

Food safety handling behaviors of young adults

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Prevention of foodborne illness starts in the kitchen, including the dorm room or first apartment kitchen; however, little is known about the food handling practices of young adults. Using standard procedures, experts (n=7) developed, validated, pilot-tested, and refined a self-reported food safety behavior questionnaire with 2 scales: safe food handling practices (SFHPs) (34 items, Cronbach alpha = 0.74) and risky eating behaviors (REBs) (27 items, alpha = 0.77). Each SFHP earned one point with scale scores normalized to 100. Each risky food consumed earned one point with scores ranging from 0-27 (riskiest). The questionnaire was administered as part of a larger nationwide online food safety survey of young adults (n=4274, mean age=19.9±1.6SD years, range=16-26, 65% female) from 16 universities. Overall, results indicated poor compliance with SFHPs (mean score=44.5±11.9SD). The majority did not use food thermometers (64%), stored cooked foods unsafely (59%), changed their dish towels/cloths/sponges less than once per week (51%), and did not usually store raw meat on the lowest refrigerator shelf (46%). Participants engaged in few REBs (mean=5.6±3.8SD) indicated by low consumption of raw/undercooked animal protein and unpasteurized milk/cheese or juice. Frequently consumed high risk foods were raw cookie/cake batter (53%), insufficiently reheated leftovers (42%), and sushi (28%). By gender, females had significantly higher SFHPs than males (mean=46.3±11.7SD vs. 40.9±11.7SD, p<0.0001) and significantly fewer REBs (mean=5.1±3.3SD vs. 6.5±4.5SD, p<0.0001). Young adults have poor SFHPs, but have low consumption of foods commonly contaminated with foodborne pathogens. Food safety education should be targeted at improving SFHPs, particularly among males.

Learning Objectives:

Upon attendance at the session, those present will be able to

- Describe the safe food handling practices of young adults.
- Describe the consumption by young adults of foods commonly contaminated with foodborne pathogens.
- Discuss the importance of developing and delivering public health messages about safe food handling in the prevention of foodborne illness to young adults.

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Not Answered

[Ensuring Food Safety, Emergency Preparedness and Disease Prevention](#)

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The Safe Food Chart

MEAT, POULTRY, and SEAFOOD

FOOD SAFETY IMPLICATIONS

Meat, Poultry, and Seafood

Foods rich in protein, such as meat, poultry, and seafood, are more frequently involved in foodborne illness outbreaks than non-protein-rich foods for 2 reasons:

1. Protein-rich foods tend to be of animal origin, and the bacteria from the animals can be found in these foods.
2. Animal foods are rich in proteins, which are an important nutrient source for some bacteria.

In addition, if hands, cutting boards, dishes, utensils, and surfaces are not thoroughly and properly cleaned after coming in contact with these raw foods, the bacteria from these foods can be transferred to ready-to-eat foods.

HUMAN PATHOGEN ASSOCIATIONS

- *Campylobacter jejuni*
(beef and poultry)
- *Clostridium botulinum*
(seafood)
- *Clostridium perfringens*
(meat)
- *Escherichia coli* O157:H7
(ground beef and pork)
- *Listeria monocytogenes*
(pork, poultry, and seafood)
- Norwalk Virus
(seafood)
- *Salmonella*
(beef, pork, poultry, and seafood)
- *Staphylococcus aureus*
(beef, pork, and poultry)



- *Vibrio cholerae*
(seafood)
- *Vibrio vulnificus* and other vibrios
(seafood)
- *Yersinia enterocolitica*
(meat and seafood)

FOOD SAFETY PRECAUTIONS (ALL MEAT, POULTRY, AND SEAFOOD)

Meat, Poultry, and Seafood

- Always wash hands, cutting boards, dishes, and utensils with hot, soapy water before and after they come in contact with raw meat, poultry, or seafood.
- Separate raw meat, poultry, and seafood from other foods in your grocery-shopping cart, refrigerator, and while preparing and handling foods at home.
- If possible, use one cutting board for raw meat products and another one for fresh fruits and vegetables.
- Place cooked food on a clean plate. If you put cooked food on an unwashed plate that previously held raw meat, poultry, or seafood, bacteria from the raw food could contaminate the cooked food.
- Don't use sauce that was used to marinate raw meat, poultry, or seafood on cooked foods, unless it is boiled before applying.
- Cook raw meat, poultry, and seafood to safe internal temperatures. Use a clean food thermometer to check, and wash it with hot, soapy water between uses. For the recommended cooking temperatures, see the ["Apply the Heat"](#) chart.

F • A • Q

If cooked meat and poultry look pink, does it mean that the food is not done?

The color of cooked meat and poultry is not a sure sign of its degree of doneness. For instance, hamburgers and fresh pork can remain pink even after cooking to temperatures of 160° F (71° C) or higher. The meat of smoked turkey is always pink because components within the smoke bind to the muscle pigment to form a stable pink pigment. Only by using a food thermometer can you accurately determine that meat has reached a safe internal temperature.

Do I have to cut off the government grade or inspection stamp on meat before cooking it?

No, the ink stamp is a harmless vegetable dye. Therefore, it is safe



to eat.

What gives a slice of ham an iridescent sheen? Is this a sign of food spoilage bacteria?

The glistening, greenish, rainbowlike color that appears from a cut surface of a ham slice is a sign of oxidation and not necessarily spoilage. When the meat is exposed to oxygen or light, some of the nitrate-modified iron content of the meat undergoes a chemical change that alters the ham's pigmentation.

How can I tell if fish is fresh?

Perfectly fresh fish and shellfish have virtually no odor. It's only when seafood starts to decompose that it takes on a "fishy" aroma. Fresh fish will have these signs:

- *The eyes are clean and bulge a little.*
- *Whole fish and fillets have firm and shiny flesh and bright, red gills free from slime.*
- *The flesh springs back when pressed.*
- *There is no darkening around the edges or brown or yellowish discoloration.*
- *The fish smells fresh and mild, not "fishy" or ammonia-like.*

Is it safe to eat sushi, the Japanese raw fish specialty?

People in the at-risk groups should not eat raw or undercooked fish or shellfish. People with liver disorders or weakened immune systems are especially at risk for getting sick. Foods made with raw fish are more likely to contain parasites or Vibrio species than foods made from cooked fish. Always cook finfish until its muscle is opaque and flaky.

FOOD SAFETY PRECAUTIONS (SPECIFIC FOODS)

Ground Meat

Meat can have harmful bacteria on the surface from the slaughter process, equipment from the processing plant, or germs on hands, utensils, or kitchen surfaces. When meat is "ground up" at the supermarket and handled at home, this surface bacteria can end up

inside the meat. This is what makes ground beef, for example, particularly at risk for *E. coli* O157:H7 contamination.

Proper cooking will kill harmful bacteria on the surface of a solid cut of meat, such as steak, because the surface gets direct heat. However, harmful bacteria on the inside of the meat are less likely to be killed by cooking if proper internal temperatures are not achieved.

That's why it's important to be especially careful that the *internal* temperature of ground meat reaches a high enough degree to kill bacteria. To destroy harmful bacteria that may be present in ground meat:

- All consumers should cook ground meat to at least 160° F (71° C). Use an accurate, instant-read food thermometer to check. Make sure the food thermometer goes straight into the meat, but does not come out the other side and touch the pan.
- The Centers for Disease Control and Prevention link eating undercooked, pink ground beef with a higher risk of illness. If a thermometer is not available, do not eat ground beef that is still pink inside.

Pork

Consumers may contract trichinosis (a disease caused by the parasite *Trichinella spiralis*) from eating undercooked pork. Pork must be cooked to a safe internal temperature to eliminate disease-causing parasites and bacteria that may be present.

- Pork must reach an internal temperature, measured with a food thermometer, of 160° F (71° C), for medium or 170° F (77° C), for well done.

Poultry

Bacteria can be found on raw or undercooked chicken. To keep poultry safe:

- Cook whole poultry to 180° F (82° C) - measure the temperature in the thigh.
- Cook chicken breasts to 170° F (77° C).
- Avoid purchasing whole poultry that's pre-stuffed but not cooked. If the product is left out at room temperature, the warm environment, along with the raw meat juices mixing with the stuffing, present a perfect environment for bacterial growth.

Raw Finfish and Shellfish (including oysters, clams, mussels, and scallops)

Generally, seafood is very safe to eat, but raw or undercooked seafood can be unsafe.



Seafood grown or collected from contaminated water can get colonized by viruses in the water. Shellfish foods, such as oysters, pump a lot of water through their bodies each day and filter out microorganisms. Thus, they are very likely to collect viruses from the water. Some oysters, for example, are eaten raw or lightly cooked, which increases the risk of foodborne illness. And viruses are not the only culprits. Bacteria and parasites are threats to raw seafood, as well. To keep seafood safe:

- Buy only fresh seafood that is refrigerated or properly iced.
- Always cook fish thoroughly. Cooking fish until it's opaque and flaky helps destroy any existing pathogenic bacteria that may be present.
- All consumers should avoid eating raw oysters or shellfish. People with liver disorders or weakened immune systems are especially at risk for getting sick.

DID YOU KNOW ?

- The **hamburger** got its name when German immigrants from Hamburg, Germany, brought this popular patty to the United States in the 1850s. In the United States, the meat was placed inside a bun, and the hamburger was born!
- **Clams, mussels,** and other **mollusks** obtain their food by filtering large quantities of water. In doing so, they can concentrate more bacteria and viruses than finfish. This makes raw mollusks unsafe to eat.