

HEALTH BEHAVIOURS ACCORDING TO FOOD SANITATION OF FOOD HANDLERS AT RESTAURANTS IN SAMUT SONGKHRAM PROVINCE THAILAND

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ABSTRACT

This descriptive research aimed to examine the levels of knowledge, attitudes, and behaviors regarding principles of food sanitation among food handlers and investigate the relationship between knowledge, attitudes, and behaviors regarding principles of food sanitation among food handlers in Amphawa District, Samut Songkhram Province. The population consists of food handlers in restaurants who willingly participated in the research project, totaling 113 individuals. Questionnaires were used to gather data, which was then analyzed using Pearson's correlation coefficient and descriptive statistics.

The study's findings revealed that: 1) The majority of the population had a high level of knowledge regarding principles of food sanitation among food handlers, with 87.6% ($\mu = 12.20$) scoring an average score of 12.20. Attitudes towards practicing principles of food sanitation were moderate, with 73.4% ($\mu = 37.13$), and behaviors regarding principles of food sanitation were also at a moderate level, with 85.9% ($\mu = 52.82$). 2) Regarding the relationship between food handlers' knowledge, attitudes, and behaviors regarding principle of food sanitation, it was discovered that food handlers in Amphawa District, Samut Songkhram Province, had significantly higher knowledge of and attitudes toward practicing food sanitation principles when it came to their behaviors regarding these principles, with statistical significance at the .000 level ($r = .344, .541$). Recommendations from the study suggest that there should be an establishment of knowledge and understanding on certain issues. For instance, food handlers may believe that a cracked bowl can still be used or that wearing a hair covering is unnecessary as long as they use a napkin to cover their hair. Therefore, it is essential to provide food handlers with the correct information regarding proper food sanitation practices. Additionally, future studies should include inspections for contamination of coliform bacteria in food contact surfaces and food handlers' hands.

Keywords: Health Behaviours, Food sanitation Practices, Food Handlers

INTRODUCTION

The healthcare system in Thailand was managed and operated with the aim of development in healthcare provision, disease prevention and control, health promotion, and health recovery, all aimed at empowering the population to take care of their own health [1]. However, due to the changing social and economic conditions in Thailand, there has been a shift in the consumption behavior of Thai people. The percentage of people consuming food outside the home has increased to 57.64%, along with the purchase of ready-to-eat meals and food from restaurants and food stalls, accounting for 42.35%. The number of patients has been consistently increasing over time. In the food poisoning situation in the year 2020, there were 87,093 reported cases, resulting in 1 fatality. Disease prognosis suggests an increasing likelihood of food poisoning cases. Additionally, there has been an increase of 52.4 percent. Despite a significant number of food establishments meeting hygiene standards, diseases transmitted through food and water remain prevalent. According to the weekly epidemiological surveillance report by the Bureau of Epidemiology, Department of Disease Control, data have been collected, compiled, and analyzed, focusing specifically on monitoring issues related to food and waterborne diseases. Furthermore, according to the Food and Water Office, Department of Health, common food and waterborne diseases in the years 2021-2022 were cholera, with a decreasing incidence rate, and severe acute gastroenteritis, which showed fluctuating rates each year. However, cases of food poisoning increased annually.

The Public Health Law Administration Center, Department of Health, Ministry of Public Health, has received complaints regarding food establishments and food distribution in public places on various issues. These include complaints about consuming food from food vendors and subsequently experiencing food poisoning, finding cockroaches, cockroach droppings, rodent droppings, hair, or other foreign objects in dishes, bowls, and other utensils, and dirty food preparation areas. According to the Public Health Act B.E. 2535, local authorities have the power to issue local regulations concerning food establishments and food distribution in public places. According to the Public Health Act B.E. 2535, the term "food establishment" refers to any building, location, or area not necessarily public where food is prepared and sold to consumers immediately, regardless of whether the area is designated for consumption on-site or elsewhere, such as restaurants, food stalls, etc. The term "food distribution in public places" refers to food establishments located in public or open spaces, such as floating markets, mobile food stalls, etc. Additionally, the term "food handlers" refers to individuals involved in food preparation, cooking, serving, distribution, and cleaning and storage of utensils, including food preparers, cooks, food servers, food vendors, and those responsible for washing and storing utensils in food establishments and food distribution in public places. According to the Ministry of Public Health's announcement on criteria and methods for training food business operators and food handlers, effective April 25, 2019, business operators, including owners, managers, and supervisors of food establishments, must undergo a 6-hour training session, while food handlers involved in food preparation, cooking, serving, and cleaning and storing utensils must undergo a 3-hour training session to ensure proper knowledge, understanding, and practice according to food sanitation principles. This is aimed at managing, covering, and inspecting to ensure clean and safe food, free from disease-causing agents, parasites, and various toxic chemicals that may contaminate food through various mediums, including food handlers (preparers, cooks, and servers), utensils, animals,

and insects carrying diseases, as well as places in the transportation, preparation, cooking, storage, distribution, and serving processes. Therefore, to prevent diseases, parasites, and toxic chemicals from contaminating food, business operators must adhere to food sanitation practices, including managing and controlling various mediums to ensure cleanliness and safety, as well as controlling the behavior of food handlers, storage, and distribution of food to maintain hygiene standards.

Amphoe Amphawa was the largest district in Samut Songkhram province, with abundant natural resources and a coastal area along the Gulf of Thailand. It boasts numerous tourist attractions, attracting a large number of visitors, both Thai and foreigners. Simultaneously, there were a considerable number of food establishments, leading to economic activity in the community to promote tourism and a positive image. Researchers have recognized the importance of food safety for tourists' health. Therefore, a study was conducted on the health behaviors according to principles of food sanitation among food handlers in restaurants in Amphawa District, Samut Songkhram Province, to ensure the safety of tourists dining in the area and to contribute to the ongoing development of food sanitation practices among food handlers in restaurants.

RESEARCH OBJECTIVE

1) To investigate the level of knowledge, attitudes, and behaviors regarding principles of food sanitation among food handlers in Amphawa District, Samut Songkhram Province.

2) To investigate the relationship between food handlers' knowledge, attitudes, and behaviors regarding the principles of food sanitation in Amphawa District, Samut Songkhram Province.

RESEARCH METHODOLOGY

This study was descriptive research. The study population consists of food handlers in restaurants who voluntarily participate in the research project, for a total of 113 individuals.

Inclusion criteria

1. Being food handlers (food preparers, servers, food vendors, dishwashers, and utensil cleaners) in food service establishments.
2. Able to read, write, and communicate in the Thai language.
3. Voluntary and willing to participate in the research project.

Exclusion criteria

1. Foreign food handlers.

The tool used for data collection was a questionnaire developed by the researchers based on the principles and theories of food sanitation practices. The content validity was assessed by three experts, evaluating accuracy, language, and appropriateness. Reliability was tested by conducting a tryout with 32 food handlers in the urban area of Muang District, Samut Songkhram Province. The reliability coefficient of the questionnaire was found to be 0.84.

The questionnaire consists of 4 parts, as follows:

Part 1: General Information: This section includes gender, age, marital status, level of education, role in the restaurant, and income.

Part 2 : Knowledge about food sanitation: This section consists of 13 items. The interpretation of knowledge was divided into 3 levels.

Level of knowledge	Percentage Range	Score Range
High level	> 80%	11 points or above
Moderate level	60% - 79%	8 - 10 points
Low level	< 60%	< 8 points

Part 3: Attitudes towards practicing principles of food sanitation among food handlers consists of 11 items. The attitudes are translated into 3 levels,[6] as follows:

Level of attitude	Percentage Range	Score Range
High level	> 80%	44 points or above
Moderate level	60% - 79%	34 - 43 points
Low level	< 60%	< 34 points

Part 4: The questionnaire consists of 20 items. Translate the results of dietary behavior into 3 levels [6] as follows:

Level of practice	Percentage Range	Score Range
High level	> 80%	60 points or above
Moderate level	60% - 79%	46 - 59 points
Low level	< 60%	< 46 points

Data Analysis: The researchers conducted data analysis as follows:

1. Data analysis using descriptive statistics includes frequency, percentage, mean, and standard deviation to describe the general characteristics of the data regarding levels of knowledge, attitudes, and behaviors according to the principles of food sanitation.

2. Analyzing the relationship between knowledge of food sanitation, attitudes toward practicing food sanitation, and behaviors regarding food sanitation using Pearson's product moment correlation coefficient.

RESULTS

1. Results of the general data analysis

Table 1: General Characteristics Data(N = 113)

General Data	Frequency	Percentage
1. sex		
Male	32	28.30
Female	81	71.70
2. age		
< 20 years	17	15.00
21-30 years	46	40.70
31-40 years	22	19.50

General Data	Frequency	Percentage
41-50 years	14	12.40
> 51	14	12.40
3. status		
Single	62	54.80
Married	42	37.20
Separated	9	8.00

Table 1: General Characteristics Data(N = 113)

General Data	Frequency	Percentage
4. Education		
- no	7	6.19
- Primary school	13	11.49
- Secondary school	23	20.39
- High school	19	16.79
- Diploma	8	7.09
- Bachelor's degree	43	38.09
5. The main tasks to be performed in restaurant		
- Prepare food /Cook food	45	39.80
- Prepare food /Cook food	41	36.30
- Prepare and serve food	27	23.90
6. Daily income		
- 300-450 baht	72	63.70
- 451-600 baht	21	18.60
- 601-750 baht	20	17.70
7. Characteristics of the restaurant		
- restaurant	26	23.00
- Made-to-order restaurant	79	69.90
- Beverage/snack shop, bakery/café	8	7.10
8. Have you received training in healthcare?		
- Yes	49	43.40
- No	64	56.60

From Table 1, it was observed that the majority of the sample group were females, accounting for 71.70%. The age range was between 21 and 30 years old, representing 40.70%. Regarding marital status, 54.80% are single. The highest level of education attained was a bachelor's degree, accounting for 38.09%. The main responsibility was food preparation and cooking, making up 39.80%. The daily income ranges from 300 to 450 baht. The restaurant

type was predominantly made-to-order/noodle shops, accounting for 69.90% . Furthermore, 56.60% have never undergone training in food sanitation and safety.

2. Results of the analysis of Knowledge about Food sanitation and Safety among Food Handlers

Table 2: Levels of knowledge regarding food sanitation among food handlers(N = 113)

Levels of knowledge	Frequency	Percentage
High level (11 points or above)	99	87.61
Moderate level (8 - 10 points)	14	12.39
Low level (< 8 points)	-	-

(Mean = 12.20, Min = 8, Max = 13)

From Table 2, it was found that the majority of food handlers have a high level of knowledge regarding food sanitation, accounting for 87.61%, while 12.39% have a moderate level of knowledge.

3. The results of the analysis of attitudes towards practicing food sanitation.

Table 3: Levels of attitude towards practicing food sanitation (N = 113)

Levels of attitude	Frequency	Percentage
High level (44 points or above)	8	7.07
Moderate level (34 - 43 points)	83	73.47
Low level (น้อยกว่า 33 points)	22	19.46

(Mean = 37.13, Min = 23, Max = 61)

From Table 3, it was found that the majority of food handlers have an attitude towards practicing food sanitation at a moderate level, with 73.47% falling into this category. Following this, 19.46% have a low level of attitude, and 7.07% have a high level.

4. The results of the analysis of behavior in accordance with food sanitation principles.

Table 4: Levels of behavior according to principles of food sanitation(N = 113)

Levels of behavior	Frequency	Percentage
High level (60 points or above)	10	8.85
Moderate level (45 - 59 points)	97	86.71
Low level (< 45 points)	6	4.44

(Mean = 53.82, Min = 38, Max = 60)

From Table 4, it was found that the majority of food handlers exhibit behavior according to food sanitation principles at a moderate level, with 86.71% falling into this category. This was followed by a high level of adherence, accounting for 8.85% , and a low level, accounting for 4.44%.

5. The results of the analysis of the relationship between knowledge, attitude, and actual food sanitation behaviors.

Table 5 : Relationship between Knowledge of food sanitation, Attitude towards Food sanitation Practices, and Actual food sanitation Behavior(N = 113)

	food sanitation Behavior	
	Pearson Correlations	P-value
- Knowledge of food sanitation	.344	.000**
- Attitude towards the behavior of practicing food sanitation behaviors among food handlers	.541	.000**

**Significant at the 0.05 level

From Table 5 , it was found that knowledge of food sanitation and attitudes towards practicing food sanitation were significantly correlated with the food sanitation behaviors of food handlers at the 0.000 level ($r = .344$ and $.541$).

RESEARCH SUMMARY AND DISCUSSION OF FINDINGS

The majority of the sample group consisted of females, accounting for 71.70%. About 40.70% were between the ages of 21 and 30, while 54.80% were single. Regarding education level, 38.09% held a bachelor's degree. The primary responsibility was food preparation and cooking, with 39.80% reporting a daily income of 300-450 baht. The restaurant type was mainly made-to-order/noodle shops, representing 69.90% . Additionally, 56.60% had never undergone training in food sanitation.

The majority of food handlers have a high level of knowledge about food sanitation, accounting for 87.61%, with 12.39% having a moderate level of knowledge. This was because some food handlers have undergone training courses for business operators and food handlers provided by the Samut Songkhram Provincial Health Office. This finding was consistent with the study by [2] Thongtae, L. (Lalana Thongtae) on factors related to personal hygiene practices regarding food sanitation among food handlers in Nakhon Ratchasima Municipality. The study found that the knowledge of food handlers in Nakhon Ratchasima Municipality ranged from moderate to high regarding food sanitation.

The majority of food handlers have a moderate attitude towards practicing food sanitation, accounting for 73.47%, followed by a low level at 19.46% and a high level at 7.07%. This was because some food handlers have undergone training courses for business operators and food handlers provided by the Samut Songkhram Provincial Health Office. This finding was consistent with the study by Kertrid, K. (Kittiphong Ketrit) on the relationship between knowledge and attitudes towards food sanitation and compliance with personal hygiene requirements among food operators in the night market area under the supervision of the Office of the Prime Minister's Inspector General, Thailand. The study found that attitudes towards food sanitation were at a moderate level.[7]

The study found a significant relationship between knowledge of food sanitation, attitudes towards practicing food sanitation, and behaviors related to food sanitation among food handlers, with a significance level of 0.000 ($r = .344$ and $.541$). In this study, some food handlers had not received training in food sanitation due to recently starting work as daily

wage employees. However, the majority of food handlers had undergone training. Additionally, they would receive an additional 6 hours of training organized by the Samut Songkhram Provincial Health Office to comply with the policy on promoting quality of life through the promotion of food safety and healthy products. Continuous training sessions were conducted for food operators, floating market vendors, and food handlers annually, with no repetition of participants, and knowledge reviews every 3 years for those who had completed the training. This was consistent with Rogers and Storey's theory that individuals tend to exhibit behaviors based on their knowledge and attitudes.[8] Additionally, this study supports that of [9] John E. Ehiri, whose research indicates that incorrect food handling techniques were the cause of outbreaks of food- and water-borne diseases, highlighting the significance of health training for food handlers in prevention and control initiatives.

Recommendations:

1) According to the survey, some people who handle food have misconceptions and incorrect behaviors regarding food sanitation. For example, some food handlers believe that a cracked cutting board can still be used, and they may not feel the need to wear hairnets, thinking that a simple headscarf is sufficient. Therefore, it was recommended to provide education to food handlers regarding proper food sanitation practices.

2) The next study should include inspections for contamination of coliform bacteria in food contact surfaces and the hands of food handlers.

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