

SANITARY CONDITIONS OF FOOD VENDING SITES AND FOOD HANDLING PRACTICES OF STREET FOOD VENDORS: IMPLICATION FOR FOOD HYGIENE AND SAFETY

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Abstract—Unsanitary environment, the lack of awareness of food safety regulations, poor knowledge of hygiene and improper food handling practices among the food vendors can contribute to outbreaks of foodborne illnesses. This study aims to investigate the food safety knowledge and practices of street food vendors and to assess the sanitary conditions of street vended foods of Tarlac State University, Main Campus.

A survey questionnaire and observation checklist on employees' knowledge of food hygiene and their practices as well on sanitary conditions of the street food vending activities in the area were used. Convenience sampling method was used to thirty mobile and stationary food vendors selling street foods. From the total of 30 respondents, majority of those involved in the food vending business are the female (60%). Half of the total of the respondents had attained secondary education (50%). Majority of the respondents (80%) equally did not have any training on food safety and were not aware of food safety law. Most of the respondents vended food items in an environment that is observed to be clean (3.57), with the presence of waste bin, hand towel, and hand soap. It appears that the sites had presence of flies, rats/cockroaches, and not totally eradicated in the areas. Vended foods are protected through covered food containers ensuring food safety. **It was found from the results of the study that street foods were vended under relatively good sanitary conditions.**

Keywords. Food Safety, Street Vended Food, Practices, Food-borne Illnesses

I. INTRODUCTION

Street foods are enjoying increasing patronage due to urbanization which is forcing many city dwellers to eat their major daily meals out of home. Street food vending is a common feature of most cities and towns in developing countries. Aside provision of ready-made instant meals at relatively inexpensive prices, teeming urban dwellers are attached to street foods because of its gustatory attributes. These attributes are linked to the

culinary prowess of the vendors. Akinyele (1998) reported the significant contribution of street foods to nutrition and food security for millions of practitioners along the chain. Draper (1996) also identified them as potential vehicles for micronutrient fortification (Alimi, 2016).

Street food vending activities in most developing countries are mostly outside the regulation and protection of the governments. The economic importance of the activities is not well appreciated due to the informal nature of the enterprise and lack of official data on volume of trade involved (Alimi, 2016). Street food vending makes up the significant proportion of informal sector of the economy of most developing countries. About 28.5% labor force in Mexico were reportedly employed in the informal sector, 30.8% of the activities in this sector were in the street food which employed over 120,000 vendors in Mexico city alone in 1998 (Estrada-Garcia, Cerna, Thompson, Lopez-Saucedo, 2002). Dawson and Canet (1991) reported that street food vending in Malaysia is a multi-million US dollar trade providing direct employment for over 100,000 vendors with gross annual sales volume of about 2 billion US dollars. Hiemstra et. al. (2006) also mentioned the significant contribution of microbusinesses made up largely of street food sector to the economy of Vietnam.

Malaysia, Philippines and India are the three countries which have regulations for protecting street vendors. Malaysia is the only country where licensed street vendors are provided facilities for conducting their trade. An initiative has been taken in Africa, where a coalition between local and national authorities, explored the food laws associated with street vending and developed strategies that could be used to control identified food hazards. Another policy was framed in Durban, Africa, where the street vendors were allocated specific areas to operate, issued certificate of acceptability and were also given training on essential food hygiene practices. In India, CII Institute of Quality's Food Safety and Quality (FSQ), has taken an initiative to create awareness among the consumers and street food vendors and it has issued a simple informative checklist of hygienic practices, called the "CII-14 point checklist on food safety for street vended food" which emphasizes

on implementation of good hygiene standards by the street vendors (Rane, 2011).

However, the sector is fraught with unwholesome activities which have been reported to pose serious concerns over the safety of the practitioners, especially the health of the consumers (Muyanja, Nayiga, Brenda, Nasinyama, 2011). These unwholesome activities traversed the whole chain of street food business from agricultural raw materials to the final retail street foods and have been fingered in the outbreak of diseases and illnesses (Akinbode, Dipeolu, Okuneye, 2011). The prevention, maintenance and treatment of diseases from street food borne illnesses were reported to result in heavy drain on the purse of individuals and governments in the developing countries due to huge spending involved Ekanem (1998). The meager resources that could have been used for infrastructural development are being channeled to treatment of preventable diseases outbreak due to the unwholesome activities mentioned above.

In the Philippines, street vended-foods are often appreciated for their unique flavors as well as for their convenience. They are often the alternative meals taken by most students which are affordable given their limited budget. Street food vending also provides a livelihood for a large number of ordinary Filipinos who would not have enough capital to put up a full blown food service business. However, it is also recognized that street-food vendors are often poor, uneducated and lack appreciation for safe food handling. Consequently, street foods are perceived to be a major public health risk. If a community is to have the full benefits of street-vended foods with minimal risk of foodborne disease, government intervention, as well as, in the case of this particular study, the Tarlac State University Administration may be required to ensure that standard of safety for such foods is best attainable in order to protect the students and the university population as a whole. This could assist to provide holistic intervention baseline to safeguard the health and safety of all along the entire chain.

The study expects to present the vending practices of street vended foods along the peripheral area of the Tarlac State University, Main Campus. The result of the study will lead to determining the extent of the university's participation to assist food vendors in elevating their level of awareness on food safety, as well as, the TSU administration's intervention to ensure the safety and protection of the university students from foodborne illnesses that could possibly result from poor sanitary conditions and improper food handling practices among the food vendors in the area.

II. METHODS AND MATERIALS

The study used the descriptive research design to explore A walk through survey was conducted by the researchers along the peripheral area of Tarlac State

University, Main Campus to vendors of concessionaire stands and stalls selling street foods like fish balls, fried boiled egg (tukneneng), barbeque, roasted and fried nuts and cornick, *palamig* and the like. All mobile even those stationary food vending units used for preparation/sales of street food as well as operators of such were included in the study. Convenience sampling method was used, only those who were willing were asked to answer the survey and were interviewed.

The questionnaire sought information concerning the respondents' demographic profile like the respondent's gender, educational background, and awareness to food safety training and awareness about food safety law.

To achieve the purpose of this study, the researchers made use a structured questionnaire. 'World Health Organization essential requirement for the safety of street-vended foods' and instrumentation used by Aquino, Zafra and Tuzon (2015) in their study "The Perception of Local Street Food Vendors of Tanauan City, Batangas on Food Safety" were the bases of where the survey questionnaire was adapted. Pre-testing was done to some of the street vendors located along the peripheral area of Tarlac State University, Main Campus who were not included as respondents of the study.

To be able to determine the "Vending Practices", a total of ten items were assessed: (1) food sold from tray/basin with covering; (2) food sold from tray/basin with no covering; (3) food exposed to flies; (4) food reheated before sale; (5) vendor wearing hand jewelry;(6) vendor having long nails; (7) vendor having boils/cuts on the hand; (8) vendor using apron; (9) vendor having hair covering; and (10) vendor blowing air into cellophane bag before serving. For the "Sanitary Condition of Vending Premises" portion, a total of eight parameters were assessed: (1) appearance; (2) presence of waste bin; (3) presence of nearby refuse dump site; (4) presence of wash hand basin; (5) presence of hand towel; (6) presence of soap; (7) presence of flies, and (8) presence of rats/cockroaches. Options were formed through a four-point Likert Scale, where: "4" represents as Always, "3"as Sometimes, "2" as Seldom, and "1" as Never.

As per the study duration, the study was carried out over a period of three months from October 2016 to December 2016 among street food vendors/vending around the area.

In this study, the result was generated by using statistical tool; the descriptive statistics through percentage and frequency count method.

III. RESULTS AND DISCUSSION

This section presents the findings of the study including the analysis and interpretation of data collected. Data are presented in tabular form and interpreted

following the sequence of answering the specific questions of the problem.

TABLE I. RESPONDENTS' DEMOGRAPHIC PROFILE

Background characteristics of respondents		
Background characteristics	Frequency (n=30)	Percent (%)
Sex		
Male	12	40
Female	18	60
Educational Attainment		
None	4	13.33
Primary	8	26.67
Secondary	15	50
Tertiary	1	3.33
Vocational	2	6.66
Food Safety Training		
Trained	6	20
Not trained	24	80
Awareness of food safety law		
Aware	6	20
Not aware	24	80

There were 18 female respondents (60%) and 12 male respondents (40%). Two (6.66%) had vocational education, one 1 (3.33%) respondent is with tertiary education, 15 (50%) attained secondary, 8 (26.67%) finished elementary, and 4 (13.33%) out of the total 30 respondents answered with "none" meaning no educational background. Twenty four (80%) of the respondents were not trained about Food Safety Training while only 6 (20%) did have training on such. Lastly, there were 24 (80%) of the respondents who were not aware of the Food Safety Law, while only 6 (20%) were aware.

TABLE 2. ENVIRONMENTAL HYGIENE INDICATORS

Environmental hygiene of food vending premises (n=30)		
Environmental hygiene indicators	Total	Verbal Interpretation
Clean environment	3.57	Always
Waste bin present	3.53	Always
Refuse site present	2.57	Seldom
Wash basin present	2.83	Sometimes
Presence of hand towel	3.70	Always
Soap present	3.23	Always
Presence of flies	2.40	Seldom
Presence of rats/ cockroaches	2.60	Sometimes

Legend: 4.00-3.60: Always; 3.59-2.60: Sometimes; 2.59-1.60: Seldom; 1.59-1.00: Never

Table 2 shows the environmental hygiene indicators of food vending premises. Presence of rodents like flies and rats/cockroaches is rated "sometimes" and the presence of wash basin are rated "sometimes" meaning these are found in good vending premises. It cannot be denied that the presence of such rodents may contribute to the ill effects on food being sold, while it is true it is a necessity to have wash bin for easy and regular washing of food containers and the like. On the other hand, though, the presence of soap, hand towel, waste bin, and clean environment are rated "always" and are found to be very effective, meaning these are highly

considered in the maintenance of cleanliness in the food vending premises. Malpractice of such may seriously affect the foods being sold and definitely the health of the consumers who patronize their products.

TABLE 3. ENVIRONMENTAL HYGIENE PARAMETERS

Observed food handling/vending practices (n=30)		
Environmental hygiene parameters	Total	Verbal Interpretation
Food in covered container	3.63	Always
Food in uncovered container	1.77	Seldom
Food exposed to flies	1.93	Seldom
Food reheated before sale	1.80	Seldom
Vendor wore hand jewelry	2.00	Seldom
Vendor had long nails	1.70	Seldom
Vendor had hair covering	1.97	Seldom
Vendor had cut on the hand	2.00	Seldom
Vendor wore apron	2.50	Seldom
Vendor blew air into cellophane bag use for vending food	1.83	Seldom

Legend: 4.00-3.60: Always; 3.59-2.60: Sometimes; 2.59-1.60: Seldom; 1.59-1.00: Never

Table 3 shows the environmental hygiene parameters of the food vendors along the peripheral area of TSU. Food in covered container has been found to be always observed implying that the vendors practice good sanitation in their vending activities in order to avoid contamination and other effects brought about by the negligence of such practice. It is important that vendors must have knowledge and be aware of such hygienic practices, because if otherwise, it will affect the health of the consumers who continually patronize their food products.

From the total of 30 respondents, majority of those

involved in the food vending business are the female (60%). In this study, it appears that the predominance of women is not surprising as they are more engaged in food preparation and food handling. Gender role in socioeconomic development is often influenced by cultural orientation. In the Philippine patriarchal society, it has become a norm that women are groomed to take care of domestic chores including vending business.

Half of the total of the respondents had attained secondary education (50%). This fact may be attributed to the reality that most street vendors belong to the socioeconomically disadvantaged group and may have lacked the opportunity to complete a higher education, probably due to social deprivation of poverty.

Majority of the respondents (80%) equally did not have any training on food safety and were not aware of food safety law. This implies that they are basically concerned with the economic benefits they would get from vending street foods and rely on their own knowledge to avoid the health risks these food may pose.

Most of the respondents vended food items in an environment that is observed to be clean (3.57), with the presence of waste bin, hand towel, and hand soap. This only validates that even if majority of them did not have food safety training, at least, they are aware of the potential risks that may arise should they don't maintain a clean working/vending environment. It appears that the sites had presence of flies, rats/cockroaches, and not totally eradicated in the areas. It revealed that they really have to seriously manage a combat-pest strategy to create a tidy and healthy vending environment. The presence of wash basin in the sites is also commendable as it is rated effective.

A clean foodstand or premise can attract more consumers based on aesthetic appeal. Though food aesthetics is desirable, it doesn't rule out the significance of other aspects such as food hygiene. Vended foods are protected through covered food containers ensuring food safety.

IV. CONCLUSION

It was found from the results of the study that street foods were vended under relatively good sanitary conditions. Majority of the vendors were females, finished secondary education and have never been on any food safety training neither aware of food safety law. With these factors though, it doesn't necessarily mean that they operate on a very unsafe or very risky food environment. They just needed to be fully aware of the health risks a dirty environment and food handling may pose to consumers. Not only are sanitary conditions suggestive of health consciousness but they are also likely to boost consumer confidence and increase vendor patronage.

V. RECOMMENDATIONS

From this study, the researchers highly recommended that food vendors should continue to maintain standard environmental alongside with personal hygiene while preparing and vending food street items. And since these food vendors are situated along the peripheral area of TSU, Main Campus, it is fitting and proper that the researchers start providing to the TSU Administration a simple informative checklist of hygienic practices to evaluate the food safety practices of the street food vendors to ensure that good hygiene standards are strictly followed.

More so, the street food vendors have to attend trainings on food safety and educate themselves on food safety law. The local government should design programs or short-term courses on food safety handling and preparation tailored-fit to them to fully equip them with proper knowledge on sanitary conditions of food vending.

ACKNOWLEDGMENT

The researchers wish to express deep sense of gratitude and appreciation to some people who are in one way or another have helped in the accomplishment of this piece of work.

To the almighty Father, for the courage, hope, and strength in facing all the obstacle encountered during the conduct of this study, the researcher truly acknowledge him above all.

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