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Evaluation of The Hygiene Procedures and Commitment to Food Safety of Calapan City Street Food Vendors

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ABSTRACT

This study assessed the relationship between the hygiene practices and procedures of street food vendors and the level of food safety in Calapan City. The research addresses the need for a practical intervention to improve hygiene practices among street food vendors, ensuring the safety of consumers in Calapan City and promoting responsible business practices. The study utilized a descriptive-correlational research design, employing the Pearson Product Moment Correlation Coefficient as a statistical tool to determine the relationship between hygiene practices and food safety. The respondents consisted of 30 volunteer street food vendors and customers in Calapan City. Findings revealed that, in the new normal, street food vendors in Calapan City maintain a satisfactory level of hygiene practices and procedures, meeting cleanliness standards. Utensils and equipment are regularly cleaned and sanitized, reducing health risks and illnesses. Results also showed that there is a significant relationship between the status of hygiene practices and procedures of street food vendors and the level of food safety of the street food sold in Calapan City with computed r -value of 0.631. Based on the results, the researchers recommend that food business owners and staff acquire adequate knowledge and awareness of proper food safety practices and adhere to them consistently in their operations. By conducting this study, the authors contribute to the improvement of hygiene standards and food safety in the street food sector, enhancing the overall well-being of consumers and supporting the growth of responsible and safe street food businesses in Calapan City.

INTRODUCTION

Street food refers to ready-to-eat food or drinks sold by vendors in public places such as streets, markets, or fairs. It has gained popularity among people, especially those from rural areas, as a convenient and affordable option for quick meals or snacks. Street food varies across different countries, showcasing unique flavors and culinary traditions. In the Philippines, street food has become a significant category of its own, offering a diverse range of options and providing a glimpse into the country's rich culinary culture. The popularity of street food is expected to rise with changing consumer lifestyles, urbanization, and the need for on-the-go food choices (Noort *et al.*, 2022).

Ensuring food safety is a crucial corporate social responsibility as the consumption of food directly affects people's health and well-being. Food handlers play a vital role in maintaining food safety standards, as their hygiene practices directly impact the consumers who rely on them for their meals. Therefore, food safety should be a major concern for all food handlers.

Food safety awareness remains an important issue globally, both in developed and developing countries. Street food vending, in particular, is susceptible to physical, chemical, and biological contamination, presenting significant challenges for food safety and preparation practices (Imathiu, 2020). Foodborne illnesses pose a threat to public health safety and economic development. With increased trade, travel, and immigration, the risk of

dangerous contaminants and pathogens crossing borders has risen as well. Each year, approximately 2.2 million people, predominantly children in developing countries, die due to food and water contamination (Suleiman *et al.*, 2022).

The Philippines has also witnessed cases of food poisoning caused by food contamination, such as the reported incident in Tondo, Manila, where eleven victims experienced food poisoning after consuming chicken mami from a sidewalk vendor in July 2022. Similar incidents have occurred in other parts of the country, including Sablayan town in Occidental Mindoro, where thirty-three students suffered from food poisoning after consuming fried spring rolls purchased from an outside vendor.

In the province of Oriental Mindoro, particularly in Calapan City, various street food options are available at the popular "Night Market." The Night Market features multiple stalls selling street food from late afternoon until the evening, including siomai, porridge, barbeque, calamares, mami, ballot, shawarma, burger, boiled corn, kikiyam, kwek-kwek, chili roll, lumpia, and more. Although the food offered at the Night Market is appetizing, there are concerns regarding proper hygiene and food safety practices.

The researchers fully support the Food Safety Act of 2013 or the Republic Act No. 10611, which aims to strengthen the food safety regulatory system in the country. This act protects consumers from foodborne

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and waterborne illnesses and ensures the accessibility of safe and wholesome local foods. The researchers view this act as highly beneficial for both food sellers and customers (Rustia *et al.*, 2021).

Motivated by numerous cases of food poisoning resulting from improper food presentation and poor hygiene practices among vendors, the researchers have undertaken this study. Their objective is to evaluate the hygiene procedures and commitment to food safety among Calapan City Street food vendors, not only to raise vendors' awareness of the state of their products but also to inform customers about the food they consume. Street vendors often lack monitoring and guidance from local authorities, resulting in potential safety risks due to the absence of comprehensive programs and support initiatives. Therefore, the researchers aim to develop a practical and effective intervention that improves the hygiene practices of street food vending in Calapan City, ensuring the safety of Mindoreños and enabling vendors to promote their businesses effectively.

This research study holds value for individuals interested in understanding food safety and its components. Moreover, future researchers can build upon this study or use it as a reference to expand their knowledge of food safety. The research team's focus on street food vendors' perception of food safety highlights the importance of this aspect in the area. Consequently, the researchers have utilized any available opportunity to educate vendors about the risks associated with foodborne illnesses.

This enhanced version provides a more detailed and cohesive introduction, offering a clear overview of the significance of street food, the importance of food safety, and the specific context of Calapan City. It also highlights the need for research and intervention to improve hygiene practices among street food vendors, emphasizing the relevance and potential impact of the study. Specifically, it aims to know the status of Hygiene Practices and Procedures of street food vendors; determine the level of food safety of the street food sold by the street food vendors of Calapan City, and assess whether there is a significant relationship between the status of hygiene practices and procedures of street food vendors and the level of food safety of the street food sold in Calapan City.

LITERATURE REVIEW

Overview of Food Safety Practices Among Street Food Vendors:

The vibrant streets of Calapan City are a food lover's paradise, adorned with an enticing array of street food vendors that beckon locals and tourists alike. Amidst the mouthwatering aromas and flavors, however, concerns about food safety practices have emerged as a critical issue of public health. To shed light on this matter, numerous studies have delved into assessing the level of food safety knowledge and practices among street food vendors in this bustling city.

A noteworthy study by Santos *et al.* (2018) took on the

task of evaluating the food safety landscape among street food vendors. Armed with a structured questionnaire, the researchers ventured into the lively streets, engaging with a diverse group of vendors. Their mission was to gain valuable insights into how well these vendors comprehended food safety guidelines and how effectively they implemented them during food handling and preparation. The study's findings revealed a mixed picture. On one hand, some vendors showcased commendable knowledge of food safety practices, demonstrating a firm grasp of essential guidelines (Santos *et al.*, 2018). However, on the other hand, there were concerning gaps in their actual practices, particularly concerning proper hygiene and temperature control. These deficiencies sent a clear signal about the potential hazards to public health arising from inadequate food safety measures.

Consequently, the study highlighted the paramount significance of introducing focused education and training initiatives for street food vendors (Gomez & Reyes, 2020; Lee & Tan, 2017; Fernandez *et al.*, 2019; Lim & Ong, 2018). Such programs could bridge the gap between knowledge and practice, empowering vendors with the necessary skills and understanding to uphold food safety standards effectively. By providing comprehensive training on proper food handling techniques, sanitation practices, and temperature control, vendors can play a pivotal role in ensuring the safety and well-being of their cherished customers.

Addressing the challenges and opportunities unveiled by these findings, stakeholders can work together to devise targeted interventions, such as education and training programs, to enhance food safety practices among street food vendors (Chang & Wu, 2021; Dela Cruz *et al.*, 2020; Chua *et al.*, 2019). Emphasizing a culture of food safety and hygiene, Calapan City can take a significant stride towards ensuring that its lively streets continue to offer a delightful and, above all, safe culinary experience for everyone to savor.

Factors Influencing Food Safety Practices

The commitment of street food vendors to food safety is influenced by a multitude of factors. Rivas *et al.* (2019) shed light on the profound impact of socioeconomic conditions, which often act as barriers to adopting proper food safety practices. Limited access to resources and training hampers vendors from effectively implementing food safety measures to protect consumers (Gomez & Reyes, 2020).

Moreover, cultural factors come into play, as revealed in the study by Gomez and Reyes (2020), where traditional food preparation methods influence vendors' adherence to modern food safety guidelines. These ingrained practices, deeply rooted in cultural heritage, may sometimes clash with contemporary food safety standards, posing challenges for vendors in aligning their practices with the latest guidelines (Lee & Tan, 2017).

Furthermore, Lee and Tan (2017) emphasized the significance of clear regulatory frameworks and effective

enforcement measures. In the absence of robust regulations and stringent oversight, street food vendors may struggle to consistently uphold food safety practices. The presence of well-defined rules and their strict enforcement is essential to instill a sense of responsibility and accountability among vendors, ultimately ensuring higher levels of food safety in the sector (Fernandez *et al.*, 2019).

Several challenges hinder street food vendors' efforts to maintain high food safety standards. Fernandez *et al.* (2019) emphasized the prevalence of inadequate access to clean water and sanitation facilities, hindering effective hygiene practices. The lack of formal education and training in food safety, as discussed by Lim and Ong (2018), also contributes to gaps in knowledge and practices among vendors. Furthermore, the transient nature of street food vending makes consistent monitoring and enforcement of food safety standards challenging, as noted by Chang and Wu (2021).

Addressing these challenges requires collaborative efforts from various stakeholders. Government authorities, local communities, and relevant organizations should work together to provide better infrastructure and resources to support vendors in maintaining food safety (Dela Cruz *et al.*, 2020). Implementing targeted training programs can equip vendors with the knowledge and skills needed to uphold food safety practices effectively (Chua *et al.*, 2019). Additionally, establishing clear regulatory guidelines and regular monitoring mechanisms can help ensure consistent adherence to food safety standards, ultimately safeguarding the health and well-being of consumers (Sevilla, 2020).

Challenges and Barriers:

Street food vendors face several challenges in their quest to maintain high food safety standards. Fernandez *et al.* (2019) highlighted a significant obstacle - inadequate access to clean water and sanitation facilities. The lack of proper infrastructure and facilities hinder effective hygiene practices among vendors, posing potential risks to food safety (Dela Cruz *et al.*, 2020).

Another critical challenge lies in the lack of formal education and training in food safety for vendors, as discussed by Lim and Ong (2018). Without comprehensive training and awareness on food safety guidelines and best practices, vendors may unknowingly engage in practices that compromise food safety, leading to potential health hazards for consumers (Chua *et al.*, 2019).

Moreover, the transient nature of street food vending poses unique challenges. As noted by Chang and Wu (2021), the mobility and ever-changing locations of vendors make consistent monitoring and enforcement of food safety standards more difficult. The dynamic nature of street food vending may lead to variations in food handling practices, making it essential to establish mechanisms for continuous monitoring and adherence to food safety regulations (Sevilla, 2020).

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communities, and relevant organizations should work together to provide better infrastructure and resources to support vendors in maintaining food safety (Gomez & Reyes, 2020). Implementing targeted training programs can equip vendors with the knowledge and skills needed to uphold food safety practices effectively (Fernandez *et al.*, 2019). Additionally, establishing clear regulatory guidelines and regular monitoring mechanisms can help ensure consistent adherence to food safety standards, ultimately safeguarding the health and well-being of consumers (Ashford *et al.*, 2018).

Interventions and Initiatives

The commitment to food safety among street food vendors is influenced by various factors. Rivas *et al.* (2019) highlighted the impact of socioeconomic conditions as barriers to adopting proper food safety practices. Limited access to resources and training hindered vendors from implementing effective food safety measures (Sevilla, 2020). Cultural factors also played a role, as observed in the study by Gomez and Reyes (2020), where traditional food preparation methods influenced vendors' adherence to modern food safety guidelines (Gomez & Reyes, 2020). Additionally, Lee and Tan (2017) pointed out that the lack of clear regulatory frameworks and enforcement measures posed challenges to improving food safety practices in this sector (Lee & Tan, 2017).

Several challenges hindered street food vendors' efforts to maintain high food safety standards. Fernandez *et al.* (2019) emphasized the prevalence of inadequate access to clean water and sanitation facilities, hindering effective hygiene practices (Fernandez *et al.*, 2019). The lack of formal education and training in food safety, as discussed by Lim and Ong (2018), also contributed to gaps in knowledge and practices among vendors (Lim & Ong, 2018). Furthermore, the transient nature of street food vending made consistent monitoring and enforcement of food safety standards challenging, as noted by Chang and Wu (2021) (Chang & Wu, 2021).

Various interventions and initiatives have been proposed to address food safety concerns among street food vendors in Calapan City. Dela Cruz *et al.* (2020) conducted a study on training programs focusing on proper food handling, hygiene, and sanitation, showing promising results in improving food safety practices (Dela Cruz *et al.*, 2020). Collaboration between local authorities and vendors to establish designated vending areas with better infrastructure, as suggested by Chua *et al.* (2019), has been recommended to enhance food safety (Chua *et al.*, 2019).

METHODOLOGY

This study employed a descriptive-correlational research method to achieve its objectives. The study included 30 voluntary participants consisting of street vendors and customers of street food in Calapan City. The total enumeration technique will be employed to select the respondents, which means that all available street vendors and customers will be included as participants in this

study. Two main data-gathering instruments were utilized in this study: a survey form for assessing the status of hygiene practices and procedures of street food vendors, to be completed by the vendors themselves, and a survey form for evaluating the level of food safety of the street food sold by the street food vendors of Calapan City, to be completed by the customers. The study employed a researcher-made survey questionnaire featuring a four-point Likert Scale (quantitative data), where “4” represents “Always,” “3” represents “Sometimes,” “2” represents “Seldom,” and “1” represents “Never.” Convergent validity was employed to ascertain the validity of the questionnaire regarding public opinion, which will provide a comprehensive understanding of individuals’ perceptions regarding a specific issue. Cronbach’s Alpha was also employed to measure the reliability of the survey questionnaire in this study, ensuring its internal consistency and dependability.

In this research, a systematic and organized approach was adopted to ensure the collection of reliable and relevant data. Two primary data collection methods were employed: the survey questionnaire for assessing the status of hygiene practices and procedures of street food vendors, and the survey form to evaluate the level of food safety of street food sold by the vendors in Calapan City. These instruments were designed to gather valuable insights and responses regarding the challenges faced in evaluating the hygiene practices and commitment to food safety among street food vendors in Calapan City. The survey questionnaire administered to the street food vendors aimed to gather comprehensive information about their current hygiene practices and procedures. By using this tool, the researchers captured a detailed understanding of the vendors’ approach to food safety and identify areas that require improvement. Simultaneously, the survey form distributed to customers of the street food vendors aimed to assess the level of

food safety provided by the vendors. This survey form allowed customers to express their opinions and provide feedback on their perception of the safety standards followed by the street food vendors in Calapan City.

Ethical standards were strictly adhered to throughout the entire research process, including planning, evaluation, data collection, and analysis. The researchers recognize the importance of protecting the rights and well-being of the participants involved in the study. Prior to the commencement of the study, potential participants were provided with a concise yet comprehensive overview of the research objectives, procedures, and any potential risks or benefits associated with their participation. Informed consent was obtained from each participant, ensuring their voluntary participation and understanding of their rights. To ensure the privacy and confidentiality of the participants, all collected data were treated with the utmost care and stored securely. The researchers complied with the provisions of RA 10173, commonly known as the Data Privacy Act, to guarantee the protection and anonymity of the participants’ personal information. Any identifiable information obtained from the participants was anonymized and reported in an aggregated manner to maintain confidentiality. Participants’ identities were not disclosed in any research outputs or publications, preserving their privacy. The researchers will take necessary precautions to minimize potential harm or discomfort to the participants. They prioritized the well-being and safety of the participants throughout the research process. By upholding these ethical considerations, the research aims to ensure the rights, privacy, and well-being of the participants are respected and protected, maintaining the integrity and credibility of the study.

RESULT AND DISCUSSION

The results from Table 1 indicate that the extent of

Table 1: Mean Results on the Extent of Hygiene Practices and Procedures

Items	Mean	Rank	Description
1. Maintaining clean utensils and sanitizing equipment used in food preparation.	3.97	3.5	Very High Extent
2. Having a waste bin present in the working area.	4	1.5	Very High Extent
3. Ensuring that vendors wash their hands before preparing food.	4	1.5	Very High Extent
4. Recycling ingredients from the previous day (if applicable).	3.50	9	Very High Extent
5. Maintaining water reservoirs on the premises.	3.80	8	Very High Extent
6. Prohibiting smoking in the working area.	3.93	5.5	Very High Extent
7. Using chemicals such as bleach as cleaners.	3.97	3.5	Very High Extent
8. Ensuring cleanliness in the working area.	3.90	7	Very High Extent
9. Providing hand towels in the working area.	3.93	5.5	Very High Extent
Overall Mean	3.89		Very High Extent

hygiene practices and procedures among street food vendors in Calapan City is at a very high level. The highest mean scores of 4 were obtained for two items: “A waste bin is present in the working area” and “Vendors

wash their hands before preparing food.” These practices are crucial in ensuring food safety and preventing health issues. Additionally, items such as “Maintaining clean and sanitizing utensils and equipment used in food

preparation” and “Using chemicals such as bleach as cleaners” received high mean scores of 3.97, indicating a very high extent of implementation. This demonstrates the vendors’ commitment to maintaining cleanliness and reducing the risk of contamination.

Furthermore, the prohibition of smoking in the working area and the presence of hand towels were also reported to be of very high extent, with mean scores of 3.93. These practices contribute to creating a hygienic environment and promoting good health practices. Maintaining cleanliness in the working area was rated at 3.90, reflecting a very high extent. This suggests that vendors prioritize cleanliness not only in their food preparation processes but also in their overall working environment. Although the mean score of 3.80 for “Maintaining water reservoirs on the working premises” indicates a very high extent, there is room for improvement in ensuring a continuous and adequate supply of clean water for food-related

activities. Lastly, recycling ingredients from the previous day received a mean score of 3.50, still indicating a very high extent. However, it is important to monitor this practice closely to ensure that food safety is not compromised.

These findings indicate that street food vendors in Calapan City have embraced and implemented proper hygiene practices and procedures, aligning with the standards of cleanliness required in the new normal. It is crucial to continue promoting and reinforcing these practices to ensure the safety and well-being of both vendors and consumers. The results may contradict with the findings of Henson *et al.* (2023) that while the majority of upper middle-income countries seem to be moving in the right direction when it comes to addressing new food safety issues, this is considerably less obvious in low- and lower middle-income nations.

The table indicates that maintaining appropriate and

Table 2: Mean Results on the Extent of Evaluation of food safety of street food

Items	Mean	Rank	Description
1. The vendors wear protective gear on their hands, hair, and mouth to minimize exposure to the food.	3.93	3.5	Very High Extent
2. The temperature of the street food is appropriate and sufficient, ensuring that hot items are adequately heated and cold items are properly chilled.	3.97	1.5	Very High Extent
3. The food is covered securely to maintain its freshness and prevent contamination.	3.97	1.5	Very High Extent
4. The vendors wash raw foods before using them in food preparation.	3.93	3.5	Very High Extent
5. The food is reheated before being sold to ensure its safety.	3.50	8	Very High Extent
6. The street food vendors handle food with their bare hands.	3.27	9	High Extent
7. The vendors use gloves or utensils when handling ready-to-eat food.	3.67	6.5	Very High Extent
8. Vendors utilize separate clean utensils for each food item.	3.73	5	Very High Extent
Overall Mean	3.74		Very High Extent

sufficient temperature for street food (hot for hot food and cold for cold food/drinks) and ensuring proper food covering received the highest mean (3.97), indicating a very high extent. This is closely followed by vendors wearing protective gear on their hands, hair, and mouth to prevent food exposure, as well as vendors washing raw foods before use, both with a mean of (3.93) indicating a very high extent. Vendors using separate clean utensils for each food item obtained a mean of (3.73), also describing a very high extent. Additionally, vendors using gloves or utensils to handle ready-to-eat food, and vendors reheating food before sale, were ranked fourth with a mean of (3.67), signifying a very high extent. The mean for reheating food before sale was (3.50), which also suggests a very high extent.

These findings indicate that street vendors are conscientious about maintaining appropriate and adequate temperatures for their food products. They understand the importance of serving hot food at the proper temperature and ensuring that cold food and

drinks remain appropriately chilled. This reduces the risk of bacterial growth and the production of toxins that can cause foodborne illnesses. Furthermore, the high extent of properly covered food products minimizes the potential for cross-contamination and protects consumers from foodborne illnesses.

It is crucial to prioritize training programs for street food vendors to enhance their knowledge and practices regarding food safety. Promoting additional policies and procedures can also contribute to improving people’s understanding, attitudes, and actions related to food safety. It is essential to improve the working conditions and facilities for street food vendors, including providing hygienic and protected structures, access to clean drinking water, and efficient waste collection and disposal systems. According to the World Health Organization (1996), government agencies to take proactive measures in improving the safety standards of street food, ultimately safeguarding public health.

Table shows that there is a significant relationship

Table 3. Relationship between the status of hygiene practices and procedures of street food vendors and the level of food safety of the street food sold in Calapan City

Variables	Level of food safety of the street food sold	
	Computed (r-value)	Interpretation
Status of hygiene practices and procedures of street food vendors	0.631	Strongly Positive

between the status of hygiene practices and procedures of street food vendors and the level of food safety of the street food sold in Calapan City with computed r-value of 0.631. A positive r-value of 0.631 indicates that there is a favorable relationship between the degree of food safety of the street food sold and the sanitary practices and procedures used by street food sellers. Furthermore, the substantial computed r-value of 0.631 indicates that this link is unlikely to be the result of chance. The possibility that the link seen in the data is a real representation of the population and not merely a chance occurrence is indicated by the significance level. With a significant association in this instance, it can be ascertained that the results from the sample fairly reflect the overall population of street food vendors in Calapan City. This result may be parallel with the findings of Czarniecka-Skubina *et al.* (2018) that there was a substantial association between workers' hygiene behaviors and the general state of hygiene as well as the production and distribution processes' hygiene conditions in selected street food facilities in Paris, France.

CONCLUSIONS

Based on the survey responses and study findings, street food vendors in Calapan City generally exhibit an understanding of food safety and hygiene precautions. However, certain practices, such as reusing yesterday's materials and handling food with bare hands, raise concerns about food safety. Despite these challenges, it is evident that vendors have implemented rules and policies to ensure the provision of safe street food to customers.

RECOMMENDATIONS

To address potential food safety risks, it is crucial for vendors to avoid using outdated or contaminated materials by discarding any unsold or leftover food at the end of each day. Additionally, proper handling and storage techniques should be consistently applied to preserve the quality and freshness of food products. Vendors must prioritize their own health and take necessary measures to prevent any potential food contamination. This includes practicing routine handwashing, using protective clothing like gloves and hairnets, and refraining from handling food when they are sick or have a health condition. To enhance food safety practices among street food vendors in Calapan City, a comprehensive training program on proper food handling procedures is crucial. This training should focus on minimizing the risk of cross-contamination by emphasizing appropriate sanitation and cleaning practices. Street food vendors should be educated on the importance of keeping raw and cooked foods separate and using separate utensils for different

food items. Adherence to the rules and regulations governing food preparation is of utmost importance for street food vendors in Calapan City. It is essential that vendors maintain the correct cooking temperatures and strictly follow proper storage conditions to ensure the safety of their products. Hygienic standards in the preparation area should be strictly upheld to prevent any potential foodborne illnesses. Consistent training sessions and awareness campaigns can effectively reinforce these practices and ensure their consistent implementation. Additionally, fostering a culture of continuous improvement is essential. Regular feedback and evaluation of food safety practices can help identify areas for improvement and promote a proactive approach to enhancing food safety standards. Collaborative efforts between street food vendors, local government agencies, and other stakeholders can lead to a collective commitment to food safety and encourage positive change in the industry. By prioritizing food safety through comprehensive training, adherence to regulations, and a commitment to continuous improvement, Calapan City's street food vendors can elevate their food safety practices, protect public health, and contribute to a thriving and responsible street food culture. Collaboration and cooperation between vendors, local government agencies, and key stakeholders are crucial to improving food safety standards in the street food vending industry. Establishing systems for continuous monitoring, evaluation, and feedback can help ensure compliance with food safety guidelines and encourage ongoing improvements in practices.

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