

Food Safety Practices among Street Food Vendors in Dipolog City

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Abstract — Street food vending is one of common business activities in the informal economy in the Philippines. Street foods are ready-to-eat (RTE) foods or drinks commonly sold by a vendor in a street or in a public place but commonly in near primary schools, sidewalks, and cathedrals. However, mishandling of these foods may be a source of food borne illnesses. This survey research aimed to assess the food safety practices of street food vendors in the City Proper of Dipolog through the use of a researcher-made structured questionnaire. Results showed that respondents fully observed and applied food safety practices in terms of hygienic practices, food preparation and processing, food contamination prevention, and waste management. Thus, street food vendors in Dipolog City observed food safety practices. It is also recommended for the local government officers assign in this sector to constantly monitor these street food vendors to strengthen food safety practices as these vendors serve different types of consumers.

Keywords — *Street Food Vendors, Food Safety Practices, Hygienic Practices, Food Preparation and Processing, Food Contamination, Waste Management*

Introduction

Street food business is becoming a common business in the informal economy of trade in the Philippines. Due to lack of employment opportunity, unemployed men and women have forged innovative avenues for selling variety of goods such as food thus making street food vending a thriving business activity (Milgram, 2019). In today's world, people prefer to meet their nutritional needs outside the home by purchasing food sold on the streets. Street foods are prepared and sold in congested areas such as streets, schools, train stations, bus terminals, entertainment and festival areas targeting a mass market. These foods and beverages can be consumed on the go without the need for additional processing or preparation (Sezgin, 2016). Millions of uneducated people earn a consistent living by preparing and selling food on the streets. However, there are some risks involved in selling food on the streets. Some of these risks include causing accidents in congested areas, being fined for occupying the pavements, and conducting illegal sales (FAO, 2011).

Street food business always link to food safety. According to World Health Organization (WHO), food safety is a public health issue that seeks to protect consumers from the risks of food poisoning and food-borne diseases, whether acute or chronic. Unsafe food can cause a variety of

health issues, including diarrheal disease, viral disease, reproductive and developmental issues, and cancer. Food safety remains a critical issue with outbreaks of food borne illness resulting in substantial costs to individuals, the food industry and the economy (Kaferstein, 1997). Mishandling of food plays a significant role in the occurrence of food borne illness. Improper food handling may be implicated in 97% of all food borne illness associated with catering outlets (Howes et al., 1996). One of the reasons for the spread of diseases originating from food sources is that street food vendors lack adequate knowledge of food safety. Furthermore, deficiencies in the application of hygiene and sanitation, food preparation, food safety rules, and knowledge of street food sellers were discovered in various studies conducted in various countries. Poor hygiene, difficulty obtaining drinking water, failure to remove waste and other similar environmental issues, as well as the fact that street food is exempt from legal regulations, all increase the risks of ensuring food safety (Rheinlander et al., 2008; Omemu and Aderoju, 2008; Abdalla et al., 2009; WHO, 2010; FAO, 2011; Choudhury et al., 2011; Rane, 2011; Kealesitse and Kabama, 2012; Abibo and Lowatt 2015; and Sezgin, 2016).

Food safety amongst street food vendors are becoming a major public concern especially in Dipolog City. Most of the Dipolognons are fond of trying new foods. There are street food businesses that can be found in the City Proper of Dipolog which street food vendors serves their products to a wide range of consumer from graders, to college students, and passersby. Street foods are therefore prepared in an informal setting and informal food vendors are classified as informal street food vendors. Street foods are cheap and delightful but if unsafe practices of street food vendors in poor storage of food, reheating of food, insufficient hand washing hygiene, and not proper way of cleaning the cooking utensils, these foods can become hazardous to people's health. Thus, this survey research aimed to assess the food safety practices in terms of the hygienic practices, food preparation and processing, food contamination prevention, and waste management of the street food vendors found inside the City Proper of Dipolog and formulate recommendations or policies related to this field.

Literature Review

Street vended foods are ready-to-eat (RTE) foods and beverages that are occasionally prepared by vendors in the streets and other public places and are mostly sold to consumers for immediate or later consumption without any further preparation or processing (Imathiu, 2017). Because of the growing population, many cities have seen an increase in the number of street food vendors (SFVs) to meet the demand for affordable and easily accessible RTE meals. The majority of city dwellers rely on such foods because they are convenient. Street foods are valued not only for their convenience and affordability, but they also contribute significantly to the country's economy, the preservation of cultural and social heritage, and the maintenance and improvement of people's nutritional status, and require low capital making it easier to enter the market (Rane, 2011; Moussavi et al., 2016; Hill et al., 2019).

In Filipino culinary tradition, street foods play an important role. They are well-known for producing comfort dishes that anyone would like. However, some of the street food vendors were using low-quality ingredients. They supposedly adhere to stringent guidelines in terms of food handling, meal preparation, and facility sanitation because some were found that they used cooking oils that had been used the day before, they did not tie their hair or wear a hairnet, they did not wash their hands before preparing and handling the foods, and they stored utensils, containers, and food that had been exposed to dust, smoke, and flies. Vendors, on the other hand, should be informed of and assure food safety so that food-borne disease cases are reduced or eliminated through government-sponsored training and seminars (Defensor, 2006; Ababio & Adi, 2012). The vendors who are involved in the in preparing and handling of food has the responsibility towards food safety. According to National Food Service Management Institute (2009), vendors are in charge of ensuring that consumers receive safe items. One mistake could have an impact on the food, starting with the purchase, preparation, storage, handling, serving, and cleaning, posing a health risk. Moreover, food and water-borne diseases, according to the Department of Health, are a group of illnesses caused by infectious and non-infectious diseases. The most common causes of these are contaminated drinking water, improper disposal of human waste, unsanitary practices, and unsafe food handling and preparation.

Calopez et al. (2017) found that the majority of street food vendors in Ilo-Ilo city are Extremely Aware of personal hygiene, food preparation, serving, and storing foods and knowledgeable on food safety handling. They also found out that these vendors always practice food safety practices in terms of the preparation, cooking, serving, personal hygiene and storing. This result is consistent with street food vendors of Ozamis City in Mindanao (Andoy & Valmorida, 2017).

However, it was found out that though street food vendors are knowledgeable about food safety, they fail to observe and practice it. It was shown that vendors have trash bins but the wastes were not segregated. Most street vendors do not consider covering their hair during the food preparation process, do not wear proper attire, and continue chit-chatting while preparing food. The majority of them have long fingernails, while cooking or serving food (Quiliope & Teves, 2016). Pascual et al. (2019) added that respondents' overall knowledge of food safety did not translate into positive attitudes in food safety practices. He also suggested that ongoing food safety education, as well as subsequent monitoring and evaluation, are vital. Furthermore, Lubos (2014) suggested that food sellers should be thoroughly informed about the role of food in disease transmission, as well as personal cleanliness and safe food handling procedures. Street food sellers should be made aware of the legal ramifications of providing hazardous food.

SFVs, who are often unskilled in food handling and sanitation, sometimes run their operations informally with no government oversight (Alimi, 2016; IFRA, 2016; Imathiu, 2017; Muinde and Kuria, 2005). This allows for actions that may substantially degrade the wholesomeness of street meals, thus causing serious food safety problems for customers. With these reviewed works of these authors, there is an urgency to conduct further assessment of food

safety practices on local areas specifically in Dipolog City to constantly monitor SVFs in handling food in terms of the hygienic practices, food preparation and processing, food contamination prevention, and waste management.

Methodology

A descriptive survey was utilized in the study to examine the food safety practices of street food vendors. Data were gathered from informal street food vendors who were found nearby streets, schools, and cathedral in Dipolog City through a researcher-made structured survey questionnaire. The 14 street food vendors that responded were asked to rate their food safety practices. They were chosen via convenience sampling, which includes people the researchers meet by their availability. Any street food vendor near schools and a cathedral in City Proper of Dipolog was eligible to be recruited as a respondent for this study.

The data gathered from the survey questionnaire were tabulated and processed. Descriptive statistics used frequency, percentage, standard deviation and mean. Frequency and percentage were used to describe the profile of the respondent. In order to determine the extent of practicing the food safety (see table 1), the mean was used. Pearson correlation coefficient (Pearson r), was employed to test the correlation between demographic variables and the extent of practicing food safety of the street food vendors in Dipolog City.

Table 1. Scale for Level of Food Safety Practice

Scale	Description	Qualitative Interpretation
3.25-4.00	Fully Practiced	Completely observed and practiced food safety
2.50-3.24	Practiced	Adequately observed and practiced food safety
1.75-2.49	Partially Practiced	Sometimes observed and practiced food safety
1.00-1.74	Not Practiced	Hardly observed and practiced food safety

Results and Discussion

Respondent's Profile

Table 2. Street Food Vendor's Profile

Profile Variables	Variable Category	Frequency	Percentage %
Age	20 years and below	2	14
	21-25 years old	1	7
	26-30 years old	2	14
	31 years old and above	9	65
Sex	Male	6	43
	Female	8	57
Educational Attainment	Primary Level	2	14
	Secondary Level	11	79
	Tertiary Level	1	7
Gross Monthly Sales	Php3, 000 and below	4	29
	Php3, 001-Php5, 000	3	21
	Php5, 001-Php10,000	3	21
	Php10.001 and above	4	29
Years of Street Food Vending	Below 1 year	6	43
	1-5 years	1	7
	6-10 years	1	7
	Above 10 years	6	43

Table 1 shows the street food vendors profile. As the age, majority of the respondents (64%) were above 30 years old. While 14% of the vendors were in the age group 26-30 years old, followed by 21 to 25 years old (7%) and young vendors less than 20 years old (15%). The result can be inferred that that many of the respondents were mature enough to have the knowledge in proper food handling and in dealing with customers (Olusegun et al., 2014). Out of 14 respondents, eight or (57%) of the vendors were females and only six or 42.85% were males. This result is similar to the study of Danso and Fenteng (2014) that implies street food vending is an occupation that can be done by most females since it is not laborious. Seventy-nine percent (79%) of them attained secondary level of education while 14% made it to primary level and only one respondent was able to attain tertiary education. Due to lack of funds for education, some vendors may use street food hawking as a way to start their own business. Vendors earning above Php10,000 and those earning below Php3,000 have equal frequency. Moreover, those with gross monthly sales of Php3001- 5,000 and Php 5001-10,000 also have similar frequency. 43% had been in the street

food business for both less than one year and over ten years and 7% had been selling street foods for both 1-5 years and 6- 10 years.

Food Safety Practices

Table 3. The Extent of Practicing Food Safety

Food Safety Practices	Mean	Description
1. Food Preparation and Processing	3.66	Fully Practiced
2. Vendor's Hygiene Practices	3.26	Fully Practiced
3. Food Contamination Prevention	3.57	Fully Practiced
4. Waste Management	3.38	Fully Practiced
Overall Mean	3.48	Fully Practiced

The result shows that street food vendors completely observed and practiced food safety with the mean of 3.48. In terms of the food preparation and processing, it was evident that the SFVs, as a preventive measure, always verify that the items are clean and in good condition, check the expiry date, buy products with intact packaging, cook at the proper temperature, and keep the area around the meals clean. Microbial contamination can be discovered in locations of preparation, utensils, raw materials, time and temperature abuse of cooked meals, and vendor personal hygiene, according to the DOH. According to WHO (2010) that keeping raw and cooked foods separate is a critical practice in food preparation safety, especially if no further processing or heating is planned. Overlooking proper storage and sensible hygiene practices, such as hand and/or equipment cleaning, is a common mistake.

In terms of the vendor's hygiene practices, vendors fully practiced trimming and cleaning their nails, and using hairnet when preparing and serving foods. They also adequately observed washing their hands, using mask, and removing accessories before handling the food. Vendor's hygiene is very crucial because the microbial that can cause foodborne disease transmission can be found in the skin, nose and mouth (Pascual et al., 2019). This implicates that street foods in Dipolog city are safe from microbial as the vendors fully observed hygiene practices.

In the aspect of Food contamination prevention, vendors have perfected their separation of cooked and raw items. They are more than likely separating raw poultry from other raw meats. They make sure that cutting boards, tools, and working places for cooking foods are all clean to avoid cross-contamination. The Centers for Disease Control and Prevention said that street vendors often do not comply with safe and hygienic food handling practices, leading to a greater risk of

having food-borne illness (Aquino et al.,2015). But in this result somehow proves that street food vendors in Dipolog city fully comply with safe food handling practices.

In the waste management, the SVFs sanitized their sink weekly, they have proper trash bins for garbage, they segregate their waste properly, and subsequently cover the trash bins to avoid pest. This can be implied that the vendors are encouraged to manage waste properly because of the intensification of cleanliness drive and sanitization campaign of city official through the implementation of Ordinance 123-City Sanitation Code.

Relationship Between Street Food Vendors' Profile and Food Safety Practices

Table 4. Relationship in Street Food Vendors' Profile and their Food Safety Practices

Paired Samples	P-Value	Significance	Interpretation
1. Age and Food Preparation and Processing	0.158	Not Significant	There is no significant relationship.
2. Age and Vendor's Hygiene Practices	0.499	Not Significant	There is no significant relationship.
3. Age and Food Contamination Prevention	0.158	Not Significant	There is no significant relationship.
4. Age and Waste Management	0.173	Not Significant	There is no significant relationship.
5. Sex and Food Preparation and Processing	0.072	Not Significant	There is no significant relationship.
6. Sex and Vendor's Hygiene Practices	0.001	Significant	There is significant relationship.
7. Sex and Food Contamination Prevention	0.499	Not Significant	There is no significant relationship.
8. Sex and Waste Management	0.060	Not Significant	There is no significant relationship.
9. Educational Attainment and Food Preparation and Processing	0.000	Significant	There is significant relationship.
10. Educational Attainment and Vendor's Hygiene Practices	0.000	Significant	There is significant relationship.

11. Educational Attainment and Food Contamination Prevention	0.028	Significant	There is significant relationship.
12. Educational Attainment and Waste Management	0.000	Significant	There is significant relationship.
13. Gross Monthly Income and Food Preparation and Processing	0.158	Not Significant	There is no significant relationship.
14. Gross Monthly Income and Vendor's Hygiene Practices	0.499	Not Significant	There is no significant relationship.
15. Gross Monthly Income and Food Contamination Prevention	0.158	Not Significant	There is no significant relationship.
16. Gross Monthly Income and Waste Management	0.173	Not Significant	There is no significant relationship.
17. Years of Street Food Vending and Food Preparation and Processing	0.158	Not Significant	There is no significant relationship.
18. Years of Street Food Vending and Vendor's Hygiene Practices	0.499	Not Significant	There is no significant relationship.
19. Years of Street Food Vending and Food Contamination Prevention	0.158	Not Significant	There is no significant relationship.
20. Years of Street Food Vending and Waste Management	0.73	Not Significant	There is no significant relationship.

* If the level of significance at 0.05 is lesser than the p-value of, there is no significant relationship.

*If the level of significance at 0.05 is greater than the p-value of, there is significant relationship.

Table 4 shows the relationship between the street food vendors' profile and their food safety practices when analyze in terms of its hygienic practices, food preparation and processing, food contamination prevention, and waste management. It revealed that there was no significant relationship found in the vendors' age, sex, gross monthly income, and years in street food vending, and their food safety practices in terms of in terms of the hygienic practices, food

preparation and processing, food contamination prevention, and waste management. This can be implied that age does not directly related to the practice of food safety. The result is consistent with Stratev et al. (2017); Alqurashi et al. (2018); and Pascual et al. (2019). No significant relationship was observed between sex and food safety practices except in the aspect of vendor's hygiene practices. It was found out that females were shown to be better at following food safety practices than males, and sex was found to be substantially associated to hygiene practice (Mekasha et al., 2016). Gross monthly income was also observed having no significant relationship in food safety practices and this is similar result from Dagne (2019). This implies that regardless of the vendor's income, he or she can fully observe food safety. There was no significant relationship found between years in street food vending and food safety practice. This could be because street food sellers, whether new or old, take responsibility for ensuring that the food they provide is safe for everyone. However, others discovered that the amount of time spent in the street food selling business is related to food safety practices because vendors gain information about food safety that allows them to fully practice it (Mwove et al., 2020).

Significant relationship found between educational attainment of the vendor and food safety practices. This result is consistent in the study of Pascua et al. (2019); Alqurashi et al. (2018); Dagne (2019). Because the level of SFVs' formal schooling is one of the factors that contribute to food safety (Rebouças et al., 2017), having finished secondary education as well as college and university training may imply that SFVs are giving better quality and safe food. The results of this study differed from (Ma et al., 2019), which found that the majority of SFVs were either illiterate or had only completed elementary or secondary school (level of education between high school and primary school). This demonstrates that street food vending is alive and well, appealing to people, even those with a college or university education.

Conclusion

Based from the findings of the study, it is concluded that most of the street food vendors were relatively adults, comprised mostly of females, have attained secondary level of education, earned gross monthly income ranging Php3, 000-Php10, 000, and operated a year and 10 years more.

It can also be concluded that street food vendors in Dipolog City completely observed and practiced food safety in terms of the hygienic practices, food preparation and processing, food contamination prevention, and waste management. It is also concluded that sex and vendor's hygiene practices were related, same goes to vendor's educational attainment and food safety.

Discovering these results, it is recommended: first, health experts from the city government are encouraged to supervise the safety measures of street food sellers to guarantee consistency. New policy can be implemented that would favor both consumer and the street food vendors. Second, food vendors can post their sanitation permits and health clearances to assure the public

of safety. Health officers from the city may conduct information drive on how SFVs can get sanitation permits and health clearances. Lastly, the local government unit may take continuous precautionary measures to improve food safety among informal street vendors. Moreover, City LGU can make essential infrastructures such as washrooms, public portable water supplies, containers, and a good drainage system available.

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