Food Safety Needs of Ontario High School Students: Investigating the (Next) Generation of Food Handlers

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BACKGROUND

Figure 3. Average annual number of sporadic cases of foodborne illness and incidence rates, by age group*. Toronto, 1998 to 2007.

BACKGROUND

Food

For some people, filling the hunger gap is as easy as opening the fridge. But not everyone is as fortunate.

- Volunteer for your local elementary school’s student nutrition program. Some schools in Ontario serve breakfast for kids before class starts and are always looking for extra help. Call the school or pop into the office and ask for details.
- Help out your neighbours. Some people don’t ask for help so why don’t you offer to cook dinner for an elderly, sick or just really-busy neighbour.
- Organize a food drive at your school for the local food bank. Or, volunteer at the food bank yourself. Find one closest to you here.
- Volunteer your time and talent serving and preparing food at a shelter, crisis centre, seniors or community centre. These places especially need help around the holidays.
- Got a killer brownie recipe? Why not bake a batch and sell them at school for charity or just give them away to somebody you think needs a little chocolate in their day.

1. Determine priority food safety messages for high school students

2. Determine students’ baseline food safety knowledge (K), attitudes (A), and practices (P)

3. Measure the impact of the MOHLTC’s standard food handler training (as modified via #1) on KAP in Ontario high school students

Spring 2014
Key Informant Interviews
Priority food safety messages for students

Fall 2014
Whole-School Baseline Survey
Overall food safety KAP
Comparison of all students to those taking food skills classes

Early Feb 2015
T₀ Survey & Observation
Pre-intervention KAP

Mid Feb 2015
Intervention

End of Feb 2015
T₁ Survey & Observation
Post-intervention KAP

May 2015
T₂ Survey & Observation
Longer-term KAP

June 2015
Student Focus Groups & Teacher Interviews
Additional beliefs/norms around food safety and safe food handling practices

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OBJECTIVES

• To identify the food safety education needs of high school students in Ontario, Canada;

To prioritize the most important education messages for this demographic, from Ontario’s standard food handler training program.

METHODS

• 20 key informant interviews
RESULTS

FOOD SAFETY EDUCATION IS IMPORTANT FOR YOUTH BECAUSE:

1. They have a current, personal need for it

EMPLOYMENT OPPORTUNITY & ADVANTAGE

CURRENT NEED TO PREPARE FOOD SAFELY

LACK GOOD ROLE MODELS

NOT FOOD LITERATE

“Because unfortunately, we’re getting to be a bunch of ‘food illiterates,’ in society. Where not only do we not know how to cook properly…”

Diplock et al, Food Control (under review)
RESULTS

FOOD SAFETY IS IMPORTANT FOR YOUTH BECAUSE:

2. High school is an ideal time and place to instil life-long good habits

DEVELOPING LIFE SKILLS IN PREP FOR LIVING ON OWN

KNOWLEDGE AND SKILLS TRANSFERABLE TO OTHERS

TRANSITIONING and EXPANDING RESPONSIBILITIES

A CAPTIVE AUDIENCE

LACK GOOD ROLE MODELS FOR SAFE FOOD HANDLING

Diplock et al, Food Control (under review)
RESULTS

FOOD SAFETY IS IMPORTANT FOR YOUTH BECAUSE:

3. They are part of the foodborne illness risk landscape

POSE A RISK TO FUTURE SELF

POSE RISK TO OTHERS, NOW AND IN FUTURE

TAKE MORE RISKS BECAUSE...

“It’s not going to happen to me”

CONSUME CONVENIENCE MEALS, AND DON’T REALIZE SOME NEED TO BE FULLY COOKED

Diplock et al, Food Control (under review)
RESULTS

PRIORITY FOOD SAFETY CONTENT AREAS:

1. Microorganisms and how they can result in foodborne disease

BASIC MICROBIOLOGY

WHAT FOOD CAN MAKE ME SICK? HOW DO I AVOID GETTING SICK?

WHO IS SUSCEPTIBLE? WHAT ARE THE CONSEQUENCES?

HOW TO PREVENT SPREAD OF PATHOGENS, ALLERGENS

WHAT TO DO AS A SICK FOOD HANDLER

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RESULTS

PRIORITY FOOD SAFETY CONTENT AREAS:

2. Keep food out of the ‘danger zone’

DON’T LEAVE FOOD AT ROOM TEMPERATURE

DON’T THAW FOOD ON THE COUNTER

PROPERLY REHEAT FOOD BEFORE EATING

USE A PROBE THERMOMETER

“It’s really important that all Canadians, including high school students…when they start to cook, know how to use a food thermometer, and that it becomes a, as much a part of their life as a toothbrush”
RESULTS

PRIORITY FOOD SAFETY CONTENT AREAS:

3. How to keep themselves and their kitchens clean and safe

   WASH HANDS PROPERLY

   USE GOOD PERSONAL HYGIENE TO PREVENT CONTAMINATION

   KEEP YOUR KITCHEN SPACES CLEAN

   PREVENT INJURY
RESULTS

PRIORITY FOOD SAFETY CONTENT AREAS:

4. How to safely do the things that youth typically do with food

PACK A SAFE LUNCH

“...that bag their lunch...how are they prepared? How long has it been? The sandwich sat in the locker for four days, and they decide to snack on it after the track meet..”

DEAL WITH LEFTOVERS

SCHOOL FUNDRAISERS AND PARTIES

USING A MICROWAVE FOR FOOD PREPARATION
RESULTS

PRIORITY FOOD SAFETY EDUCATION MESSAGES

“Wash your hands, Wash your hands, Wash your hands”

Avoid Cross Contaminating your Food

Avoid Temperature Abuse of Foods

Keep Yourself and Food Preparation Areas Clean

Understand How Microbes Can Make You Sick
DISCUSSION AND NEXT STEPS

• Education needs identified are consistent with literature

• Ontario’s standard food handler training program aligns well with identified needs and Ontario high school curriculum
  » particularly if risks important to youth (e.g., packed lunches) can be highlighted
OVERALL KAP – WHOLE SCHOOL

OBJECTIVES

• To measure the food safety knowledge, attitudes, and self-reported practices in Ontario high school students

METHODS

• School-wide paper survey in four Ontario high schools (n=2,860) administered in Nov/Dec 2014

RESULTS

PERCENT OF ALL STUDENTS:

Currently working or volunteering in a restaurant / deli / other food service location 17%

Currently handling food in a public-serving venue ** 18%

** Of these, 45% had ever taken a course as below...

Who had ever taken a course where they were taught to prepare or handle food 35%

RESULTS

SELF-REPORTED COOKING ABILITIES:

6% don’t know how to cook
10% can only cook food when the instructions are on the box
18% can do the basics like boil an egg or make grilled cheese
44% can prepare simple meals if they have a recipe to follow
22% can cook almost anything

RESULTS

KNOWLEDGE:

50% chose keeping foods refrigerated as the most important way to prevent food poisoning
  → 34% chose cleaning kitchen counters with sanitizer

46% knew the best way to wash hands was soap/running water
  → 24% chose methods that involved sanitizer, no soap

17% knew a food thermometer was the best way to check hamburger doneness
  → 57% chose cutting the meat open to check for pink

RESULTS

KNOWLEDGE:

• Students averaged 1.86 (S.D. 1.05) correct answers out of 4

• Females and older students answered more questions correctly than males and younger students

• Working/volunteering in a restaurant, deli, or other food service location was associated with more correct answers

• The following were not associated with the number of correct answers:
  » Whether students currently handled food in public-serving venues
  » Whether they had ever taken a course in which they were taught to prepare or handle food

RESULTS

ATTITUDES:

87% agreed that being able to cook safe, healthy meals is an important life skill.

57% like learning about how to keep their foods safe to eat.

53% reported being concerned about getting food poisoning.

73% reported being confident that they could cook safe, healthy meals for themselves and their families.

RESULTS

**SELF-REPORTED PRACTICES:**

Percent of all students who report they ‘always’…

- Wash hands with soap/running water before handling food 56%
- Wash hands with soap/running water after handling raw meat 77%
- Keep raw and ready-to-eat foods separated 66%
- Use ice packs in their lunches 18%
- Use ice packs when taking lunch on day trips (e.g., field trips) 22%
- Use a microwave when cooking/reheating 29%

DISCUSSION AND NEXT STEPS

• Knowledge is low and self-confidence is high

• Many incorrectly select sanitizers as being better than soap, e.g., for hand washing

• 1 in 5 are involved in handling food for the public

• Those who handle food in commercial or public serving venues are not more knowledgeable regarding hand washing and foodborne illness prevention (they are, however, more knowledgeable about thermometer use)

• Self-reported practices are not ideal

OBSERVED FOOD SAFETY BEHAVIOURS

OBJECTIVES

• To measure the (baseline) food safety behaviours in Ontario high school students

METHODS

• Observation of recipe preparation in 8 food and nutrition classes (Grades 10 and 12) in 4 schools in Feb. 2015
• n~108 (8-23 per class)

• Recipe designed to capture all major consumer food safety behaviours
PRELIMINARY RESULTS

Proportion washing hands (in any manner!):

Before starting to cook 79%  
→ only 73% w/soap, water

After handling produce 12%  

After retrieving the raw chicken 33%  
→ only 26% w/soap, water

Percent of all students who report they ‘always’…

Wash hands with soap/running water before handling food 56%
Wash hands with soap/running water after handling raw meat 77%

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PRELIMINARY RESULTS

Proportion washing produce before using it:

- Lettuce: 18%
- Tomato: 12%
- Both: 8%

Proportion using a clean surface to slice the:

- Lettuce: 57%
- Tomato: 54%
- Cheese: 54%
- Bun: 56%
- All four: 45%

Percent of all students who report they ‘always’…

Keep raw and ready-to-eat foods separated 66%
PRELIMINARY RESULTS

Proportion of students determining chicken doneness by:

- Thermometer
- By cutting it open
- By tasting it
- By time
PRELIMINARY RESULTS

Proportion of students determining chicken doneness by:

- Thermometer* 5%
- By cutting it open 42%
- By tasting it 0%
- By time 47%
- Other 6%

*none calibrated the thermometer prior to using
NEXT STEPS AND DISCUSSION

• How do food and nutrition students compare to all students?
• How do observed and self-reported behaviours compare?
• Does traditional food safety education (i.e., giving people messages) improve behaviour?
  » Immediate and longer term (here, ~2-3 months)

• How can this study inform risk assessments (or other public health activities)?
For more information:

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