

From Stall to Safe Meal: A Study on Food Safety Practices in the University Belt in Tamag, Vigan City

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KEYWORDS	ABSTRACT:
Food safety Foodborne Food handlers Sanitation Food Safety practices	<p>Introduction: Food safety is a shared responsibility in food service, with convenience and affordability attracting low-income workers. Contamination remains a concern, necessitating hygiene and sanitation for all handlers.</p> <p>Objectives: This study aimed to determine the food safety practices of food servers and servers along the university belt in Brgy. Tamag, Vigan City, Ilocos Sur.</p> <p>Methods: This study employed a descriptive-correlational design to examine the relationship between socio-demographic factors and food safety practices among food stall servers, using a questionnaire adapted from Asmawi et al. (2018). Ethical approval and consent ensured participants' rights, and data were analyzed using frequency counts, percentages, means, and Pearson correlation</p> <p>Results: The food handlers have a good adherence to food safety, with a very good practice along food storage and serving, though only good in personal hygiene, food preparation, and waste management. Significant relationships were found between age and waste management, and an inverse relationship between educational attainment and food storage practices.</p> <p>Conclusions: The food stall servers exhibit excellent food safety practices, with age and education influencing specific practices, emphasizing the need for targeted interventions.</p>

1. Introduction

Food safety is more than just sanitation; it is about trust and accountability. It embodies consumers' trust in food stall vendors and owners to provide meals that are convenient, economical, safe, and free of hazards. Every meal builds or breaks trust, making food safety essential to public health and community well-being.

The prevalence of foodborne diseases remains a significant public health concern, with current global reports indicating alarmingly high levels of such illnesses. According to the World Health

Organization, infectious or poisonous, foodborne illnesses are typically brought on by bacteria, viruses, parasites, or chemicals that enter the body through contaminated food [1]. It is shown that every year, 420,000 people worldwide die, and an estimated 600 million get sick from eating tainted food, losing 33 million years of healthy life. In 2016, Region 1 came out highest in the incidence of rotavirus, according to DOH. It can be acquired through dangerous methods of handling and preparing food, such as street vendors' food fare. It showed that public locations where food is served are more likely to have foodborne illness outbreaks [2].

While much research has focused on larger establishments, a gap remains in understanding how food stall servers near universities, particularly in less-regulated, peripheral areas, adhere to food safety standards. University students, who often rely on affordable food options, may face elevated risks of foodborne illness due to inconsistent food handling practices. The Department of Health (DOH, 2015) defines food safety as ensuring that food when prepared and consumed as intended, does not harm consumers. This aligns with the role of local government and health systems in upholding public health standards, including food safety [3].

Consumers need to be aware of the food they eat and adequately observe the sanitation practices of food servers [4]. Students are particularly vulnerable to food contamination because they prefer budget-friendly food purchases. This contradicts the findings that junior high school students have "High" practices on food preferences and the choice of quality food [5]. Moreover, international students at the University of Northern Philippines display admirable health behaviors, with most opting to avoid fast or street foods [6].

Furthermore, young students, especially university students, are particularly vulnerable to foodborne pathogens, placing them at heightened risk for foodborne diseases [2]. Due to their exposure to a variety of food sources, including those that may be unsafe, university students represent a critical group for targeted interventions aimed at reducing food poisoning risks [7].

Numerous research studies conducted in various provinces have found insufficient sanitation and hygiene, improper food preparation, and disregard for food safety regulations. The physical surroundings where servers operate frequently lack essential amenities, including hygienic kitchens, running water, and restrooms [8]. A foodborne disease can spread by food contamination, which creates a concern for both individuals and public health. To prevent food from becoming contaminated at any point in the food chain, a variety of resources must be used to practice food safety [9].

In response, the study investigates food safety practices of food stall servers along the peripheral area and outside the university campus. This research aims to safeguard the safety of students because they are more prone to engage in risky eating habits, putting them vulnerable to food-borne illnesses. Thus, by informing and adhering to food safety measures, the handlers will preserve the public's right to quality and guarantee the safety of the products, possibly preventing food-borne diseases.

Objectives

This study aimed to determine the food safety practices among food stall servers along the University belt in Tamag, Vigan City, Philippines, for the year 2024. Specifically, the study sought to describe the socio-demographic profile of the food stall servers, including factors like age, sex, educational attainment, length of service, and daily income; determine the extent of food safety practices among the food stall servers along personal hygiene, food preparation, food storage, food serving and waste management; and establish the relationship between the food safety practices among the food stall servers and their socio-demographic profile.

2. Methods

Research Design. This study utilized the descriptive-correlational method of research to capture characteristics, behaviors, and viewpoints within a specific population while assessing relationships among multiple quantitative variables. It examined the relationship between the personal factors the food safety practices among the food stall servers.

Data Collection. Total enumeration was used. A questionnaire checklist was utilized as the primary tool in the collection of data adapted from a validated instrument [10]. Part I of the questionnaire was about socio-demographic factors, and Part II gathered information on the food safety practices of food stall servers in terms of personal hygiene, food preparation, food storage, food serving, and waste management. After the approval from the College of Nursing Ethics Review Committee and authorization from the Brgy Captain of Brgy. Tamag, researchers personally distributed the questionnaires, and another set of questionnaires was distributed to UNP students as a primary consumers for validation.

Ethical Consideration. Ethical considerations ensured respondent confidentiality, and informed consent was obtained, assuring participants' privacy, anonymity, and right to withdraw.

Statistical Tools. The data was analyzed using frequency count and percentage for demographic profiling, mean to assess food safety practices, and simple linear correlation to determine the significant relationship between the food safety practices and the profiles.

3. Results

The results indicate that various demographic factors, such as age, sex, educational attainment, length of service, and daily income, influence the food safety practices of the respondents.

3.1 Socio-demographic profile of the food stall servers

Among the respondents, majority (14 or 28%) were aged 31-40, 27 (54%) were females, 22 (44%) were high school graduates. The majority have a 1-3 years length of service and a daily income of Ph 301-500. These demographic insights highlight a workforce composed predominantly of women with modest education and income, which may influence their practices and perceptions regarding food safety and their engagement in training and adherence to food handling standards.

3.2 Food Safety Practices of Food Servers

The food servers demonstrate a very good adherence to food safety, reflecting a strong commitment to safe and hygienic practices. This high rating suggests that food stall servers along the university belt prioritize food safety and comply effectively with local regulations, protecting vulnerable populations.

Table 1

Summary Mean Ratings of Food Safety Practices of Food Servers

Food Safety Practices	Mean	DR
Food Serving	3.67	Very Good
Food Storage	3.39	Very Good
Waste Management	3.25	Good
Personal Hygiene	3.21	Good
Food Preparation	3.21	Good
Overall Mean	3.35	Good

The implementation of effective food safety management systems in the food service sector significantly contributes to higher ratings of food serving [11]. These systems, which include practices such as hazard analysis and critical control points (HACCP), are found to enhance overall food safety and reduce the risk of foodborne illnesses, ultimately leading to better consumer satisfaction and ratings of food serving establishments. Further, the need for improvement in personal hygiene and food preparation practices among food servers is essential to mitigate the risk of food contamination and foodborne illnesses, ensuring the safety of consumers and maintaining public health standards [12]. Further, this adherence demonstrates a thorough understanding and application of essential food safety protocols, which are crucial in promoting public health and preventing foodborne illnesses.

3.3 Food Safety Practices Among Food Stall Servers and their Socio-Demographic Profile

Table 2

Relationship Between the Food Safety Practices Among Food Stall Servers and their Socio-Demographic Profile

Socio-Demographic Factors	Food Safety Practices					
	Personal Hygiene	Food Preparation	Food Storage	Food Serving	Waste Management	Overall
Sex	0.020	0.101	0.225	0.075	0.139	0.225
Age	0.074	-0.064	-0.277	0.006	0.288*	-0.187
Educational Attainment	0.131	-0.043	-0.328*	-0.011	0.177	0.048
Length of Service	-0.012	-0.023	-0.182	-0.046	-0.085	-0.086
Daily Income	0.060	0.040	-0.068	-0.170	0.004	-0.006

*Correlation is significant at the 0.05 level (2 tailed)

The analysis reveals a significant positive relationship between respondents' age and their waste management practices ($r = 0.288$), suggesting that their approach to managing waste improves as they

age. Older individuals may exhibit more responsible waste management and good environmental behavior when it comes to the sorting of waste from sources [13], [14], [15]. However, a study found that age does not affect waste management or sanitation practices [16].

Conversely, an inverse relationship exists between respondents' educational attainment and food storage practices ($r=0.328$), indicating that higher educational levels are associated with less adherence to recommended food storage practices. Despite their educational background, individuals may still lack specific knowledge or training in food safety practices, particularly if their education does not include coursework or training. They may inadvertently engage in unsafe food storage behaviors without adequate awareness or training. Moreover, a satisfactory knowledge of food safety does not always translate into a positive change in food handling behavior and attitudes and hygienic practices during the processing and handling of food products [17]. In contrast, individuals with higher levels of education may have access to professional development opportunities, such as training workshops or certification programs, which can further enhance their food safety knowledge and skills [18].

4. Discussion

The socio-demographic profile of food stall servers encompasses age, sex, educational attainment, length of service, and daily income, each affecting food safety practices in unique ways. Age influences awareness and adherence to safe food handling practices; middle-aged individuals tend to be more cautious than younger servers due to broader experience in food preparation [19], [2]. Gender also plays a role; studies suggest that female vendors are often more careful about food safety, possibly due to their critical roles in household decision-making around food and nutrition [20], [21]. Educational attainment shapes food safety practices by increasing awareness and knowledge, although higher education levels do not always correlate directly with improved practices [22], [23]. Though not always correlated with food safety adherence, length of service can impact skills and caution in food handling [23]. Daily income levels also affect food safety behaviors, as lower-income vendors may lack resources like clean water and proper storage, which can increase safety risks [24], [1], [25].

The extent of food safety practices of food stall servers and owners is influenced by their adherence to standards on personal hygiene, food preparation, storage, serving, and waste management. Food stall servers always observe personal hygiene practices, such as regular handwashing, which are crucial to reducing contamination but vary based on individual habits and resources [26]. In terms of proper food preparation, food stall servers ensure food safety by checking product expiration, practicing proper hygiene like regular handwashing, and using clean utensils to prevent contamination and the spread of foodborne illnesses. They follow essential storage practices and observe proper food serving. This positive assessment implies that food servers with more experience often excel in these areas, although gaps remain, particularly for vendors with less training in food safety [23], [27]. However, even if they support environmental sustainability and public health by practicing proper waste management and maintaining cleanliness in the service area, low-rating in-waste segregation highlights gaps in sorting waste materials, suggesting possible non-compliance with waste management guidelines. It is therefore concluded that servers actively manage solid waste to protect food quality, fulfilling their responsibilities in ecological waste management and maintaining a clean, sanitary environment for

satisfactory service [28]. These findings reveal that servers demonstrate a strong commitment to food safety and adhere to hygienic practices, supporting public health and preventing foodborne illnesses; responsible for delivering safe food, as errors in preparation, storage or handling can pose health risks; thus, prioritize food safety [19].

On the other hand, the lack of correlation between age and food safety practices regarding personal hygiene, food preparation, food storage, and food serving suggests that adherence to safety standards is consistent across different age groups. Regardless of age, employees receive comprehensive training and must comply with regulatory requirements to maintain public health standards [29]. Overall, age minimally influences food safety practices within food service establishments, as training, regulations, and awareness efforts ensure uniform adherence to safety protocols across age demographics. Also, while gender may influence some behaviors and attitudes, its impact on food safety standards in food service enterprises may be minor due to gender-neutral training and regulatory compliance. Standardized training and regulations ensure consistent food safety practices, regardless of employees' length of service, and daily income does not significantly impact food safety practices, as adherence remains consistent across income levels. Lastly, the inverse relationship between educational attainment and food storage could mean that those with higher levels of education may have a lower extent of practice in terms of food storage compared to those with lower levels of education. Individuals may lack food safety knowledge if their education doesn't include specific training, potentially leading to unsafe storage practices. It has been noted that even satisfactory knowledge of food safety does not always lead to strict improvements in food handling behaviors, attitudes, or hygienic practices during food processing and handling [17]. On the contrary, individuals with higher education levels often have greater access to professional development opportunities, such as training workshops or certification programs, which can further strengthen their food safety knowledge and skills. Promoting education and awareness of food safety practices is essential to enhancing safe food storage habits across all population segments, regardless of educational attainment [18].

In conclusion, this study emphasizes the importance of food safety practices in protecting public health, particularly in high-demand locations such as the University Belt of Tamag in Vigan. The findings reveal the strengths and limitations of food stall servers' food safety practices, emphasizing the importance of focused interventions like education, training, and tougher implementation of regulatory standards. Addressing these gaps allows stakeholders to improve food safety standards, increase customer trust, and reduce the risk of foodborne illness. Finally, providing safe and healthy meals benefits not only consumers but also the reputation and sustainability of the local food stalls.

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