

Food Safety Knowledge Among Street Food Vendors in Estancia, Iloilo, Philippines

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Abstract: This study aimed to assess the food safety knowledge of street food vendors in the Municipality of Estancia, Iloilo. Using a quantitative survey design, data were collected from 275 street food vendors, focusing on four key areas: food preparation, handling, storage, and selling. Results revealed that the majority of respondents were extremely knowledgeable about food safety, particularly in hand sanitation, proper utensil cleaning, and food storage techniques. Despite high levels of knowledge, challenges in consistently applying this knowledge were identified, suggesting the need for continuous training and education to ensure proper food safety compliance. The findings of this study provide a foundation for the development of targeted training programs to improve food safety standards among street food vendors in the area, ultimately reducing the risk of foodborne illnesses.

Keywords: food handling, food preparation, food safety, food storage, street food vendors.

1. Introduction

Street food vending is a widespread phenomenon in urban areas of developing countries, including the Philippines (Castillo, 1994; Solomons & Gross, 1995). These informal food systems provide a convenient and economical source of nourishment, particularly for low-income populations (Abdussalam & Kaferstein, 1993; Freese et al., 1998). In the Philippines, street food has become a staple for a cross-section of the socioeconomic spectrum, from the disadvantaged to the more affluent (Castillo, 1994). This reality is reflected in microcosms of densely populated areas, such as school campuses and markets (Castillo et al., 1993), where street food vendors meet the demand for quick, ready-to-eat meals.

Despite its benefits, numerous studies have shown that street food can be a vector for foodborne illnesses. Hazards associated with street-vended food include contamination with harmful microorganisms such as *Salmonella*, *Vibrio* species, and *Escherichia coli* (Azanza & Gedaria, 1997; Freese et al., 1998; Umoh & Odoaba, 1999). In the Philippines, Azanza and Gedaria (1997) documented alarming levels of fecal contamination in street foods sold on a university campus, indicating unsafe hygiene practices that compromise public health.

The global concern about food safety is reflected in rising rates of foodborne diseases, affecting millions of people annually (WHO, 2011). Foodborne illnesses such as salmonellosis and typhoid are prevalent in both developing and developed nations. Contaminated food items can lead to a wide

range of illnesses, and these outbreaks are often traced back to poor food handling practices in foodservice establishments (Egan et al., 2007). For street food vendors, common sources of contamination include improper storage, poor personal hygiene, and inadequate cooking methods (Rosset et al., 2004; Evans et al., 1998). The potential for foodborne outbreaks in public spaces underscores the need for continuous education and regulation of food safety practices.

While studies worldwide have examined food safety knowledge among food handlers (Bas, Ersun, & Kivanç, 2006; Sharif et al., 2013), research focusing on street food vendors in the Philippines, particularly in rural areas like Estancia, Iloilo, remains scarce. This study aims to bridge that gap by investigating the food safety knowledge and practices of street food vendors in Estancia. Given the vital role these vendors play in providing affordable meals to the community, understanding their level of knowledge on food safety is crucial for developing appropriate interventions to reduce health risks.

2. Review of Related Literature

A. Prevalence of Street Food Vending

Street food vending is a prevalent and essential part of urban economies, especially in developing countries (Solomons & Gross, 1995). It is a primary source of nourishment for low-income populations, providing affordable, ready-to-eat meals for people who often lack the resources or time to prepare food at home (Abdussalam & Kaferstein, 1993; Freese et al., 1998). In the Philippines, street food plays a crucial role in meeting the dietary needs of various socioeconomic groups, from the affluent to the disadvantaged (Castillo, 1994). Street food vendors are a common sight near markets, transportation hubs, and educational institutions, especially in densely populated areas (Castillo et al., 1993).

B. Health Risks Associated with Street Food

Despite the accessibility and affordability of street food, numerous studies have raised concerns about its safety. The handling, preparation, and storage of street foods are often unsupervised and unregulated, leading to contamination with foodborne pathogens (Azanza & Gedaria, 1997). These pathogens include *Salmonella*, *Escherichia coli*, and *Vibrio* species, which are commonly associated with foodborne

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illnesses like typhoid and cholera (Freese et al., 1998; Umoh & Odoba, 1999). Studies in the Philippines have found that street food is frequently contaminated with bacteria, and the levels of contamination often exceed acceptable public health standards (Azanza & Gedaria, 1997).

Street food vendors are at a high risk of spreading foodborne diseases due to poor hygiene practices, inadequate cooking, and cross-contamination during food preparation (Mederios et al., 2001). Furthermore, improper food handling practices such as storing food at incorrect temperatures, serving contaminated raw food, and using unsafe water sources have been identified as common risks in street food vending (Sneed et al., 2004; Egan et al., 2007). These issues are exacerbated by the lack of training and education among street food vendors, many of whom are unaware of the proper protocols for food safety (Bas, Ersun, & Kivanç, 2006).

C. Food Safety Knowledge and Practices of Vendors

The level of knowledge and awareness of food safety among street food vendors plays a critical role in preventing foodborne illnesses. Several studies have pointed out that food handlers, including street food vendors, often have limited knowledge of microbiological food hazards, temperature control, and personal hygiene (Sharif et al., 2013; Mederios et al., 2001). This lack of knowledge contributes to improper practices such as inadequate cooking, improper storage of food, and cross-contamination, all of which are significant risk factors for foodborne diseases (Egan et al., 2007; Walker et al., 2003).

Studies have demonstrated that education and training programs for food handlers can significantly improve food safety knowledge and practices (Roberts et al., 2008; Angelillo et al., 2000). However, despite the availability of food safety training, the high turnover rate among food handlers, particularly in informal sectors like street food vending, makes it difficult to ensure consistent adherence to safe food handling practices (Foote, 2004). Moreover, some studies have shown that even after receiving training, food handlers may not always apply the knowledge they acquire, leading to substandard food safety practices (Hertzman & Barrash, 2007; Chukwuocha et al., 2009).

3. Methodology

This study employed a quantitative research design using a survey to assess the food safety knowledge of street food vendors in Estancia, focusing on food preparation, handling, storage, and selling. The survey design follows Creswell's (2014) framework, which involves administering questionnaires to collect quantitative data for statistical

analysis.

Respondents included 275 randomly selected street food vendors in Estancia, determined through G-power sampling.

The research instrument was a researcher-made questionnaire validated by three experts and pilot-tested to ensure reliability (Chronbach's $\alpha = .86$).

In the data gathering process, permission was obtained from local government units, and the respondents were informed of their confidentiality rights and the voluntary nature of their participation.

For statistical treatment, weighted means and standard deviations were used to determine the food safety knowledge of vendors.

4. Results

The results of the study demonstrate that street food vendors in Estancia exhibit a high level of food safety knowledge across all categories, with average weighted means (\bar{x}) consistently falling within the range for "Extremely Knowledgeable (EK)" (4.21–5.00). This indicates that vendors have a strong understanding of food safety principles, particularly in the areas of preparation, handling, storage, and selling, essential for preventing contamination and ensuring public health safety.

A. Food Safety Knowledge in Food Preparation

The overall mean for food preparation is 4.47 with a standard deviation (SD) of 0.39, suggesting uniformity in knowledge regarding proper food preparation. The highest-rated item is "proper hand sanitation reduces the risk of contamination" ($\bar{x} = 4.58$, $SD = 0.57$), emphasizing the importance of hygiene practices in reducing foodborne illness, as highlighted by research such as the work of Okojie and Isah (2014), which stresses the critical role of handwashing in controlling contamination. Vendors also show high awareness of the importance of wearing protective gear ($\bar{x} = 4.50$, $SD = 0.66$), aligning with the findings of Iwu et al. (2017), which emphasized the need for wearing personal protective equipment (PPE) during food preparation.

B. Food Safety Knowledge in Food Handling

The vendors' food handling knowledge received an average mean of 4.51 ($SD = 0.34$), showing their high awareness in this aspect as well. The item "proper hand hygiene can prevent foodborne diseases" ($\bar{x} = 4.72$, $SD = 0.54$) is rated the highest, reflecting the strong understanding of hygiene's impact on public health, which is consistent with WHO's guidelines on food safety. The awareness of cleaning utensils and sanitizing the preparation area ($\bar{x} = 4.48$, $SD = 0.59$) is also noteworthy,

Table 1
Food safety knowledge in food preparation

Description	$\bar{w}\bar{x}$	SD	Level of Food Safety Knowledge
Preparation	4.47	0.39	EK
1. In preparing the food proper hand sanitation reduce the risk of contamination.	4.58	0.57	EK
2. Cleaning and sanitizing the utensils in preparing the food is essential.	4.45	0.66	EK
3. The area where food is prepared is adequately sanitized and cleaned.	4.40	0.70	EK
4. The food must be kept safe and away from contamination while preparing.	4.41	0.67	EK
5. Wearing of mask, gloves, caps, hair nets, aprons, etc. are essential in preparing the food.	4.50	0.66	EK

Note: (4.21–5.00) Extremely Knowledgeable (EK); (3.41–4.20) Very Knowledgeable (VK); (2.61–3.40) Moderately Knowledgeable (MK); (1.81–2.60) Slightly Knowledgeable (SK); (1.00–1.80) Not Knowledgeable (NK)

Table 2
Food safety knowledge in food handling

Description	w \bar{x}	SD	Level of Food Safety Knowledge
Handling	4.51	0.34	EK
1. Proper hand hygiene can prevent foodborne diseases.	4.72	0.54	EK
2. The danger of food contamination is reduced with proper utensil cleaning and sanitation.	4.48	0.59	EK
3. The area for raw ingredients is clean and properly sanitize.	4.52	0.60	EK
4. Ensuring the quality of ingredients before the preparation is necessary.	4.32	0.67	EK
5. The health status of food handlers should check before working.	4.50	0.62	EK

Note: (4.21–5.00), Extremely Knowledgeable (EK); (3.41–4.20), Very Knowledgeable (VK); (2.61–3.40) Moderately Knowledgeable (MK); (1.81–2.60) Slightly Knowledgeable (SK); (1.00–1.80), Not Knowledgeable (NK)

Table 3
Food safety knowledge in food storage

Description	w \bar{x}	SD	Level of Food Safety Knowledge
Storage	4.43	0.38	EK
1. It is necessary to clean the hand in storing and retrieving foods in the storage area.	4.37	0.57	EK
2. Before being stored, containers for food must be properly sealed.	4.43	0.62	EK
3. The storage area are clean and sanitize before storing the food.	4.43	0.69	EK
4. There is a sufficient hygienic storage area of food products.	4.46	0.70	EK
5. Properly check the temperature of storage area periodically to reduce the risk of food contamination.	4.47	0.67	EK

Note: (4.21–5.00), Extremely Knowledgeable (EK); (3.41–4.20), Very Knowledgeable (VK); (2.61–3.40) Moderately Knowledgeable (MK); (1.81–2.60) Slightly Knowledgeable (SK); (1.00–1.80), Not Knowledgeable (NK)

Table 4
Food safety knowledge in selling

Description	w \bar{x}	SD	Level of Food Safety Knowledge
Selling	4.52	0.38	EK
1. Hand sanitizing is very important after handling money.	4.53	0.71	EK
2. When serving the food, food containers and other utensils must be sanitized and kept clean.	4.52	0.65	EK
3. The food stalls must be properly clean and with trash bins are present nearby.	4.46	0.66	EK
4. Food are display in a clean and sanitize area.	4.52	0.59	EK
5. Displayed food not in direct contact with floor or ground surface.	4.59	0.65	EK

Note: (4.21–5.00), Extremely Knowledgeable (EK); (3.41–4.20), Very Knowledgeable (VK); (2.61–3.40) Moderately Knowledgeable (MK); (1.81–2.60) Slightly Knowledgeable (SK); (1.00–1.80), Not Knowledgeable (NK)

echoing findings from Abdul-Mutalib et al. (2012), who emphasized the importance of proper food handling to prevent contamination.

C. Food Safety Knowledge in Food Storage

In terms of food storage, the mean score is 4.43 (SD = 0.38), showing a good level of knowledge. The item “checking the temperature of storage areas” (\bar{x} = 4.47, SD = 0.67) indicates that vendors understand the importance of maintaining proper temperatures to reduce contamination risks. This is supported by Egan et al. (2007), who noted that temperature control is a crucial factor in preventing bacterial growth in stored food.

D. Food Safety Knowledge in Selling

Food safety knowledge regarding selling practices also yielded a high mean of 4.52 (SD = 0.38). Vendors are especially knowledgeable about “sanitizing hands after handling money” (\bar{x} = 4.53, SD = 0.71), underscoring the critical understanding that handling money is a potential source of contamination, a point raised by Neal et al. (2011), who studied the correlation between hand hygiene and contamination in food services. Ensuring cleanliness in food stalls and maintaining a proper display of food (\bar{x} = 4.59, SD = 0.65) aligns with global food safety recommendations, such as those by the Food and Agriculture Organization (FAO).

5. Conclusion

In this study, we looked at how much street food vendors in Estancia, Iloilo, know about food safety, covering how they

prepare, handle, store, and sell food. The results show that the vendors generally know a lot about important practices, like keeping their hands and utensils clean, wearing protective gear, and checking the quality of their ingredients. They also understand how to store food properly and keep it safe from contamination.

However, even though they know what they should be doing, there may still be challenges in putting this knowledge into action. Vendors might face problems like limited resources or not having regular training to help them follow these practices consistently.

This study suggests that regular training programs for street food vendors could help ensure that they apply their food safety knowledge in their everyday work. Doing this will help reduce the risk of foodborne illnesses and improve the quality and safety of street food in the area.

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