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## An Assessment of Food Safety, Sanitation and Hygiene Practices in Public High School Canteens in Parañaque City

NHOEL M. HERNANDEZ  
CAPLE JUN LIPA  
CATHERINE R. LLAVE  
AARON VITO M. BAYGAN  
EDCON B. BACCAY

Polytechnic University of the Philippines  
Parañaque Campus

### **Abstract:**

*Food safety, sanitation and hygiene become a serious concern and issue in the country especially in school canteens where student's safety and nutrition is of great importance. The purpose of this study is to assess the condition and quality of the school canteens among public high schools in Parañaque City. The researchers surveyed 600 primary consumers (students, faculty and non-teaching staff) and 12 canteen heads from 12 different public high schools. Using a survey questionnaire, they were asked on the condition and quality of food, equipment, utensils and utilities and in terms of service. As weighted mean was computed and analysed, the result, consumers agreed on the quality on the aspects of sanitation while the canteen heads strongly agreed on the same items. This implies that the perception of the two types of respondents varied. Thus, researchers recommend to further monitor and make audit on the operation and condition of their school canteens.*

**Key words:** Food Safety, Sanitation and Hygiene Practices, Public High School Canteens, Parañaque City

## **INTRODUCTION**

‘Food’ is defined as ‘any material that people and animal eat that contains substances that is taken in by and used by the living body for growth and repair and as a source of energy for activities. It is considered as one of the necessities of human consumption. However, in Australia, about 2,000,000 Australians suffer from food poisoning each year which triggered the reason on food becoming one of the most important public health issues.

Sanitation management defines the general status of the food facility. The principles of this scheme deliver a practical approach to determine delinquency in food set-up. It is important to conduct an inspection program regarding hazard analysis that helps food handlers to incorporate this plan into their routine activities.

Recently, news of food poisoning abound the local media especially in school canteens. As common knowledge students are not allowed to buy food outside the school premises and therefore are only limited to what their school canteens have to offer. To ensure the health and safety of students, authorities have mandated the schools to follow strict regulations and implementations of food safety procedures and sanitation guidelines in their school canteens.

School canteens are built to supply the students the proper nutrition through a healthy, safe and affordable food. School meals should provide the students all the necessary nutrients and are safe from the hygienic-sanitary point of view. [1] However, due to malpractice and insufficient knowledge in sanitation and hygiene, canteens in public high schools became one of the health issues in the country today.

Food items served in school canteens might be a source of contamination and become a threat to individuals particularly the consumers within the facility. In fact, a

numerous cases of food poisoning in the country are in school canteens.

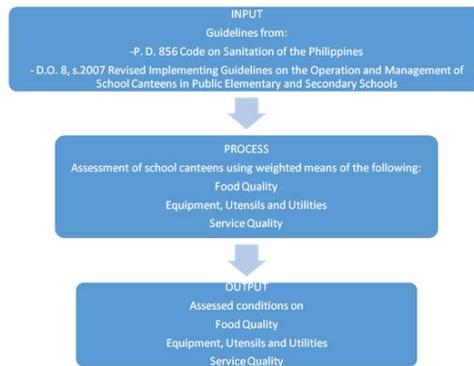
A critical factor to be considered for contamination is bacterial growth which is affected by temperature, sanitation and hygiene practices among employees and food handlers. The correct handling of food and a high standard of professional hygiene are essential to food safety and is of great concern..

The safety to health of the students from the foods served in this type of facility is in the shoulder of the school canteen heads (basically school principals). The plans, implementations and monitoring also rely on the management. Thus, whatever conflicts that may arise in the institution, the management is held liable. The coordinator or supervisor must have the understanding and knowledge of the basic principles of sanitation.

## **OBJECTIVE OF THE STUDY**

The objective of this paper is to assess the food safety sanitation and hygiene practices of public high school canteens in Parañaque City using a survey questionnaire based on the Code on Sanitation of the Philippines and the DepEd Order No. 8 series of 2007 (DO 8,s. 2007) wherein the result of this assessment will be of great value in determining the safety of the eating environment and for future development.

For the input, the researchers made use of the guidelines stated in Presidential Decree 856 (PD 856) which is the Code on Sanitation of the Philippines and DO 8, s. 2007 also known as Revised Implementing Guidelines on the Operation and Management of School Canteens in Public Elementary and Secondary Schools. Using weighted means on the three categories namely, Food Quality; Equipment, Utensils, and Utilities; and Service Quality, the assessed conditions were taken.



**Figure 1. Research Paradigm**

## **Statement of the Problem**

This study specifically answered the following:

1. What is the respondent's distribution?
2. What are the factors/ attributes of food safety and sanitation standards strictly implemented, as observed by both respondents, in terms of:
  - a. Food service quality
  - b. Equipment, utensils and utilities quality
  - c. Service quality
3. What is the over-all assessment on the quality of public high school canteens in Paranaque?

## **Scope and Limitations**

This study surveyed only 12 public high schools in Paranaque City each with 50 respondents as consumers and 1 for canteen management as represented by the canteen head. The consumers were students, faculty, and non-teaching staff. This study was conducted from November to December 2015.

This paper assessed the eating conditions and environment using only survey questionnaire that is based on the Code on Sanitation of the Philippines and DepEd Order No. 8 s. 20007.

## **Review of related literature and studies**

This chapter presents the review of related literature summarized from various writings and researches of the people who are expert in the field.

### **Foreign Literature and Studies**

Food safety is an ‘important public health issue’ and is ‘essential in mass catering’ because of its enormous quantity of meals served daily for the consumers whether children in schools, hospitals and any other institutions.

Many foreign countries have set their standard guidelines for their school canteens. New South Wales government, for instance, published a fact sheet entitled “Fresh Tastes @ School” containing the Food Safety standards and guidelines for school canteens in the territory.[4] The project include a kit for canteen menu planning and DVD’s for canteen management.

In a research conducted by his group on the samples of cooked foods (warm-served and cold-served), equipment, table wares and chopping boards, they found out that there were no safety risks for consumers since there were no bacteria detected (e.g. *E. Coli*, *Salmonella* spp. and *Listeria Monocytogenes*). However, the fluctuations on the graphed data of microbial loads of aerobes, coliform, *Staphylococcus aureus*, *Bacillus cereus* and sulphite- reducing clostridia imply that there is an inadequate handling or processing procedures on foods. He also added that due to the wide scope covered by internal auditing, the full conformance to the requirements of the HACCP plan was never achieved. According to him, the microbiological monitoring and internal auditing is a powerful verification tool for a practical evaluation of the HACCP plan which contribute to the overall quality of the canteen. Thus, he recommended having an enhancement of staff training on the proper handling

and processing of food products to be served for the consumers of the canteen. (Osimani, et al, 2013) [5]

According to Jaiswal (2009), food safety “means assurance that food is acceptable for human consumption according to its intended use and Food Safety Management System means the adoption of Good Manufacturing Practices, Good Hygienic Practices, Hazard Analysis and Critical Control Point and such other practices as may be specified by regulation, for the food business”. [6]

### **Local Literature and Studies**

In the Philippines, Teves (2015) conducted a study on HACCP Certification in the Philippine small- scale food company, he pointed out that the success and effectiveness of HACCP system relies on the adequate knowledge and expertise, strong government support and commitment and the positive outlook on the long term benefits. [7]

The management’s compliance on the existing laws and other legal regulations concerning food safety, sanitation and hygiene is a great help to ensure consumer protection, improved product quality, improved service quality that may lead to the increase of profit

As evident from the above studies, there is a dearth of knowledge/ study being done in order to ensure the safety of the children when it comes with food in the Philippines in contrast to the growing number of news on food poisoning in schools.

## **METHODOLOGY**

This section describes the methods applied in this study.

### **Research Design**

This study is descriptive in nature which made use of survey. Since the aim of descriptive research is describing the present

conditions/practices, this paper assessed the current eating conditions of the canteens in public high schools in Paranaque City. The result were then analysed for statistical interpretation.

### **Population and Sample**

Since there are only 13 public high schools, the researchers made use of the 13 high schools; however, since 1 public high school was not willing to participate, the participating schools were reduced to 12. Hence, purposive sampling was employed.

The researchers also decided to have 50 respondents for each school as representatives for the school's consumer and 1 responded for canteen managements specifically the canteen managers; thus employing quota sampling. The total respondents for consumers were 600 and 12 for canteen heads, thus having 612 respondents.

In sum, the researchers used non-probability sampling specifically purposive quota sampling.

### **Research Instrument**

The instrument used to gather data was survey questionnaire since the respondents were students, teachers and non-teaching staff, they are deemed literate.

<b>Table 1. Legend</b>	
<b>Interpretation</b>	<b>Value</b>
<b>Strongly Disagree</b>	1.00-1.75
<b>Disagree</b>	1.76-2.50
<b>Agree</b>	2.51-3.25
<b>Strongly Agree</b>	3.26-4.00

Table 1 presents the legend for degree of agreeableness as responses to the items on the survey questionnaires.

## Data Gathering Procedure

The researchers asked permission first to the Paranaque Division Office. After the approval, the Division Office sent a memorandum to the participating schools. Then, the researchers followed through by sending also a letter of request to conduct the study.

The copies of the questionnaire were then personally distributed inside the school campus and were retrieved on the same day. The respondents were randomly selected. The results were then collated and tallied using the SPSS program.

## RESULTS AND DISCUSSION

This section discusses the results obtained from the survey.

### Respondents' Distribution

Respondents	Frequency	Percent
Food Managers/ Canteen Heads	12	1.96
Consumers	600	98.04
<b>Total</b>	<b>612</b>	<b>100</b>

**Table 2. Distribution of Respondents**

Table 2 shows that there are 12 food managers/ canteen heads which correspond to the 12 public high schools in Paranaque City. This means that for every school canteen there is only one food manager assigned. As for the consumers, 50 respondents were taken for each public high school, hence, a total of 600.

### **Strict Implementation of the Factors/ Attributes of Food Safety and Sanitation Standards as observed by both respondents in terms of:**

#### *A. Food Product Quality*

Checklist	Weighted Mean	Verbal Interpretation
1. Hot foods are served warm.	3.67	Strongly Agree

2.	<b>Cold items are served cold or chilled.</b>	3.75	Strongly Agree
3.	<b>Meat or meat items are not bloody.</b>	3.83	Strongly Agree
4.	<b>Foods are odor-free.</b>	3.75	Strongly Agree
5.	<b>Foods are free form physical hazards.</b>	3.75	Strongly Agree
6.	<b>There is no visible moist in the food container lids.</b>	3.67	Strongly Agree
7.	<b>Foods are served on time.</b>	3.67	Strongly Agree
8.	<b>Potable water is free from unusual odor.</b>	3.67	Strongly Agree
9.	<b>Sauces such as gravy are served warm.</b>	3.67	Strongly Agree
10.	<b>Condiments have no residues on the bottom of the container and have lids.</b>	3.58	Strongly Agree
11.	<b>Side items for condiments are fresh.</b>	3.67	Strongly Agree
12.	<b>Bottled and packed items are not expired.</b>	3.75	Strongly Agree
13.	<b>Displayed items are dust-free.</b>	3.75	Strongly Agree
<b>TOTAL</b>		<b>3.71</b>	<b>STRONGLY AGREE</b>

**Table 3. Food Product Quality Weighted Mean (Canteen Heads)**

Table 3 shows that canteen heads rated the quality of food product as Strongly Agree with the weighted mean of 3.71.

Checklist	Weighted Mean	Verbal Interpretation
1. Hot foods are served warm.	3.09	Agree
2. Cold items are served cold or chilled.	3.27	Strongly Agree
3. Meat or meat items are not bloody.	3.23	Agree
4. Foods are odor-free.	3.11	Agree
5. Foods are free form physical hazards.	3.12	Agree
6. There is no visible moist in the food container lids.	3.11	Agree
7. Foods are served on time.	3.21	Agree
8. Potable water is free from unusual odor.	3.20	Agree
9. Sauces such as gravy are served warm.	2.30	Disagree
10. Condiments have no residues on the bottom of the container and have lids.	3.03	Agree
11. Side items for condiments are fresh.	3.13	Agree
12. Bottled and packed items are not expired.	3.42	Strongly Agree
13. Displayed items are dust-free.	3.16	Agree
<b>TOTAL</b>	<b>3.12</b>	<b>AGREE</b>

**Table 4. Food Product Quality Weighted Mean (Consumers)**

Consumers in Table 4 rated most of the items as Agree with only two items (i.e. Nos. 2 and 12) as Strongly Agree and only Item No. 9 has Disagree. Overall, consumers rated the quality food product as Agree with the weighted mean of 3.12.

The quality of food product in public high schools in Paranaque, as perceived by both respondents, is strongly implemented.

*B. Equipment, Utensils and Facility, and*

Checklist	Weighted Mean	Verbal Interpretation
1. Dining is spacious.	3.33	Agree
2. There are adequate tables and chairs for dine-in guests.	3.33	Agree
3. There is enough ventilation.	3.33	Agree
4. Safety equipment are visible in the area.	3.50	Strongly Agree
5. Food warmers are used to warm items.	3.08	Agree
6. Food items have individual serving utensils.	3.50	Strongly Agree
7. Chinaware's and glassware's are of good condition, clean, sanitized, properly washed, and dry.	3.58	Strongly Agree
8. Cutleries are of good condition, clean, sanitized, properly washed, and dry.	3.58	Strongly Agree
9. There is an available wash area for guests with hand soap, sanitizer and hand dryer.	3.25	Agree
10. Segregated garbage bins are properly labelled and are available and visible for the customers.	3.58	Strongly Agree
11. The area has proper signage that is readable and visible to customers.	3.42	Strongly Agree
12. Comfort rooms have adequate water supply, hand soap, sanitizer, and tissue papers all the time.	3.42	Strongly Agree
13. The area is free from insects and other vermin.	3.58	Strongly Agree
14. Other supplies are properly stored.	3.50	Strongly Agree
<b>TOTAL</b>	<b>3.43</b>	<b>STRONGLY AGREE</b>

**Table 5. Equipment, Utensils and Facility Quality Weighted Mean (Canteen Head)**

Table 5 shows that the equipment, utensils and facility has been rated by canteen heads as Strongly Agree with the weighted mean of 3.43.

Checklist	Weighted Mean	Verbal Interpretation
1. Dining is spacious.	3.04	Agree
2. There are adequate tables and chairs for dine-in guests.	3.01	Agree
3. There is enough ventilation.	2.93	Agree
4. Safety equipment are visible in the area.	3.06	Agree
5. Food warmers are used to warm items.	2.89	Agree
6. Food items have individual serving utensils.	3.15	Agree
7. Chinaware's and glassware's are of good condition, clean, sanitized, properly washed, and dry.	3.14	Agree
8. Cutleries are of good condition, clean, sanitized, properly washed, and dry.	3.15	Agree
9. There is an available wash area for guests with hand soap, sanitizer and hand dryer.	2.80	Agree
10. Segregated garbage bins are properly labelled and are available and visible for the customers.	3.07	Agree
11. The area has proper signage that is readable and visible to customers.	2.98	Agree
12. Comfort rooms have adequate water supply, hand soap, sanitizer, and tissue papers all the time.	2.71	Agree
13. The area is free from insects and other vermin.	2.89	Agree
14. Other supplies are properly stored.	3.18	Agree
<b>TOTAL</b>	<b>3.00</b>	<b>AGREE</b>

**Table 6. Equipment, Utensils and Facility Quality Weighted Mean (Consumers)**

Table 6 shows that consumers rated their canteens' equipment, utensils and facility as agree with the weighted mean of 3.00.

Even though there were some items that both respondents shared the same response (i.e. 1, 2, 3, 5, and 9), both agree, with the average mean of 3. 215, that their canteens follow a strict procedure for their equipment, utensils and facility.

*C. Service Quality*

Checklist	Weighted Mean	Verbal Interpretation
1. Employees show courtesy and willingness to customers.	3.42	Strongly Agree
2. Food handlers practice good grooming, hygiene, and sanitation.	3.58	Strongly Agree
3. Potable water with clean and sanitized glassware's are visible and available to guests all the time.	3.33	Strongly Agree
4. Adequate cutleries are visible and available all the time.	3.42	Strongly Agree
5. Adequate chinaware's are available all the time and stacked in a 'deco system'.	3.42	Strongly Agree
6. Adequate service trays are clean and available.	3.25	Agree
7. Condiments are visible and available.	3.50	Strongly Agree
8. Extra items such as tissues, toothpicks, and drinking straws are available.	3.25	Agree
9. Dining attendants practice dining sanitation.	3.58	Strongly Agree
10. Employees wear medical certificates all the time.	3.58	Strongly Agree
<b>TOTAL</b>	<b>3.43</b>	<b>STRONGLY AGREE</b>

**Table 7. Service Quality Weighted Mean (Canteen Head)**

Table 7 displays the canteen heads assessment of the quality of service they have. It states that they strongly agree that their service has quality with the weighted mean of 3.43.

Checklist	Weighted Mean	Verbal Interpretation
1. Employees show courtesy and willingness to customers.	3.12	Agree
2. Food handlers practice good grooming, hygiene, and sanitation.	3.15	Agree
3. Potable water with clean and sanitized glassware's are visible and available to guests all the time.	3.08	Agree
4. Adequate cutleries are visible and available all the time.	2.98	Agree
5. Adequate chinaware's are available all the time and stacked in a 'deco system'.	2.95	Agree
6. Adequate service trays are clean and available.	3.05	Agree
7. Condiments are visible and available.	3.09	Agree
8. Extra items such as tissues, toothpicks, and drinking straws are available.	2.77	Agree
9. Dining attendants practice dining sanitation.	2.96	Agree
10. Employees wear medical certificates all the time.	2.93	Agree
<b>TOTAL</b>	<b>3.01</b>	<b>AGREE</b>

**Table 8. Service Quality Weighted Mean (Consumers)**

Table 8 expresses the consumers' assessment on service quality and they rated their canteens' service quality as Agree with the weighted mean of 3.01.

Tables 7 and 8 show that both canteen heads and consumers share the same positive view which means that when it comes to the services of their canteens, quality is visibly implemented.

### **Over-all Assessment on the Quality of Public High School Canteens in Paranaque**

Results shows that the assessment given by the canteen heads in all three aspects have been given Strongly Agree while the consumers gave their canteens the rating of Agree which means

that consumers still see deficiency in food handling, hygiene and sanitation practices.

## **SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS**

### **Summary of Findings**

#### **Distribution of the Respondents**

Two types of respondents were considered for this paper. One were the food managers or the canteen heads concerned with managing the public high school canteens and second were the consumers of the said canteens.

Strict Implementation of the Factors/ Attributes of Food Safety and Sanitation Standards as observed by both respondents in terms of:

#### **A. Food Product Quality**

Both respondents strongly agree that there is strict implementation of quality food in their canteens.

#### **B. Equipment, Utensils and Facility, and**

Respondents both agree that there is strict implementation of quality with regard to equipment, utensils and facility.

#### **C. Service Quality**

Both canteen heads and consumers agree that there is quality when it comes to canteen service.

### **Over-all Assessment on the Quality of Public High School Canteens in Paranaque**

Both respondents strongly agree that in terms of food product quality there is a rigorous observation of guidelines while in handling of equipment, utensils and conditions of the facility, and service the consumers and canteen heads that leniency is still visible in implementing the standards.

## **Conclusions**

The following conclusions have been made in observance of the data obtained: (1) Among the factors enumerated, only sauces/gravies have been found problematic by the consumers. (2) The food preparation/ handling, sanitation and hygiene practices of Paranaque public high school canteens follow a standard which is comparable to international guidelines. And, (3) because of the good quality in food safety, sanitation and hygiene practices, there is no report of food poisoning in Paranaque public high schools as of this study

## **Recommendations**

These recommendations are suggested for the improvement of the public high school canteens: (1) When it comes to sauces/ gravies, food managers or canteen heads should pay more meticulous attention to its temperature. (2) Overall, the sanitation and hygiene practices Paranaque public high schools can be emulated by cities/provinces which encountered food poisoning problems. (3) More effort should be exerted by the food managers so that consumers' responses will coincide with that of the canteen heads. (4) It is further recommended for future researchers to correlate gender and food handling and sanitation practices. (5) Further, to research on the significant effect of length of service as canteen head/manager and implementation of food handling and sanitation codes. And, (6) this could be an off-shoot for the concerned authorities for a health and sanitation code patterned after an international standard.

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