



Awareness and Practice of Good Manufacturing Practices (GMP) among Street Food Vendors in Catarman, Northern Samar

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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ABSTRACT

Street food vendors play a crucial role in providing affordable and convenient food options, especially for those who need to purchase necessities in small quantities. However, ensuring food safety in these informal food businesses remains a major concern. This study aims to investigate the level of awareness and practices of good manufacturing practices among street food vendors in Catarman, Northern Samar. Using a combination of descriptive quantitative and qualitative approaches, the researchers conducted interviews with vendors at the University of Eastern

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Philippines Main Campus. A survey questionnaire was administered to gather accurate information, while simultaneous observations of the vendors' operations were conducted. Data analysis involved tallying, frequency calculation, percentage determination, and mean calculation. It was found that despite belonging to a single association, the vendors employed different food safety practices in their businesses. The findings highlight the importance of enhancing food safety knowledge among street food vendors and implementing effective measures to prevent food-borne illnesses. This study contributes to the body of knowledge on the subject and offers valuable insights for policymakers and regulatory agencies in improving food safety practices within the street food sector.

Keywords: Awareness; food safety; GMP; practices; street food vendors.

1. INTRODUCTION

Street food refers to food or beverages that are prepared and cooked by vendors in public locations, such as streets, markets, or parks, for immediate consumption. These delectable and convenient food items are typically sold by mobile vendors who operate from portable stalls, carts, or food trucks. In the Philippines, street food holds a prominent presence, with diverse options that cater to the preferences of many Filipinos. However, it is important to note that street food consumption may pose health risks depending on the preparation methods employed by the vendors [1]. Street food vending is a global phenomenon, yet its nature and offerings vary significantly across different regions and cultures [2,3].

The presence of vendors in city centers, particularly in increasingly congested cities, often leads to traffic obstruction. In attempts to address this issue, some governments have made efforts to relocate vendors from specific areas, but these attempts have generally proven unsuccessful. In recent years, street food has gained significant popularity, attracting people from far and wide who seek to indulge in the latest culinary trends and develop their taste preferences [4-8]. Whether it's a traditional food truck, a contemporary street kitchen, a market stall, or a food festival, it is evident that the street food business can be lucrative. Initially, food trucks were established to provide hot meals to underprivileged areas in major cities, catering to the needs of workers who operated during unconventional hours and had limited access to regular restaurant services. However, nowadays, food trucks are as abundant as high-quality restaurants, gastro pubs, and wine bars found on bustling streets, drawing enthusiastic customers in search of a unique dining experience [9-12]. It is no surprise that many individuals are embarking on their own entrepreneurial journey

in the street food industry. If you're considering starting your own street food venture, this guide aims to equip you with comprehensive information to kickstart your path to success.

According to BMC Public Health [13], indicate that street food vendors typically use inadequate food handling techniques, and that most of them work in unhygienic environments. Most street food vendors operate in unclean settings and often have poor food handling procedures. Younger consumers' perceptions of food safety were noticeably better than those of older age groups. Additionally, their levels of education varied, and younger people often had higher incomes [1]. The majority of sellers picked spots close to grocery stores or schools. Both customers and street food sellers understood the importance of food safety, but street merchants generally did not practice safe food handling.

John Stefanelli [14] states that the behaviors and understanding of food safety concepts of street food vendors were investigated, with an emphasis on matters such as food contamination, good manufacturing practices, and health and personal hygiene. However, it was found that merchants lacked adequate knowledge of waste management and food regulation.

According to Leonard W.T. Fweja et al. [15], using inefficient and unclean methods to handle food is one of the causes of food contamination. The outcomes of street food vendors' food handling processes reveal several handling flaws that could expose food to contamination. The vending machines should ideally be constructed and designed in a way that makes cleaning and maintaining them easy. Every culture, whether it is underdeveloped, developing, or developed, depends on street food. As a result, maintaining a high degree of hygiene is crucial. Each region has a unique set of circumstances affecting the

maintenance of hygiene. A study on the current knowledge of vendors regarding food safety and hygiene practices as well as methods of raw material procurement was also carried out.

Trafiaek et al. [16] suggest that the reason for better hygienic conditions in Poland may be better general education of street food vendors than in developing countries, where only a small percentage of vendors have secondary education and the rest have primary or lower education. However, some authors contend that training and licensing, rather than education level, have an impact on increasing food safety knowledge and improving food handling. Others demonstrated a strong correlation between vendors' practices for food safety and their level of education. It is not unimportant that street food is frequently an uncontrolled activity employed in underdeveloped nations to address socio-economic issues by offering affordable meals and employment [17].

Hence, this study generally aims to investigate and describe the street food vendors' perception of their food safety practices and overall manufacturing processes of their food products.

2. METHODOLOGY

Prior to data collection, the researchers obtained formal approval from the university ethics committee. The researchers physically approached the respondents, explained the purpose of the study, and sought their voluntary agreement to participate. Informed consent was obtained to ensure that participants were aware of the study's objectives, procedures, and their rights as participants. The researchers utilized a survey questionnaire to gather data on the vendors' viewpoints regarding food safety. In addition to the questionnaire, individual interviews were conducted to gain a more comprehensive understanding of the subject. During the interviews, the researchers ensured clarity, respect, and confidentiality, allowing participants to express their opinions freely. Data collection took place at the University of Eastern Philippines in Catarman, Northern Samar, and was conducted during the months of October to December 2022. Each respondent was provided with a checklist as a survey form to gather information about their safety practices. The researchers ensured that the survey process was conducted professionally and respectfully, considering the respondents' time constraints and preferences. Throughout the data-gathering

phase, the researchers adhered to ethical considerations by following proper health protocols. After compiling the data, the researchers performed statistical analysis to systematically analyze and interpret the gathered information. They ensured that the analysis process was unbiased and accurate. Conclusions and implications were drawn based on the results, and the findings were reported objectively, ensuring the confidentiality and anonymity of the respondents.

3. RESULTS AND DISCUSSION

Table 1 presents the perception of food safety practices among street food vendors. The highest indicator highlighted in the table is the promptness of raw material delivery. Street food vendors employ various practices when it comes to receiving raw materials from their suppliers, who provide them with the necessary ingredients for daily operations. As stated by the Philippine Department of Health (2013), microbial contamination can be found in preparation areas, utensils, raw ingredients, as well as in the improper handling of cooked food and personal hygiene of vendors. Consequently, food safety ensures that consumption of food does not pose any harm to consumers. Interestingly, vendors do not prioritize extensive processing of ingredients, as evidenced by their low rating for this indicator. They do not adhere to specific processes for cleaning raw materials, likely due to a lack of awareness regarding the potential consequences of deviating from standard practices. According to the World Health Organization (2006), food is inherently safe, especially when it has a history of traditional usage. However, the introduction of unfamiliar processes, technologies, and inadequate handling can compromise the safety of food intended for consumption.

Table 2 presents the perception of personal hygiene among street food vendors. The highest indicator in the table is handwashing, which is crucial for maintaining proper personal hygiene. It is widely recognized that hands serve as the primary tool for handling and preparing ingredients, from storage to the point of sale. The Centers for Disease Control and Prevention (2012) highlight that street vendors frequently fail to adhere to safe and hygienic food handling practices, increasing the risk of food-borne illnesses. Moreover, it can be challenging to protect street food from unhygienic actions of passersby, such as sneezing or coughing near

the food. On the other hand, the lowest indicator is the potential exposure of food to handlers, suggesting that vendors may not adequately shield the food they handle from potential contamination.

Table 3 displays the vendors' perception regarding food preparation. It indicates that the cleanliness of utensils holds significant importance for vendors. It is evident that vendors recognize the need to maintain cleanliness in the tools they use to sell their products, ensuring the absence of harmful organisms. As noted by the Philippine Department of Health (2013), microbial contamination can be present in preparation areas, utensils, raw ingredients, as well as in the mishandling of cooked foods and the personal hygiene of vendors. In this context, the combination of cooked foods and raw food received the lowest rating for this indicator. This suggests that vendors may be unaware of the potential risks associated with mixing raw and cooked food. It is crucial to separate them as microorganisms can proliferate based on temperature and critical control points. As emphasized by Abdussalam (2010), a fundamental practice for food preparation safety is maintaining the separation of raw and cooked foods, especially if further processing or heating is not intended. Often, oversight in proper

storage and neglect of sensible hygiene practices, such as hand and equipment cleaning, can lead to common mistakes.

Table 4 presents the vendors' perception regarding environmental exposure. It indicates that the maintenance of water reservoirs holds great importance. Water serves as a fundamental tool for vendors, used for handwashing, cleaning their surroundings, and utensils during cooking and preparation. If the water containers become contaminated with harmful organisms, it can lead to food-borne illnesses that people wish to avoid. Remize (2014) emphasizes the significant concern of hygienic aspects in street food vending for food control officers. Vending stands often lack proper infrastructure, including running water, washing facilities, and bathrooms. To enhance the safety of street food among vendors, awareness programs should be initiated, involving local authorities, government departments, consumer organizations, standard setting bodies, and non-government organizations. Additionally, vendors tend to use minimal amounts of chemicals. They rely on simple cleaning products to maintain the cleanliness of their tools and equipment. They prioritize affordability rather than relying on strong chemicals, as their income may not allow for expensive cleaning products.

Table 1. Vendors' perception in terms of food safety practices

Food Safety Practices	Mean	Interpretation
Usage of plastic wraps, foils, and cover	4.20	Effective
Timeliness of delivery of raw materials	4.53	Effective
Quality of raw materials	4.13	Effective
Extensive processing of ingredients	4.06	Very Effective

Legend: 5.00 – 4.60 Very Effective; 4.59 – 3.60 Effective; 3.59 – 2.60 Moderately; 2.59 – 1.60 Slightly Ineffective; 1.59 – 1.00 Ineffective

Table 2. Vendors' perception in terms of vendor hygiene

Vendors' Hygiene	Mean	Interpretation
Washing of hands	4.87	Very Effective
Changing of attire	4.67	Very Effective
Exposure to food-to-food handlers	2.40	Slightly Ineffective
Work under health condition	4.27	Effective
Presence in the workplace while on restroom breaks	3.43	Effective

Table 3. Vendors' perception in terms of food preparation

Food Preparation	Mean	Interpretation
Cleanliness of utensils	4.83	Very Effective
Methods of recycling ingredients	3.87	Effective
Waste disposal	4.13	Effective
The temperature of the ingredients	4.27	Effective
Storing cooked products before selling	4.20	Effective
Combination of cooked foods and raw foods	2.20	Slightly Ineffective

Table 4. Vendors perception in terms of environmental exposure to food

Environmental Exposure to Food	Mean	Interpretation
Maintenance of water reservoirs	4.87	Very Effective
Maintenance of cooking materials	4.60	Very Effective
Prevention of smokers in the workplace	4.67	Very Effective
Work under environmental condition	4.47	Effective
Usage of chemical cleaners	3.27	Moderately

4. CONCLUSION

This paper highlights the significance of timeliness in the delivery of raw materials, with vendors recognizing its importance for their operations. However, the application of extensive processing of ingredients received the lowest rating, indicating a lack of awareness among vendors regarding the potential risks associated with improper handling and preparation methods. It also emphasizes the criticality of handwashing as a fundamental practice for personal hygiene among vendors. Nevertheless, the exposure of food to handlers emerged as the lowest indicator, suggesting a need for increased awareness and measures to prevent contamination from external sources. It also underscores the vendors' recognition of the importance of utensil cleanliness in food preparation. However, the combination of cooked and raw foods received a lower rating, indicating a lack of awareness regarding the risks associated with cross-contamination. Proper separation of raw and cooked foods is crucial to minimize the potential multiplication of harmful microorganisms. Lastly, the findings highlighted the significance of maintaining clean water reservoirs for vendors. Clean water is essential for various aspects of food handling and preparation. However, the use of chemicals was not emphasized by the vendors, likely due to cost considerations.

These findings underscore the importance of implementing comprehensive awareness programs and interventions aimed at enhancing food safety practices within the street food vendor community. It is crucial to foster collaboration among various stakeholders, including local authorities, government departments, consumer organizations, standard-setting bodies, and non-government organizations. By working together, these entities can contribute to the improvement of street food safety. The focus of these efforts should be on providing education, resources, and infrastructure support to vendors, enabling them to adopt and maintain proper hygiene practices, prevent cross-contamination, and ensure a clean

environment. Addressing these areas of concern and implementing appropriate measures will contribute to enhancing the overall safety and quality of street food. Consequently, it will help mitigate the risk of food-borne illnesses and instill greater consumer confidence in street food vendors.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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