

Department of Apparel, Events & Hospitality Management

Development and Assessment of Visual-Based Food Safety Training with Chinese-speaking Foodservice Workers in Independently-owned Chinese Restaurants

Lakshman Rajagopal, PhD & Dawei Li, MS

Project funded by the Foodservice Systems Management Education Council

Iowa State University

Department of Apparel, Events & Hospitality Management

Introduction

- Annually, known and unknown disease-causing agents in food cause a number of illnesses, hospitalizations, and deaths (Scallan, et al, 2011a; 2011b).
- Foodborne pathogens result in over \$15.5 billion in economic burden (Hoffman, Macculloch, & Batz, 2015).
- Maintaining the safety of food served to customers is critical for all foodservice establishments.
- Ethnic restaurants have been found to have more food safety violations than non-ethnic restaurants (Kwon, Roberts, Shanklin, Liu, & Yen, 2010).
- Language barriers, low risk perception, lack of knowledge and understanding of food safety are major challenges to practicing food safety in ethnic restaurants (Rudder, 2006; Bermudez-Millan, 2004).

There is a need to address these barriers through the development of appropriate, culturally-relevant training materials.

Iowa State University

Department of Apparel, Events & Hospitality Management

Food Safety Training

- Formal (lecture) and informal (posters, on-the-job training) food safety training, and providing resources for practicing food safety (easy access to handwashing sinks, gloves) can help promote a culture of food safety (Yiannas, 2010).
- Po, Bourguin, Occeea, and Po (2011) suggested that appropriate translation and visuals can help overcome language barriers and relay critical food safety messages.
- Visual-based training along with hands-on activities was found to be effective in training Spanish-speaking foodservice workers about safe food handling practices (Rajagopal, 2012, 2013).

Iowa State University

Department of Apparel, Events & Hospitality Management

Chinese Food and Restaurants

- Chinese cuisine is among the most preferred ethnic cuisines in America, followed by Mexican, Japanese and Thai (Lee, Niode, Simonne, & Bruhn, 2012).
- This is evidenced by 41,000 Chinese restaurants in the U.S.; three times the number of McDonald's restaurants (Chinese Restaurant News, 2008).
- No known research** has developed and assessed the effectiveness of visual-based minimal-text training for improving food safety knowledge and attitudes of Chinese-speaking foodservice workers in independently-owned Chinese restaurants.

Iowa State University

Department of Apparel, Events & Hospitality Management

Purpose

Develop and test the effectiveness of visual-based, minimal-text food safety training on food safety knowledge and attitudes of Chinese-speaking foodservice workers in independently-owned Chinese restaurants.

Iowa State University

Department of Apparel, Events & Hospitality Management

Methodology

```

graph TD
    subgraph Phase_One [Phase One]
        P1[Develop and administer web-based questionnaire to food safety inspectors (n=45). Pilot-test questionnaire (n=2).]
    end
    subgraph Phase_Two [Phase Two]
        P2[Assess food safety inspectors' views on food safety needs of Chinese-speaking foodservice workers in Iowa.]
        P3[Develop training materials based on feedback from phase one and conduct on-site food safety training with Chinese-speaking foodservice workers (n=50) in independently-owned Chinese restaurants (n=16) in Iowa.]
        P4[Assess participants' food safety knowledge and attitudes before and after training using questionnaires. Analyze data using SPSS 22.0.]
    end
    P1 --> P2
    P2 --> P3
    P3 --> P4
  
```

Iowa State University

Department of Apparel, Events & Hospitality Management

Findings – Phase One

N=45 food safety inspectors, n=28 (62.22%) valid responses

Items	Feedback from food safety inspectors	
	In compliance	Concerns
Top Five Food Safety Practices in Compliance and Concerns	Cooking temperatures of foods	Improper cooling of foods
	Proper holding temperature	Improper cold holding temperature
	Date marking of foods	Lack of proper pest management
	Awareness of the importance of employee health	Improper dishwashing procedures
	Purchasing foods from approved sources	Lack of date marking of foods
Top Challenges and Barriers Food Safety Inspectors Faced	Language barriers	
	Cultural differences	
Top Three Suggestions for Improving Food Safety and Address Food Culture Issues	Provide training and training materials in their native language	
	Provide ServSafe® course in Chinese	
	Food safety videos and posters in native language	

Iowa State University

Department of Apparel, Events & Hospitality Management

Phase Two

Training using the Flow of Food as a Guide

Iowa State University

Department of Apparel, Events & Hospitality Management

Wash those hands! Here is how

1. Wet hands with warm running water 100°F(38 °C).
2. Apply soap.
3. Rub hands together for 10-15 seconds.
4. Clean under fingernails and between fingers.
5. Rinse hands thoroughly under running water.
6. Dry hands with disposable paper towel or hand dryer.

Iowa State University

Department of Apparel, Events & Hospitality Management

正确的洗手步骤

Action verb (rinse)

1. 润: 用温水润湿双手 100°F(38 °C)
2. 抹: 涂抹肥皂.
3. 搓: 搓揉10-15秒
4. 洁: 清洁指甲与指间
5. 冲: 冲洗
6. 干: 用一次性纸巾擦干或风干机风干双手

Iowa State University

Department of Apparel, Events & Hospitality Management

I'm Gloving It!

A Guide to Glove Use in Foodservice Establishments

我要带手套!

为什么要带手套? 何时该换手套? 何时该洗手? 如何戴手套?

Iowa State University

Department of Apparel, Events & Hospitality Management

When to change gloves

何时更换手套

How to Calibrate a Thermometer?

如何校正温度计

Why? - Properly calibrated thermometers measure correct minimum internal temperature of food and help maintain food safety.

为什么? - 正确的校正温度计, 测量正确食物内部最低温度, 帮助保持食品安全。

It should read 32°F/0°C

读数应为 32°F/0°C

Iowa State University

Department of Apparel, Events & Hospitality Management

How to Clean and Sanitize a Thermometer?

如何清洁并消毒温度计?

Cleaning and Sanitizing Using a Three-Compartment Sink

清洁与消毒的应用—三联水槽

Iowa State University 13

Department of Apparel, Events & Hospitality Management

How to Prepare Cleaning and Sanitizing Solutions?

如何准备清洁与消毒溶液?

How to clean and sanitize surfaces?

如何清洁并消毒表面?

Cleaning and Sanitizing Using a Three-Compartment Sink

清洁与消毒的应用—三联水槽

Iowa State University 14

Department of Apparel, Events & Hospitality Management

Storage - On's & Don'ts

储存与物

How to Store Dry Storage Containers

如何储存干式储物容器

How to Store Dry Storage Containers

如何储存干式储物容器

Iowa State University 15

Department of Apparel, Events & Hospitality Management

Photos of training

Iowa State University 16

Department of Apparel, Events & Hospitality Management

Recruitment – Challenges/Successes/Tips

Challenges

- Hard to recruit participants whose managers were afraid their workers might expose the “reality” of their restaurant.
- Some managers would immediately cease talking to the student during recruitment when the word “food safety” was mentioned

Successes

- Achieved recruiting goal by building good relationship with manager and associates – dining, talking informally to “break the ice”

Tips

- Show your “face” instead of only talking over the phone to help build respect and trust.
- Build relationship first, avoid talking about sensitive topics such as “food safety” right away.

Iowa State University 17

Department of Apparel, Events & Hospitality Management

Discussion and Implications - Phase Two

- Visual-based training was found to be useful in improving food safety knowledge and attitudes
- The long-term effect of training should be examined through assessment of knowledge gained through observational assessment of food handling practices
- Food safety educators and researchers will need to develop and utilize more visual based training tools, and assess its effectiveness to improve food handling practices and reduce the incidence of foodborne illness.

Iowa State University 18

Department of Apparel, Events & Hospitality Management

Limitations

In general

- Findings cannot be generalized to foodservice workers in other parts of the United States

Phase one:

- Absence of similar studies made it challenging to compare results.

Phase two:

- Self-reported data of food handling practices may not be an accurate representation of actual practices.
- It is unknown if the improvement in attitudes and knowledge scores would be similar after some time (1-6 months).
- This study only considered foodservice workers who speak Mandarin Chinese, but some may also speak Cantonese Chinese.

Iowa State University 19

Department of Apparel, Events & Hospitality Management

Thank you

*Want a copy of the training materials?
Email: Iraj@iastate.edu*



Iowa State University