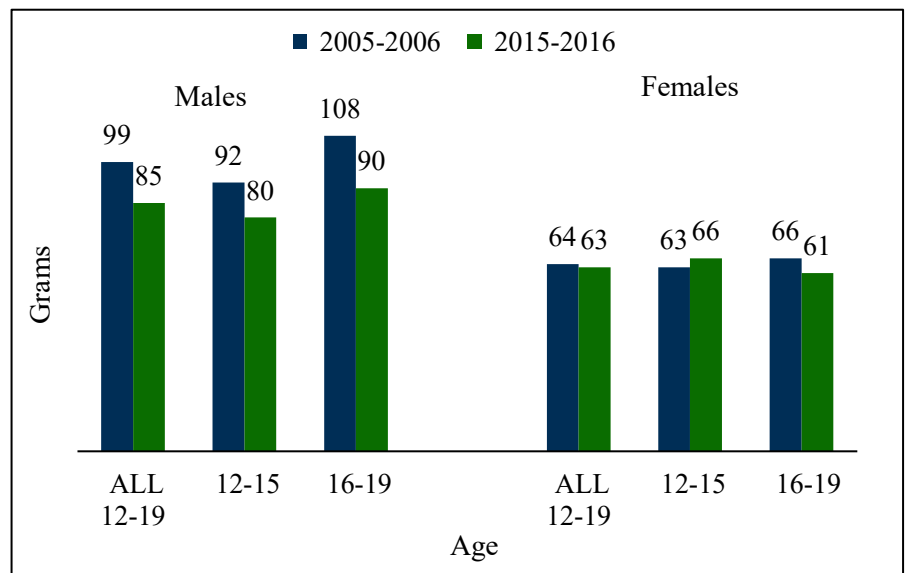
- Overall, the average protein intake of male adolescents was about one-quarter higher than female adolescents.
- There were no differences in adolescents' protein intakes between 2005-2006 and 2015-2016.
- Protein contributed about 15% to energy intake of adolescents.
- About three-quarters of protein intake is consumed at lunch and dinner.
- Animal sources of protein accounted for about two-thirds of adolescents' protein intake.

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 Americans¹ recommend consuming a variety of protein foods. Such foods include lean meats and poultry, seafood, dairy products, eggs, legumes (beans and peas), nuts and seeds, and soy products. This report describes protein intake of adolescents in the U.S. using nationally representative dietary intake data from What We Eat in America, NHANES 2015-2016.

How much protein do adolescents consume on a given day?

The average protein intake of adolescent males 12-19 years was about one-quarter higher than females (85 grams and 63 grams, respectively). The difference between males and females was larger among 16-19 year olds. Although protein intake appears to have decreased among males, there were no significant changes between 2005-2006 and 2015-2016.

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



SOURCE: What We Eat in America, NHANES 2005-2006 and 2015-2016, day 1, individuals 12-19 years



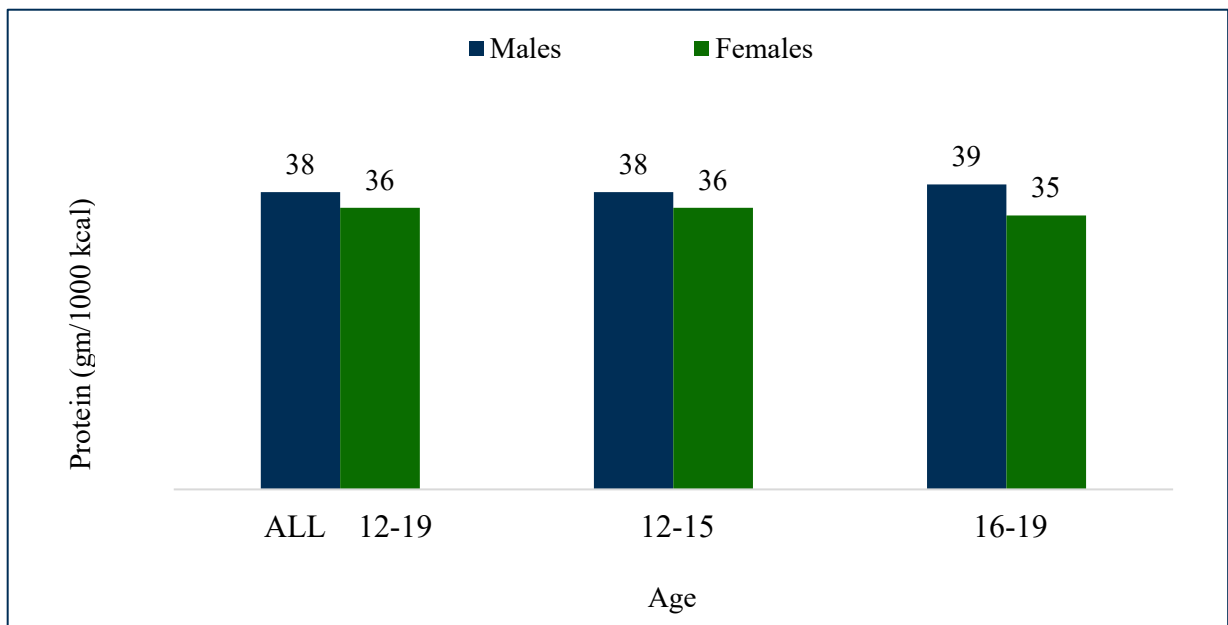
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Protein intakes of adolescents are similar when energy intake is considered.

The grams of protein per 1000 kcal of energy (protein density) was around 38 grams for males and 36 grams for females. Protein density did not differ between 2005-2006 and 2015-2016 (*data not shown*). Protein densities of 36 and 38 grams per 1000 kcal equate to about 14% and 15%, respectively, of total energy intake from protein. The 2015-2020 Dietary Guidelines for Americans recommend that protein provide a range of 10 to 35% of total energy intake.

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

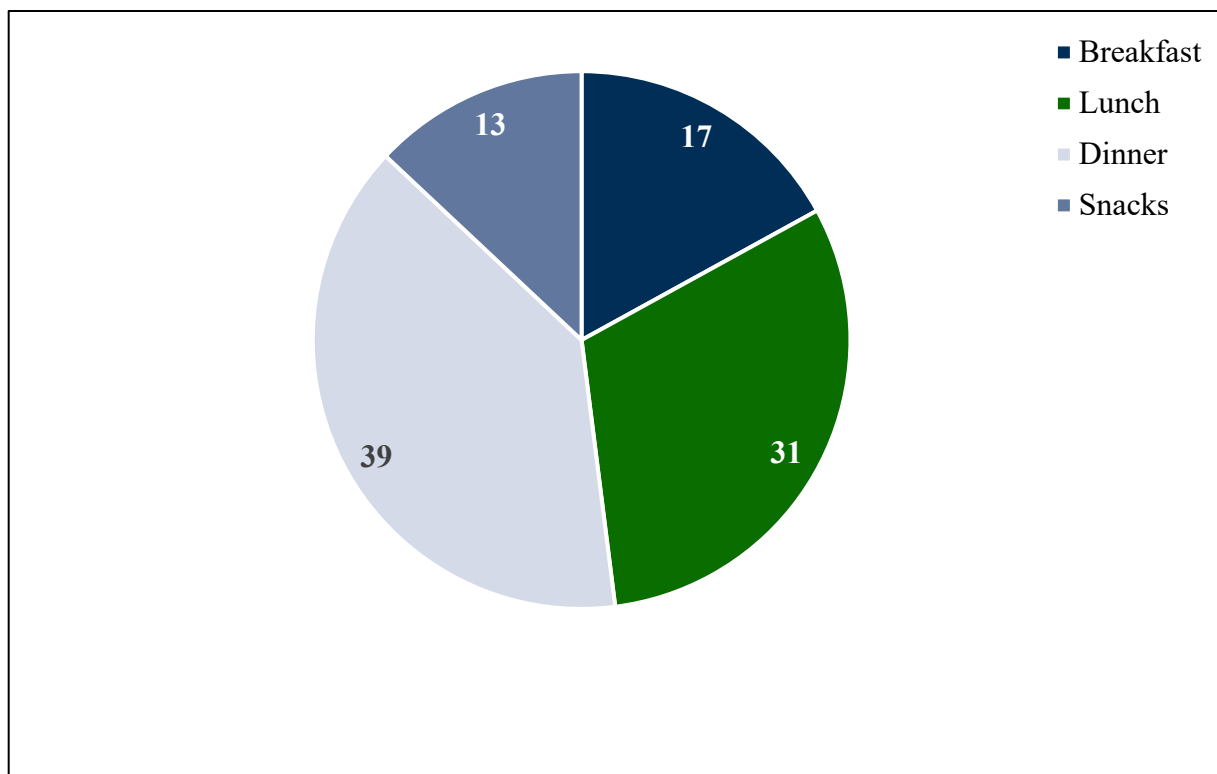


SOURCE: What We Eat in America, NHANES 2015-2016, day 1, individuals 12-19 years

How is protein intake distributed among eating occasions?

Over two-thirds of protein intake by adolescents was consumed at lunch and dinner, and the remaining was distributed among breakfast and snacks.

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

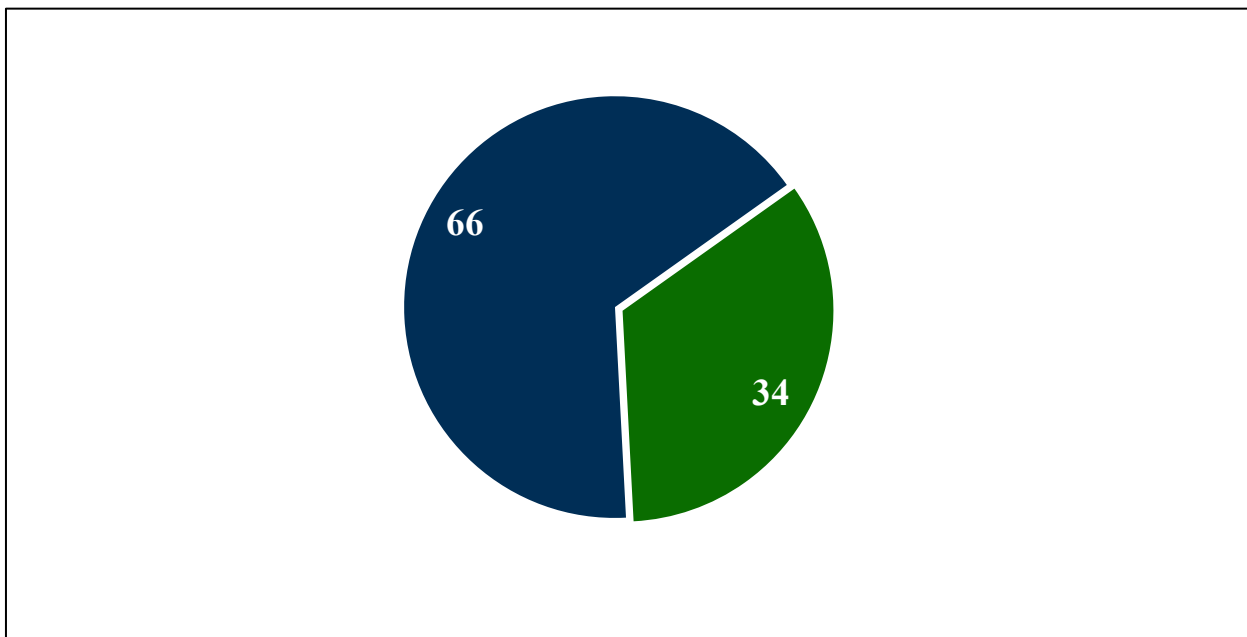


SOURCE: What We Eat in America, NHANES 2015-2016, day 1, individuals 12-19 years

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

While the 2015 Dietary Guidelines for Americans encourage increasing protein intake from plant sources, about two-thirds of adolescents' protein intake is from animal sources. The remaining 34% estimated protein intake from plant sources including grains, soy products, legumes, nuts and seeds, vegetables, and fruit. Proportions were similar between those 12-15 years and 16-19 years (*data not shown*). Estimation of protein from plant and animal sources is described in "Definitions", page 5.

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



SOURCE: What We Eat in America, NHANES 2015-2016, day 1, individuals 12-19 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 2115 individuals 12-19 years (1052 males and 1063 females) provided complete and reliable dietary intake data in 2005-2006. A total of 1196 individuals age 12-19 years (609 males and 587 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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