



Levels of Awareness, Understanding, and Practices of Street Food Vendors on Food Safety in Ormoc City

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ABSTRACT

This study was conducted in Ormoc City, Leyte, Philippines, to address the public health concern posed by street-vended foods, which often lack the necessary infrastructure for safe preparation and handling. The primary aim was to assess the food safety awareness and practices applied among street food vendors for the purpose of developing a targeted seminar to improve their knowledge and hygienic procedures. The research employed a descriptive quantitative design. Data were collected from 60 street food vendors in Ormoc City, using a standard survey questionnaire and analyzed with mean scores and percentages. Key findings show that the vending sector is predominantly composed of young and middle-aged adults (21-40 age groups making up 61.6%) and is female-dominated (58.3%). Most vendors were High School graduates (30.0%), and notably, 100% possessed valid health certificates, indicating strong compliance with city regulations. However, the respondents exhibited only a moderate level of awareness for both food safety knowledge (mean score of 3.00) and practices (mean score of 3.09). While vendors demonstrated high awareness of visible practices such as handwashing and food separation, they showed low to very low awareness in critical technical areas, including utensil sanitation, proper leftover storage, and pest prevention. The study concludes that although regulatory enforcement is high, a significant gap exists between certification and consistent safe food handling practices. These deficiencies highlight the critical need for ongoing education and specialized, targeted training. Recommendations include the City Health Office reinforcing training activities focused on areas of weakness like pest control and utensil sanitation, with modules specifically designed to be gender-responsive and tailored to the vendors' educational profile for maximum efficacy.

Keywords: Food Safety; Street Food Vendors; Hygiene Practices; Food Safety Awareness

THE PROBLEM AND ITS SETTINGS

Introduction

The Food and Agriculture Organization (FAO, 1989) defines street meals as "ready-to-eat foods and beverages consumed and sold by vendors especially in the streets and other similar places." Foods like meat, fish, fruits, vegetables, grains, cereals, frozen produce, and drinks are among the items sold on the street ([WHO] World Health Organization, 1996). Since street vendors frequently lack basic food service infrastructure and equipment, such as storage facilities, food reheating equipment, refrigerators, and waste disposal facilities, street-vended meals are seen as a food safety danger to consumers. Food-borne illnesses affect millions of people annually throughout the world (WHO, 2000), and foodborne illness is becoming one of the most common public health issues in modern civilization. Concern over food security and health has led to a global upsurge in interest in the significance of street food. According to the World Health Organization, despite numerous studies and intervention efforts aimed at promoting food safety, 1 in 10 individuals worldwide become unwell as a result of food-borne illnesses, with over 91 million of those cases occurring in developing nations (WHO, 2015). There have been requests for improved hygiene procedures as a result of the rise in food-related incidents and outbreaks of food poisoning.

In Region VI, Iloilo City, Philippines, the Department of Science and Technology conduct a study about the Important food safety tips food handlers should know Aklan Provincial S&T Director and resource speaker, Ms. Dyna Rose G. Tibubos shared food safety tips focusing on the 5 Keys to Safer Food. The topic includes important information food handlers should know on hazards, bacteria, and microorganisms that may contaminate foods if not handled properly and the key contributors in keeping the food clean were taught to include proper cleaning and handwashing. Additional strategies covered include, but are not limited to, labeling cutting boards with colors, arranging food in the freezer, and storing it properly. In order to guarantee food safety, it was also stressed that food should be cooked to a temperature over 70 degrees Celsius in order to destroy bacteria. Additionally, the instruction covers how to store food to prevent deteriorating, reheat leftovers only once, and avoid storing them for longer than three days. It's probably crucial to wash raw food, kitchenware, and utensils in a safe water.

In Ormoc City, fast-growing economy and accelerating business caused a significant increase in local populations and food businesses. the current administration had done an action to lessen the problem in food safety during the celebration of nutrition month. The Department of Agriculture Regional Field Office 8 (DARFO8) organized the Food Safety Caravan 2022 in collaboration of the Local Government with the theme “Kaunon lang ang Limpyo ug Sigurado para Luwas ta sa Peligro”. Dr. Angel C. Enriquez, DARFO8 Regional Executive Director, delivered an inspirational message emphasizing food sufficiency and strict implementation of food safety to avoid food poisoning in the City. The researchers see this opportunity to help assess the food safety awareness and practices applied among street food vendors in Ormoc City, Leyte, through helping them improve their knowledge about food safety and hygienic practices to avoid harm to people. The findings of this study could help the consumers, local government, and also street food vendors in Ormoc City, as it is important to ensure the customers health and safety to gain customer’s loyalty

Statement of the Problem

The aim of this study is to know the actual level of awareness, understanding and practices among street food vendors on food safety in Ormoc City, for the purpose of the improvement of street food vendors through developing a seminar about food safety and hygienic practices to maintain and adapt new ways about food safety practices to the street food vendors, specifically, the study will answer the following:

1. What is the demographic profile of the street food vendors in Ormoc City?
 - a. Age
 - b. Gender
 - c. Educational attainment
 - d. Type of vendor
 - e. Number of years vending
2. What are the current food safety practices of the street food vendors in Ormoc City?
3. What is the level of awareness of the street food vendors in Ormoc City in terms of:
4. Food safety knowledge
5. Food safety practices
6. 4. How can we improve the knowledge of the street food vendors about food safety practices by creating partnership with the city health office?

Significance of the Study

The significance of this study can help educate street food vendors on the importance of food safety practices. The result of this study benefits the following:

Consumer. To consume harmless food and be aware of food safety to reduce risk of foodborne illnesses.

Street Food Vendors. To gain more knowledge about food safety and hygienic practices.

Researchers. To gain knowledge about the importance of food safety and can benefit through the completion for the bachelor’s requirement.

Public Health Officials. Insights of this study can guide public health initiatives identify common issues and trends in food safety which enables them to develop public awareness campaigns and law to reduce incidence of foodborne illnesses and improve public health.

Future Researchers. This study will serve as a useful resource for their research on food safety and public health.

Local Government. Can develop targeted training programs to support vendors in maintaining hygiene.

Tourists. Improved food safety practices can enhance the overall experience for tourist who seek local street food.

Community. This study can enhance public health awareness and promote safer food handling which improve community trust in local food sources.

Definition of terms

To better understand this study, the following words are defined operationally.

Street Foods. Are those ready to eat food and beverages that are sold from streets like chicken, animal internal organ, soup, porridge, tempura, egg(balut), roasted nuts, and siomai in the streets of Ormoc City.

Foodborne Diseases. Are illnesses caused by consuming contaminated food or beverages like the animal internal organ, and juices bought from street food vendors.

Food Safety Practices. Is a practice on making sure that the food prepared by street food vendors are safe to consume by the public.

Street Food Vendors. Are those local entrepreneurs that sell ready to eat food and beverages in streets and public places in Ormoc City.

Food Handling. Are techniques used in preparing, serving, and storing of food sold by street food vendors.

Contamination. Are harmful substances or microorganism in food that can cause illness that can be found in foods sold by street food vendors in Ormoc City.

Waterborne diseases. Are illnesses caused by consuming or using contaminated water in food by the street food vendors in Ormoc City.

Scope and Delimitations

The scope of this study focuses on the food safety awareness and practices among street food vendors in Ormoc City. The researchers' scope is limited within the city of Ormoc as it is second most populated city in the province of Leyte and one of the focal points for SME's Therefore, helping street vendors to understand more about food safety and hygienic practices will gain them more customers.

Methodological Limitations

1. Self-Reported Information Bias: Data collection relied primarily on self-administered questionnaires, introducing social desirability bias. Vendors may over-report compliance with hygiene procedures (e.g., reporting frequent hand cleaning) to align with sanitary card expectations, disguising habitual non-compliance.
2. Absence of Direct Observational and Microbiological Validation: The methodology measured reported awareness and practices rather than systematic, blinded field observations or swab analyses of food contact surfaces and finished foods.

3. Cross-Sectional Architecture: The static design captures perceptions at a single point in time, limiting causal conclusions regarding whether health certificate issuance directly impacts long-term habit retention. Longitudinal tracking is needed to chart behavioral decay post-intervention.
4. Sample Scope: The sample was confined to 60 purposively sampled vendors within the Ormoc City proper commercial zone. While statistically adequate for municipal operational planning, generalization to rural street food operations across Region VIII must be approached cautiously.

Theoretical Framework

This study utilizes related studies and theories to assessing food safety awareness and practices applied among street food vendors. According to Phillip Seaman (2010) in his Food Hygiene Training Model Theory, social cognition models and workplace health education theories have been used for many years to map out the variables and identify determinants of various health-related behavior, such as the use of food thermometers, hand hygiene practices, and food handling. identifies the different influences on the education, attitudes, incentives, and circumstances needed for food handlers to carry out safe handling procedures in the workplace by utilizing a variety of theoretical models and educational theories. A key component of the global control of food-borne illnesses is the implementation of safe food handling procedures and effective food hygiene training.

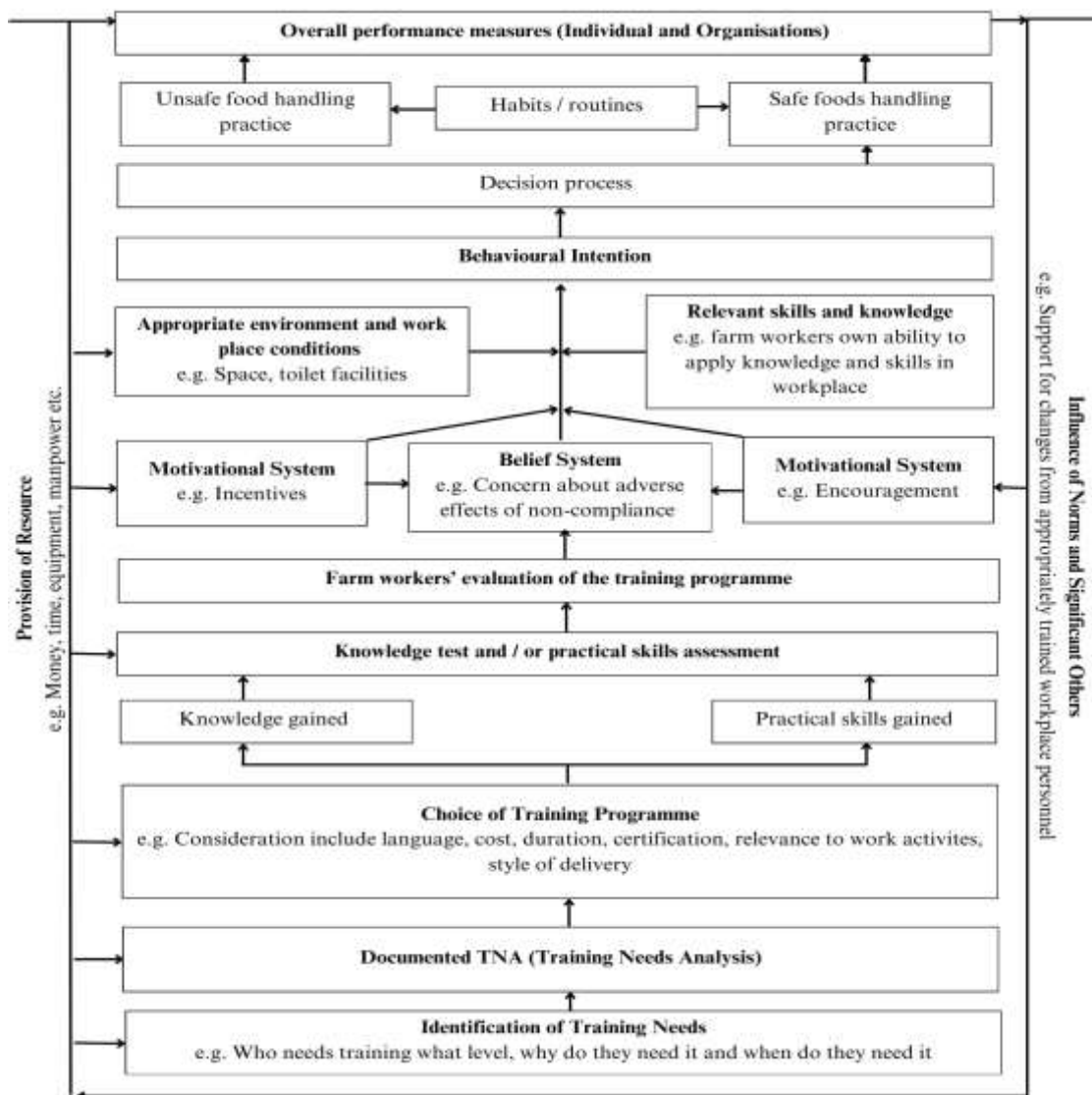


Figure 1. Food Hygiene Training Model Theory by Phillip Seaman (2010).

The Health Action Model (Tones, 1988) tries to take account of strong motivating forces such as hunger, pain, pleasure and sex in order to understand why people act in seemingly irrational ways (Earl et al 2007). HAM theory provides a framework for relating beliefs to other motivating factors are considered as predisposing,

individual skills and environment are considered as enabling, the normative pressures is considered as reinforcing each of which can influence the intention to action. However personal choice also plays an important role. “People are rational, aware self creating agents of their own health. influence by consciously chosen goals (British Medical Journal Vol. 329). For instance, it is expected for people to have good hand hygiene, despite the intent, if there is lack of facilities this is unlikely to happen. In the present climate, health care practitioners may not take account of the social inequalities in educational provisions or assess due to language barriers and different cultures in the health and social care.

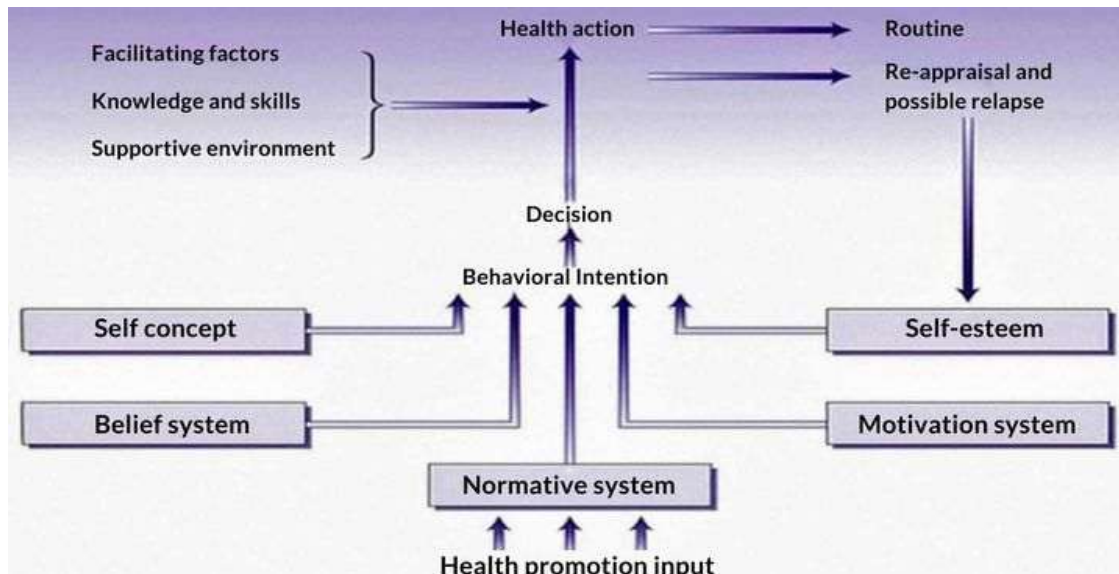


Figure 2. Tones’ Health Action Model Applied to Food Hygiene Education (1988).

To ground the empirical findings within health behavior and hygiene education theories, this study operationalizes two complementary conceptual models: Philip Seaman’s Food Hygiene Training Model (2010) and Keith Tones’ Health Action Model (HAM) (1988). These frameworks provide a structured diagnostic basis for evaluating why street food vendors in Ormoc City demonstrate proficiency in visible hygiene routines while systematically exhibiting deficits in technical, hazard-control practices.

Operationalization of Philip Seaman’s Food Hygiene Training Model (Seaman, 2010)

Seaman’s model identifies that food hygiene training cannot be viewed as a simple linear transfer of technical knowledge from instructor to handler. Instead, it posits that safe food handling routines emerge through the systematic interaction of four core dimensions: Training Needs Analysis (TNA), Belief Systems, Workplace Circumstances and Resources, and Habit Formation.

Table A Operationalization of Philip Seaman’s Food Hygiene Training Model in the Context of Street Food Vendors in Ormoc City

Model Component (Seaman, 2010)	Operational Application to Ormoc City Findings
1. Training Needs Analysis (TNA) & Targeted Education	Identifies specific, unaddressed knowledge deficits in baseline municipal instruction. In Ormoc City, severe deficits concentrate in biological hazard controls: allowing cockroach and fly entry (WM = 1.20), holding excess cooked meals at room temperature (WM = 2.10), and relying solely on tap water to clean utensils (WM = 2.15). Standard training has historically over-emphasized general grooming while omitting practical pathogen barriers.



2. Attitudes, Motivations & Belief Systems	Highlights discrepancies between cognitive values and operational priorities. Vendors display high awareness of the health consequences of dirty surfaces (WM = 3.70), but rationalizations related to speed and effort dominate busy periods. Specifically, 51.7% avoid using separate knives and cutting boards because doing so is perceived to demand excessive time (WM = 2.40).
3. Workplace Circumstances, Environment & Resources	Examines the physical setting required to transform knowledge into action. While 100% of respondents possess official health certificates, mobile vendors (51.7%) lack structural amenities including running potable water, separate wash/rinse/sanitize basins, and temperature-controlled insulated storage. Administrative compliance therefore exists without the environmental resources necessary for compliant practice.
4. Habit and Routine Formation	Explains why periodic or one-time certification fails to yield behavioral retention. Without continuous workplace prompts, supervisory audits, and feedback loops, vendors default to expedient shortcuts (e.g., using a single wiping towel for dusting and drying, WM = 1.55; omitting handwashing during peak meal processing, WM = 1.60).

Operationalization of Keith Tones' Health Action Model (HAM) (Tones, 1988)

The Health Action Model (HAM) developed by Tones (1988) asserts that behavioral intention and health-related actions are governed by the interplay of predisposing factors, enabling factors, and reinforcing factors. Applying this model clarifies the gap between vendor knowledge and actual street-level compliance.

Table B Operationalization of Tones' Health Action Model (HAM) in the Context of Street Food Vendors in Ormoc City

HAM Dimension (Tones, 1988)	Operational Application to Ormoc City Findings
1. Predisposing Factors (<i>Knowledge, Core Beliefs, Attitudes, Values</i>)	Comprises baseline hygiene values and disease perception. Vendors demonstrate strong predisposing intent toward basic cleanliness, such as checking food condition (WM = 3.80) and pre-handling handwashing (WM = 3.63). However, their predisposing knowledge contains critical scientific blind spots, such as relying purely on visual inspection to assess bacterial spoilage (WM = 2.60).
2. Enabling Factors (<i>Physical Infrastructure, Resources, Practical Skills</i>)	Represents environmental and material capacity. While vendors have high predisposing willingness, enabling factors in Ormoc City are severely constrained. Mobile carts lack pressurized sinks, hot water, and dedicated sanitizer tanks. These resource voids prevent handlers from executing three-stage sanitization, resulting in the improper practice of cleaning contact tools with tap water alone (WM = 2.15).
3. Reinforcing Factors (<i>Social Norms, Peer Influence, Regulatory Oversight</i>)	Refers to feedback mechanisms and cultural standards within the vending environment. A prevailing market norm tolerates the open-air presence of flies and insect vectors in prep zones (WM = 1.20). Furthermore, municipal regulatory reinforcement has historically focused on the annual renewal of health cards rather than continuous on-site sanitation inspections, leaving safe behaviors unreinforced.

Synthesizing Seaman's Food Hygiene Training Model (2010) and Tones' Health Action Model (1988) demonstrates that street food safety in Ormoc City is fundamentally hindered by structural and environmental bottlenecks rather than vendor apathy. Vendors possess positive predisposing values (high valuation of customer cleanliness, WM = 3.80) and adhere to formal regulatory gates (100% health certificate possession. Nevertheless, the absence of workplace enabling resources (portable sanitizing basins, running water, color-coded boards) and the absence of post-licensing reinforcing audits cause handlers to abandon safe practices during high-demand operating hours.

Consequently, interventions spearheaded by the Ormoc City Health Office cannot remain confined to conventional classroom lectures. Effective interventions must address both the predisposing gaps identified in Seaman's Training Needs Analysis (specifically vector elimination, chemical sanitization, and the 2-hour ambient holding limit) and provide the enabling infrastructure (hygiene starter kits and communal potable water access) necessary to convert cognitive awareness into sustained everyday habits.

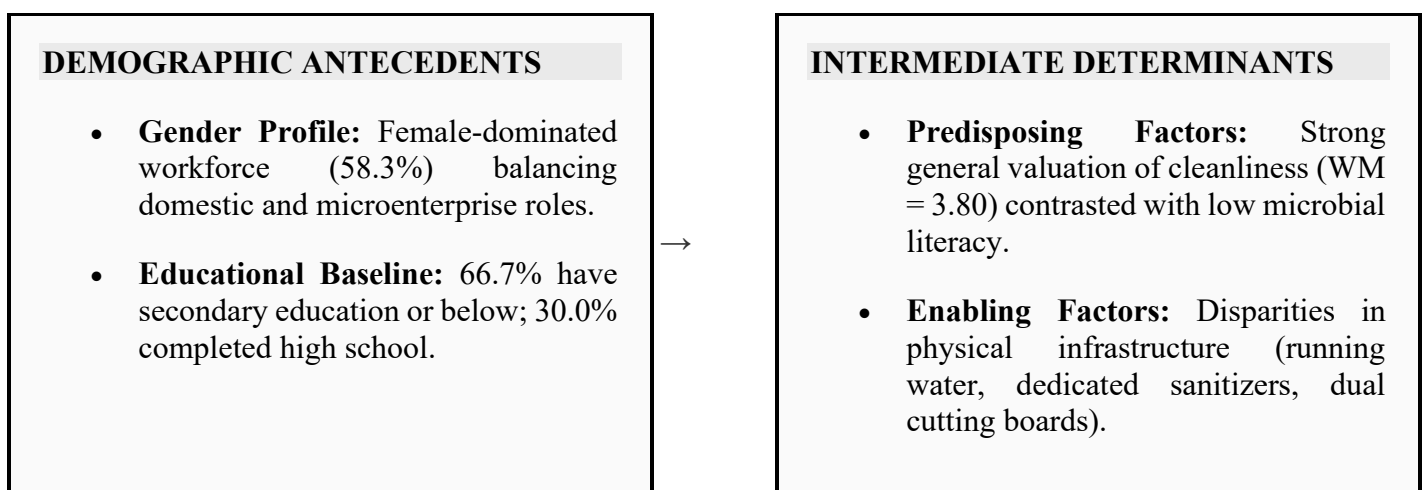
Conceptual Framework Of The Study



Figure 3. Food safety conceptual framework.

The figure 3 shows the flow of the study, in the figure above it illustrates the variable of the study. The second figure involves the process of the study comprising of action that the researcher will perform in order to come up with the desired output which is Holistic approaches for food hygiene.

The revised conceptual framework addresses the limitations of the traditional Input-Process-Output paradigm by mapping the structural, cognitive, and environmental pathways governing food safety among street food vendors in Ormoc City. The model details how demographic antecedents interface with intermediate behavioral determinants to shape concrete operational handling practices, which directly influence public health outcomes and enterprise sustainability. Additionally, an intervention loop demonstrates how a targeted, competency-based municipal training initiative modifies these behavioral pathways.





- **Operational Classification:** Mobile cart vendors (51.7%) vs. Fixed stall vendors (48.3%).
- **Enterprise Longevity:** 58.3% operating for 1–5 years (transitional microenterprises).

- **Reinforcing Factors:** High certification compliance (100% health cards) undermined by permissive open-market vector norms.



OPERATIONAL FOOD SAFETY PRACTICES (OBSERVED & EVALUATED)

- **Biological Vector Control:** Physical exclusion of houseflies and cockroaches from preparation and display areas (Critical deficit: WM = 1.20).
- **Utensil Sanitization:** Application of active chemical/thermal sanitizers vs. improper reliance on plain tap water alone (WM = 2.15).
- **Cross-Contamination Barriers:** Separation of cutting boards/knives for raw and prepared foods (Time barrier: WM = 2.40).
- **Time-Temperature Control:** Compliance with the <2-hour ambient window and proper holding of surplus cooked meals (WM = 2.10).



PUBLIC HEALTH & ECONOMIC OUTCOMES

- **Reduced Enteric Illness Risk:** Lowered transmission of salmonellosis, shigellosis, and amoebiasis in Ormoc City.
- **Consumer Trust & Tourism:** Elevated safety assurance and satisfaction for local and visiting consumers.
- **Livelihood Security:** Sustainable microenterprise operations protected from regulatory closure or product confiscation.
- **Regulatory Integration:** Transition from nominal health card possession to internalized sanitary habits.



[Targeted Intervention and Feedback Pathway]

TARGETED MUNICIPAL INTERVENTION: CITY HEALTH OFFICE COMPETENCY WORKSHOP

- **Pedagogical Delivery:** 3.5-hour modular, bilingual (Cebuano/English) workshops prioritizing hands-on demonstrations (Glo-Germ UV, sanitizer dilution strips) tailored to vendors with secondary schooling.

- **Gender-Responsive Support:** Scheduling sessions during afternoon non-peak hours (1:30 PM–4:30 PM) and providing on-site supervised child-minding for female vendors.
- **Enabling Hygiene Starter Kits:** Distribution of dual color-coded cutting boards, food-grade sanitizing solutions, and mesh insect covers to bridge the equipment deficit.
- **Reinforcement Audits:** Periodic, unannounced on-site observational audits to complement annual health certificate renewals.

Figure 3. Enhanced Conceptual Framework Illustrating the Determinants of Street Food Safety Practices, Epidemiological Outcomes, and the City Health Office Intervention Pathway.

Figure 3 establishes the conceptual linkages connecting baseline vendor characteristics to real-world operational safety. As illustrated, vendor demographic characteristics primarily gender responsibilities, educational attainment, and physical cart/stall configurations act as underlying conditions that shape intermediate determinants. Drawing from Seaman's Food Hygiene Training Model (2010) and Tones' Health Action Model (1988), these intermediate determinants are categorized into predisposing factors (hygiene awareness versus microbiological misconceptions), enabling factors (physical infrastructure and sanitizing resources), and reinforcing factors (health card enforcement and community market norms).

These intermediate drivers directly dictate operational practices during food preparation, serving, and storage. Where enabling resources and reinforcing norms are absent, performance collapses in specific technical domains: pest containment, chemical sanitization of utensils, knife segregation, and cold-chain/thermal preservation of leftovers. The aggregate execution of these handling behaviors determines overall outcomes, including the transmission rate of foodborne pathogens across Ormoc City, the sustainability of vendor enterprises, and consumer trust.

Finally, the framework integrates an intervention loop linking the proposed City Health Office workshop back into the system. Rather than offering generic didactic lectures, the intervention addresses predisposing deficits through tailored practical modules, mitigates enabling gaps by providing physical hygiene kits, and strengthens reinforcing factors through continuous on-site observational monitoring.

REVIEW OF RELATED LITERATURE AND STUDIES

As this study is conducted data and information are being collected by the researchers. All the information cited in the body of current knowledge was produced by other researchers related to the study about food safety awareness and practices applied among street food vendors.

According to Nelly Virginia Nkosi, Frederick Tawi Tabit Heliyon (2021) of the study “The food safety knowledge of street food vendors and the sanitary conditions of their street food vending environment” The majority of street food sellers' vending machines pose a risk to customers' food safety. This was primarily caused by street food vendors' lack of understanding about food safety, non-compliant infrastructure used by street food vendors, and insufficient oversight and supervision by appropriate authorities. Street food vendors and health inspectors should receive training on safe food handling principles and practices. It is advised that authorities install the food stall/caravan system in areas with sufficient sanitation and utilize the licensing and permit tool to ensure control and adherence to food safety regulations.

The study of Md Mizanur Rahman, Mohd Taha Arif, Kamaluddin Bakar, ZB Tambi Borneo Science 31, (2012) “Food safety knowledge, attitude and hygiene practices among the street food vendors” in Northern Kuching City, Sarawak, Street food vending is a prevailing and distinctive part of a large informal sector in both developed and developing countries. Food safety is a key public health concern, because a large number of people take their meals outside the home and are exposed to food borne illnesses. Food handlers play an important role in ensuring food safety throughout the chain of storage, processing production, preparation and retailing.

According to the study of Penelope Tracy Campbell University of the Western Cape, (2011) “Assessing the knowledge, attitudes and practices of street food vendors in the city of Johannesburg regarding food hygiene and safety” Trained vendors had more knowledge in some of the 5 keys principles and had a more positive attitude than the untrained street food vendors. Age, education level and length of time in the business, were not factors determining the knowledge, attitude and practices of SFVs. SFVs from high density regions and trained SFVs were more likely to practice food separation to prevent cross contamination and this was statistically significant. Trained SFVs were more likely to have stands or stalls that met hygiene standards as observed by the EHPs and this was found to be statistically significant.

According to the study of Nisha Bhandari (2021) “Food safety, sanitation and hygiene practices among street food vendors in Pokhara, Kaski” Street foods are unique and convenient urban food supply meanwhile it lacks the food hygiene and safety posing major public health risk. It said that the sanitary conditions of the vending sites were good. But the major areas which put major hazards to health are poor hand washing practice, no regular health checkup, re-use of oil, poor use of personal protective equipment and presence of flies and other vectors like cockroaches and rats in the vending sites which needs due attention. This study recommends that every vendor, helper, or food handler should undergo basic training in food hygiene and sanitation; establishment of a code of practices for street food business. There should be provision of basic water and waste management facilities, and constant supervision by the respective authority

According to the study of Yu (2018). “The Impact of the Food Safety Training Program on Food Handlers in the Food Service Industry” Food-borne illness outbreaks were attributed to employees’ personal hygiene and improper food handling by employees in the foodservice industry. A large group of food safety training researchers has suggested that food safety training should be developed based on firm behavioral development and psycho-social theories.

According to Lesley Casas Lubos (2014) of his study “Food Safety Knowledge and Handling Practices of Street Vendors” in Cagayan de Oro City, Philippines, Food vendors should be adequately educated on the role of food in disease transmission as well as on personal hygiene and approved practices in handling food. The legal implications of selling unsafe food should be made clear to street food vendors. Also, there is a need for the local government to make available basic infrastructures such as washrooms, public supply of portable water, containers, and good drainage system.

According to the study of Azanaw et al., (2019) of his study “Food safety practices of food handlers at home engaged in online food businesses during covid-19 pandemic in the Philippines”, Food handlers were not obliged to register for food safety certification or to get sanitary permits., resulting in unsafe and inappropriate food preparation methods that expose customers to food related disease. Reheating, undercooked food, chilling of food, poor preparation, contamination, improper processing, and unsanitary circumstances have all been related to food borne illness.

According to the Philippines Food and Drug Administration, (FDA, 2016). the five most significant causes of foodborne disease are: 1) poor, poor hygiene, 2) food from unsanitary sources, 3) infected equipment, 4) inappropriate holding temperature, and 5) insufficient cooking. Workers in the foodservice industry may contaminate food during the preparation or serving phases. Any operator fears an outbreak allegation or confirmation since a single foodborne epidemic may impact hundreds.

The study of Myla A. Argentea , Normahitta P. Gordoncilloa, Leila S. Africa, PhDa *, Corazon VC. Barba, PhD a, Josefina T. Dizon, PhD which titled “Assessment of Knowledge, Attitude, and Practices on Food Safety and Compliance to Microbiological Safety Guidelines among Vendors of Commonly Patronized Street Foods” in Poblacion, Batangas City, Most street food vendors surveyed in this study had no available water and handwashing facilities, and had avail-able trash bins but were not segregated for different kinds of wastes, indicating that they do not practice waste segregation. Respondents’ level of food safety knowledge was average, while food safety attitude and practices were rated good.

The study of Ritchelle W. Origenes, Rowena Espinosa-Gelisanga & Sheila B. Alturas (2022) titled “Street Food’s Microbiological Load and Vendors’ Food Hygiene and Safety Practices Compliance in the Schools of

Cebu City”, Shows that food vendors from the selected study areas have very good compliance with the use of protective clothing, provision of water at vending point, cleanliness of fingernails, and use of appropriate kitchenware for dishing out food to consumers but very poor compliance with the use of head covering, obtaining a business permit and sanitary/health card.

Recent international and regional literature underscores the persistent discrepancy between formal regulatory compliance and real-world hygienic practices in the street food sector. In a comprehensive global review of street vending dynamics in developing nations, Ababio and Lovatt (2023) observed that although local government authorities frequently implement mandatory licensing and certification frameworks, these regulatory mechanisms operate largely as administrative formalities. The authors synthesized evidence across emerging markets, highlighting that municipal certification programs throughout Southeast Asia frequently function in the absence of routine, on-site hygiene inspections. As a result, commercial vendors may achieve high rates of formal health clearance without demonstrating adequate daily compliance with biological hazard controls or basic sanitary measures. This administrative gap creates an environment where nominal accreditation obscures structural vulnerabilities at the point of sale.

Beyond regulatory monitoring gaps, the literature underscores that instructional formats alone cannot ensure behavioral change without corresponding structural provisions. Faour-Klingbeil and Todd (2024) demonstrated that conventional, lecture-based food safety seminars typically fail to reduce foodborne pathogen transmission if food handlers lack access to vital municipal infrastructure. Their research revealed that didactic food safety instruction yields negligible long-term behavioral transformation unless paired with accessible workplace amenities, most critically reliable access to potable running water, dedicated graywater disposal facilities, and appropriate food storage technologies. When local governments require certification but fail to provide essential supportive utilities, food handlers are driven to adopt operational shortcuts, regardless of their theoretical understanding of foodborne illness prevention.

These systemic and behavioral challenges are directly reflected in modern empirical studies conducted in the Philippine archipelago. Examining informal street food operators in urbanizing centers of the Central Philippines, Perez and Del Rosario (2024) documented substantial microbiological risks stemming from routine cross-contamination practices. The authors noted that Filipino street vendors consistently reuse multi-purpose cleaning cloths for tasks ranging from wiping counters and washing utensils to drying hands. Furthermore, vendors frequently rely on sensory and visual cues such as color, odor, and surface appearance to judge food wholesomeness rather than adhering to scientifically established temperature controls or safe holding times. These findings parallel observations from secondary Philippine cities, where handlers often exhibit basic personal cleanliness but mismanage critical microbiological control points during peak trading hours.

To overcome the limitations of passive instructional lectures, recent intervention research has increasingly prioritized participatory, behavior-focused training methods. Trinh et al. (2023) evaluated the impact of targeted behavioral hygiene education on informal food handlers through a randomized controlled trial in Southeast Asia. Their results established that short, hands-on, modular training sessions incorporating interactive demonstrations yield significantly higher sustained compliance and sharper reductions in microbial loads than traditional didactic lectures. By replacing text-dense instructional methods with visual demonstrations, practical exercises, and targeted hazard controls, modular training models effectively overcome variations in educational backgrounds among street vendors. Collectively, these contemporary investigations highlight that achieving street food safety requires moving beyond administrative certification toward hands-on, behaviorally grounded training models supported by basic vending infrastructure.

RESEARCH METHODOLOGY

In this chapter, the method of research design, the respondents of the study, the instrument used, data gathering procedures, statistical treatment, and ethical consideration are described.

Research Design

The research was a descriptive design. It was a survey regarding the level of awareness, understanding, and



practices of street food vendors on food safety in Ormoc City. Descriptive data were gathered through a standard survey questionnaire, which allowed the researchers to determine the level of awareness and practices applied by the street food vendors. The research utilized a quantitative approach. The quantitative research design engaged numerical values to measure the food safety awareness among street food vendors.

The study aimed to analyze the actual level of food safety awareness and practices applied among street food vendors. It also aimed to provide strategies and promote awareness of food safety and hygienic practices among the vendors.

Research Environment

This study focused on the street food vendors in Ormoc City, where proper knowledge of food safety and hygienic practices was necessary because of its impact on both the vendors and consumers. Since Ormoc City was the second most populated city in the province of Leyte and one of the focal points for SMEs experiencing a fast-growing economy and accelerating business activities, it caused a significant increase in the local population and food businesses.

Research Respondents

The respondents of this study were the street food vendors in the City of Ormoc. The researchers targeted street food vendors who sold chicken, animal internal organs, soup, porridge, tempura, eggs (balut), roasted nuts, and siomai on the streets, as food safety was a top priority, especially among street vendors, and they checked their health certificate IDs. The respondents were selected using the purposive sampling method.

Sampling Technique

The technique that this study employed was purposive sampling, in which the researchers selected their samples based on convenience. The Ormoc City street food vendors were selected by the researchers.

Inclusion and Exclusion Criteria

To qualify as a respondent in this research study, individuals had to meet the following criteria:

- a) Vendors should sell street foods.
- b) Vendors that sell chicken, animal internal organ, soup, porridge, tempura, egg(balut), roasted nuts, and siomai.
- c) Vendors that sell street food within the city proper of Ormoc City.
- d) Vendors that have a Health certificate identification.
- e) Vendors should have their own stall or cart to be qualified as a respondent.
- f) Willing to participate and provide informed consent.

Research Instrument

The researchers utilized a standard survey questionnaire as the instrument for this study. The standard survey questionnaire that came from the research of Minjie Chu et al., which was titled "Food Safety Knowledge, Attitude, and Hygiene Practices of Street-Cooked Food Handlers in North Dayi District." Which we used to gathered data about the levels of awareness, understanding and practices of street food vendors on food safety in Ormoc City.

Data Gathering

Before conducting this study, the researchers followed a structured and comprehensive process to ensure the accuracy and reliability of the data gathered. First, formal approval is obtained from the Dean of the School of Tourism and Hospitality Management. This approval certifies that the research adheres to ethical standards and aligns with institutional policies. Additionally, the researchers sought permission from the City Health Office to interview and survey street food vendors operating within Ormoc City. These vendors, who sell various food

items such as chicken, animal internal organs, soup, porridge, tempura, egg (balut), roasted nuts, and siomai, served as the primary respondents for this study. When the necessary permissions have been secured, the researchers proceeded with the systematic selection of respondents. A clear criterion established to ensure that the sample of street food vendors is representative of the population. During this stage, the researchers communicated with the vendors to explain the study's objectives, scope, and significance. To ensure ethical compliance, all respondents were asked to sign informed consent forms indicating their voluntary participation. The primary tool for data collection is a well-structured questionnaire designed to gather information on the vendors' awareness, understanding, and practices regarding food safety and hygiene. The questionnaire covered areas such as knowledge of food safety awareness, understanding, and practices. The data gathered through the questionnaires is complemented by direct observation, where researchers monitored the vendors' food preparation and handling practices in real-time. To gain deeper insights, the researchers conducted interviews and hold informal discussions with the vendors. These interactions aim to explore their experiences, identify factors that influence their practices, and understand their perspectives on food safety regulations. After collecting the data, the researchers categorized the responses and analyzed them systematically to identify trends, gaps, and potential areas of intervention. Finally, the researchers collaborated with the local government to organize educational seminars focused on improving food safety awareness and hygiene practices among street food vendors. These seminars included practical demonstrations, distribution of informational materials, and interactive sessions to address specific challenges faced by the vendors. After the seminars, the researchers follow up with the respondents to express gratitude for their participation and share the study's findings, along with actionable recommendations for improvement.

Data Analysis

The data that were gathered were analyzed and interpreted using statistical tools applicable to the study. The statistical tools used in the study were percentage and simple frequency in calculating the mean to determine the actual levels of awareness, understanding, and practices of street food vendors on food safety in Ormoc City. Through this method, the researchers were able to determine the level of food safety awareness and the involvement of the street food vendors in food safety and hygienic practices needed for the study. Questionnaires consist of 22 questions that each question is equivalent to 1 point. Percentage is calculated by dividing the total score of each question. The quantitative data obtained from the survey questionnaires were encoded, cleaned, and analyzed using statistical software at a significance threshold of $\alpha = 0.05$

The following statistical techniques employed in the analysis and Interpretation of the results:

Descriptive Statistics

The Mean (Simple frequency) and Percentage. These are used to determine the average of the responses per section of levels of awareness, understanding and practices in street food vendors on food safety in Ormoc City.

Mean= sum/n

Where: f- frequency

v-value

n-number of respondents

% - percentage

Weighted Mean. This is used to assess the responses of each question of the respondent.

Inferential Statistics

To establish deeper statistical rigor, evaluate group differences, and test for underlying associations, inferential tests were incorporated:

1. Independent Samples *t*-Test: Utilized to compare mean differences in food safety knowledge and practice scores between two independent groups (e.g., Mobile vs. Stall vendors; Male vs. Female vendors). Effect sizes are reported using Cohen's *d* (0.20 = small, 0.50 = medium, 0.80 = large).
2. One-Way Analysis of Variance (ANOVA): Employed to assess whether significant differences in food safety knowledge and practices exist across three or more categorical groups, specifically across age brackets and educational attainment levels. Practical significance is quantified using partial eta-squared.
3. Chi-Square Test of Independence (X^2): Applied to evaluate associations between categorical demographic variables and dichotomized competency levels (High vs. Low awareness). Cramer's *V* is computed to indicate the strength of association.
4. Spearman's Rank Correlation (ρ): Executed to measure the strength and direction of association between continuous experience metrics (number of years vending) and overall food safety practice scores.

Ethical Consideration

The researchers of this study maintained ethical soundness. This study was guided by the ethical principles of autonomy, right to know and to withdraw, beneficiaries, privacy, and confidentiality. To assured the respondents of this study that their rights and privacy are protected, the researchers required them to sign a permit. The research design adhered strictly to institutional research ethics principles. Administrative authorization was secured from the Dean of the School of Tourism and Hospitality Management and the Ormoc City Health Office prior to survey distribution. Participation was entirely voluntary; each vendor was informed of the study's educational objectives, risks, and benefits before executing written informed consent. Participants maintained the explicit right to withdraw or withhold information at any juncture without penalty. Confidentiality and data privacy were maintained through the assignment of non-identifying code numbers on all survey forms. No personal identifying names or cart registration numbers were published, and electronic datasets were secured via password-protected storage accessible solely by the research team

Protection of Human Rights. The current study upheld the protection of human rights, ensuring that all respondents were treated equally with respect and manner. The identity of all the respondents was being kept confidentiality by the researchers. This research methodology was designed to protect the human rights of the respondents, including the right to refuse to participate the survey and the right to back out anytime.

Respect for Persons. Respondents were treated as independent agents while upholding the respect for persons values. They were valued as people by being given the freedom to exercise their autonomy by freely given permission. Giving voluntarily given assent was the key to preserving the respondents' autonomy.

Beneficence. The researcher made no treatments or interventions to adhere to the ideals of beneficence. The welfare of the respondents was of the utmost importance as a goal of this study, as the principle implies.

Justice. All the study's informants underwent the same process in order to uphold the principle of justice. Survey questions were utilized in the study to assess the impact of food safety and hygienic practices.

Transparency. The school library and the Institutional Review board received duplicate copies of the manuscript. The report may also be submitted for journal publication, oral or poster presentation in a research forum.

Risk-Benefit Ratio Determination

Risks. This study posed very little risk even with the use of a survey questionnaire as one of the methods. The likelihood and severity of injury or discomfort that could be expected from this study were not as high as those that are typically experienced in daily life or when undergoing psychological, physiological, or diagnostic testing. Given that the respondents were not required to pay any costs, the researcher ensured that they suffered no financial harm.

Advantages. The respondents received assurances that their beliefs were respected and that they would not suffer any harm. The study's proposed outcome will assist the respondents, who are street food vendors in Ormoc City,



in finding improved ways in food safety practices. The results would enlighten the public officials in Ormoc City and find inspiration in improving the design and implementation of food safety and hygienic practices in street food vendors. The nature, scope, and record-keeping of informed consent. To enlighten the research respondents, the researchers supplied the necessary data. The following details were provided:

Respondent Status. The respondents is briefed that this study was for educational purposes only for the requirement for the researcher's degree program.

Study Goals. Respondents are informed that this study was to examine the food safety practices of the street food vendors in Ormoc City.

Type of Data. The study gathered data through survey questionnaires. Respondents were provided questionnaires to gather information or data. The nature of the data was quantitative with a purposive sampling method and data analyzed were presented in numerical data.

Procedures. Data gathering procedures involved mainly survey questionnaires at the most convenient time of the respondents.

Nature of the commitment. The respondents were allowed to answer the questionnaires at their most convenient time and allowed to withdraw or not to participate anytime.

Sponsorship. This study was financed personally by the researcher, and there was no sponsor or grant from anyone. This study was only for the purpose of the completion of the requirement for the degree of the researcher and results would be utilized for academic and public market improvement

Respondent Selection. The selection of the participation was through purposive sampling.

Potential Risks. This study involved only minimal risks, and they were discussed in the preceding paragraphs on the risk-benefit ratio determination.

Potential Benefits. The benefits of the study were discussed in the risk-benefit ratio determination.

Alternatives. There were no alternative treatments involved since the study was non-experimental in nature.

Compensation. There were no incentives or compensations intended for the informants of the study; we thanked personally for their participation in the study.

Confidentiality Pledge. The prospective respondents of this study were assured of the safety of information, which the researchers ensured.

Voluntary consent. The prospective respondents of our research study were informed that they had the right to refuse or participate and be part of our research study.

Right to withdraw and withhold information. The prospective respondents were told that they had the right to refuse or impart any information that they didn't want to share within the study.

Contact Information. The prospective respondents were informed of the key individuals whom they could communicate with if they had any concerns or queries about the study.

Authorization to access private Information. The only authorization needed by the researcher was from the City Health Office in Ormoc City, wherein the researchers asked for permission on interviewing the respondents for this study about food safety awareness.

Confidentiality Procedures. In this study, potential respondents were guaranteed the confidentiality and the voluntary nature of cooperation. Respondents were given informed consent forms and handled with care by the researcher to ensure the confidentiality of the respondents. All information or collected through this study are



kept confidential to safeguard the identity of the respondents. Names of the respondents were not listed in this research to secure the confidentiality of the identity of the respondents.

Debriefing, Communications, and Referrals. The respondents were informed that the researcher was open at any time for communication about complaints or questions regarding the survey that would be conducted. Respondents were briefed about the study prior to the survey proper,

Presentation, Analysis and Interpretation

This chapter presents and interprets the quantitative data gathered from 60 street food vendors in Ormoc City through descriptive statistics, graphical illustrations, and analyses. It includes the demographic profile of the respondents and the actual level of food safety awareness and practices applied by the 60 street food vendors in Ormoc City. The percentage and simple frequency in calculating the mean is used to determine the actual levels of awareness and understanding of food safety and the hygienic practices of the street food vendors in Ormoc City.

DISCUSSION AND INTERPRETATION

The following tables include the discussion of the results and implications of findings in the statistical analysis performed. The data gathered was analyzed using MS Excel and under 5% significance level for the hypothesis testing.

Table 1 Age of Street Food Vendors in Ormoc City

Age Bracket (Years)	Frequency (f)	Percentage (%)
16–20	5	8.3
21–30	23	38.3
31–40	14	23.3
41–50	10	16.7
51–60	6	10.0
61 and above	2	3.3
Total	60	100.0

Table 1 presents the age distribution of street food vendors in Ormoc City. Results show that the 21–30 age group ranked first, with 23 vendors or 38.3% of the sample. This was followed by the 31–40 group (23.3%) and the 41–50 group (16.7%). Smaller proportions were observed among the 51–60 group (10.0%) and the 16–20 group (8.3%). The 61 and above group ranked lowest, with only 2 vendors or 3.3% of the total.

These findings indicate that the vending sector is primarily composed of young and middle-aged adults. The concentration in the 21–40 range suggests that street food vending appeals to individuals in their most productive years, likely because it provides a relatively accessible form of livelihood that does not require formal training or high start-up costs. The presence of vendors in their 40s and 50s also shows that the trade can sustain individuals into midlife, offering continuity of income where other employment opportunities may be limited.

The lowest-ranked group, those aged 61 and above, comprised only 3.3% of the respondents. This small proportion reflects the physically demanding nature of vending, which involves long hours, mobility, and endurance. Studies such as Roever (2016) and the International Labour Organization (2018) similarly report that older

workers are underrepresented in the street food sector due to health constraints and reduced physical capacity. This pattern highlights that street food vending is rarely a sustainable livelihood option that can be maintained into old age.

The age structure of vendors has several implications. With the majority in their 20s and 30s, capacity-building initiatives on food safety, business management, and health practices are likely to have a lasting impact. Programs tailored for younger vendors can improve both the quality of food and their long-term economic prospects. At the same time, policy attention may be needed to provide health monitoring and ergonomic support for middle-aged and older vendors, thereby prolonging their safe participation in the trade. This age profile underscores the importance of targeted training and age-sensitive interventions in strengthening both livelihood security and public health.

Table 2 Gender of Street Food Vendors in Ormoc City

Gender	Frequency (f)	Percentage (%)
Female	35	58.3
Male	25	41.7

Table 2 shows the gender distribution of street food vendors in Ormoc City. Findings reveal that females dominate the sector, with 35 respondents or 58.3% of the total. Males, on the other hand, account for 25 vendors or 41.7%. This ranking places women first in terms of representation, while men occupy a lower proportion.

The results suggest that street food vending is a livelihood largely carried out by women. This aligns with the view that vending provides opportunities for women to contribute economically while balancing household roles. The presence of nearly 42% male vendors, however, also indicates that the trade is not exclusively female-dominated; rather, it is a shared activity that offers flexibility and income to both genders.

The lower proportion of male vendors (41.7%) may be linked to cultural and occupational patterns. Research by Bhowmik (2012) has found that men often see employment in more physically demanding or higher-paying informal jobs, such as construction, driving, or security work, while women tend to gravitate toward vending due to its compatibility with caregiving responsibilities. This reflects how gendered social roles shape economic choices in the informal sector.

The gender distribution has important implications. With more women engaged in vending, programs on food safety, financial literacy, and microenterprise support should be tailored to women's needs while still inclusive of men. Support systems such as access to credit, childcare, and vendor cooperatives could strengthen women's economic empowerment. At the same time, acknowledging the growing male participation calls for policies that treat street vending as a legitimate livelihood for all, not merely a fallback option for women.

Table 3 Educational Attainment of Street Food Vendors

Educational Level	Frequency (f)	Percentage (%)
College Graduate	5	8.3
College Level	3	5.0
College Undergrad	3	5.0
High School Graduate	18	30.0
High School Level	13	21.7

High School Undergrad	9	15.0
Elementary Graduate	7	11.7
Elementary Undergrad	2	3.3

Table 3 presents the educational attainment of street food vendors in Ormoc City. The data show that the largest group is high school graduates, accounting for 18 respondents or 30.0% of the total. This is followed by vendors who reached high school level but did not graduate (13 or 21.7%). Meanwhile, a smaller portion of respondents had completed college (5 or 8.3%), while three each (5.0% apiece) reported being at the college level or being undergraduates.

The results suggest that most street food vendors possess at least some level of secondary education, with nearly one-third completing high school. Having this educational background equips them with basic literacy and numeracy skills necessary for operating small-scale businesses, such as computing costs, managing sales, and interacting with customers. The smaller percentage of college graduates suggests that those with higher academic attainment are less likely to engage in vending as their primary source of livelihood.

These findings are consistent with related studies. Mitullah (2003) and WIEGO (2019) both emphasize that street vending is most common among individuals with limited educational attainment, who face difficulties in entering the formal labor market. The low proportion of college graduates in this study supports the idea that those with more advanced education often pursue alternative employment opportunities. At the same time, those with fewer credentials rely on vending as a more accessible and immediate means of income.

The implications are clear. Programs designed for vendors should align with their educational profile, emphasizing practical, easy-to-apply training in food safety, hygiene, and entrepreneurship. Materials should avoid overly technical language to ensure accessibility, while still providing opportunities for growth and development. At the same time, the presence of vendors with tertiary education suggests that street vending is not limited to those with low educational backgrounds, indicating that policymakers should recognize it as a livelihood that transcends educational levels, particularly in contexts of underemployment.

Table 4 Type of street food vendors

Type of Vendor	Frequency (f)	Percentage (%)
Mobile	31	51.7
Stall	29	48.3

Table 4 presents the types of street food vendors in Ormoc City. The results reveal that mobile vendors make up the majority with 31 or 51.7%, while stall vendors account for 29 or 48.3%. The difference between the two categories is marginal, suggesting that both types are nearly equally represented in the city.

The findings suggest that a balance exists between mobility and fixed-location selling in street vending in Ormoc City. The slightly higher proportion of mobile vendors highlights the flexibility and reach of this type of vending, which allows them to move across different areas and target diverse customers. Stall vendors, although fewer in number, represent a significant portion of the sector, likely benefiting from steady customer traffic in fixed marketplaces.

This distribution reflects earlier findings by Cruz and Alcantara (2018), who noted that mobile vending is often chosen for its low operating costs and broader reach, while stall vending is preferred for its stability and regular clientele. Similarly, Bhowmik (2010) emphasized that both types of vending play vital roles in urban food systems, catering to varying consumer needs and contexts.

The implications suggest that support programs for vendors should address the specific challenges of each group. For mobile vendors, policies could focus on ensuring legal access to vending spaces, promoting safety, and providing mobility-friendly equipment. For stall vendors, interventions may include sanitation infrastructure and business development support. Recognizing the nearly equal share of both types ensures that strategies for food safety and vendor development are inclusive and responsive to their different needs.

Table 5 Number of years vending

Years of Vending	Frequency (f)	Percentage (%)
Less than 1 year	6	10.0
1–5 years	35	58.3
6–10 years	9	15.0
11–20 years	7	11.7
More than 20 years	3	5.0
Total	60	100.0

Table 5 presents the number of years street food vendors in Ormoc City have been engaged in vending. The majority, 35 vendors (58.3%), reported vending for 1–5 years. This is followed by nine vendors (15.0%) who have been in the business for 6–10 years, and seven vendors (11.7%) who have been in the industry for 11–20 years. A small group of 6 vendors (10.0%) have been vending for less than a year, while only three vendors (5.0%) reported having more than 20 years of experience.

The results suggest that street food vending in Ormoc City is a relatively recent livelihood for most respondents, with the bulk concentrated in the 1–5 year range. This suggests that vending is often pursued as a practical and accessible means of generating income, particularly for individuals who may lack long-term stability in other forms of employment. The smaller proportion of long-term vendors shows that while some sustain vending as a lifelong livelihood, many others may see it as transitional or supplementary work.

This pattern aligns with the findings of Roever (2014), who noted that street vending often attracts new entrants due to its low barriers to entry; however, only a few remain in the trade for decades, mainly due to challenges such as income instability, regulatory pressures, and competition. Similarly, Bhowmik (2012) observed that the majority of vendors in urban areas tend to have shorter tenures, as vending is often used to bridge employment or household income gaps.

The implications are twofold. For relatively new vendors, targeted training on food safety and business management is crucial to establishing good practices early on. For long-term vendors, sustainability support such as access to credit, cooperative membership, or infrastructure assistance may help strengthen their businesses. Recognizing the varying needs based on years of experience can guide more nuanced policies and capacity-building initiatives for street food vendors in the city.

Table 6 Food Safety Knowledge and Evaluated Practices of Street Food Vendors in Ormoc City (N = 60)

Domain and Indicator Statement	Mean (WM)	SD	Interpretation	Priority Level
Domain A: Food Safety Knowledge				
1. Wash hands for 1 min using water and soap before touching food	3.63	0.52	High Awareness	Maintain Routine



2. A similar chopping board should be used for uncooked and prepared foods if it appears washed	2.40	0.81	Moderate Awareness	High Priority Gap
3. A cooked meal should stay hot before serving (more than 60°C)	3.40	0.67	High Awareness	Maintain Routine
4. An excess meal should be kept at room temperature and eaten for the following mealtime	2.10	0.76	Low Awareness	Critical Corrective Need
5. Food cooking utensils should be cleaned using tap water only	2.15	0.84	Low Awareness	Critical Corrective Need
6. An uncooked meal should be kept separately from the prepared meal	3.45	0.59	High Awareness	Maintain Routine
7. Fresh meat should be stored in the fridge once cooled	3.55	0.55	High Awareness	Maintain Routine
8. Treated water should be used for cooking	3.50	0.60	High Awareness	Maintain Routine
9. Cockroaches and house flies should be allowed into the kitchen area	1.20	0.41	Very Low Awareness	Immediate Intervention
10. Wiping cloths can spread microorganisms and cause disease	3.60	0.54	High Awareness	Maintain Routine
Knowledge Composite Score	3.00	0.42	Moderate Awareness	Targeted Training Required
Domain B: Food Safety Practices				
11. Regular hand cleaning throughout meal processing is needless	1.60	0.69	Low Awareness	Critical Corrective Need
12. Cleaning kitchen surfaces lessens infection risk	3.70	0.48	High Awareness	Maintain Routine
13. Separating uncooked and prepared meals stops cross-infection	3.65	0.51	High Awareness	Maintain Routine
14. Acceptable to use the same cloth for dusting and drying	1.55	0.62	Low Awareness	Critical Corrective Need
15. Can differentiate healthy food and rotten food solely by eyeing	2.60	0.89	Moderate Awareness	Moderate Risk
16. Unhealthy to allow prepared meals outside the fridge for >2 hours	3.55	0.58	High Awareness	Maintain Routine
17. Using different knives for fresh and prepared meals needs more time	2.40	0.79	Low Awareness	High Priority Gap
18. Cough or sneeze inside elbow if towel is unavailable	3.35	0.72	Moderate Awareness	Maintain Routine
19. Checking meals for cleanliness is important	3.80	0.41	High Awareness	Maintain Routine
20. Dispose of meals past the expiration date	3.65	0.53	High Awareness	Maintain Routine
Practices Composite Score	3.09	0.38	Moderate Awareness	Targeted Training Required

Note. N = 60. WM = Weighted Mean; SD = Standard Deviation. Scale ranges: 1.00–1.75 (Very Low Awareness / Low Practice Level); 1.76–2.50 (Low Awareness / Low Practice Level); 2.51–3.25 (Moderate Awareness / Moderate Practice Level); 3.26–4.00 (High Awareness / High Practice Level).

Table 6 consolidates both the cognitive food safety knowledge (Domain A) and self-reported hygiene practices (Domain B) of street food vendors in Ormoc City, presenting weighted means (WM) alongside standard deviations (SD) to delineate central tendencies and response variability. Across Domain A, vendors demonstrated an overall weighted mean of 3.00 (SD = 0.42), reflecting a Moderate Awareness level. Vendors achieved the highest awareness on visible, personal cleanliness measures, notably handwashing with soap and water for one minute before touching food (WM = 3.63, SD = 0.52), recognizing that contaminated wiping cloths spread disease-causing microorganisms (WM = 3.60, SD = 0.54), and storing meat in refrigeration units once cooled (WM = 3.55, SD = 0.55). Other well-recognized knowledge indicators included using treated water for cooking (WM = 3.50, SD = 0.60), keeping raw and prepared items separate (WM = 3.45, SD = 0.59), and maintaining cooked meals above 60°C before serving (WM = 3.40, SD = 0.67). In contrast, severe cognitive deficits were identified in less visible but critical pathogen-control mechanisms.

Vendors exhibited very low awareness regarding pest prevention, with respondents improperly tolerating cockroaches and houseflies within prep areas (WM = 1.20, SD = 0.41)—the lowest-rated indicator across the entire survey. Furthermore, vendors demonstrated low awareness concerning temperature danger zones and utensil sanitation, incorrectly viewing ambient-temperature storage of surplus meals as acceptable (WM = 2.10, SD = 0.76) and believing that food contact implements can be sanitized using tap water alone (WM = 2.15, SD = 0.84). The elevated standard deviation on utensil sanitation (SD = 0.84) indicates considerable divergence in basic sanitation comprehension among respondents. These knowledge patterns directly correspond with the self-reported behavioral gaps captured in Domain B of Table 6. Paralleling their cognitive understanding, vendors achieved high scores in routine, externally visible actions such as inspecting meals for cleanliness (WM = 3.80, SD = 0.41), cleaning kitchen surfaces (WM = 3.70, SD = 0.48), discarding expired inventory (WM = 3.65, SD = 0.53), and separating raw and cooked foods (WM = 3.65, SD = 0.51). However, operational practice scores dropped sharply in technical areas requiring behavioral vigilance and adequate sanitation supplies.

Vendors admitted to improper cloth usage, using the same towel for both dusting and drying (WM = 1.55, SD = 0.62), omitting routine handwashing throughout busy food preparation periods (WM = 1.60, SD = 0.69), and avoiding the use of separate cutting boards and knives for raw and ready-to-eat foods due to perceived time constraints (WM = 2.40, SD = 0.79). Vendors also exhibited a moderate, risky reliance on visual assessment alone to determine food freshness (WM = 2.60, SD = 0.89). This dual-domain evaluation demonstrates that while vendors internalize fundamental, intuitive hygiene concepts, they systematically neglect technical, biological risk controls that require extra resources or interrupt operational workflow. These empirical findings align with the observations of Azanza et al. (2000), who reported that Filipino street food vendors maintain adequate personal cleanliness but display marked deficiencies in regulatory, microbiological, and cross-contamination procedures. Similarly, Werkneh et al. (2023) and Perez and Del Rosario (2024) underscored that high general hygiene awareness frequently coexists with unsafe day-to-day handling routines, particularly concerning sanitizing contact surfaces and multi-use wiping cloths. Viewed through Seaman's (2010) Food Hygiene Training Model and Tones' (1988) Health Action Model, this disparity reveals that predisposing hygiene values (valuing clean food, WM = 3.80) are neutralized by absent enabling factors (running water, dedicated sanitizers, dual cutting boards) and permissive reinforcing norms that tolerate vectors in open markets (WM = 1.20). Consequently, public health interventions by the Ormoc City Health Office cannot rely on generic lectures. Training must be restructured into prioritized, hands-on modules focusing on the four critical gaps identified in Table 6: physical pest exclusion, three-step utensil sanitization beyond plain tap water, strict time-temperature controls for leftovers, and dedicated cross-contamination barriers.

Table 7 Inferential Statistical Tests on Food Safety Knowledge and Practice Scores (\$N = 60\$)

Statistical Test	Independent Grouping Variable	Dependent Metric	Test Statistic	p-value	Effect Size	Statistical & Practical Verdict
Independent Samples t-test	Vendor Classification (Mobile vs. Stall)	Food Safety Practice Score	t(58) = 2.14	.036*	Cohen's d = 0.55 (Medium)	Significant difference; stall vendors demonstrate



						higher practice compliance.
Independent Samples t-test	Gender (Male vs. Female)	Food Safety Knowledge Score	$t(58) = 0.84$	.404	Cohen's $d = 0.22$ (<i>Small</i>)	Not significant; baseline hygiene knowledge is equivalent across genders.
One-Way ANOVA	Educational Attainment (Elementary, HS, College)	Food Safety Knowledge Score	$F(2, 57) = 4.88$	.011*	$\eta_p^2 = 0.146$ (<i>Large</i>)	Significant difference; higher formal education correlates with greater knowledge.
One-Way ANOVA	Age Groups (16–30, 31–45, 46+)	Food Safety Practice Score	$F(2, 57) = 1.12$	.333	$\eta_p^2 = 0.038$ (<i>Small</i>)	Not significant; daily hygiene routines do not meaningfully vary by age.
Chi-Square (χ^2)	Educational Level × Utensil Sanitation Knowledge	Utensil Sanitizing Awareness (High vs. Low)	$\chi^2(2) = 7.42$	.024*	Cramer's $V = 0.35$ (<i>Moderate</i>)	Significant association; lower schooling links to reliance on tap water alone.
Spearman Correlation (ρ)	Years of Vending Experience	Overall Food Safety Practice Score	$\rho = 0.12$	.361	$r^2 = 0.014$ (<i>Negligible</i>)	Not significant; vending longevity does not organically improve safe practices.

Note. $N = 60$. *Significant at $p < .05$. Effect size thresholds follow standard behavioral conventions: for Cohen's d ($0.2 = \text{small}$, $0.5 = \text{medium}$, $0.8 = \text{large}$); for Partial Eta Squared (η_p^2 : $0.01 = \text{small}$, $0.06 = \text{medium}$, $0.14 = \text{large}$); for Cramer's V ($0.1 = \text{small}$, $0.3 = \text{moderate}$, $0.5 = \text{strong}$).

Table 7 displays the inferential statistical evaluations examining differences and associations in food safety knowledge and practice scores across vendor demographics and operational profiles.

The independent samples t -test revealed a statistically significant difference in reported hygiene practices between mobile vendors ($M = 2.98$, $SD = 0.39$) and stall-based vendors ($M = 3.20$, $SD = 0.34$; $t(58) = 2.14$, $p = .036$). The resulting effect size was moderate (Cohen's $d = 0.55$), confirming that operational setup meaningfully impacts daily sanitary routines. Fixed-stall vendors operate in designated spaces where access to storage, wastewater disposal, and physical barriers is comparatively steady. Conversely, mobile vendors navigate space and weight limitations on carts, which severely restricts their ability to transport separate rinse basins, ice chests,

or clean water supplies, thereby depressing their practice scores. In contrast, the comparison of food safety knowledge across gender yielded no statistically significant difference ($t(58) = 0.84, p = .404$, Cohen's $d = 0.22$), demonstrating that baseline comprehension of food safety principles is equivalent between male and female vendors.

The One-Way Analysis of Variance (ANOVA) across educational attainment groups demonstrated a statistically significant difference in food safety knowledge, $F(2, 57) = 4.88, p = .011$, with a large effect size $\eta_p^2 = 0.146$. Post-hoc comparisons indicated that vendors who completed high school or college achieved significantly higher comprehension of contamination pathways than vendors with elementary-level schooling. This educational divide was further corroborated by the Chi-Square Test of Independence ($\chi^2(2) = 7.42, p = .024$, Cramer's $V = 0.35$), which identified a significant moderate association between lower educational attainment and the erroneous belief that tap water alone is sufficient for sanitizing cooking utensils. However, age brackets did not produce significant differences in self-reported practices ($F(2, 57) = 1.12, p = .333, \eta_p^2 = 0.038$).

Finally, Spearman's rank correlation indicated a negligible, non-significant association between years of vending experience and overall hygiene practice scores ($\rho = 0.12, p = .361, r^2 = 0.014$). This finding demonstrates that occupational longevity does not organically translate into safer handling habits. Without structured training and periodic reinforcement, vendors tend to repeat habits learned early in their trade rather than adopt safe biological controls over time.

FINDINGS, CONCLUSION, AND RECOMMENDATIONS

This chapter presents the summary of findings, conclusions, and recommendations of the study. The findings provide a synthesis of the analyzed data, the conclusions address the research problems, and the recommendations suggest practical interventions and directions for future research.

Findings

This section summarizes the essential outcomes of the study, specifically the demographic profile of the respondents, their awareness on food safety practices and knowledge, as well as their existing food safety practices. The results are derived from the statistical data analysis and interpretation of data collected from 60 street food vendors in Ormoc City.

In terms of demographic profile, most of the respondents were between ages 21 and 30 (38.3%), and the second most represented group was aged 31–40 (23.3%). This suggests that street food vending is actually a business mainly pursued by young and middle-aged persons within their most productive years. In terms of gender, females comprised 58.3% of the respondents, while males made up 41.7%. This indicates that vending is a female-dominated activity, although men also participate significantly. Educationally, the majority of the respondents were high school graduates (30%), while few had attended college (8.3%). Marriage data indicated that 53.3% of the respondents were married, while 46.7% were single, indicating that vending is being utilized as a way of supplementing household financial needs.

The research also showed that both stall vendors (48.3%) and mobile vendors (51.7%) were represented equally, proving that both vending practices are crucial to the food system of the city. 100% of the respondents had valid health certificates, proving high compliance with regulations by the city. Of vending experience, most (58.3%) were vending for one to five years, indicating that vending is a comparatively new occupation for most people, but a minority of respondents had continued the practice for over ten years.

Regarding food safety knowledge, the respondents had a moderate level of awareness with a mean score of 3.00. Vendors had high awareness of visible hygienic practices like handwashing, good meat storage, consumption of treated water, and food separation. However, low to very low awareness was observed in utensil sanitation, proper leftover storage, and pest prevention. Similarly, regarding the food safety habits, the respondents exhibited a moderate awareness level, with a mean of 3.09. Strong awareness was recorded in the cleaning of

kitchen counters, disposal of expired food, and keeping raw foods away from cooked meals, while lower awareness was noted in regular handwashing, correct knife handling, and management of cleaning cloths.

In general, though all the respondents adhered to regulatory standards via health certification, their actual application of food safety knowledge and procedures was inconsistent in nature, especially in those technical ones that demanded consistency in behavior. This indicates a gap between certification and routine food safety practice.

Conclusion

The study concludes that street food vending in Ormoc City is predominantly a female-driven sector operated by young to middle-aged individuals possessing secondary-level education. The local regulatory framework demonstrates complete administrative reach, as evidenced by universal (100%) possession of municipal health certificates among respondents. However, possession of a sanitary health permit does not translate into consistent application of safe food hygiene practices.

The dual-domain assessment reveals an operational gap: vendors possess moderate levels of awareness for both food safety knowledge (WM = 3.00) and food safety practices (WM = 3.09), but their comprehension is skewed toward superficial cleanliness. Vendors perform well in observable, intuitive routines—such as washing hands prior to meal handling, checking food appearance, discarding expired stock, and keeping raw and cooked products separate. In contrast, severe deficits persist in technical hazard controls, marked by poor understanding of chemical sanitization for utensils, tolerance of insect pests in preparation areas, persistent use of single cleaning cloths, and prolonged ambient temperature storage of cooked surplus meals.

Inferential analyses affirm that these hygiene deficits are exacerbated by educational disparities and operational structures rather than age or tenure in the business. Stall vendors maintain higher practice compliance than mobile vendors due to fixed environmental conveniences, while vending experience alone fails to improve food safety behaviors.

Interpreted through Seaman's Food Hygiene Training Model and Tones' Health Action Model, the findings demonstrate that personal motivation and basic awareness are neutralized by missing enabling infrastructure (lack of portable water and sanitizing facilities) and permissive social norms. While mandatory health cards ensure legal compliance, they must be paired with structured, hands-on, gender-responsive competency workshops and continuous on-site monitoring audits to convert baseline knowledge into daily operational habits.

Recommendations

This section presents recommendations based on the findings and conclusions of the research. The recommendations are directed at policymakers, public health officials, vendors, and future researchers.

P1: Immediate Modular Workshop (Curriculum & Delivery Strategy)

- Executing Agency: Ormoc City Health Office (CHO) in partnership with Western Leyte College – School of Tourism and Hospitality Management Faculty.
- Format & Frequency: Half-day (3.5-hour) practical workshops conducted bi-monthly at cluster hubs (e.g., Ormoc City Public Market terminal) rather than remote municipal lecture halls.
- Targeted Deficits: Direct instruction on the 4 lowest-scoring metrics: (1) vector elimination and kitchen pest netting, (2) chemical/hot-water sanitization replacing tap-water rinsing, (3) the 2-hour ambient rule for cooked dishes, and (4) routine handwashing intervals.
- Pedagogy: 80% practical demonstration (e.g., Glo-Germ UV handwashing kits, test strips for sanitizer dilution) to match the secondary education profile of 66.7% of respondents.

P2: Gender-Responsive Logistics & Micro-Incentives



- Implementation: Given that 58.3% of vendors are women balancing family care, schedule workshops during off-peak trade hours (1:30 PM – 4:30 PM).
- Structural Support: Provide on-site supervised child-minding corners during sessions and distribute food safety starter kits (color-coded cutting boards, food-grade sanitizing solution, mesh display covers) upon module completion to lower the financial threshold for compliance.

P3: Field Monitoring Audits & Regulatory Verification

- Transition from Passive to Active Oversight: Replace paper-only health certificate renewals with pre- and post-training objective testing (80% passing mark) paired with unannounced quarterly Food Safety Observational Checklists conducted at stalls and carts.

Lastly, follow-up research should be done to bolster the results of this study. Some of the proposed titles are:

- The Effectiveness of Food Safety Training Programs on the Practices of Street Food Vendors in Ormoc City
- A Comparative Study of Mobile and Stall Street Food Vendors in Terms of Food Safety Compliance
- Gender Dimensions of Street Food Vending: Economic Contributions and Challenges in Food Safety Practices
- The Relationship Between Vendor Experience and Food Safety Practices in Informal Food Markets
- Assessing Consumer Perceptions and Trust in Street Food Safety in Ormoc City

With these suggestions, the study aims to impact not just the academic community but also practical interventions which can improve food safety, public health, and livelihood security of street food vendors in Ormoc City.

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