

Where You Live May Be a Factor in Foodborne Illnesses

Kansas State University

MANHATTAN, Kansas (Newswise) — Improving education about risky food handling behaviors would reduce the amount of foodborne illness and help improve food security around the world, according to Kansas State University research.

For their study, the university's Kadri Koppel, assistant professor of human nutrition, and Edgar Chambers IV, university distinguished professor and director of the Sensory Analysis Center, worked with around 100 consumers from India, Korea, Thailand, Russia, Estonia, Italy, Spain and two cities in the United States. The consumers completed questionnaires about their purchase, storage, handling and preparation practices of poultry and eggs. It is one of the only studies to use the same questionnaire to collect data between different countries and is part of a larger project to develop science-based messages for consumers about food safety practices.

The study produced the article "Eggs and Poultry: Purchase, Storage and Preparation Practices of Consumers in Selected Asian Countries," which was published in the journal *Foods*.

"We really wanted to know how consumers in different countries are actually handling raw eggs and poultry because these products are the source of two main bacteria: salmonella and campylobacter," Koppel said. "These bacteria lead to many cases of foodborne illness and we need a better understanding of food handling practices to find the risky behaviors that may lead to contamination."

Food safety regulations vary by country. The research found that most consumers purchase their eggs from the supermarket, with the exception of Argentina, where consumers get their eggs from the regular open-air market. However, the way the eggs were stored at the supermarkets varied. While some countries kept the eggs refrigerated, most eggs in Thailand, India, Spain, Italy and Colombia were stored at room temperature.

"When you think about the range of countries that we had and you compare the annual average temperatures in those countries, they can vary by about 50-degrees Fahrenheit — and that's a pretty big range," Koppel said. "A lot can happen to eggs if they're stored at room temperature in a country where the climate may be somewhat tropical."

The researchers found the majority of consumers store their eggs in the refrigerator once they brought them home.

Another similar finding was that the majority of consumers in these countries buy

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raw poultry and meats, but how they store those meats varies. Fifty percent or more of the consumers in Russia, India, Thailand, Colombia and the U.S. would freeze the meat right away, although these consumers often would improperly store the meat.

"If you think about the typical refrigerator and the air movement within the fridge, warmer air typically rises higher," Koppel said. "If you put the meat in a place where the temperature is warmer, then it's more likely to spoil. Raw meats also may have juices that leak and there is a possibility that the juices may cross-contaminate ingredients on lower shelves."

The safest place to store raw meat in the refrigerator is on the bottom shelf. The research found mixed results on this, with most of the consumers in Argentina and Colombia storing meat on higher shelves, putting them at a higher risk for contamination.

The riskiest behavior was exhibited in preparing the eggs and poultry. About 90 percent of consumers in Colombia and 70 percent of consumers in India washed these products in the sink before preparation. In the U.S., about 40 percent did.

"If you think about washing something in the sink, typically water splatters on the surface around the sink," Koppel said. "If you have some other ingredients near the sink that you're about to use for your meal, all that water splattering around the sink could cross-contaminate the other ingredients you are about to use."

The researchers found consumers also need to improve their cutting board cleanliness. About 40 percent of Colombian consumers reported using the same cutting board for multiple ingredients without washing or wiping it down between each use. While most other consumers reported cleaning the board between ingredients, Koppel said that not all forms of cleaning are effective.

"This may seem like a safe behavior, but it really depends on the wiping agent," Koppel said. "If you're using a kitchen towel, it may not remove a lot of the material that's come into contact with the cutting board. If you use the sponge that you use to wash dishes, research has shown that those sponges actually contain a lot of other bacteria and that may contaminate your other ingredients in addition to what's already on the cutting board."

The safest practice is to use a different cutting board for different ingredients, she said.

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