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## Research Article

### Food Safety Practices among Street Food Vendors in the Twin Cities of Zamboanga Del Norte

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#### ABSTRACT

This paper aimed to examine the food safety practices among street food vendors in the Twin Cities of Zamboanga del Norte. Food safety practices covered two indicators; Sanitation and Personal Hygiene practices. There were two types of respondents in the study. First, there were 50 owners and proprietors of street food vendors in the twin cities, breakdown into 25 respondents for each City. Second, there were 400 total respondents in the study, and these were customers of the street food vendors; 200 respondents were allocated for Dapitan, while another 200 respondents were from Dipolog City. The study revealed that the majority of street vendor owners are college graduates. However, 98% or 49 of the respondents have not attended any food safety seminars. Further, sanitation practices are often practiced. Moreover, personal hygiene practices were frequently and sometimes practiced. There was a significant difference in the personal hygiene practices of when group according to Age. It implies that the younger generation of street vendors are still learning and could eventually learn as they grow older. A strong reason why hygiene practices differ between young and old street food vendors in these two cities. Most street vendors are mature individuals but are still active in the street vending business. However, these street food vendors still have poor food safety practices for a lack of appropriate knowledge, and most did not attend any sanitation and personal hygiene seminars/workshops. Street vendors may be subject to a regular sanitary inspection regarding how street food merchants sell their goods to prevent contamination and keep the food they serve from any health risks. The LGU of both Cities may organize a seminar/training related to sanitation and personal hygiene to improve the standard of their Food vending continuously. A policy/program to be developed by each LGU as their support for these street food vendors.

**Keywords:** *food safety, personal hygiene practices, sanitation practices, street vendors*

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## Introduction

The Food and Agriculture Organization (FAO) defines street food as "ready-to-eat" meals and beverages prepared and offered along streets and other public areas. Street foods have grown famous not just as a convenient and inexpensive source of food but also as a primary source of income for locals. As observed, street food seller overlooks the importance of the safety and quality of the Food they offer. Negligence can result in food-related diseases, and the worst-case situation is contamination that might harm the customers, particularly the young. The growth of the urban population stipulated street food vending. But despite this concern, the demand for inexpensive ready-to-eat Food has increased. The majority of the revenues made by street vending are often local, boosting economic activity among communities.

Street food is popular in developing economies because it offers individuals and families both employment and income. Growing poverty and unemployment are also crucial factors in attracting individuals to the street food industry, which requires less capital. (AddoTham et al., 2020). The sector is also booming because it is generally inexpensive, readily available, and provides consumers with a choice of meals. However, food poisoning and other health risks associated with street food outweigh the benefits of buying a product.

The FAO estimates that 2.5 billion people frequently eat food from the street. They often represent traditional local culture and provide a limitless variety of Food, drinks, light meals, and other goods. Preparing street foods also differ in how they prepare them, which as small space meals, pre-prepared Food, consignment goods, and on-site prepared food. These categories indicate the increasing challenge of ensuring food safety by offering suitable methodologies. As part of its commitment to quality and safe foods, the World Health Organization (WHO) has established specific food safety regulations (WHO, 2016).

According to the WHO, Each year, outbreaks of diarrhea caused by contaminated food and water afflict around 2.2 million people worldwide. Food-borne illnesses can also

result in cancer, reactive arthritis, brain and neurological disorders, kidney and liver failure, and diarrhea. As a result, food-borne diseases must be thoroughly examined to avoid possible outbreaks (CDC, 2011). Although street meals are widely popular in developing countries, evidence indicates that food-borne epidemics can be traced back to street vending foods. As a result, street food safety is potentially a serious public health risk.

According to surveys, many urban people rely extensively on street snacks for their regular meals. Most of the street food vending population is notably in Asia. Poor food hygiene, pollution of the environment, or disruption of pedestrian and vehicle traffic are all generally listed as significant disadvantages of street food selling. The Philippine National Standard for Food Products is notable to some agencies, including the Department of Health, the Bureau of Food and Drugs, the Department of Agriculture, and other smaller authorities. The Department of Health is one of the essential departments since it is responsible for ensuring access to high-quality healthcare services and promoting food quality.

Food hygiene covers a lot of principles intended to ensure food safety and protect food from contaminations unsuitable for human consumption, preventing the spread of infectious diseases related to food handling. It also guarantees that Food purchased meets the buyers' needs and standards. Food should be handled, kept, cooked, and served in such a way and under such conditions avoided. (WHO, 2011).

This study is anchored on Hygiene and Sanitation theory. Wasike (2010) states that hygiene and sanitation practices in the hospitality and tourism industry had to be critically analyzed to identify gaps between the theory and practice. It emphasizes cleanliness and the absence of microorganisms. This theory allows the factors to consider in street food vending which requires high standards and locations and serve as a premium tool for internal hygiene and sanitation. Recently, the country's policy framework and operational standards for food sanitation and hygiene are continuously improving. Due to the growing incidence

of food-borne diseases and malnutrition globally, hygiene and sanitation have recently received more attention. Despite food regulation policies, adequate safety and sanitation management remains a problem in many nations, including the Philippines.

However, there is no arguing that street food vendors help resolve significant economic and social difficulties in the nation by offering prepared meals at reasonable prices and creating jobs for many rural and urban residents throughout its supply chain. However, due to the informal nature of the business, the vendors' activities are not controlled. As a result, unwholesome practices can flourish. For these reasons, the researcher prompted to conduct this study to assess the perceived sanitation and personal hygiene practices among street food vendors in the twin Cities in Zamboanga del Norte.

### Methods

A descriptive research method was used in the study with the questionnaire checklist and

documentary analysis. Supplementary data was part of the data gathering through observation and interviews.

The respondents were the street food vendor owners and the customers in the Twin Cities of Zamboanga del Norte in 2018. An incidental sampling technique used in the study in selecting the respondents with a total of 400 customers, while 50 street vendor owners were purposively selected to be part of the study. This study utilized one set of a checklist to assess the food safety practices originated and modified from previous studies (Chukuezi, 2010; Dirks, 2010). It consisted of two parts. Part I dealt with the general demographic information of street vendors in terms of age, sex, location, educational level, and food safety training/seminar attended. Part II was on the Practices of the street vendors. The checklist covered two essential sections: i) Sanitation Practices and ii) Hygiene Practices rated by their customers.

Table 1.

Age	Dapitan City		Dipolog City	
	F	%	F	%
20 and below	0	0.00	1	4.00
21-28	3	12.00	2	8.00
29-39	10	40.00	9	36.00
40 and above	12	48.00	13	52.00
<b>Total</b>	<b>25</b>	<b>100.00</b>	<b>25</b>	<b>100.00</b>

Table 1 presents the profile of the respondents in terms of Age. The table also shows that among 25 respondents in Dipolog City, only 1 or 4.00 percent belonged to the Age of 20 and below. There were 2 or 8.00 percent who were in the Age of 21-28, 9 or 36.00 percent who belonged to the 29-39 years old bracket, and 13 or 52.00 percent who belonged to the 40 and above year bracket. This means that no one among street food is below 20 years old.

The findings refuted the study of Njaya (2014), which revealed that most of the food vendors were in the 21-30 age group. The active age group and their participation in the street food industry reflect the high unemployment levels in the country. The informal sector,

particularly street food vending, has become the only source of income for the unemployed because of relatively low capital requirements.

Most street vendors in Dapitan and Dipolog are not out-of-school youth. Most street vendors are old enough, including mature individuals who are mostly married and are the family's breadwinners. Dipeolu (2007) income-generating potentials of street food vending companies in Ogun State, Nigeria, were examined. He discovered that street food sales were highly successful and provided street vendors with a significant monthly income. Nakisani Carol & Ongori (2013) explored the significance of street selling as a livelihood strategy and methods to alleviate the

challenges encountered by street vendors in Gaborone, Botswana. They discovered that street vending was primarily a source of money

and a means of establishing jobs for the urban poor.

Table 2.

Seminars / Trainings Attended	Dapitan City		Dipolog City	
	F	%	F	%
51 and up hours	0	0.00	0	0.00
41-50 hours	0	0.00	0	0.00
31-40 hours	0	0.00	0	0.00
21-30 hours	0	0.00	0	0.00
11-20 hours	0	0.00	0	0.00
1-10 hours	0	0.00	1	4.00
-none-	25	100	24	96
<b>Total</b>	<b>25</b>	<b>100</b>	<b>25</b>	<b>100</b>

Table 2 presents the profile of the respondents in terms of seminars/training attended. The table shows that only 1 or 4.00 percent participated in a seminar/training. There was 24 or 96.00 percent who did not attend at all. Meanwhile, the City of Dapitan identified that all of the street food vendors, or the 100.00 percent, did not have any seminars/training related to food safety. This means that almost all street vendors lack seminars and training on food safety, posing significant risks to consumers exposed to food disease and contamination.

The findings refuted the study of Anetor (2015), who indicated that the Food and Drugs Authority and the Municipal Assembly provided on-the-job food hygiene training to most food sellers, while some did not. According to Food Agricultural Organization and World Health Organization, food vendors must undergo basic training in food hygiene before licensing. People who work in the food industry may require further training to ensure the product's safety and acceptability for consumption. Given how most vendors learn the skills necessary to sell food, more than half require

instruction in food hygiene. This is critical because they may lack appropriate understanding about hygiene procedures applicable to their job.

The study of Njaya (2014) revealed that more than half of the food vendors required training in business management, catering, and Food handling. The majority of them were willing to pay for the training. However, 11.7 % only of the total respondents attended the training.

Moreover, the findings of Phil (2010) revealed that respondents experienced little influence or engagement with external agents while doing their business. Vietnamese law now needs to fight with both local and federal levels of enforcement after shifting from a system based on Communist ideology to one based on the market. There is still some ambiguity in the manner that governing authorities do their business. In any case, it would not be remarkable if street sellers were aware of all the modifications brought about by the difficulties that big businesses had in complying with the ever-changing laws.

Table 3.

Sanitation Practices	Dapitan		Dipolog	
	AWV	D	AWV	D
1. Prepares food at home.	3.56	0	3.45	0
2. Prepares food on-site.	3.54	0	3.79	0
3. Protects vending stall from dust, sun and wind.	3.63	0	3.76	0

4. Restricts animals or pests (flies etc.) around the vending stall.	3.67	0	3.69	0
5. Access to community-operated waste water and general waste disposal sites is adequately maintained cleanly.	3.80	0	3.74	0
6. Replaces damaged utensils and equipment replaced immediately.	3.64	0	3.71	0
7. Stores and displays Food openly in the stalls.	3.64	0	3.64	0
8. Cooked, partially cooked, and raw foods are kept separate.	3.64	0	3.54	0
9. Keeps cool and refrigerates previously cooked foods and leftovers.	3.52	0	3.69	0
10. Serves Food accordingly to its desired temperature.	3.55	0	3.68	0
11. Keeps cupboards free from damage and deterioration.	3.57	0	3.63	0
12. Stores separately chemicals like cleaning agents from Food and ingredients.	3.65	0	3.66	0
13. Washes raw foods, vegetables, and others before cooking.	3.77	0	3.67	0
14. Cleans the utensils adequately every time, after use, and store in a covered container.	3.88	0	3.70	0
15. Cleans utensils with prescribed washing agents.	3.68	0	3.65	0
16. Uses the same utensil (knives and boards) to prepare raw and cooked food products or cut raw vegetables, fresh meat, and poultry.	3.76	0	3.63	0
17. Separates the washing area for customers and the food production area.	3.79	0	3.77	0
18. Keeps ceiling, walls, and floors free from cracks, chips, holes, peeling paint, dampness, and other signs of damage.	3.64	0	3.62	0
19. Keeps benches, sinks and shelves, and tables free from rust, damage, and deterioration	3.68	0	3.65	0
20. Cleans shelves, drawers, doors, and fan grills free from damage.	3.86	0	3.79	0

Table 3 presents the sanitation practices of the street food vendors in the Cities of Dapitan and Dipolog City. It was evident from the table that Dapitan's street food vendors frequently practiced cooking food at home with an average weighted value.

3.56, and when meal preparation is required on-site, they also do so, with an average weighted value of 3.54, which indicates a frequent practice. Vendors often practiced protecting the vending stall from dust, sun, and wind, with an average weighted value of 3.63. Moreover, they often practiced restricting

animals or pets, flies, etc., around the vending stall with an average weighted value of 3.67.

They also often practiced displaying and storing their Food openly in their respective stalls. This is a bad practice among street vendors because it exposes them to flies and other microbial infections that can cause food contamination. It was obtained with an average weighted value of 3.64. According to the data, they frequently cooked foods; partially, cooking and raw foods are separated with an average weighted value of 3.64. The item on keeping calm and refrigerating the previously

cooked and leftover food obtained an average weighted value of 3.5. Item 10, which was often used and involved serving food at the desired temperature, has an average weighted value of 3.55. Based on the researcher's observation and the data results, they often practiced using cupboards that are free from damage and deterioration. It obtained an average weighted value of 3.57.

On the other hand, they could practice separating the chemicals like cleaning agents from the Food and ingredients on the location. It obtained an average weighted value of 3.65. As often practiced, raw Food, ingredients, and others were washed before cooking. It obtained an average weighted value of 3.17.

With an average weighted value of 3.88, item 6 is frequently used to clean the utensils and put them in a covered container. Items 15 were regularly used to clean the utensils with the suggested agents. It obtained a weighted average of 3.68. Using the same cut boards and knives for all types of ingredients, including meat, poultry, and other main ingredients, was a very poor sanitation practice, with an average weighted value of 3.75. It was common practice to have the same washing area for customers and operators. According to the researcher's observations, most street vendors used the same washing area, with an average weighted value of 3.79. Aside from those practices, another practice often done was keeping the ceilings, walls, and floors free from cracks, paint peeling, and other signs of damage, with an average weighted value of 3.64. In contrast, an average weighted value of 3.68 for benches, sinks, shelves, and tables free from rust, damage, and deterioration, and an average weighted value for the shelves, drawers, doors, and fan grills are free from damaged.

This means that the street vendors of Dapitan City often practiced the 20 identified sanitation practices. Similar to the street food vendors in Dipolog City.

The findings are similar to the results of the study by Thanh (2015). It showed that more than half of the Food was prepared on-site. Half of the vending sites were open air without protection from the sun, wind, and dust.

More than half of the stalls tested positive for the presence of animals and pests/flies. Half of the vending stalls had no access to potable water on-site, while almost half did not have adequate hand washing facilities. Further, some stalls lacked proper wastewater and food disposal facilities. In addition, half of the respondents did not separate raw, partially cooked, and cooked food products. More than half observed not covering their utensils, while some washed them with stagnant water. These findings highlighted that vendors in HoChiMinh City generally have poor food handling practices and personal hygiene.

Moreover, the study of Alimini (2016) shown that street food selling provides ready-made meals at comparatively inexpensive rates and employment for teeming rural and urban populations along its value chain, solving significant social and economic concerns in underdeveloped nations. However, due to the informal nature of the company, the practitioners' activities are not controlled. This leaves plenty of space for harmful actions.

This implies that City Officials and Department of Health officials must strictly monitor and supervise the sanitation practices of the local street vendors to provide a global baseline for intervention ensuring safe food practices. Furthermore, adopting safety approaches that allow the entire street food business chain, from good agricultural practices to hazard analysis critical control points method by farmers, vendors, and consumers, would significantly reduce risks in street food consumption. To top it all, as a result, all stakeholders work together to strengthen and adequately enforce public health policies to ensure safe practices and create a safer and healthier society.

Table 4.

Personal Hygiene	Dapitan		Dipolog	
	AWV	D	AWV	D
1. Washes their hands in clean water each time before preparing, handling, and serving food.	3.95	O	3.92	O
2. Washes their hands each time after visiting the toilet.	4.09	O	3.92	O
3. Uses clothes that are clean and presentable.	3.79	O	3.92	O
4. Uses an apron when preparing, handling, and serving food.	3.55	O	3.87	O
5. Uses hairnet when preparing, handling, and serving food.	3.35	S	3.81	O
6. *Handles Food with bare hands.	3.52	O	3.48	S
7. Uses disposable or reusable gloves.	3.35	S	3.57	O
8. Keeps nails clean and short.	3.69	O	3.58	O
9. *Keeps nails with colored polish.	3.29	S	3.47	S
10. Wears mask and other protected gear if they suffer from tolerable illness.	3.46	O	3.61	O
11. *Operates although they are suffering from severe illness.	3.25	S	3.49	S
12. *Handles money while serving Food.	3.19	S	3.51	O
13. Washes their hands after handling money.	3.51	O	3.59	O
14. *Wears excessive jewelry and accessories.	3.12	S	3.37	S
15. Keeps jewelry adequately covered/hidden.	3.42	O	3.20	S
16. *Blows air into polythene bag before use	2.81	O	2.44	R
17. *Smokes during preparation and handling of food.	2.23	R	2.08	R
18. *Sneezing into hands while entertaining customers	2.14	R	2.16	R
19. *Coughing into hands and continues to work without washing their hands.	2.17	R	2.41	R
20. Washes their hands regularly	3.53	O	3.48	O

Table 4 presents the hygiene practices of the street food vendors in the Cities of Dapitan and Dipolog City. It could be seen on the table that street food vendors in the City of Dapitan and Dipolog often practiced "washing their hands in clean water each time before the preparation, handling, and serving of food and washes each time after visiting the toilet."

On the other hand, both street food vendors in the Cities of Dapitan and Dipolog also often practiced wearing presentable and clean clothes. At the same time, they also used an apron when preparing, handling, and serving

food. However, the street vendors in the City of Dapitan wore hairnets only, while the street food vendors in Dipolog often wore hairnets as their basic hygiene practices.

Moreover, in terms of using bare hands in handling foods, street food vendors in Dapitan often practice it. In contrast, in Dipolog, they practice it sometimes, which supported the following result: Dapitan City street food vendors also sometimes wore disposable gloves compared to Dipolog, which they practice often. Both street food vendors in the Cities of Dapitan and Dipolog often practice having clean and

short nails, but both cities sometimes wear colored nail polish.

However, based on the data gathered, street food vendors in the Cities of Dapitan and Dipolog occasionally continue operating even though they suffer from severe illnesses. Meanwhile, street food vendors in Dapitan and Dipolog have become used to wearing masks and other protective gear if they suffer from a minor or tolerable disease.

The street food vendors in the City of Dapitan sometimes practiced handling money while serving the customers; on the other hand, the street food vendors in Dipolog City often practiced. They also often practiced washing hands after handling money.

Both street food vendors also practiced wearing excessive jewelry and accessories. Still, the street food vendors in Dipolog sometimes covered and hid it, while in Dapitan, they often practiced covering and hiding jewelry. However, the street food vendors in the City of Dapitan often practice blowing into polythene bags before using, while in Dipolog, they rarely practice. Both street food vendors in the Cities of Dapitan and Dipolog rarely practice smoking during food preparation and handling.

This means that the street food vendors in both Cities are not seriously observing hygiene practices.

Lastly, sneezing into their hands, continuing to work without washing their hands, coughing, and continuing to work without washing their hands were rarely practiced. This means that the practices in Dapitan and Dipolog were similar but varied only on the average weighted value. These 20 identified Hygiene practices were manifested often, sometimes, and rarely among them. This means that the City Health officers monitor the street vendors' hygiene practices to protect the

consumers from the ill effect on their health. Based on observation, both vendors are exposing consumers to health hazards.

Metiboba & Kakwagh (2014) examined the safety and hygienic implication of street food vending in Kogi state, Nigeria. They discovered that the majority of vending foods were harmful to human intake. Furthermore, the study recognized poor design and location of vending sites, as well as a lack of services such as waste bin facilities, as the prime cause of the lack of food safety and hygiene.

In his analysis, Bromley (2000) advanced the following arguments against street selling. He believes that road vending contributes to vehicular and pedestrian congestion, that increases pollution and impedes the passage of police, ambulances, and other emergency vehicles. He further said that street vending frequently blocks evacuation routes from packed structures such as theaters and stadiums, exacerbating the tragedy in the case of a big fire, explosion, or hazardous gas escape.

Bromley also claimed that street sellers were dangerous. Because of their mobility, street sellers can follow their consumers and avoid government laws. He further stated that some street sellers sold unlicensed, counterfeit, or damaged items and then escaped to other sites before being captured by upset customers or the police.

Further, Rheinlander (2006) study revealed that food quality among consumers and vendors is highly subjective and multidimensional. This covers biological problems such as food safety and cleanliness, as well as social, cultural, visual, and moral factors. Price, availability, and accessibility were shown to be extremely powerful, frequently outweighing food cleanliness concerns.

Table 5.

Age	Hygiene Practices			Chi-Square
	More Frequent	Less Frequent	Total	
Below 40	10	15	25	6.650* p-value=0.010
40 and above	19	6	25	
<b>Total</b>	<b>29</b>	<b>21</b>	<b>50</b>	



Table 5 shows the difference test on street food vendors' hygiene practices when grouped by Age. The age was regrouped from below 40 years old and above 40 years old. Based on the chi-square test of difference, it was found that the computed value was 3.00, which is less than the critical value of 3.84 at 0.05 level of significance with 1 degree of freedom and for which the p-value was 0.010, which is less than 0.05 level. This leads to the rejection of the null hypothesis.

The table shows a significant difference in the hygiene practices of the street food vendors when grouped as to Age. This means that street vendors from Dapitan City and Dipolog City have different hygiene practices when vending street foods according to the age bracket they belong to.

Indeed, hygiene practices differ when grouped by Age.

By reason, Age invoked experiences to the vendors. This result said that the younger vendors are still learning, and eventually, they could learn as they grow older. This is why hygiene practices differ between young and old street food vendors in these two cities.

The finding is refuted in the study of Calopez (2017), It found that in terms of personal cleanliness, preparation, cooking, serving, and storage, street food sellers "Practiced Always" on food safety. There was no significant difference when grouped by age.

## Conclusion

The street vendors are quite mature individuals but are still active in the street vending business. However, these street food vendors have poor food safety practices for a lack of appropriate knowledge in sanitation and hygiene practices since food safety must observe at all times. Vendors of both Cities do not differ at all in their practices.

Age group and their participation in the street food industry reflect the high unemployment levels in the country.

The reason that they were deficient in food safety practices is due to the factor that most of the street vendors don't have attendance seminars/ training related to food safety.

The hygiene practices of the street vendors vary according to the frequency of practice in Dipolog City and Dapitan City.

Age, sex, location, and education are not indicators of differences in the street vendors' sanitation practices in Dapitan and Dipolog City. Sex, location, and education level are not indicators of difference in the hygiene practices of the street vendors both in Dapitan and Dipolog City, while Age is an indicator of difference. It could be said that the younger generation of vendors is still learning; eventually, they could learn as they grow older.

## Recommendations

1. The City Government of Dapitan may provide a proper or common site for all street food vendors in Dapitan City, where Dipolog City had been recently practicing. In relation to this recommendation, street food sellers may be given specific places or spaces along city streets so that their operations may be adequately and readily inspected or supervised by city health officials.
2. A Seminars or training on new ways and sanitary methods of preparing, cooking, serving, and preserving food supplied to the general public may be provided to street food vendors. This ensures that they follow the required rules for proper hygiene and sanitation. To satisfy clients, pay close attention on utilizing unfamiliar ingredients when preparing different meals and improving food sold.
3. Sanitary permits may be strictly enforced to ensure food quality is regularly observed. The local government's health workers may constantly monitor street food vendors' full adherence with acquiring sanitary licenses. In this regard, street vendors must be subjected to continuous sanitary audits in the areas where they operate to guarantee that the food provided is not contaminated, making the food offered safe from any increased risks.
4. Each LGU may propose and implement a policy or program to help street food vendors improve their businesses continuously.

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