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Conference Paper

Compliance to Food Safety Standards of Ambulant Vendors in Two Cities of Nueva Ecija, Philippines

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Abstract: Food safety practices of food handlers play significant role in making sure that food is kept clean from the preparation, cooking process and up to the time it is served to the customers (Mohan 2006). This study assessed the compliance to food safety standards anchored on Presidential Decree 856, Code on Sanitation of the Philippines that promulgates indicators of appropriate practices in food safety and sanitation of ambulant food vendors in Science City of Munoz and San Jose City, Nueva Ecija, Philippines. Responses were elicited from ambulant vendors and street food consumers and were treated using descriptive statistics, Pearson product moment correlation (r) and t-test. The study revealed that ambulant food vendors complied the highest on the procurement of raw materials, congruent with the street food consumers' perception. Compliance of ambulant food vendors to general requirement, general appearance, water and ice used, preparation and handling, washing of utensils and distribution and point of sale were generally often observed as reported by the ambulant food vendors and perceived by the street food consumers. The results indicated a significant difference on the compliance to food safety standards of ambulant food vendors on procurement of raw materials, distribution and point of sale and overall compliance to standards, where vendors from San Jose City showed higher degree of compliance. Food safety is a multi-sectoral concern, thus, private and public sectors must create series of programs, particularly on education and information dissemination about food safety practices. These must include lectures and hands-on activities to be participated by food vendors and consumers that will help augment their knowledge on food safety practices. Regular monitoring on the part of the government must be conducted as a fundamental ascendency to ensure that small and medium scale food handlers are primary initiators of food safety in the country.

Keywords: Food safety, food handling and practices, ambulant vendors, street food consumers, Code on Sanitation of the Philippines

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Introduction

Food safety has emerged as the major consumer concern in both developed and developing countries. The Philippine government continues to encourage the involvement and participation of the stakeholders and members of the academe, scientific community and consumer groups through the use of effective risk communication and feedback mechanism. (Layese, 2002)

Even though there are food regulatory laws, proper management of nutrition and sanitation remains to be an issue in many countries including Philippines. The causes of food borne illness are multifaceted. Some major risk factors of food borne illness are related to employee behaviors and preparation practices in food service establishments (WHO, 2000).

According to Mohan (2006) as cited by Que (2007), food handlers such as caterers, bakers and street food vendors are the most important sources for the transfer of the microorganisms to the food from their skin, nose, bowel to the food prepared and served by them. Besides unhealthy food handlers, disease carriers handling the food also play an equally important role in transmitting these diseases and impose a great threat to the health of the public. Certainly, there are many other modes where the food borne diseases are transmitted. These include preparation of food in the utensils infected by handling or washing in the contaminated water or flies alighting on food after feeding on exposed infected feces or during storage of food by insects, rodents etc. However, the role of food handlers in the transmission of food borne diseases comes atop.

With all these factors in mind, the researcher decided to conduct the study to assess the compliance of ambulant food vendors to food safety standards in Science City of Munoz and San Jose City in Nueva Ecija as prescribed by the World Health Organization and the Presidential Decree 856, Code on Sanitation of the Philippines.

Review of Literature

This chapter presents studies and literatures related to the different constructs presented in the study.

Food Safety

Safety is a basic requirement of food quality. Food contamination and poisoning can occur at any stage from farm to fork. Rapid urbanization and globalization of food manufacturing and trade increase the likelihood of incidents involving contaminated and adulterated food. Hundreds of people in our local area fall ill every year and many suffer death as a result of consuming unsafe food (DOST, 2010)

Street Food

Street food items, which readily provide low-cost nutrition at easily accessible locations, are commonly found in Asia. This sector of the food industry that feeds millions of people every day and employs millions of semi-skilled and unskilled people generates income running into billions. However, it presents unique challenges in food safety, especially problems related to hygiene and sanitation (Othman, 2005)

Street foods are simple and traditional foods that are sold by street food vendors. These include fried and boiled snacks, and packed snacks and hot and cold beverages, soups, native cakes, grilled food (mostly meats and variety meats), sandwiches, as meat/fish and vegetable viands, eggs, fruits and bakery products (Que, 2007).

Preparation and Handling of Foods

Matalas and Yannakoulia (2000) reported on Greek street foods that most vendors were not aware of several hygiene rules, and basically preferred to act according to their personal habits and "traditional way of doing things."

In an observational study of food safety practices by street vendors and microbiological quality of street purchased hamburger beef patties, only 10% of the vending units had access to running water and refrigeration, and the presence of food-borne pathogens posed some potential risks to consumers (Badrie et al., 2004).

Hand Washing

In a convenience sample of 30 households, it was found that 30% of participants did not wash their hands after handling raw meat, even though 100% reported it was important. Similarly, while 90% of young adults reported always washing their hands thoroughly after handling raw poultry, only 52% were observed washing their hands correctly after handling chicken. In a recent study, fewer than half of adults with children in day care stated that changing diapers or eating food prepared by a person with gastroenteritis played a role in the spread of illness. Fortunately, after receiving proper education, people showed more positive attitudes toward hand washing and are more likely to adopt personal hygiene recommendations compared to other food safety behaviors (Shapiro, 2010).

Proper hand washing can remove dirt, soil and some other contaminants like bacteria, viruses and parasites. (Simonne, 2004). Handling and preparing foods with hand contact is a common way to transfer food borne hazards to and from foods. It is important to ensure that the hands of a food handler are kept clean before, during, and after handling foods (Linton 2005).

Azanza et al. (2000) reported that during street food vending in most urban poor communities in the Philippines, where toilet and lavatory facilities are not readily available, vendors are forced to use secluded areas in place of public toilets.

Knowledge and Skills on Food Safety

According to FAO (1997), food handlers should have the necessary knowledge and skills to enable them to handle food hygienically. It was observed in a study that 23.81% of the vendors prepared food in unhygienic conditions.

However, Martins (2006) observed otherwise where high hygiene standard maintained by most vendors during preparation and serving of the foods. This study indicated that the health risks of consuming street foods are minimal, that street food vendors depend on vending for their livelihood and that their customers appreciate their trade.

On a similar note, Von and Makhoane (2006) found that street food vendors in South Africa were capable of producing relatively safe food with low bacterial counts, although there was still a need for proper hygienic conditions and access to basic sanitary facilities.

These observations are collaborated by Azanza et al (2000) where they found that among the 54 street food vendors surveyed in the Philippines, knowledge on food safety concepts was established particularly on topics that dealt with health and personal hygiene and food contamination. Despite these observations in developing countries like South Africa and Philippines, street food still remains sources of health problems.

Consumers' Perception of Compliance of Street Food Vendors to Food Safety Standards

According to Nidhi and Priti (2009), education, family income and occupation are major factor that effect extent of awareness of street food consumers to food handling and safety. But overall, education has highest impact.

Street Food Consumers Awareness to Food Safety

In a study conducted by Nidhi and Priti in 2009, the findings revealed that consumers were aware that there were ambulant vendors who were neglectful on some food safety practices, but still patronized street foods because of their affordability

Summary of Review of Literature

Based on related studies on street food and food safety practices, there is a great demand for street foods worldwide because of the evolving lifestyles of people. The change in lifestyles of people influences their eating preferences, from cooking food at home to having meals outside their abode like that of street vended foods.

Because of the economic situations in the third world countries like the Philippines, many people are able to find employment in street food vending. It has been seen in studies from different countries that ambulant food vendors practiced traditional ways of food safety practices such as preparing foods, washing of utensils and hand washing.

It was also revealed in previous studies that there is a great need to educate ambulant food vendors in terms of proper food handling in accordance to preexisting regulations on food safety practices. Moreover, consumer education also plays an important role in the involvement of consumers to ensure public safety and health.

Methodology

Theoretical and Conceptual Framework

The Input-Output Theory of Wassily Leontief (1986) was adapted in this study wherein the conceptual paradigm is anchored. The theory was identified specifically for this study because it assumed that the socio-demographic characteristics of ambulant food vendors and street food consumers are inputs that influence the output referred to as the compliance to food safety standards of the street food vendors.

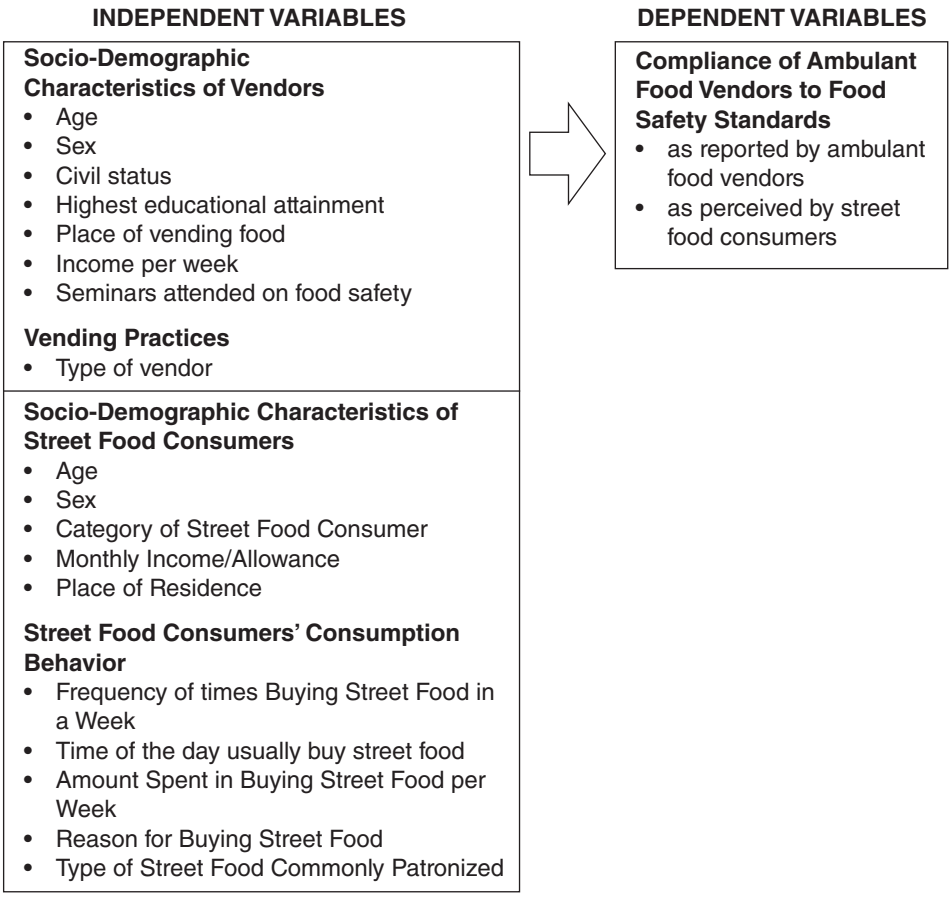

Figure 1. Conceptual framework of the study

Figure 1 shows and presents how the independent variables that were identified as the ambulant food vendors' and street food consumers' socio-demographic characteristics is related to the compliance of ambulant food vendors to food safety standards as reported by the ambulant food vendors and as perceived by the street food consumers. Figure 1 explains the interplay of constructs such as the relationship of the socio-demographic characteristics of the ambulant food vendors to their conformity to food safety standards. The perception of the street food consumers on the compliance to food safety standards of ambulant food vendors was looked to counter-check if the ambulant food vendors' response were actually observed.

Operational Definition of Terms

The following terms are hereby defined operationally:

Ambulant Food Vendors are semi-stationary vendors selling cooked viands, snacks and beverages within 500m range in the market place of Science City of Munoz and San Jose City, Nueva Ecija.

Common Street Food Sold the following street foods sold by the street food vendors:
kikiam (fried ground pork and vegetables placed in bean curd sheet)
kwek-kwek (fried quail eggs coated with flour)
squidball (fried minced squid meat formed into ball patty)
fishball (fried ball-shaped patty made of fish flakes)
pork barbeque (grilled marinated pork)
isaw (grilled chicken intestine)
betamax (grilled marinated cube chicken blood)
banana cue (skewered banana fried with brown sugar)
camote cue (skewered camote fried with brown sugar)
chicken skin (fried chicken skin coated with flour)
calamares (deep fried squid coated with flour)
peanuts (roasted peanuts with fried garlic)
sago't gulaman (tapioca pearls, agar, brown sugar, flavoring, water and ice)
buko juice (young coconut juice, sugar and ice) and;
pineapple juice (powdered pineapple, water, sugar and ice)

Place of Preparation refers to the place where street food vendors prepare the goods they sell. This could be at home or in the cart.

Sources of Raw Ingredients these are suppliers or vendors whose products are of good quality that are used as ingredients in the preparation of street foods.

Street Food Consumers are individuals who usually patronize street vended foods.

Category of Street Food Consumers refers to whether the consumer respondent is employed; works as teacher/instructor, government employee, private employee, self-employed; farmer, tricycle driver, entrepreneur , student or unemployed.

Frequency of Buying Street Food in a Week the number of times the consumer respondent buys street food in a week.

Time of the Day Usually Buys Street Food pertains whether the street food consumer usually buys street food in the morning, afternoon or without any particular time of the day.

Amount Spent in Buying Street Food in a Week refers to the money spent by the consumer respondent in buying street food in a week

Compliance of Street Food Vendors to Food Safety Standards the range to which the street food vendor complies with the food safety standards as prescribed by the Code on Sanitation of the Philippines. The compliance can be measured by:

4	always observed	AO	always complied
3	often observed	OO	often complied
2	seldom observed	SO	seldom complied
1	never observed	NO	never complied

Food Safety In the Philippines, the Department of Health defines food safety as the assurance or guarantee that food will not cause harm to the consumers when it is prepared and/or eaten according to its intended use (DOH, 2006).

Food Safety Practices refers to the practices of street food vendors in terms of their compliance to general requirements in food safety, general appearance both personal and food products, raw materials or ingredients used for food items, water and ice used for beverages and washing, preparation and handling of food products, vermin control, handling and storage of utensils, and distribution at point of sale.

Food Safety Standard is a regulatory guideline that defines the identity of a given food product to food establishments and vendor and specifies the minimum quality factors including general requirements, general appearance, raw materials, water and ice used, preparation and handling of food products, vermin control, washing, handling and storage of utensils, and distribution at point of sale.

Perceived Compliance to Food Safety Standards is the extent by which street food vendors conform to food safety standards as perceived by the street food consumer.

4	always observed	AO	always complied
3	often observed	OO	often complied
2	seldom observed	SO	seldom complied
1	never observed	NO	never complied

Street food is any food that is obtainable from a street food vendor. Street food is intimately connected with take-out and fast food; it is distinguished by its local flavor and by being purchased on the sidewalk, without entering any building.

Research Design

The researcher used a descriptive research method in the study. The study described how the ambulant vendors adhere to the Presidential Decree 856, Code on Sanitation of the Philippines in terms of: the cleanliness of the materials being used; the sanitary practices performed by the vendors; the vendor's general appearance in terms of hygiene and behavior in preparing and handling food products. The study also describes the street food consumers' observations on the compliance of ambulant food vendors to food safety standards. The study gathered data through face-to-face interview with the respondents with the aid of a questionnaire.

Respondents of the Study

There were two sets of respondents for the study are: first were the 35 ambulant food vendors in the Science City of Munoz and San Jose City in Nueva Ecija, the other set of respondents were the 115 street food consumers in the Science City of Munoz and San Jose City in Nueva Ecija.

Table 1. Respondents of the study

Respondents	Science City Of Munoz			San Jose City			Total %
	Population	F	%	Population	F	%	
Street Food Vendors	21	15	42.85	48	20	57.15	100
Street Food Consumers	–	51	44.35	–	64	55.65	100

Sampling and Sampling Procedure

The sampling procedure was done in two parts; the selection of street food consumer respondents was done through purposive sampling since the consumers must be selected through the number of times they buy from a specific street food vendor. Further, the consumer must have been buying from one particular vendor at least three times per week. They were selected through observation with the purpose of identifying consumers who buys from an ambulant vendor according to the set criterion.

Random sampling was used to select the ambulant food vendors vending food in the Science City of Munoz and San Jose City in Nueva Ecija, Philippines.

Instrumentation

A face-to-face interview was conducted using a survey questionnaire containing 31 statements patterned from the Presidential Decree 856, Code on Sanitation of the Philippines about the food safety practices of ambulant food vendors and fourteen questions on their socio-demographic characteristics.

Another survey questionnaire was used for the street food consumers that include questions on their demographic characteristics and perceived compliance of ambulant food vendors to food safety standards.

The instrument was pretested using the Cronbach's Alpha where questionnaire for ambulant food vendors revealed significant rating at .844 which was considered reliable.

Gathering Procedure

The researcher gathered data through face-to-face interview using a survey questionnaire. The data were gathered from ambulant food vendors within 500m range of the city public market and street food consumers buying from a particular street food vendor at least three times a week.

Method of Data Analysis

The following statistical tools were used in the data analysis:

1. Descriptive statistics was used to describe socio-demographic characteristics of street food consumers and ambulant food vendors such as frequency counts, percentages, mean and standard deviation.
2. Pearson Product Moment Correlation was used to identify relationships between the independent and dependent variables such as the socio-demographic characteristics of the ambulant food vendors particularly their age, sex, civil status, highest educational attainment, place vending food, number of years vending food, weekly net and seminars attended on food safety in relation to the their level of awareness to food safety standards and extent of their compliance to food safety standards.
3. T-test was used to test differences such as the difference between the vendors' compliance to food safety standards as well as the consumer's perception to the compliance to food safety standards of the ambulant food vendors.

Findings of the Study

The study was able to draw the following findings:

Socio-demographic Characteristics of Ambulant Food Vendors

Table 2. Socio-demographic characteristics of the ambulant food vendors

AGE		N=35 F	%
	below 25	9	25.7
	25-30	6	17.1
	31-35	3	8.6
	36-40	10	28.6

Table 2. (Con't)

AGE		N=35 F	%
	41-45	4	11.4
	46-50	2	5.7
	above 50	1	2.9
Mean	34.57		
Range	19-51		
SEX			
	Male	19	54.29
	Female	16	45.71
CIVIL STATUS			
	Single	12	34.30
	Married	18	51.40
	Widow/er	2	5.70
	Separated	3	8.60
HIGHEST EDUCATIONAL ATTAINMENT			
	elementary graduate	4	11.50
	high school undergraduate	6	17.10
	high school graduate	18	51.40
	college undergraduate	7	20.00
PLACE OF VENDING			
	Science City of Munoz	15	42.90
	San Jose City	20	57.10
INCOME PER WEEK			
	less than 500	1	2.90
	500-1,000	3	8.60
	1,001-2500	18	51.40
	2,501-5,000	10	28.50
	more than 5,000	3	8.60
Mean	3,275.71php		
Range	450.00-7,500php		
ATTENDED SEMINAR ON FOOD SAFETY			
	Have attended	3	8.60
	No seminar	32	91.40

Twenty eight percent (28.6%) of the ambulant food vendors were aged mostly 36-40 years old. Majority (54.29%) were male, married, high school graduate (51.4%) and earns an income per week of 1,001-2,500 php (51.4%). Almost all (91.4%) of the ambulant food vendors were not able to attend seminar of food safety.

Table 3. Vending practices of ambulant food vendors

TYPE OF VENDOR		N=35 F	%
	itinerant	30	85.70
	fixed	5	14.30
YEARS OF VENDING			
	less than 1 year	21	60.00
	1-5 years	9	25.71
	6-10 years	3	8.60
	more than 10 years	2	5.71
TIME OF THE DAY VENDING FOOD			
	PM	5	14.30
	Whole day	30	85.70
COMMON FOOD SOLD *			
kikiam	(fried ground pork & vegetables in bean curd sheet)	20	57.10
kwek-kwek	(fried quail eggs coated with flour)	13	37.10
squidballs	(fried minced squid meat formed into ball patty)	18	51.40
fishballs	(fried ball-shaped patty made of fish flakes)	18	51.40
barbeque	(grilled marinated pork)	11	31.40
isaw	(grilled chicken intestine)	11	31.40
betamax	(grilled marinated cube chicken blood)	9	25.70
banana cue	(skewered banana fried with brown sugar)	10	28.60
camote cue	(skewered camote fried with brown sugar)	11	31.40
chicken skin	(fried chicken skin coated with flour)	8	22.90
calamares	(deep fried squid coated with flour)	9	25.70
peanut	(roasted peanuts with fried garlic)	8	22.90
sago't gulaman	(tapioca pearls, agar, brown sugar, flavoring, water and ice)	20	57.10
buko juice	(young coconut juice, water, sugar and ice)	23	65.70
pineapple juice	(powdered pineapple, water, sugar and ice)	21	60.00

Table 3. (Con't)

PREPARATION AND SOURCES OF RAW MATERIALS *		N=35 F	%
With Preparation			
	at home	14	40.00
	at the food cart	14	40.00
Without Preparation			
	buys prepared goods from supplier	16	45.70
SOURCE OF INGREDIENTS FOR THOSE WITH PREPARATION			
	grocery/supermarket	18	51.40
	wet market	19	54.30
SOURCES OF GOODS FOR THOSE WITHOUT PREPARATION			
	suppliers deliver goods	1	2.90
	buys prepared goods from supplier	16	45.70

* Multiple responses

Majority (85.70%) of the ambulant food vendors were itinerant and vending food during the day. Sixty percent (60%) have been vending for less than one year. The most common food vended by the ambulant food vendors were buko juice (67.70%), sago't gulaman and kikiam (57.10%) and 54.3% buy from the wet market while 51.4% buy from the grocery and supermarket.

Table 4. Health status of ambulant food vendors

DIAGNOSED WITH DISEASE		N=35 F	%
	been diagnosed with disease	5	14.30
	no diagnosis of disease	30	85.70
TYPE OF DISEASE DIAGNOSED			
	Cardiovascular	1	2.90
	Respiratory	1	2.90
	Diabetes	3	8.60
	No diagnosis	30	85.70
VISIT'S A PHYSICIAN FOR CHECK-UP			
	Has check-up	24	68.60
	No check-up	10	28.60
	Missing	1	2.90

Table 4. (Con't)

NUMBER OF TIMES HAD CHECK-UP			
	1-5 times	5	14.30
	6-10 times	12	34.30
	11-15 times	6	17.10
	more than 15 times	1	2.90
	No checkup	10	28.60
REASON FOR NOT HAVING CHECK-UP			
	Lack of money	2	5.71
	Lack of time	7	20.00
	no pain felt	1	2.84

Majority (85.7%) of the ambulant food vendors have not been diagnosed with any disease. But those diagnosed had diabetes, cardio-vascular and respiratory problems. Majority (68.6%) of the ambulant food vendors went to a medical doctor for check-up and some have checked-up 6-10 times every year (34.3%). The reason of those who did not have check-up is lack of time (22.9%).

Socio-demographic Characteristics of Street Food Consumers

Table 5. Socio-demographic characteristics of street food consumers

AGE		**N=35 F**	**%**
	12-20 yrs. Old	53	43.40
	21-30	47	38.50
	31-40	3	2.50
	41-50	9	7.82
	above 50	2	1.60
	Missing data	1	0.86
Mean	22.16		
Range	18-51		
SEX			
	Male	50	43.47
	Female	65	56.53
CATEGORY OF STREET FOOD CONSUMER			
Employed		32	27.82
	government employee	4	3.47
	private employee	18	15.65
	instructor/teacher	4	3.47
	household helper	6	5.21

Table 5. (Con't)

Self-employed			
	Entrepreneur	4	3.47
	Tricycle driver	17	14.78
	Farmer	2	1.73
student		**46**	**40.00**
unemployed		14	12.17
MONTHLY INCOME/ALLOWANCE			
	below 1000 php	3	2.50
	1000-2500 php	47	38.50
	2501-5000 php	43	35.20
	5001-7500 php	8	6.60
	7501-10000 php	8	6.60
	more than 10,000 php	6	4.90
	Mean 4,321.73php		
	Range 500-12,000php		
PLACE OF RESIDENCE			
	Science City of Munoz	48	41.74
	San Jose City	67	58.26
		115	100

Forty three percent (43.3%) of the street food consumers were aged 12-20 years old, 56.53% are female, 40% were students. They bought street food three times a week, anytime of the day, 38.50% spent below 100php on street food and bought street food because it is affordable.

Table 6. Street food consumers' consumption behavior

FREQUENCY OF BUYING STREET FOOD IN A WEEK	**F**	**%**
twice a week	1	0.8
three times a week	32	26.2
four times a week	30	24.6
five times a week	25	20.5
more than 5 times a week	27	22.1
	115	100
TIME OF THE DAY WHEN THEY USUALLY BUY STREET FOOD		
AM	7	6.08
PM	42	36.52
Anytime	65	56.52
No response	1	.87
	115	100

Table 6. (Con't)

AMOUNT SPENT ON STREET FOOD PER WEEK			
	below 100 php	97	79.5
	101-200 php	16	13.1
	201-300 php	2	1.6
		115	100
REASON FOR BUYING STREET FOOD *			
	it is affordable	102	83.6
	it tastes good	49	40.2
	it is nutritious	2	1.6
	convenient to buy than cooking at home	19	15.6
	it is clean	2	1.6
TYPE OF STREET FOOD MOSTLY PATRONIZED *			
kikiam	(ground pork & vegetables in bean curd sheet)	41	33.6
kwek-kwek	(fried quail eggs coated with flour)	37	30.3
squidballs	(minced squid meat formed into ball patty)	7	5.7
fishballs	(ball-shaped patty made of fish flakes)	64	52.5
barbeque	(grilled marinated pork)	59	48.4
isaw	(grilled chicken intestine)	51	41.8
betamax	(grilled marinated cube chicken blood)	33	27
camote cue	(skewered camote fried with brown sugar)	42	34.4
chicken skin	(fried chicken skin coated with flour)	23	18.9
calamares	(deep fried squid coated with flour)	35	28.7
sago't gulaman	(tapioca pearls and agar concoction)	36	29.5
buko juice	(coconut juice)	84	68.9
pineapple juice	(powdered pineapple juice)	63	51.6

* Multiple responses

Buko juice is the commonly sold good of ambulant food vendors and the commonly patronized food item by the street food consumers.

Compliance of Ambulant Food Vendors to Food Safety Standards

Table 7. Overall mean of the different food safety standards complied with by the ambulant food vendors

FOOD SAFETY STANDARDS	Mean	SD	DE
General requirement	2.61	0.59	OO
General appearance	2.90	0.59	OO
Raw Materials	2.96	0.55	OO
Water and Ice	2.72	0.55	OO

Table 7. (Con't)

Preparation and Handling	2.73	0.51	OO
Washing of Utensils	2.80	0.60	OO
Handling of Washed Utensils	2.44	0.78	SO
Storage of Washed Utensils	2.67	0.69	OO
Distribution and Point of Sale	2.67	0.47	OO
Over-all mean	2.71	0.38	OO

	Score	DE		
Legend:	3.26-4.00	Always Observed	AO	Always Complied
	2.51-3.25	Often Observed	OO	Often Complied
	1.76-2.50	Seldom Observed	SO	Seldom Complied
	1.00-1.75	Never Observed	NO	Never Complied

Based on the summary of the compliance of ambulant food vendors to food safety standards, the vendors often observed compliance to general requirement, general appearance, raw materials, water and ice, preparation and handling, and washing of utensils, storage of washed utensils and distribution and point of sale.

Compliance to Food Safety Standards of Ambulant Food Vendors as Perceived by the Street Food Consumers

Table 8. Overall mean of the different food safety standards complied with by ambulant food vendors as perceived by street food consumers

FOOD SAFETY STANDARDS	Mean	SD	DE
General appearance	2.80	0.60	OO
Raw Materials	2.98	0.75	OO
Water and Ice	2.72	0.79	OO
Preparation and Handling	2.55	0.56	OO
Washing of Utensils	2.51	0.72	OO
Handling of Washed Utensils	2.45	1.17	SO
Storage of Washed Utensils	2.47	0.71	SO
Distribution and Point of Sale	2.60	0.60	OO
Over-all mean	2.62	0.54	OO

	Score	DE		
Legend:	3.26-4.00	Always Observed	AO	Always Complied
	2.51-3.25	Often Observed	OO	Often Complied
	1.76-2.50	Seldom Observed	SO	Seldom Complied
	1.00-1.75	Ever Observed	NO	Never Complied

Results revealed that compliance of ambulant food vendors to food safety standards as perceived by the street food consumers was often observed by the vendors.

The highly perceived compliance to food safety standards is the procurement of raw materials and seldom observed is handling of washed utensils and storage of washed utensils.

Relationship of Socio-demographic Characteristics of Ambulant Food Vendors to their Compliance to Food Safety Standards

Table 9. Relationship between socio-demographic characteristics of ambulant food vendors and compliance to food safety standards

SOCIO-DEMO GRAPHIC CHARAC TERISTICS	GENE-RAL RE-QUIRE MENTS	GENE-RAL APPEA-RANCE	RAW MATE-RIALS	WA-TER AND ICE	PREPA-RATION AND HAND-LING	WASH-ING OF UTEN-SILS	HAND-LING OF WASH-ED UTEN-SILS	STO-RAGE OF WASH-ED UTEN-SILS	DISTRI-BUTI-ON AND POINT OF SALE
Age	-.042	.080	.174	.236	.223	.350*	-.256	.216	.127
Type of vendor	.451**	.096	.454**	.239	.269	.501**	-.445*	-.043	.237
Income per Week	.239	.141	.076	-.071	.084	-.250	.590*	.079	.056

*correlation is significant at the 0.05 level (2-tailed).
**correlation is significant at the 0.01 level (2-tailed).

There was a highly significant relationship between the type of vendor and the compliance to the food safety practices particularly in general requirements (r=.451), raw materials (r=.454) and washing of utensils (r=.501). Age was also significantly related to washing of utensils (r=.350) while income per week was significantly related to handling of washed utensils (r=.590). The vendors who were categorized as itinerant have more access to raw materials as they go around the vicinity of the public market as well as source of water, therefore have the capability to regularly wash their utensils.

Difference Between the Compliance to Food Safety Standards of Ambulant Food Vendors in Science City of Muñoz and San Jose City

Table 10. Difference between the reported compliance to food safety standards of ambulant food vendors as perceived by the street food consumers in Science City of Muñoz and San Jose City

	STREET FOOD CONSUMERS		**STREET FOOD VENDORS**		**t-value**	**P-value**
FOOD SAFETY PRACTICES	**Mean**	**SD**	**Mean**	**SD**		
General Appearance	2.8	0.6	2.9	0.59	0.83	0.4

Table 10. (Con't)

	STREET FOOD CONSUMERS		STREET FOOD VENDORS		t-value	P-value
FOOD SAFETY PRACTICES	**Mean**	**SD**	**Mean**	**SD**		
Raw Materials	2.98	0.75	2.96	0.55	-0.19	0.84
Water and Ice	2.72	0.79	2.72	0.55	0.012	0.99
Preparation and Handling	2.55	0.56	2.73	0.51	1.69	0.09
Washing of Utensils	2.51	0.72	2.8	0.6	2.09	0.03
Storage of Washed Utensils	2.47	0.71	2.67	0.69	1.43	0.15
Distribution and Point of Sale	2.6	0.6	2.67	0.47	0.67	0.49
OVER-ALL	2.62	0.54	2.71	0.38	0.83	0.4

*Significant at ($p \leq 0.05$)
** Highly significant at ($p \leq 0.01$)

Based on the findings, there was a significant difference on the compliance of ambulant food vendors in procurement of raw materials (t=-3.06) and distribution and point of sale (t=-2.33). Significant difference was also noted in the over-all compliance of ambulant food vendors to food safety standards from the two cities with vendors in San Jose City getting higher degree of compliance. The result may be associated to the frequency of market days and the number of available suppliers in the two cities where it is found out that in San Jose City, the public market is open from Mondays to Sundays and where most suppliers may be found, while in Science City of Munoz; market days are on Thursdays and Sundays only. Therefore, the vendors in San Jose City have access to fresh raw materials every day.

Difference Between the Compliance to Food Safety Standards of Ambulant Food Vendors as Perceived by the Street Food Consumers in Standards in Science City of Muñoz and San Jose City

Table 11. Difference between the compliance to food safety standards of ambulant food vendors in Science City of Muñoz and San Jose City

	STREET FOOD VENDORS					
	Science City of Munoz		San Jose City		t-value	P-value
FOOD SAFETY PRACTICES	**Mean**	**SD**	**Mean**	**SD**		
General Requirements	2.57	0.55	2.65	0.63	-0.35	0.72
General Appearance	2.72	0.65	3.04	0.52	-1.61	0.11
Raw Materials	2.66	0.44	3.18	0.52	-3.06	0.004

Table 11. (Con't)

	STREET FOOD VENDORS					
	Science City of Munoz		San Jose City		t-value	P-value
FOOD SAFETY PRACTICES	**Mean**	**SD**	**Mean**	**SD**		
Water and Ice	2.58	0.35	2.82	0.65	-1.23	0.22
Preparation and Handling	2.54	0.47	2.87	0.5	-1.96	0.05
Washing of Utensils	2.62	0.54	2.93	0.62	-1.53	0.13
Handling of Washed Utensils	2.36	0.58	2.5	0.91	-0.49	0.62
Storage of Washed Utensils	2.53	0.66	2.77	0.71	-1.01	0.31
Distribution and Point of Sale	2.47	0.36	2.83	0.49	-2.33	0.026
OVER-ALL	2.54	0.36	2.83	0.35	-2.4	0.022

*Significant at ($p \leq 0.05$)
** Highly significant at ($p \leq 0.01$)

There was no significant difference on the perception of street food consumers from the Science City of Muñoz and San Jose City on the compliance of ambulant food vendors to food safety standards. The findings showed that street food consumers from both cities have similar observations on the compliance of ambulant food vendors to food safety standards such as to general requirements, general appearance, raw materials, water and ice, preparation and handling, pest control, washing of utensils, handling of washed utensils, storage of washed utensils & distribution and point of sale.

Difference Between the Food Safety Practices Commonly Observed by the Ambulant Food Vendors as Reported by the Street Food Consumers

Table 12. Difference between the compliance to food safety standards of ambulant food vendors as perceived by street food consumers in Science City of Muñoz and San Jose City

	STREET FOOD CONSUMERS					
	Science City of Munoz		San Jose City		t-value	P-value
FOOD SAFETY PRACTICES	**Mean**	**SD**	**Mean**	**SD**		
General Appearance	2.74	0.67	2.85	0.55	-0.94	0.34
Raw Materials	2.95	0.89	3.01	0.64	-0.44	0.65
Water and Ice	2.58	0.66	2.81	0.86	-1.54	0.12
Preparation and Handling	2.45	0.7	2.62	0.41	-1.61	0.11
Pest Control	2.41	0.86	2.59	0.58	-1.29	0.19

Table 12. (Con't)

	STREET FOOD CONSUMERS					
	Science City of Munoz		San Jose City		t-value	P-value
FOOD SAFETY PRACTICES	**Mean**	**SD**	**Mean**	**SD**		
Washing of Utensils	2.33	0.72	2.53	1.4	-0.92	0.35
Handling of Washed Utensils	2.44	0.83	2.49	0.63	-0.32	0.74
Storage of Washed Utensils	2.53	0.75	2.64	0.45	-0.96	0.33
Distribution and Point of Sale	2.44	0.83	2.49	0.63	-0.32	0.74
OVER-ALL	2.53	0.63	2.69	0.45	-1.53	0.12

*Significant at ($p \leq 0.05$)
** Highly significant at ($p \leq 0.01$)

The findings showed that from among the different food safety practices, the commonly practiced aspects by the ambulant food vendors are taking a bath daily and wearing of clean clothing and these practice were observed by the street food consumers. As stated by the ambulant food vendors, they need to be clean to protect themselves and their consumers from possible spread of disease. Moreover, according to the street food consumers, they perceived that the ambulant food vendor often takes a bath daily because bathing is a habit of cleanliness.

CONCLUSION

Based on the findings of the study, the following conclusions were drawn:

The ambulant food vendors often observed compliance to food safety standards such as general requirement, general appearance, raw materials, water and ice, preparation and handling, pest control, washing of utensils, handling of washed utensils, storage of washed utensils and distribution and point of sale. The vendors have higher compliance on general appearance as being well presented and groomed has a significant effect on how they would attract the consumers as well as to protect themselves from illnesses.

Street food consumers perceived that ambulant food vendors often observed compliance to general requirements, general appearance, raw materials, water and ice, preparation and handling, pest control, washing of utensils, and distribution & point of sale. However, they seldom observed compliance to food safety standards in handling and storage of washed utensils. This may be associated to the lack of space and equipment fitting to a food cart used by the ambulant vendors unlike that of a permanent food establishment.

The type of vendor had high significant relationship to general requirements,

raw materials and washing of utensils. Age was also associated to washing of utensils. Income per week and handling of washed utensils has a significant relationship. On the other hand, type of vendor was negatively associated to handling of washed utensils as itinerant vendors uses food carts to vend their products, therefore have smaller spaces to store their utensils. Similarly, there was a significant but negative relation of on the attendance to seminar on food safety to general appearance, raw materials, water and ice, preparation and handling, storage of washed utensils and distribution and point of sale. The vendors having stated that they seldom attend seminars on food safety for the reason that they would rather spend their time working to earn money, displayed limited knowledge and poor practice on food safety and sanitation.

There were significant differences on the compliance to food safety standards of ambulant food vendors particularly in procurement of raw materials and distribution and point of sale. Ambulant food vendors in San Jose City have higher degree of compliance to procurement of raw materials that may be attributed to the frequency of market days and the greater number of suppliers available in San Jose City. Competition is also higher.

There was no significant difference on the perception of street food consumers in the Science City of Muñoz and San Jose City on the compliance of ambulant food vendors to food safety standards. Observations on food safety practices of ambulant food vendors such as compliance to general requirements, general appearance, raw materials, water and ice, preparation and handling, pest control, washing of utensils, handling of washed utensils, storage of washed utensils & distribution and point of sale from both cities were the same.

Among the different aspects of food safety practices, the ambulant vendors complied the highest on taking a bath daily and wearing of clean clothing, as these have direct effect on how they would attract their patrons to buy from them as well as their personal protection from possible illnesses brought about by the environment. The street food consumers also perceived these practices therefore affecting their preference on choosing from which vendor to buy from because the physical appearance and presentation of the vendor is associated to their hygienic practices.

Based on the findings of the study, it is further concluded that seminars on food safety practices should be one of the key programs of the local government unit to educate and empower small and medium scale food handlers. In this kind of initiative, the different sectors such as the academe, research and extension may collaborate to come up with a series of programs or activities that would involve lecture and hands-on activities that can be participated by street food vendors and street food consumers to help augment their knowledge on food safety practices. Ambulant food vendors must be compelled by the local government unit to attend seminars on food safety practices to supplement their knowledge on food safety practices.

Food safety is a multi-sector concern and an issue that must not be neglected as this issue affects the different industries of a country as well as its economy. Street food vending may be a small industry but poses health risks to the people, thus, different sectors must work together to alleviate the status of street food trading to ensure a healthy and safe community.

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