

An Assessment of The Food Safety Knowledge and Practices of Food Handlers in Selected Turo-Turo Restaurants Near Saint Mary's University

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ABSTRACT

Turo-Turo in the Filipino language means, “point-point,” that insinuates to a local and cafeteria-style service of food handlers wherein a customer picks a combo of entrees from a range of prepared dishes, it also offers fast service, in which brands them popular with customers that have limited time to eat, wherein you just need to choose and pay. Moreover, food safety refers to the practices that are done in the preparation, handling, and storing of food are intended to prevent foodborne illness, thus, this study sought to obtain current information on the food safety knowledge and practices of food handlers of the *turo-turo* restaurants near Saint Mary's University. This study used the descriptive–quantitative type of research in assessing the food safety knowledge and practices of food handlers. The researchers selected six (6) *turo-turo* restaurants. In relation to this, a minimum of three (3) hands-on staff from each restaurant were approached to participate in the study. Moreover, an adapted questionnaire-checklist was used to gather the needed data for the research study. The findings stated that the majority of the food handlers are knowledgeable on proper food safety, however, there are few food handlers who are not knowledgeable with regards to some of the statements under Cross-contamination and Proper storage of food. On the other hand, most of the food handlers practice the proper food safety practices, however, few of the respondents do not observe the food safety practices with regards to some statements in the category of Sanitizing Equipment and utensils.

Keywords: Turo-Turo, Food Handlers, Food safety knowledge, Food safety practices.

INTRODUCTION

The industry of food has grown fast, specifically the canteen or local eatery or is commonly known as the *turo-turo* and in the Filipino language *turo-turo* that would mean, “point-point,” that insinuates to a cafeteria-style service of food handlers wherein a customer picks a combo of entrees from a range of prepared dishes (Serrano, 2022).

Turo-Turo is where the food handlers sell and serve food, offers fast service, in which brands them popular with customers that are on a tight lunch break, that all you need to do is to choose and pay for it. Customers are given a good service, as well as creating effective relationships among customers and business people are all considered as the ingredients of a profitable business (Antonino, 2019). The municipality of Bayombong, where the food industry has been growing from only more than a few food establishments, the most popular amongst the establishments are the *turo-turo* restaurants, wherein it is also popular for the several educational institutions within its vicinity.

As stated by Sesotec (2020), food safety refers to the practices that are done in the preparation, handling, and storing of food are intended to prevent foodborne illness. All the food that is prepared on orders must observe the correct safety standards and protocols and should only be forwarded to the customers if the result is safe to eat and free from food-borne diseases. The supplied food at any eating venue should be free from any food contamination and to prevent any food-borne illnesses that may occur at any time if the food safety standards are not met.

In this line of thought, this study contributed significantly as it has provided information about the food handlers of the *turo-turo* restaurants in the food preparation and handling of food products for its quality and safety. Also, it has determined the compliance of *turo-turos* to the procedures and requirements provided by the provisions of P.D. 856. Moreover, this study identified the standards needed to improve the food handling practices as exercised by the *turo-turos* and has provided notice to the consuming public, if there were alarming issues regarding food safety considerations. Their response served as a guideline of the Government of the Sanitary Office to come up with policies that strengthened the compliance and awareness on the Code on Sanitation of the Philippines. Based from the responses of the respondents, it has been possible to use it as a guide to significantly increase efficiency, maintain productivity, make employees and customers feel safe, exceed standards, and prevent undesirable incidents. The integration of trainings and seminars to food handlers also served as the best practice of the LGU thus, it has also boosted the revenue of the locality.

***Turo-Turo* Food**

It was well-defined by the World Health Organization (WHO), that one of the circumstances and the measures that are required throughout the production, processing, storage, distribution, and preparation of food to guarantee that it is safe to fit for human consumption, it is vital for avoiding foodborne illness and improving human health.

A generous number in the population is obstructed by foodborne illnesses and other health issues that is caused by food contamination.

Food Hygiene and Sanitation

The food safety and hygiene are considered as a global health problem especially in unindustrialized countries because of the rise in food-borne illnesses (FBDs) and deaths. The adoption of excellent hygiene standards lays the groundwork for guaranteeing food safety and provides a solid platform for reducing cross-contamination and person-to-person transmission in food safety operations. Food sanitation is the taking additional precautions to prevent food cross contamination of food preparation. Within a randomized controlled trial in Bangladesh, Bangladesh measured the environment and implemented individual and combined nutrition, sanitation, hand washing, and water treatment interventions. (Ram, Stephen & M.C Jr, 2018).

Laws Related to Food Safety

Hazard Analysis and Critical Control Points (HACCP) is a foundational, risk-based way to deal with forestalling the organic, substance, and actual defilement of food underway, bundling, and dissemination conditions. Controlling for contaminants at a number of crucial points in the food preparation process and strictly observing the proper food safety practices are two key components of the HACCP concept (Sesotec, 2020).

The FSMA law's primary implementing regulatory body is the FDA. This means that the FDA's FSMA regulations must be followed by all food establishments, which account for at least 75% of the food industry (Njunina, 2021).

In the concept of the Philippines' Law, the Food Safety Act of 2013, can be strengthened and standardized more as part of the food industry's practice and the regulatory system to make a difference. This approach includes breaking down the likelihood and seriousness of adverse consequences to wellbeing of various perils that can deliver food hazardous (Fernandez, & Weiler, 2019).

In accordance with Cloudcfo (2021), the requirement of a permit for business is a way for the Local Government Units (LGUs) in the Philippines to monitor all businesses that are operating within their region or authority. The business permit process has served to help the LGUs ensure that the *turo-turo* restaurant businesses have standard, secure, and safe business practices in place, and are observing the different regulations and food safety standards that are required when running a business. From the viewpoint of a business, the acquiring of a business permit views that business as a business that is appropriately registered and entitled to operate within the LGU. Therefore, this can be a proof of legitimacy and reputability for customers seeking to engage that business.

Moreover, according to Mrs. Acosta, the licensing officer of the municipality of Bayombong, Nueva Vizcaya, there are 59 *turo-turos* registered as of 2022. Furthermore, before giving business permit the LGU's is conducting of Joint Investigation Team every 3rd week of the Quarter to monitor the operation of all business establishment. Wherein, the business permit application process is not a once only activity for a business, when a business is being registered for the first time in the Philippines, a business permit should be applied and secured as part of the primary business registration process. Additionally, the business permit in the Philippines must be renewed every year, at the start of each year. Moreover, in order to secure the business permit renewal, there are a number of documents that are required to be submitted. A business without an up-to-date business permit is not entitled to operate the business within the LGU. Should the business not have a permit to operate, the business may be prevented by the LGU from operating until it has obtained their business permit, has complied with the various requirements, and has paid any fines or penalties that might have been given as a result of operating without a business permit.

Factors Affecting Food Safety in the Philippines

The population's vulnerability to hazard, and the nature of the food safety hazards all contributed to the Philippines' food safety risk. The country faced a variety of food safety issues as a result of these factors. In the Philippines, food handlers at home and are not operating a business are not issued with sanitary permit or are not required to apply for food safety certification, to which can lead to unsafe food safety practices in food preparation, putting consumers at risk of FBD.

Food safety hazards are becoming more widely acknowledged as a significant public health issue, developing nations still have a limited understanding of the wider socioeconomic costs of unclean food and the advantages of taking corrective or preventative action (Steven, Spencer, Laurian, Delia & Emilie, 2018).

Food Contamination

Food Contamination is when food can become contaminated at any point from production to consumption. The primary food safety responsibility lies with food producers, many food-borne diseases are caused by improperly prepared or mishandled food at home, in food service establishments, and markets or even in the farms (WHO, 2019). Food products from farm to table, at any stage, can become contaminated, as well as during production, processing, shipping, and distribution (Alexandre, Carlos, Silvia, Manuel, & Jorge, 2019).

Foodborne Diseases

Foodborne illnesses, often known as foodborne diseases, infections, and food poisoning, are a general yet

preventable public health issue that affects people all over the world. Foodborne illnesses are conditions that can cause mild to severe health hazards and issues that are typically contagious and poisonous in nature (Rekontill, n.d.).

For better understanding of the terms used in the study, the following terms were defined.

Food Handlers are those who are packing, preparing, storing, or serving of food items that the consumers bought. Most of the food handlers are employed by food manufacturing or packaging companies, restaurants, hotels, hospitals, and cafeterias where they follow proper food handling procedures to ensure that food items are safe for human consumption (Betterteam, 2021).

Food Safety Knowledge is everything that people do during the preparation of food to ensure that the food they consume does not cause harm to the consumers. Food safety is a set of procedures that a business follows to avoid food contamination incidents that could harm customers' health (Oyarzabal, & VanRenterghem, 2020).

Food Safety Practices is the proper distribution, processing, and handling of food to prevent the presence of contaminants that can cause foodborne illness (Njunina, 2021).

Turo-turo means "point and point" a cafeteria-style service in which the customer may select from the variety of freshly prepared dishes warming on a steam table is referred to as this informal term for small and inexpensive (Serrano, 2022).

This study sought to obtain current information on the food safety knowledge and practices of food handlers such as *turo-turo* restaurants near Saint Mary's University on the second semester of academic year of 2022-2023. It would seek answers to the following: (1) Are the respondent's knowledgeable on proper food safety along the identified variables; 1.1 Cross-contamination, 1.2 Personal Hygiene, 1.3 Proper Storage of Food, 1.4 Sanitizing Equipment and utensils, 1.5 Regular hand washing at the workplace; (2) Do the respondent's practice proper food safety along the identified variables; 2.1 Cross-contamination, 2.2 Personal Hygiene, 2.3 Proper Storage of Food, 2.4 Sanitizing Equipment and utensils, 2.5 Regular hand washing at the workplace.

METHODS

The researchers of this study made use of the descriptive – quantitative type of research. Moreover, this study also used descriptive research design that describes the characteristics of the phenomenon being studied in assessing the food safety knowledge and practices of food handlers in selected *turo-turo* restaurants near Saint Mary's University. This study was conducted in 6 different establishments near Saint Mary's University, the first and second *turo-turo* restaurant that is located at SMU gate 1 is Ate Lorna's and the Rapha's Eatery, the third and fourth *turo-turo* is located at SMU gate 2 are Kuya Jun's and the Francene Food Hub, and the fifth and sixth *turo-turo* restaurant is located at SMU gate 3 is the Yanelle's Food Garage, and lastly, the Jaye's Eatery. In relation to this, a minimum of three (3) hands-on staff from each *turo-turo* restaurant were approached to participate in the study. Moreover, an adapted questionnaire-checklist was used to gather the needed data for the research study. The data gathered were subjected to analysis and interpretation at the option of the selected university research analyst.

RESULTS AND DISCUSSION

This chapter contains the detailed discussion of analyzed data gathered by the researchers that answers the

general and specific problem of the study. The findings are presented under the following headings: food handlers' knowledge on food safety practices and food handlers' food safety practices with regards to; cross-contamination, personal hygiene, proper storage of food, sanitizing equipment and utensils, regular hand washing at the workplace.

Section 1. Food Handlers' Knowledge on Food Safety Practices

Table 1: Food Handlers' Knowledge on Cross Contamination

Statement		Frequency	Percentage
Cross Contamination			
1. Consumption of under cooked /uncooked meat leads to food borne illness.	Yes	17	94.40
	No	1	5.60
	Not Applicable	0	0.00
2. Are those Food handlers with illnesses such as diarrhea, flu and sore throat poses a risk of food contamination?	Yes	18	100.00
	No	0	0.00
	Not Applicable	0	0.00
3. Washing of raw materials used in food handling is always important to decrease food borne infection.	Yes	17	94.40
	No	1	5.60
	Not Applicable	0	0.00
4. Water can be a vehicle for diseases causing organisms.	Yes	14	77.80
	No	2	11.10
	Not Applicable	2	11.10
5. Salmonella is a foodborne disease.	Yes	13	72.20
	No	5	27.80
	Not Applicable	0	0.00
6. Hepatitis A is a foodborne pathogen.	Yes	16	88.90
	No	2	11.10
	Not Applicable	0	0.00
7. Raw vegetables are higher in contamination than undercooked bee	Yes	10	55.60
	No	8	44.40
	Not Applicable	0	0.00
8. All bacteria found in food are not harmful.	Yes	5	27.80
	No	13	72.20
	Not Applicable	0	0.00
9. Preparing the food in advance is likely to contribute to food borne illness.	Yes	8	44.40
	No	10	55.60
	Not Applicable	0	0.00
10. During the suffering from infection disease of the skin and other illness that may be passed on to the food, it is necessary to take leave from work	Yes	16	88.90
	No	2	11.10
	Not Applicable	0	0.00

In the area of cross-contamination, Table 1 reveals that all the respondents are knowledgeable that food handlers with illnesses such as diarrhea, flu and sore throat pose a risk of food contamination (F=18, 100%). The Department of Health (2021) declared that when the food handler is sick, they should not go to work, because it can contaminate food more easily. However, in terms of knowledge that all bacteria found in food are not harmful, there were only a few respondents who answered yes (F=5, 27.80%). Thus, majority of the respondents are not knowledgeable with regards to this. Centers for Disease Control and Prevention (2022) stated that bacteria can cause illness and some customers are even hospitalized because of it. Hence, knowledge of this is a requirement among food handlers.

Table 2: Food Handlers’ Knowledge on Personal Hygiene

Statement		Frequency	Percentage
Personal Hygiene			
11. Using gloves in the food preparation handling reduces the food contamination risk.	Yes	16	88.90
	No	2	11.10
	Not Applicable	0	0.00
12. The usage of jewels such as rings, watches, wearing in food handling cause food contamination	Yes	12	66.70
	No	6	33.30
	Not Applicable	0	0.00

In terms of personal hygiene, the table clearly reveals that majority of the respondents are knowledgeable (F=16, 88.90%) in terms of using of gloves in the food preparation handling reduces the food contamination risks, while only two (F=2, 11.10%) are not knowledgeable about these. Using gloves properly is necessary to protect the consumers from the foodborne illness; hence, gloves are essential tools in food handling specifically, correctly used ones (StateFoodSafety.com., n.d.). Not using gloves may cause contamination of food easily, that is why employees should change their gloves more often and wash their hands before putting in a new pair.

Additionally, in terms of knowledge that the usage of jewelries such as rings and watches in handling food can cause food contamination, majority of the respondents are knowledgeable (F=12, 66.70%); however, there are six (F=6, 33.30%) respondents that are not knowledgeable. Wearing jewelry might cause food safety hazards, such as biological hazards. As a matter of fact, the main reason for spoilage might be the bacteria and pathogens from the rings and earrings. Any type of jewels is a prospective food contaminant that’s why the exclusion of using jewelries in the kitchen is considered part of good food and personal hygiene (Hanson, 2022).

Table 3: Food Handlers’ Knowledge on Proper Storage of Food

Statement		Frequency	Percentage
Proper Storage of Food			
13. Foods that are unfit for consumption always doesn’t smell bad and taste of spoil.	Yes	7	38.90
	No	11	61.10
	Not Applicable	0	0.00

14. Contaminated food always has some change in color, odor, or taste.	Yes	18	100.00
	No	0	0.00
	Not Applicable	0	0.00

In the area of proper storage of food, the table presents that all the respondents have a good understanding that contaminated foods always have some change in color, odor, or taste (F=18, 100%). Without the usage of microscope to confirm spoilage, food that deteriorate because of bacteria develop bad odors, tastes, and textures. Because of this, fruits and vegetables get mushy or slimy, or meat can develop a bad odor (AskUSDA, n.d.). Moir (n.d.) corroborates this saying that if the food smells bad, the food has already spoiled. Further, microorganisms such as bacteria, yeasts, and molds spoil food by making it smelly, slimy, or moldy might give food poisoning. However, color and especially smell are not at all times accurate ways of gauging whether food is contaminated or not. More than half of the respondents (F=11, 61.10%) are aware that no change in smell and color is not a sign that food is fit for consumption. This means that they are aware that even if food does not smell bad or look spoiled, it does not mean that it is not contaminated and can be eaten. Based on their answer, it can be understood that they are knowledgeable in terms of knowing whether a food is safe for consumption.

Table 4: Food Handlers’ Knowledge on Sanitizing Equipment and Utensils and Regular Hand Washing at the workplace

Statement		Frequency	Percentage
Sanitizing Equipment and utensils			
15. Properly cleaning and sanitizing of the utensils is very important in food safety.	Yes	18	100.00
	No	0	0.00
	Not Applicable	0	0.00
Regular hand washing at the workplace.			
16. Hand hygiene can prevent food contamination.	Yes	17	94.40
	No	1	5.6
	Not applicable	0	0.00

In the area of sanitizing equipment and utensils, Table 4 presents that all the respondents have a good understanding that properly cleaning and sanitizing of utensils is very important in ensuring food safety (F=18, 100%), therefore, the respondents are knowledgeable. Without proper food sanitation, mostly pathogens and other food safety risk stay in contact surfaces such as in equipment and other utensils and it may cause cross-contamination and has the potential to also cause a foodborne illness outbreak (What is Food Sanitation, n.d.). Hence, sanitation is indeed a must among food handlers.

The findings on the category of regular hand washing at the workplace showed that 94.4.90% (F=17) of food handlers are knowledgeable hand hygiene can prevent food contamination. Azanaw et al. (2019) said that washing hands anytime and anywhere in food production, before handling food, after feeding, and after touching contaminated materials is one thing that food handlers should always observe. Also, the FDA determined that handwashing is not enough in order to stop the spread of these infections that is why using of gloves is critical as it gives higher level of protection among potential and deadly bacteria. This especially critical when cooking of food that is not cooked ahead of time before serving to the consumers (StateFoodSafety, n.d.). As revealed in Table 2, 88.90% (f = 16) of the respondents are aware of the protection that gloves give.

Section 2. Food Handlers' Food Safety Practices

Table 5: Food Handlers' Food Safety Practices on Cross Contamination

Statement		Frequency	Percentage
Cross Contamination			
1. Serving leftover food to the consumers	I do	3	16.7
	I don't	15	83.3
	Not Applicable	0	00.0
2. Do you Handle food at work when you have diarrhea and other disease have cuts on your hand	I do	4	22.2
	I don't	14	77.8
	Not Applicable	0	00.0

In the area of cross contamination, majority of the food handlers do not handle food at work when they have diarrhea and other disease or have cuts on their hand (F=14, 77.8%). This is accordance with the policy of Canadian Institute of Food Safety (2022) on the avoidance of food handlers in handling of food whenever they are experiencing sickness because failure to do so can cause harmful bacteria to be transferred onto the food that they are working with. Even if the food handlers who are sick do not work with the food directly, there is a possibility that they can contaminate the equipment, surfaces, and other food handlers. Moreover, majority of the respondents (F=15, 83.3%) do not practice serving leftover food to the consumers in order for them to prevent cross contamination. However, there are four respondents (F=4, 22.2%) who practiced it. Not serving of leftover food is a practice that should be observed by the food handlers since according to Hanson (2022), there is possibility that leftover foods have a higher number of harmful bacteria that can cause foodborne illnesses and can easily contaminate a newly cook and prepared food.

Table 6: Food Handlers' Food Safety Practices on Personal Hygiene

Statement		Frequency	Percentage
Personal Hygiene			
3. Wearing specific clothes before working. (ex. apron, hairnet, etc.)	I do	17	94.4
	I don't	1	5.6
	Not Applicable	0	00.0
4. Keeping your nails short and remove all ornaments (rings and watches etc.) before starting activities.	I do	16	88.9
	I don't	2	11.1
	Not Applicable	0	00.0
5. Hair is completely covered while serving.	I do	13	72.2
	I don't	2	11.1
	Not Applicable	0	00.0
6. Drinking and smoking in your workplace	I do	1	5.6
	I don't	17	94.4
	Not Applicable	0	00.0
7. Wearing masks before distributing the unwrapped foods.	I do	15	83.3
	I don't	3	16.7
	Not Applicable	0	00.0
8. Using of gloves in handling of food	I do	13	72.2
	I don't	2	11.1

	Not Applicable	3	16.7
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In the area of personal hygiene, it appears that most of the food handlers wear specific clothes before working (F= 17, 94.4%). However, in terms of covering the hair completely while serving, it was observed by only 72.2% (F=13) respondents. According to Hanson (2022), the most important reason that food handlers should wear hairnet is that it can prevent physical hazards from contaminating foods, causing foodborne illnesses, and loss of customer satisfaction. Thus, use of hairnet is required. During the researchers’ ocular inspection, the researchers observed that most of the food handlers were not wearing proper clothes, apron and hairnet which is not appropriate if they are handling food. The use of dirty clothes is one of the sources of cross-contamination because bacteria can transfer from the garment of those who handle food to the prepared food (Personal Hygiene in Food Safety, n. d.). Also, wearing clean uniform before entering in the kitchen is needed; dirty uniforms should be prohibited to prevent cross contamination. Moreover, soiled and used uniforms should be in a segregated area and stored outside the workstation.

Table 7: Food Handlers’ Food Safety Practices on Proper Storage of Food and Sanitizing Equipment and Utensils

Statement		Frequency	Percentage
Proper Storage of Food			
9. Checking the shelf life of time of serving.	I do	17	94.4
	I don’t	1	5.6
	Not Applicable	0	00.0
10. Serving the food which is prepared in very advance.	I do	10	55.6
	I don’t	5	27.8
	Not Applicable	3	16.7
Sanitizing Equipment and Utensils			
11. Handling other utensils or doing of other works while food handling	I do	7	38.9
	I don’t	10	55.6
	Not Applicable	1	5.6
12. Washing hands and sanitize service utensils before usage.	I do	17	94.4
	I don’t	1	5.6
	Not Applicable	0	00.0

In terms of proper food storage, the findings reveal that the majority of the participants check the shelf life of food before serving (F=17, 94.4%) which means that the respondents practice proper storage of food. WebstaurantStore (2023) stated that properly storing food in refrigerator is important in order to prevent cross contamination since there

are different types of food that are stored in the same area where contaminants can transfer rapidly from one food to another when it is not fully covered or organized. However, 55.6% (F=10) of the respondents serve food that is prepared very much in advance which was also observed by the researchers during the ocular observation. Apparently, most of the *turo-turo* food handlers offer foods that have been prepared hours before. But then preparing foods in advance and improperly cooking them are the main causes of food poisoning and other food-borne illnesses. Moreover, some food loses their taste and aroma if not served when it is freshly cooked (Kukurekovic, 2021).

In the category of sanitizing equipment and utensils, it was revealed in the findings that 94.4% of the respondents (F=17) are wash their hands and sterilize service utensils before usage. Food handlers should

properly wash their hand because it is one of the most important things to do to prevent food borne illness (CLEAN, 2020). Additionally, proper cleaning of food items, food preparation utensils and surfaces are also key in such bacteria. However, 38.9% (F=7) of the respondents handle other utensils or do other works while handling food which means that they may fail to observe the regulation from Centers for Disease Control and Prevention (2023) that after handling raw meat, poultry, seafood, flour, or eggs, it is essential to wash hands always.

Table 8: Food Handlers’ Food Safety Practices on Regular Hand Washing at the Workplace

Statement		Frequency	Percentage
Regular Hand Washing at the workplace			
13. Washing hands before wearing the gloves	I do	13	72.2
	I don't	1	5.6
	Not Applicable	4	22.2
14. Using dry cloths /clean tissues to dry your hands after cleaning.	I do	17	94.4
	I don't	1	5.6
	Not Applicable	0	00.0
15. Cleaning your hands with detergent if you use toilet in the middle of the food handling	I do	16	88.9
	I don't	2	11.1
	Not Applicable	0	00.0

In terms of regular hand washing at the workplace, majority of the respondents practice washing their hands before wearing gloves (F=13, 72.2%), also, the usage of dry clothes or clean tissues to dry hands after cleaning is observed by (F=17, 94.4%), and cleaning hands with soap after using the toilet in the middle of the food handling (F=16, 88.9%). Thus, based on the given answers by the informants, most of them practice food safety protocol in terms of handwashing. CDC (2022) states that washing hands often while cooking will prevent germs from the food and keep everyone safe and healthy. To prevent cross contamination while cooking, food handlers should wash hands frequently and correctly because hands contain bacteria that cannot seen, and these germs might enter in the food while preparing it. However, four respondents (F=4, 22.2%) answered that this practice is not applicable saying that wearing gloves is not applicable in their business as *turo-turo* restaurants because for them, using gloves is a waste of money and deductible from their daily profits. Eby (2022) agreed saying that utilizing food service gloves in a restaurant daily can be very wasteful because most of these gloves are disposable and can be discarded a couple of times in an hour just by one employee.

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