



LESSONS FROM CORONAVIRUS PREVENTION

Keep Calm, Handle Food Safely:

COVID-19 Food Safety Implications for Extension Educators

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Introduction

With more than 150,000 confirmed cases globally, the World Health Organization (WHO) declared COVID-19 as a pandemic. At the time this article was written, over 3,000 cases and 50-plus deaths have been confirmed in the U.S. As the COVID-19 pandemic continues to evolve, universities and businesses are increasingly teaching and doing business online. Community organizations have canceled events and gatherings amidst headlines reporting stores are “running out of hand sanitizers and toilet paper.” While some say people are overreacting, others say these precautionary measures should have been taken earlier. In a relative knowledge vacuum about the virus, it is understandable how paranoia and fear may spread throughout communities.

However, small steps can be taken in particular areas of public health. The hygienic actions that reduce the risk for foodborne illness can also reduce the risk for this virus. In particular, what should consumers do to keep their food safe during this pandemic? The objective of this article is to

1. Examine the best food safety practices for consumers in different scenarios
 - Scenario 1: Shopping in a grocery store;
 - Scenario 2: Being a person with increased risk;
 - Scenario 3: Being self-quarantined.
2. Explore consumer food safety communication strategies during these stressful times.

COVID-19 and your food. Currently, there is no peer-reviewed literature examining COVID-19's ability to stay infectious on foods. Proper handling is especially important if airborne droplets carrying the virus land on ready-to-eat food. With proper safe food handling practices, consumers can gain confidence.

Food safety is always important, whether there is an outbreak or not. Consumers have expressed concerns about the pandemic's food safety implications. Food safety is vital, regardless of whether there is a pandemic or not. Simple, everyday practices that protect against foodborne illness are also important to protect against COVID-19. Those practices include

- proper handwashing;
- cleaning and sanitization of contact surfaces.

A previous Extension publication, by [Feng \(2020\)](#), described the above practices in detail.

1. **Examine the best food safety practices for consumers in different scenarios**

Scenario 1: Shopping in a grocery store. When planning a trip to grocery store, be prepared to avoid cross-contamination. Here are a few points to follow:

- Sanitize shopping cart and basket handles before and after use. Many grocery stores have sanitization wipes near the entrance. If bringing a young child to the store, clean and sanitize the child flap seat and other areas that the child can touch.



- Use a single-use plastic bag for meat packages. Although not specific to COVID-19 prevention, research has showed it to reduce the risk of foodborne pathogen cross-contamination.
- Clean and sanitize shelf-stable and ready-to-eat food packages, including canned food, drinks and packaged items like chips, and crackers. This can help avoid potential cross-contamination via customer-to-customer packaging contact.
- Wash and sanitize reusable grocery bags often. As a general precaution use separate bags for raw meat and ready-to-eat food items.
- Use sanitizer wipes on “high-touch” hand-contact surfaces, like door handles, salad-bar tongs, and checkout counters.
- Wash and sanitize hands after grocery shopping, whether driving a personal car or using public transportation.



Scenario 2: Being a person with increased risk. People with increased risk for foodborne illness, or a caregiver for such individuals, must be more careful about foodborne illness. The U.S. Centers for Disease Control and Prevention, **CDC, lists the higher-risk population for COVID-19** as older adults and individuals with chronic diseases, like lung disease, heart disease, and diabetes (Centers for Disease Control and Prevention, 2020c).

Those who are at high risk for a foodborne illness include pregnant women, children age 5 or younger, adults age 55 or older, people with weakened immune systems (those experiencing chemotherapy, are HIV-infected, or are organ transplant patients), and people with diabetes. If a person becomes ill they may be more susceptible to traditional foodborne illness, so extra attention should be placed on proper cooking and chilling as well as hygiene.

Best practices for high-risk individuals. Avoid eating raw food. It can be challenging to ask people not to eat food they love. Food choice is influenced by many social, cultural, and environmental factors. Raw milk and soft cheese made from raw milk were associated with several foodborne outbreaks (Centers for Disease Control and Prevention, 2019; U.S. Food & Drug Administration, 2018). Raw sprouts, mushrooms, fruit, and vegetables were also found to be sources for foodborne pathogens that made people sick (Centers for Disease Control and Prevention, 2020b, 2020c; U.S. Food & Drug Administration, 2020a, 2020b). To maintain a nutritious and safe diet, choose foods that you can cook or are processed to reduce possible pathogens. Examples include canned vegetables and canned fruit in 100% fruit juice.

- Choose pasteurized milk and juice. Many food processing technologies that can kill pathogens, including ultra-high heat treatment, high-pressure processes, and irradiation (Arnold, Yang, Boyer, & Saunders, 2019). Those technologies can enhance food safety and retain nutritional value.

Scenario 3: Being self-quarantined. Quarantine is a preventive strategy to separate and restrict the movement of individuals who were exposed to pathogens to see if they are infected (Centers for Disease Control and Prevention, 2020a). Avoiding cross-contamination is essential during quarantine. If the individuals are self-quarantined,

- Stay in a specific room and use a separate bathroom, if live with others.
- Do not prepare meals for others.
- Separate utensils, cups, and plates from other household members.

Clean and sanitize used utensils, cups, and plates. For more sanitization best practices, refer to USDA's recent publication.

2. Food safety communication strategies for

Extension educators. The COVID-19 pandemic has raised health concerns among consumers. The figure below shows an increasing need for food safety education, especially for high-risk individuals and their family/caregivers. Understanding behavior and behavior change can help extension educators develop effective communication strategies for their audience.

News announcements may influence consumers' internet searches. The author conducted a Google News search to interpret possible factors that impact some significant changes shown in Figure 1.

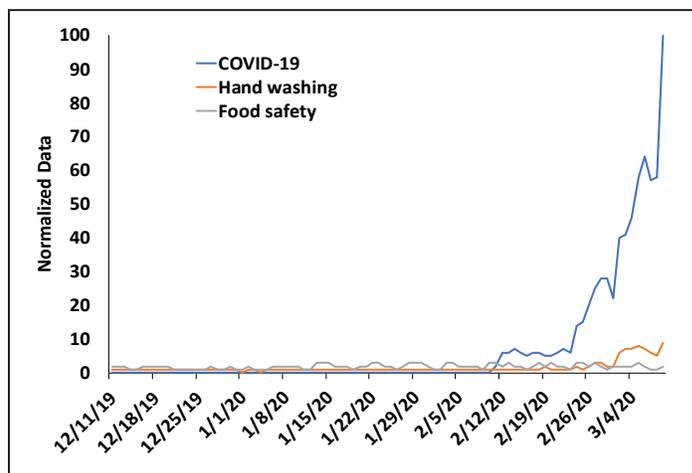


Figure 1. Weekly normalized data of web-searches interactions related to "COVID-19," "Hand washing," and "Food safety" retrieved from Google Trends from December 11th 2019 to March 11th 2020 in the United States. On March 11th, 2020, the author conducted a search on Google Trends search (Google Inc, Menlo Park, CA, USA), which is a free web-based system tracks web-search volume on search-terms. The Y-axis is the relative search volume, which is computed as the percentage of queries concerning a particular term for a given location and time period. The figure is normalized as the highest query share of that term over the time series and presented on a scale from 0 to 100.

- 2/12/20: WHO names the novel coronavirus as COVID-19. There was a significant increase in the search volume of "COVID-19."
- 2/25/20: CDC informs that "Americans should prepare for the spread of the coronavirus in communities across the country." There was another significant increase in search volume of "COVID-19."
- After 2/25/2020: as the number of cases increases, the search volume of "COVID-19" surged.

However, there was only a **slight increase** of the search volume for "handwashing" on March 4, 2020, and **no change** in consumers' search volume for "food safety."

Start with the basics. Consumer communication concerning handwashing and food safety is not a new topic. During the COVID-19 pandemic, communication with consumers still needs to start with the basics. Knowledge doesn't always translate to behavior. Consumers think they know how and when to wash their hands, but when observed, only 35% washed their hands before meal preparation (Bruhn, 2014) and failed to properly wash hands 97% of the time (USDA, 2018). Similarly, many knew food should be cooked at certain temperature, but when observed, less than 5% used food thermometers (Feng & Bruhn, 2019). Information about handwashing and safe food handling can enhance consumer personal hygiene and can be delivered along with COVID-19 prevention information and practices.

Optimism bias. Food safety education and communication can be challenging when the audiences are not motivated. Identifying and focusing on teachable moments for consumers is a key component for an effective program. Many consumers perceive their risk of getting foodborne illness as much lower in comparison to others. This could be due to consumers' optimism bias, which is the difference between expectations and the actual probability of a situation. When the expectations are more favorable than the actual outcome, the bias is "optimistic" (Sharot, 2011). When developing communication materials, consider optimism bias. Strategies include reinforcing the infection rate and using storytelling delivery formats to help the consumers relate infection cases to themselves.

Practice and repeat. Consumers get information from various sources, and food safety may not be perceived as a health concern. The educator's challenge is to change consumer behavior and retain those behavior changes. There are strategies that can address those challenges. Integrating behavior change models when developing and evaluating programs can help enhance and track behavior changes. One of the commonly used behavior change theories, Theory of Planned Behavior, hypothesizes that an individual's behavior intention is influenced by the person's attitudes about the behavior, perceived behavior control, and subjective norms (Ajzen, 1991). "Perceived behavior control" refers to the difficulty of performing a behavior due to an individual's lack of self-efficacy for performing the behavior. Thus, *the first strategy is to integrate "practice" into the consumer communication.* Practices, like take-home tasks, can help increase individual's perceived behavior control. *The second strategy is to "repeat" and teach in "bite-size" sessions.* Periodic review of information rather than a prolonged and intense study session can improve knowledge retention.

Conclusion

The COVID-19 pandemic had added more pressure on both consumers and health educators. There is a need for extension educators to develop programs to address food safety implications of this non-foodborne outbreak. The hygienic actions that reduce the risk for foodborne illness also reduce the risk for the virus. This article provides the best food safety practices for consumers under different scenarios, and explores consumer food safety communication strategies during the COVID-19 pandemic.

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