Volume 44 Issue 1, January/February 2019

Nutrition Perspectives

University of California, Davis, Department of Nutrition and the Center for Nutrition in Schools

How Common are Food Allergies in Adults?

When it comes to food allergies, much of the attention is focused on food allergies in children. However, even though many adults have food allergies, it turns out that only about half of adults who think they have a food allergy actually do (1). A recent study published in *JAMA Network Open* estimates that only 10.8 percent of adults in the U.S. currently have one or more food allergies compared to those who thought they had food allergies (19 percent).

To conduct this study, researchers contacted tens of thousands of adults around the country (n=40,443) and then weighted their responses to better represent the demographics of the U.S. For each person reporting a food allergy in the survey, their symptoms were matched against a stringent list determined by a panel of experts. If the symptoms the respondent reported did not match at least one on the list, they were considered to not have a food allergy. For most of these participants, they likely instead had a food intolerance or oral allergy syndrome. Food intolerances do not involve the same immune system mechanisms as food allergies, while oral allergy syndrome symptoms are typically fairly mild and limited to the mouth.

Researchers also asked questions about type of food allergies, when they developed, and if

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The most common food allergy in adults was shellfish.

the participant had visited an Emergency Room due to their allergy or had a prescription for an epinephrine autoinjector (such as an EpiPen).

The most common food allergies were shellfish, peanuts, milk, tree nuts, and fish. Nearly half developed at least one of their food allergies in adulthood. While the majority who developed an allergy as an adult also had childhood food allergies, 26 percent hadn't developed any food allergies until adulthood. Women were more likely than men to have a food allergy. Compared to other racial and ethnic groups, those who were white were least likely to have a food allergy.

Allergy-related emergency room visits were fairly common, with 38.3 percent visiting the emergency room at least once in their life, and 8.6 percent visiting within the last year. Despite this, only 24 percent had a current epinephrine prescription. Rates of prescriptions varied by type of allergy, with the highest proportion among those with a sesame allergy (61.6 percent), followed by peanut (53.8 percent), and tree nuts (51.5 percent).

The researchers concluded that food allergies are fairly common in adults, with many developing a new allergy in adulthood. They suggested that those who are not sure they have a food allergy confirm the suspected allergy with a doctor, to avoid impairing quality of life by avoiding foods unnecessarily.

Oral allergy syndrome symptoms are typically mild and limited to the mouth.

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Impact of the Ketogenic Diet on Cognitive Function and Health Outcomes

The ketogenic diet used in the study required that participants consume at least 75 percent of the daily calories from fat.

Over the last few years, the ketogenic diet (also referred to as the keto diet) has become an increasingly popular diet for weight loss. It differs from a traditional weight-loss diet by heavily restricting carbohydrate intake in order to cause the body to enter a state of ketosis, in which the body uses fat to produce ketones to be used as fuel, resulting in higher than normal amounts of ketones circulating in the bloodstream. While its supporters in the popular press have made many claims regarding the diet, ranging from improved insulin sensitivity and cardiovascular health to better cognition, research is still needed to either confirm or reject many of these supposed health benefits.

Researchers in Slovenia sought to investigate some of the claims regarding the ketogenic diet. To do so, they recruited adults with a body mass index (BMI) greater than 30 to participate in a 12-week weight loss study (n=35). Participants were given a thorough introduction to the ketogenic diet with a two-hour lecture, a small group educational session, and one-on-one consultation with a dietitian. They were provided with a list of foods that were very low in carbohydrates and a list of websites where they could find suitable ketogenic diet recipes. The participants could follow the diet however they chose, as long as they restricted carbohydrates to 5 to 10 percent of their calorie intake and obtained at least 75 percent of their calories from fat. For the first two weeks of the diet, participants also cut their daily calorie intake to 1200 to 1500 calories, after which they were allowed to eat as much as they chose. Beta-hydroxy butyrate, a type of ketone, was measured weekly to make sure that participants were adhering to the diet. Participants also kept weekly 3-day food records.

Over the course of the 12-week study, body weight continued to decrease even though participants didn't restrict calories beyond the first two weeks. Overall, physical fitness, working memory and processing speed (measures of cognitive function) improved, while insulin levels and reported emotional eating decreased.

Despite these positive health outcomes, the study design makes it difficult to draw conclusions about the ketogenic diet specifically. This is primarily because there was no control group to which the effectiveness of the ketogenic

A major concern regarding highly restrictive diets, such as the ketogenic diet, is that they eliminate many foods that contain important nutrients.

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diet could be compared. Many of the positive health outcomes identified in this study, such as improvements in physical performance, cognitive function, eating behaviors, and metabolic profile, may be due solely to weight loss, without the ketogenic diet having any additional added benefit. Had the researchers included either a weight-maintenance group adhering to the ketogenic diet, or a weight loss group on a non-ketogenic diet, any benefits or drawbacks unique to the ketogenic diet would have been easier to determine.

One of the biggest concerns regarding highly restrictive diets, such as the ketogenic diet, is that they eliminate many foods that contain nutrients important for health (2). This was evident in the study with respect to fiber intake among participants. Baseline fiber intake was already well below recommendations (an average of 14.5 grams per day, compared to the recommendations of 28 grams per day for a 2000 calorie diet), and dropped by half to 6.4 grams per day at week 12 of the study. While the study authors did note that it is theoretically possible to consume a low-carbohydrate diet that meets most nutrient needs (3), the health implications of adhering to a ketogenic diet on a long-term basis are unknown.

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Effect of Dairy Fat on Blood Lipids Differs Depending on Food Matrix

The researchers invested the impact of dairy fat in different food matrices on blood lipids.

Is a food more than the sum of its parts? New research from the University College Dublin seems to suggest so. In a study of overweight adults in Dublin, the researchers found that consuming cheese daily compared to a nutritionally similar combination of butter, protein, and calcium resulted in a greater reduction in low-density lipoprotein (LDL) and total cholesterol (1).

In this study, researchers randomized 203 healthy, overweight participants to one of four groups: 120 g of full-fat cheddar; 120 g of reduced-fat

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cheddar plus 21 g butter; 49 g butter plus 30 g of casein protein and a calcium supplement; and 120 g of full-fat cheddar following a six-week washout period in which they consumed no dairy. Each group consumed their assigned foods daily for six weeks and kept a log to record how much of their study food they consumed. Other than limiting other dairy to less than 50 mL of milk per day, there were no other dietary restrictions.

At the end of the study, there was a reduction in total and LDL cholesterol in all groups, however the full-fat cheddar group experienced the greatest reduction, followed by the reduced-fat cheddar group, and then the butter group, in a step-wise fashion. When the changes were compared to one another, there was a statistically-significant difference between the full-fat cheddar group and reduced-fat cheddar group with regards to total (p=.033) and LDL cholesterol (p=.026).

While nutritionally similar with respect to fat, calories, protein, and calcium, the group that consumed butter without cheese did have the same improvements in blood lipids as the cheese groups.

The different groups were matched for dairy fat, protein, and calcium, which indicates that the structure of the food, or food matrix, is what made a difference in how participants responded to the foods with respect to blood lipids. Over the last several decades, our understanding of the effect of different types of fat on blood lipids and overall health has evolved and become more nuanced as evidence has accumulated. Data such as these add further nuance by indicating not just the composition of the food, but also the structure may impact how a food is metabolized.

While interesting, the study had several limitations. The first is that other than the foods provided as part of their assigned group, participants were not on an otherwise-controlled diet, which may have differed between groups. Further, participants were not blinded to the foods for which they were assigned, which may have had an impact on satiety and the foods they chose to consume outside of the study. In addition, there was a difference between the groups in drop-out rates, with those in the butter without cheese group and wash-out period group dropping out of the study in greater numbers. Future research should include rigorous, blinded feeding studies to further elaborate on the effects of food matrix on blood lipids.

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Breakfast in the Classroom Did Not Improve Weight Status of Students

Breakfast has long had a reputation as the most important meal of the day; when it comes to school children, eating a regular breakfast is associated with several benefits, including healthier weight status (1). Many schools participate in the School Breakfast Program (SBP), which provides subsidized or free breakfast to students who qualify. In many schools, this is offered before the start of the school day, requiring students to arrive with enough time before the bell rings to obtain and eat the school-provided breakfast. For some students, this might be a barrier to their participation in the SBP.

Other research has demonstrated that breakfast has many benefits, including healthier weight status.

Researchers from Temple University in Philadelphia hypothesized that a breakfast in the classroom program would both increase SBP participation and reduce the incidence of overweight and obesity (those who become newly-overweight or obese), and prevalence (the overall number of students who are overweight or obese) (2). To examine this question, they randomly assigned 16 schools in Philadelphia to either participate in a breakfast in the classroom intervention called "One Healthy Breakfast" or to serve as a control with breakfast offered before the start of the school day.

In addition to breakfast in the classroom, intervention schools also received 18 forty-five-minute nutrition lessons about the importance of breakfast, related signage and events in the school, marketing within nearby corner stores to promote healthy choices, and parent outreach through newsletters and tabling at Back to School Night and similar events. These were in addition to nutrition education activities that the schools already were conducting. The control schools continued to offer breakfast before school and to engage in nutrition education activities that were present before the start of the study.

Intervention schools participated in breakfast in the classroom, as well as other breakfast-focused activities, such as nutrition education and marketing in nearby stores.

To assess the effectiveness of the intervention in reducing incidence of overweight and obesity, the researchers measured the height and weight of 4th, 5th, and 6th grade students and continued for the next 2.5 years until they were in 6th, 7th, and 8th grade, respectively. Height and weight data were used to calculate body mass index (BMI) percentile-for-age,

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which was used to determine incidence and prevalence of overweight and obesity.

Participation in the SBP increased, however the impact of the intervention on obesity was not quite what the researchers were expecting. While there was no difference in incidence of overweight and obesity when comparing schools receiving breakfast in the classroom to schools with traditional SBP before school, when the researchers examined obesity separately from overweight they observed an increase in both incidence and prevalence of obesity in the intervention schools.

The study found that incidence and prevalence of obesity increased in the intervention schools compared to the control schools.

The researchers speculated about possible reasons behind these unexpected results. The study took place in Philadelphia, a large city where there are numerous opportunities for students to eat in the morning before school; for some students, breakfast in the classroom may have been the second breakfast they ate that day. In an area with fewer opportunities to acquire food, such as in a suburban or rural school district, these results may be different. In addition, children with higher BMIs are more likely to eat when food is present even when they are not hungry, which may have contributed to these results (3). Future studies will need to determine how breakfast in the classroom may impact other populations of students and if there are alternative methods to increase SBP participation without increasing overweight or obesity in students.

Most school breakfast programs offer breakfast before the school day begins.

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Having a Stressful Job Associated with Developing Type 2 Diabetes in Women

The researchers found that rating one's work as mentally-tiring was associated with a higher risk of developing type 2 diabetes in women.

Mentally-tiring work has been found to be associated with increased risk of type 2 diabetes – but only in women with a body mass index (BMI) below 25 (1).

A large study in France followed over 70,000 women for more than 20 years to examine the possible association. The participants, the majority of whom were teachers, were part of a larger study known as the European Prospective Investigation into Cancer and Nutrition (EPIC). Starting in 1990, participants completed biennial health questionnaires. In addition, the participants' health insurance plan provided information about health expenditures and prescriptions.

The participants were asked at one time point in 1992 whether they considered their work mentally tiring. Over the course of the study, participants who were identified as possibly having type 2 diabetes, either through their regular biennial questionnaire responses or through prescriptions for diabetes medications, were asked to complete a questionnaire specifically about type 2 diabetes.

At first, the researchers looked at the association between mentally tiring work and type 2 diabetes on its own and found that those who rated their work as "very mentally tiring" were 21 percent more likely to develop type 2 diabetes over the course of the next 20 years than those who rated their work as "little or not mentally tiring". However, when they controlled for a variety of potentially-related factors, such as age, smoking, family history, physical activity, BMI, and profession, they determined that this increased risk was only statistically significant for women with a BMI below 25 ($p<.001$). The researchers speculated that this could be due to BMI above 25 being strongly associated with type 2 diabetes, masking the potential impact of mentally tiring work.

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The association between type 2 diabetes and mentally-tiring work was significant in those with a BMI below 25.

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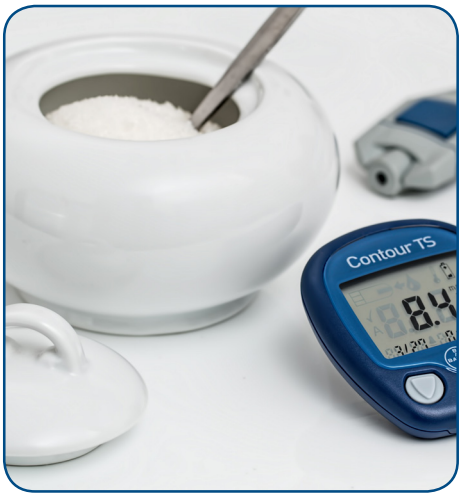
The researchers pointed out that the correlation they observed could be related instead to a factor not assessed in the study, such as sleep duration.

Previous studies have also found an increased risk for type 2 diabetes in women with stressful jobs, but not in men (2). The researchers note that this could be due to the additional work that women do related to household tasks and childcare. Research indicates that women still spend many more hours on these tasks per week than men (3); this additional work may contribute to less time for relaxation, further enhancing work-related stress.

While this study found an association between type 2 diabetes and mentally tiring work, there are a few limitations that may limit the generalizability of the results. The first is that participants were only asked about how mentally tiring their work is at one time point. This means that the data really only indicated that having a mentally tiring job in 1992 is associated with development of type 2 diabetes sometime over the next 20 years. It could be that the researchers could have found a stronger association or none at all if they examined mentally tiring work at different time points. It is also possible that this correlation is related instead to a factor not measured in this study, such as sleep duration. In addition, the cohort was fairly homogenous, which may further limit generalizability to other populations.



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Food Safety Tips for Eating at Restaurants

Going out to eat? When choosing a restaurant, look for one that keeps food safety on the menu. Here are tips to stay healthy while dining out.

Check inspection scores. Check a restaurant's score at your health department's website, ask the health department for a copy of the report, or look for it when you get to the restaurant.

Look for certificates that show kitchen managers have completed food safety training. Proper food safety training can help improve practices that reduce the chance of spreading foodborne germs and illnesses.

Look for safe food-handling practices. Sick food workers can spread their illness to customers (1). Most kitchens are out of the customer's sight, but if you can see food being prepared, check to make sure workers are using gloves or utensils to handle foods that will not be cooked further, such as deli meats and salad greens.

Order food that's properly cooked. Certain foods (2), including meat, poultry, and fish, need to be cooked to a temperature high enough to kill harmful germs that may be present. If you're served undercooked meat, poultry, seafood, or eggs, send them back to be cooked until they are safe to eat.

Avoid food served lukewarm. Cold food should be served cold, and hot food should be served hot. If you're selecting food from a buffet or salad bar, make sure that the hot food is steaming, and the cold food is chilled. Germs that cause food borne illness grow quickly when food is in the danger zone, between 40˚F and 140˚F.

Ask your server if they use pasteurized eggs in foods such as Caesar salad dressing, custards, or hollandaise sauce. Raw or undercooked eggs (3) can make you sick unless they're pasteurized to kill germs.

Take care of your leftovers quickly. Refrigerate within two hours of eating out. If it is above 90 F outside, refrigerate leftovers within one hour. Eat leftovers within three to four days. Throw them out after that time.

For more information, visit these CDC web pages:

- Food Workers Working When They Are Sick – EHS-Net Study Findings and Recommendations: https://www.cdc.gov/nceh/ehs/ehsnet/plain_language/food-workers-working-when-sick.pdf
- Foods Linked to Food Poisoning: https://www.cdc.gov/foodsafety/foods-linked-illness.html
- Salmonella and Eggs: https://www.cdc.gov/Features/SalmonellaEggs/index.html

Source: Centers for Disease Control and Prevention. CDC Food Safety. Jan. 29, 2019. https://www.cdc.gov/foodsafety/communication/eatingout.html.

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