

Evaluation of Dietetic Students' Food Safety Knowledge and Attitudes: A Multistate Study

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Introduction

Nutrition and food safety are critical to consumer health, especially high-risk consumers such as individuals who are 65 years old and older, young children, immune-compromised, or pregnant [1]. Registered dietitians (RDs) commonly advise individuals in high-risk populations and are viewed by consumers as trusted authorities for food safety information [2]. Younger RDs are less likely than older RDs to provide food safety education to their patients; RDs' attitudes towards food safety and food safety training have been linked to RDs' sharing food safety information with their patients [3]. Food safety training is incorporated into curricula for RDs; however, deficiencies in RDs' food safety knowledge have been identified. Research conducted with RD students suggests gaps in food safety knowledge vary among students studying in different countries [4]. Few studies have examined the consistency of RD students' food safety education among different universities within the same country.

Objectives

The purpose of this study is to evaluate and compare food safety knowledge and attitudes of RD students enrolled in programs across three states.

Methods

Recruitment: RD students 18 years old and older from California State University (CSU) (N=14), The Ohio State University (OSU) (N=104), and Purdue University (PU) (N=64) were recruited.

Study Design: Participants completed a pilot-tested survey that measured participants' demographics, food safety knowledge, prior food safety training and coursework, and attitudes toward food safety training. Questions were formatted as multiple choice, fill-in-the-blank, and Likert-scale.

Data Analysis: Quantitative data analysis was conducted using IBM SPSS Statistics for Windows (Version 25.0. Armonk, NY: IBM Corp.). Response frequency was calculated for multiple choice and fill-in-the-blank questions, and averages were calculated for Likert-scale questions.

Results

Attitudes Toward Food Safety Communication

RD students agreed that health care professionals are responsible for delivering food safety information to vulnerable patients and that the food safety education they received was clinically applicable (Figure 1). CSU RD students (1.83 ± 0.84) were more confident in their ability to provide food safety information to immune-compromised patients than RD students from OSU (2.84 ± 1.12) and PU (2.97 ± 1.04). RD students were interested in learning more about food safety education to better educate vulnerable patients.

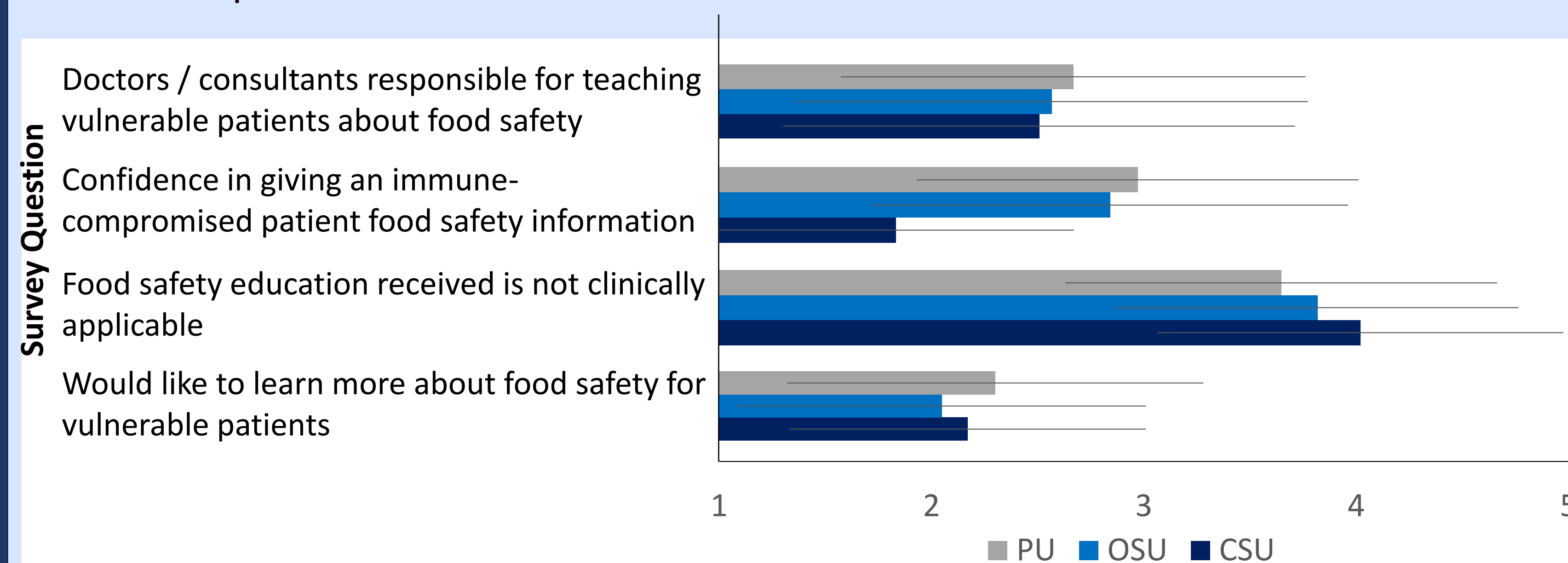


Figure 1. RD students' average response to food safety attitude survey questions.

Results

Pathogen Recognition

Most RD students recognized *E. coli* and *Salmonella* as pathogens. RD students were less familiar with *Campylobacter* (CSU 57%, OSU 40%, PU 11%) and *Clostridium* (CSU 71%, OSU 52%, 30%). RD students from PU had the lowest recognition of these two pathogens.

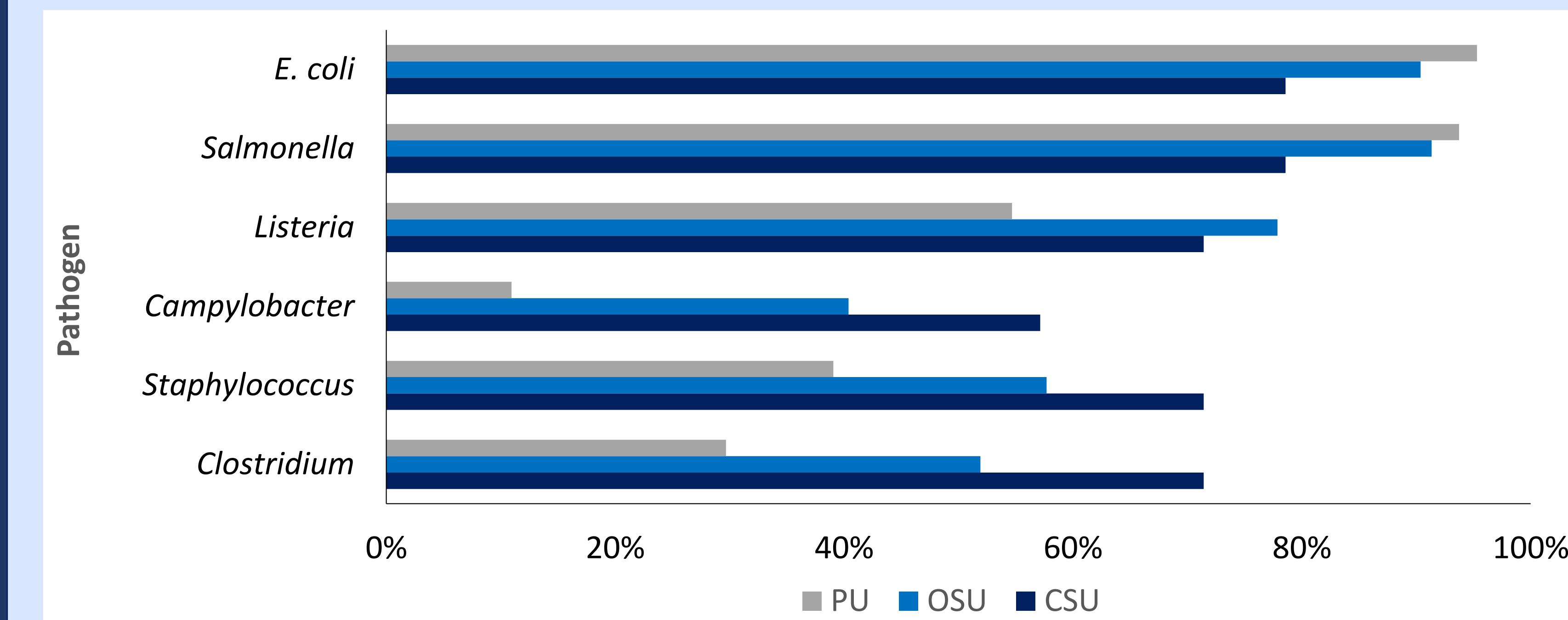


Figure 2. Percent of RD students who recognized pathogens that cause foodborne illness.

Hand Hygiene

Most RD students understood that hands should be washed before preparing food (CSU 79%, OSU 81%, PU 83%), after handling raw meat and poultry (CSU 79%, 81%, 86%), and before handling ready-to-eat foods (CSU 79%, OSU 73%, PU 72%). Of the three universities, OSU RD students were least aware that handwashing is recommended after feeding or touching pets (CSU 79%, OSU 41%, PU 83%).

Cooking

RD students from all universities identified thermometer use as a recommended method for determining whether raw meat and poultry is safe to consume. However, half or fewer of RD students knew the recommended endpoint temperatures for ground beef and leftovers or the temperature at which refrigerators should be maintained.

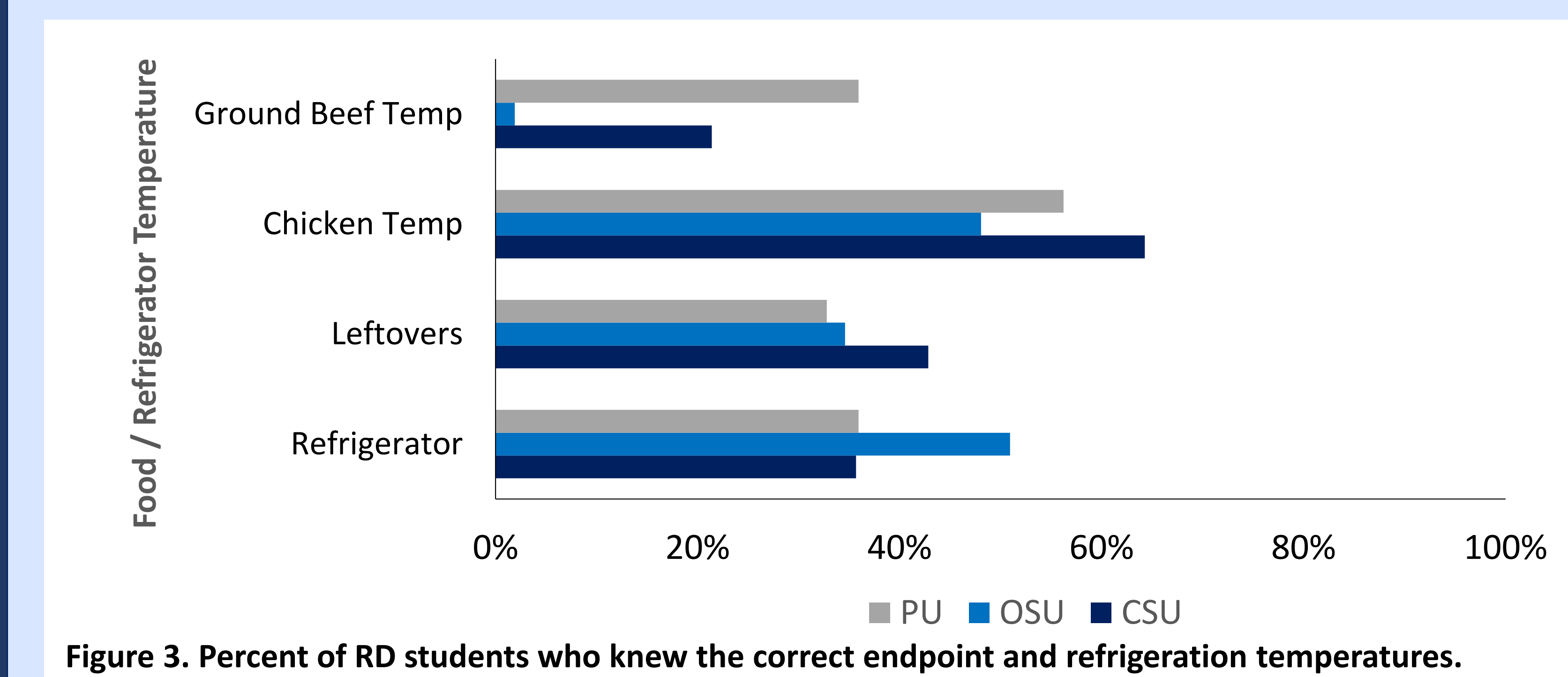


Figure 3. Percent of RD students who knew the correct endpoint and refrigeration temperatures.

Refrigeration

PU RD students were the most aware that bacteria can survive at refrigerator temperature (CSU 71%, OSU 75%, PU 91%) and of recommended practices for thawing foods (CSU 79%, OSU 70%, PU 91%). OSU student were much less aware that food should not be left on the counter to completely cool compared to CSU and PU (CSU 79%, OSU 40%, PU 91%).

Results

Cross-Contamination

The majority of RD students understood that unwashed hands (CSU 79%, OSU 75%, PU 81%) and use of the same cutting board (CSU 79%, OSU 75%, PU 80%) when preparing raw and ready-to-eat foods can increase the risk of cross-contamination. RD students also recognized storage practices could lead to increased incidences of cross-contamination (CSU 79%, OSU 71%, PU 80%).

However, the cross-contamination risks associated with washing raw poultry were not recognized by most RD students. RD students from CSU demonstrated the highest knowledge (57%) of this risk compared to OSU (38%) and PU (22%) students.

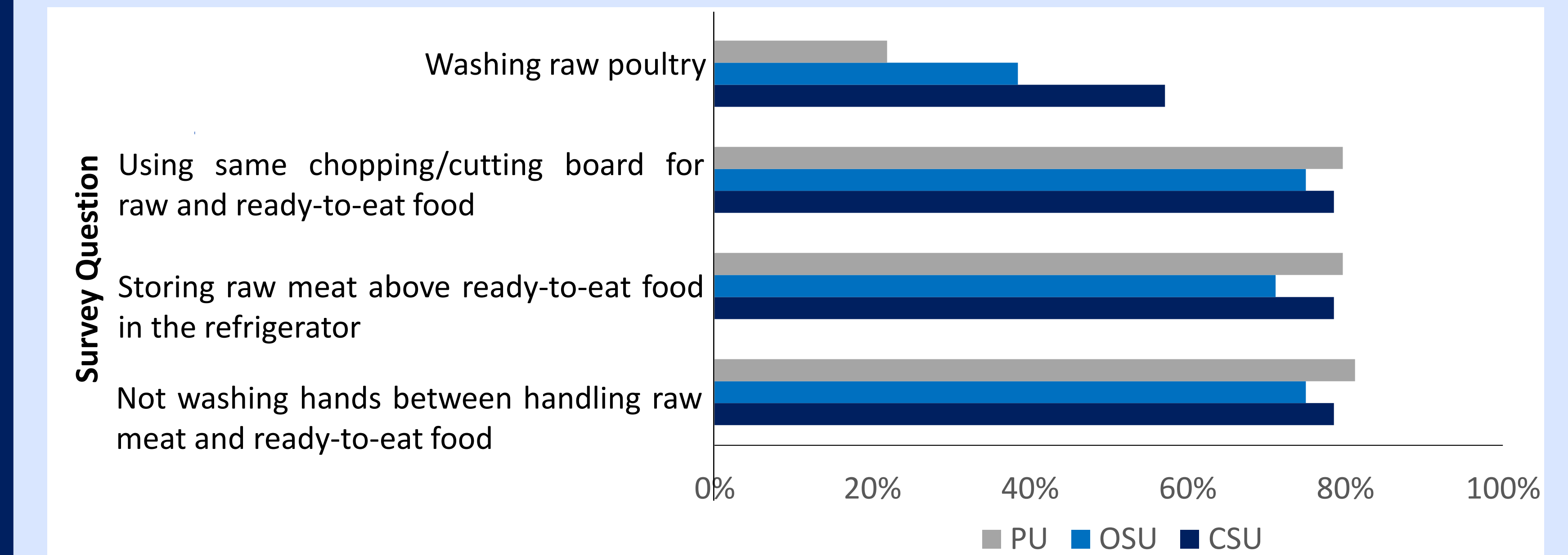


Figure 4. Percent of RD students who were aware of cross-contamination risks.

Significance

Confidence in ability to communicate food safety information to vulnerable populations and knowledge of food safety topics varied among RD students attending universities in different states.

Gaps in RD students' knowledge could increase vulnerable patients' risk of contracting a foodborne illness. RD students were interested in learning more about food safety to educate vulnerable patients.

Evaluation of university food safety curriculum and teaching methods is needed to standardize and improve the depth and retention of knowledge among RD students.

Limitations and Future Work

The number of RD students who responded to the survey was low and should be increased to be representative of RD students at California State University, The Ohio State University, and Purdue University.

Further research is needed to evaluate RD students' food safety knowledge and attitudes across universities to develop enhanced instructional methods for RD students.

Acknowledgement

We would like to thank all the students who completed the survey.

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