

# Food Safety Knowledge and Self-reported Practices of UK University Students

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## Introduction

Changes in the food consumption patterns of university students, particularly those living away from home has been reported<sup>1,2</sup>; however, emphasis is given to the nutritional intake and weight fluctuations in relation to such food consumption practices as opposed to the potential food safety implications.

Data suggest that young adults such as university students, may behave with more food safety risks than other consumer groups<sup>3</sup>. Indeed, previous observational consumer food safety research has indicated young adults implement food safety malpractices during domestic food preparation<sup>4</sup>; furthermore, widespread microbial contamination has been determined in student kitchens<sup>5</sup>.

The key food safety principles outlined by the United Kingdom Food Standards Agency (FSA)<sup>6</sup> and United States Food and Drug Administration (FDA)<sup>7</sup> to promote food safety in the domestic kitchen include 'cleaning', 'cooking', 'chilling' and 'cross-contamination / separate'. Currently data specific to university students' application of these key practices are lacking.

Consequently, there is a need to determine food safety cognitive behavioural influences of university students to inform targeted strategy development to improve food safety during domestic food preparation.

## Research Aim

To determine university students' food safety knowledge of four critical areas to ensure food safety and the associated self-reported domestic kitchen practices.

## Methods

A systematic review informed design and development of a questionnaire to determine food safety knowledge and self-reported practices in the domestic kitchen structured using key food safety principles 'cleaning', 'cooking', 'chilling' and 'cross-contamination'. A pilot study was conducted to ensure feasibility.

The self-complete questionnaires were administered to students (aged 18 - 25 years) attending Cardiff Metropolitan University (n=100) that were recruited according to predetermined criteria. Questionnaire completion took ~20 minutes.

Data was entered into a specifically designed Microsoft Access 2007 database, statistical analysis was conducted using IBM SPSS Statistics 20.

## Participant Profile

Profile of the university students that participated in the research study:

- **Gender:** Female - 60% and Male - 40%.
- **Age distribution:** 18 – 19 years old - 16%; 20 – 21 years old - 48%; 22 – 23 years old - 28% and 24 – 25 years old - 8%.
- **Food preparation in the past 7 days:** No meals - 1%; 1 – 7 meals - 26%; 8 – 12 meals - 38%; 13 – 15 meals - 20%; 16 – 19 meals - 9% and 20+ meals - 6%.

## References

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## Results

### Food safety

Findings determined that the majority (93%) of university students knew that 'cleaning' was critical to ensure food safety; however, only 55% were aware that 'chilling' was critical; furthermore, only 32% of university students knew that all four areas were critical to ensure the safe of food in the domestic kitchen (Figure 1).

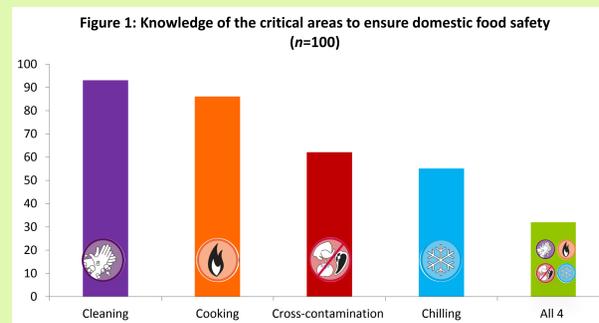
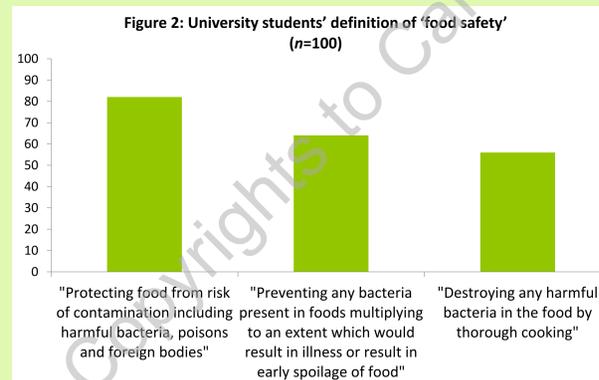


Figure 2 indicates what students believed defined 'food safety', to the majority (82%) food safety was regarding preventing microbial contamination, whereas only 38% believed that all three statements defined 'food safety'.



## Statistical analysis

Statistical analysis was conducted to determine significant differences between participant responses and demographic. Although food safety malpractices were greater among male university students, it was not determined to be statistically different ( $p > 0.05$ ) from the self-reported practices of female students.

No statistical differences were determined between food safety knowledge according to gender or reported cooking frequency ( $p > 0.05$ ).

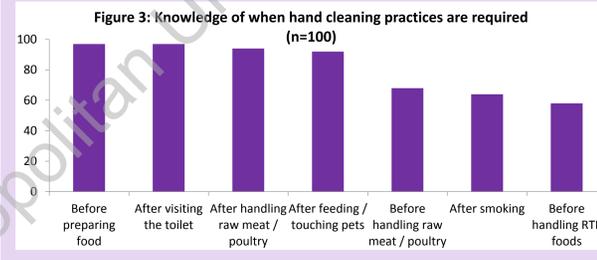
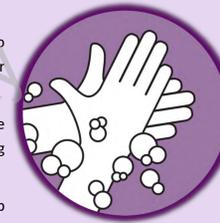
Food safety knowledge was determined to be significantly different ( $p < 0.05$ ) among participant age group; with students aged 22 – 25 years having greater food safety knowledge.

### Cleaning

Although 81% of students reported hand washing to be 'very important' to them, drying hands after washing was reportedly 'very important' to only 29%.

As indicated in Figure 3, 42% were unaware of the need to implement hand cleaning before handling ready-to-eat (RTE) foods.

- 23% failed to report the use of hot water and soap when washing hands.



### Chilling



- 33% of students did not know that a domestic refrigerator needs to operate between 1-5°C (32-41°F) to ensure food safety.
- 41% gave inadequate responses as to how they ensure their refrigerator is running at the correct temperature.
- Knowledge of which foods require refrigerated storage indicated that university students did not think there was a need to refrigerate opened foods with 'use-by' dates (27%) and leftover foods such as cooked ham (20%).

- 70% reported unsafe practices when dealing with leftover food, including:
  - immediate refrigeration (8%).
  - leaving at room temperature for prolonged periods (25%).

### Cross-contamination

Although the practice of washing equipment between use for raw and RTE products was self-reported by 95% of university students, practices that may cause cross-contamination were also self-reported by students, with:

- 77% reporting the practice of washing raw poultry before cooking would be implemented.
- 91% indicated a used towel would be used to dry equipment.
- 31% failed to report raw meat and poultry would 'always' be stored at the bottom of the refrigerator.
- 61% failed to report that fruit and vegetables to be consumed raw would 'always' be washed.

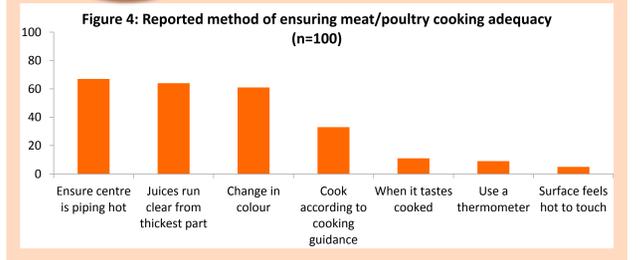


### Cooking



Reported thermometer use was low (9%), majority reported other acceptable practices such as ensuring centre is steaming hot (67%) and that juices run clear (64%) to ensure cooking adequacy (Figure 4).

- 72% of students did not know what temperature food should be cooked to for ensuring food safety.
- 17% believed consuming burgers / sausages / pork / poultry cooked 'rare' to be an acceptable practice.



## Conclusions

- This study illustrates a lack of food safety knowledge among university students.
- The implementation of food safety malpractices when preparing food in the domestic kitchen were frequently self-reported by university students.
- Findings can be used to inform targeted risk communication initiatives to improve university students food safety knowledge in order to improve food safety practices when preparing food in the domestic kitchen.



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