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## FOOD HYGIENE KNOWLEDGE AND PREFERENCES OF EATING PLACES AMONG CONSUMERS IN GREATER JAKARTA, INDONESIA

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### **Abstract:-**

*Food safety is a very important issue and needs to get the main attention in the supervision, especially in developing countries including Indonesia. Many of the diseases in circulation are sourced from foods where consumers are less aware of the usual foods being consumed may be unhygienic or unhealthy. A cross-sectional study was carried out among 107 consumers at a urban area, Greater Jakarta, in Indonesia. This paper specifically discusses the preliminary study of food hygiene knowledge and practices. A web-based questionnaire pertaining to knowledge and practices related to personal hygiene (5 items), food handling practices (11 items), food hygiene preferences (6 items), and eating places preferences (8 items). A score of 5 was given to strongly agree and 1 to the strongly disagree. Mean age of consumers was 22 years old (sd 5.96), female (65.42%), mostly undergraduates students. Overall mean knowledge score (personal hygiene  $4.23 \pm 0.81$ ; food handling practices  $3.91 \pm 0.87$ , food hygiene preferences  $3.59 \pm 0.96$ , eating places preferences  $4.22 \pm 0.83$ ). Overall knowledge was significantly associated with age ( $p=0.040$ ) and level of education ( $p=0.005$ ). While preferences of eating place was significantly associated with level of education ( $p=0.001$ ). This study suggested there is positive relationship between food handling practices, food hygiene preferences, eating place preferences among respondents.*

**Keywords: -** Food safety, knowledge, personal hygiene, sanitation

## INTRODUCTION

Food-borne diseases have been increasing in recent years, with a greater impact on the health and economy of developing countries than developed countries (WHO, 2008). Globally, the incidences of foodborne illness are increasing and therefore we need establish the cause and preventive measures are warranted. To begin, there have been advances in the control of foodborne hazards as well as improvements in food inspection and surveillance systems (FAO, 2003).

Good personal hygiene and sanitary handling practices are an essential part of any prevention program for food safety. Although the majority of food handlers have the skills and knowledge to handle food safely, human handling errors have been implicated in most outbreaks or foodborne disease of food poisoning (Ehiri, 1996; Greig, 2007). The safety measures taken by consumers, therefore, play a critical role in the prevention of foodborne illnesses as the consumption phase is the last step of the “from farm to fork” food chain and the only one beyond the official checks performed by the competent authorities involved in assuring food quality. Preventing food related infections at the consumer level relies on a combination of good hygiene practices during food preparation, cooking and storage. Consumers have responsibilities dealing with purchasing, storage, food provision and processing and need to be conscious of the nature of and risks related to food product consumption. Levels of knowledge of food safety among food handlers and the effective application of such knowledge in food handling practices are essential in ensuring the consistent production of safe food (Bolton, 2008). The objectives of the present study were to evaluate food hygiene practices and preferences of eating place of sample population in greater Jakarta, and to identify the relationship between sociodemographic factors and knowledge related to food hygiene was examined.

## MATERIAL AND METHODS

A web based data collection was conducted in June 2017 and 107 consumers from different background participated in the preliminary study. A total 107 peoples were participated. A 30- items self-devised questionnaire was developed by incorporating and modyfing questions to meet the objective of this research. The questionnaire was divided into five sections:

Respondent Demography, Personal Hygiene, Food Handling Practices, Food Hygiene Preferences and Eating Places Preferences.

## RESULTS AND DISCUSSION

### *General characteristics of the study population*

A total of 107 consumers participated in the study with a mean age of 22 years old (sd 5.96). Based on table 1 it shows that most 82.24% of respondents were between 19 to 22 years old. 10.28% of respondent aged above 23 years old. The age between 13 to 18 years old is lowest group of people. About 74% was in the age group of 19-21, 65.42% was female, 57% of them were senior high school students, 39.3% from undergraduates. The majority of respondents have a degree of undergraduates. Most (57%) had of them senior high school qualification followed by undergraduates (39.35%) and others (4%). Looking at the table for the area of residence respondents 53.27% DKI Jakarta, 9.35% Bogor, 15.89% Depok, 12.15% Tangerang and 9.35% Bekasi.

**Table 1. Demographic characteristics of the study population**

Demographic variables	Frequency	Percent %
Age Group (years)		
13-18	8	7.48%
19-22	88	82.24%
23 and above	11	10.28%
Gender:		
Male	37	34.58%
Female	70	65.42%
Level of education		
Senior High School	61	57%
Undergraduates	42	39.35%
Others	4	3.74%
Area of residence		
DKI Jakarta	57	53.27%
Bogor	10	9.35%
Depok	17	15.89%
Tangerang	13	12.15%
Bekasi	10	9.35%

The questionnaire is composed of four types of knowledge. Overall, the knowledge level of respondents on food safety was moderate with a mean value of 3.99(SD=1.01). Knowledge on Personal Hygiene accounted the highest score (M=4.23, SD=0.81) and Knowledge on Food Hygiene Preferences showed the lowest score (M=3.59, SD=0.96) (Table 2).

Food safety is extremely important to health since it protects against foodborne illnesses due to low level of knowledge in the area. In this study, food safety knowledge of community was carried out to examine the distribution and relationship of food safety knowledge and practices, with demographic characteristics (age, gender, level of education, and area of

residence) as well as length of citizens. The study demonstrated that good personal hygiene would be good in food handling practices, food hygiene preferences, and choosing eating place preferences.

**Table 2. Mean score of overall knowledge**

Type of knowledge	Total (n=107)	
	Mean (M)	(SD)
Personal Hygiene	4.23	0.81
Food Handling Practices	3.91	0.87
Food Hygiene Preferences	3.59	0.96
Eating Place Preferences	4.22	0.83
Overall knowledge	3.99	1.01

Knowledge and practice both personal hygiene and eating place preferences is good enough. While food handling practices and food hygiene preferences are still considered not good enough. Overall, citizens of greater Jakarta have emerged awareness of the importance of food security, especially now the government has made many programs for education of food safety to citizens.

*Personal Hygiene*

On personal hygiene, five questions showed respondents have a good practice. This survey found that respondents frequently wash their hands with soap (M=4.08, SD=0.88) and running water (M=4.38, SD=0.71) both before (M=4.33, SD=0.82) and after (M=4.49, SD=0.74) handling a food. They also quite often cut their nails regularly (M=3.89, SD=0.9).

**Table 3. Mean score of personal hygiene**

Personal Hygiene	Total (n=107)	
	Mean (M)	(SD)
Washing hands before handling food	4.33	0.82
Washing hands after handling food	4.49	0.74
Washing hands with running water	4.38	0.71
Washing hands with soap	4.08	0.88
Cut nails regularly	3.89	0.9

*Food Handling Practices*

The mean scorer for each item measuring are listed in the dependent variable, food handling practices (table 4). Respondents strongly agree using a clean container to store food (M= 4.64, SD 0.54), avoid direct contact with food when sneezing/ coughing (M=4.40, SD= 0.82), and ensure cleanliness of food processing equipment (M=4.36, SD= 0.69). Respondents are not used to using cutting boards and different knives for each type of food (M= 3.29, SD =0.93). Kiranmai (2016) reported improper methods of cleaning the utensils used for cooking and plates used for serving, seem to be closely associated with fungal contamination. In developing countries, up to an estimated 70% of cases of diarrheal diseases are associated with the consumption of contaminated foods (WHO, 2008). Approximately 10 to 20% of food-borne disease outbreaks are due to contamination by the food handler (Maizun MZ, 2002). Almost 75% of food borne illness outbreaks are assumed to be related to improper food handling practices by employees in food establishments (Practical stuff, 2004). The improper food handling practices have attributed by lack of adequate food safety knowledge. Thus, determining the level of food safety knowledge and practice and educating food establishment employees who handle food about proper food safety practices is crucial in preventing food borne illness outbreaks (Gizau, 2014).

**Table 4. Mean score of food handling practices**

Food Handling Practices	Total (n=107)	
	Mean (M)	(SD)
Ensure cleanliness of food processing equipment	4.36	0.69
Using a clean dry cloth to clean the tableware that has been washed	3.89	0.98
Avoid direct contact with food when sneezing / coughing	4.40	0.82
Process food using tools	3.46	0.94
Using a mask when sick while processing food	3.46	1.06
Closes food to serve	4.18	0.77
Using a clean container to store food	4.64	0.54
Using different cutting boards and knives for different types of food	3.29	0.93
Washing the groceries to be processed or stored	4.29	0.79
Storing the frozen food back to the refrigerator after use	3.36	1.11
Directly move food into plastic wrap	3.73	0.96

*Food Hygiene Preferences*

The mean scorer for each item measuring are listed in the table, food hygiene preferences. Respondents strongly agree with food preferences cooked well ( $M = 4.19$ ,  $SD= 0.78$ ), and eating food despite seeing physical and chemical contamination avoid direct contact with food when sneezing/ coughing ( $M=4$ ,  $SD= 1$ ). However, respondents do not pay much attention to the cleanliness of their eating places from the insects / animal contained in the surroundings ( $M = 2.25$ ,  $SD=1.13$ ).

**Table 5. Mean score of food hygiene preferences**

Food Hygiene Preferences	Total (n=107)	
	Mean (M)	(SD)
food preferences cooked well	4.19	0.78
There are insects / animals that roam	2.25	1.13
Choosing foods prepared without the use of tools	3.31	0.98
Eating food despite seeing physical and chemical contamination	4	1
observing ice cubes used on drinks	3.98	0.96
observing the condition of cooking oil used before buying food	3.82	0.93

On eating place preferences, eight questions showed respondents have a good practice. Respondents strongly agree with sink in the location around the dining area ( $M = 4.59$ ,  $SD =0.61$ ), slum locations make food easily contaminated by bacteria and dust ( $M = 4.52$ ,  $SD =0.84$ ). Overall, respondents would prefer a place with good sanitation although the price is expensive ( $M = 3.94$ ,  $SD = 0.89$ ), it is closely related to knowledge about sanitation and food safety owned by the respondents. With good knowledge certainly raises awareness of the choice of a good eating place.

*Eating Place Preferences*

**Table 6. Mean score of eating place preferences**

Eating Place Preferences	Total (n=107)	
	Mean (M)	(SD)
Choose a place with good sanitation even though the price is expensive	3.94	0.89
Choose a clean place when buying food	4.26	0.80
Slum locations make food easily contaminated by bacteria and dust	4.52	0.84
The presence of a dumpster at the location where to eat	4.27	0.95
Choosing where to eat on a closed storefront	4.16	0.80
Sink in the location around the dining area	4.59	0.61
Choosing a food place that has a good sewerage channel	3.73	0.97
Choosing a food handler paying attention to personal hygiene	4.28	0.76

Based on the table 6, the highest standardized beta coefficient was food handling practices ( $\beta = 0.481$ ,  $P= 0.000$ ) determine as a largest influence and makes the strongest contribution to explain on food handling practices toward personal hygiene. For the eating place preference, the standard beta coefficient ( $\beta = 0.262$ ,  $p= 0.009$ ) was the second highest which showed that moderate contribution towards personal hygiene.

**Table 7. Result of linear regression**

Variable	B	Std Error	Beta
Food Handling Practices	0.54	0.110	0.481
Food Hygiene Preferences	0.043	0.114	0.032
Eating Place Preferences	0.276	0.104	0.262

Dependent Variable: Personal hygiene . $R^2 = 49.7\%$  \*,  $p <0.005$

Meanwhile, the table 7 showed the beta value for food hygiene preferences ( $\beta= 0.032$ ,  $p= 0.706$ ) was low which showed that it made less contribution to personal hygiene. In conclusion, food safety knowledge was considered as the most influential factors in predicting personal hygiene and both predictors made statistically significant contributions to personal hygiene. Although food safety studies have been conducted for a long time, the results showed that food handling practices had one common understanding regarding food handling practices content. In this study, the regression analysis showed that food handling practices the strongest predictor of personal hygiene. The highest standardized beta coefficient indicated that ( $\beta = 0.481$ ,  $p < 0.05$ ). This study suggested there is positive relationship between food handling practices, food hygiene preferences, eating place preferences among respondents.

**Table 8. Determinants of food hygiene by demographic characteristics**

Demographic variables	Sig. Hygiene	Personal Handling Practices	Sig. Food Preferences	Sig. Eating Place Preferences
Age	0.040*	0.000*	0.916	0.731
Gender	0.198	0.686	0.120	0.692
Level of education	0.005*	0.061	0.366	0.001*
Area of residence	0.491	0.001*	0.501	0.083

\*p < 0.05, there are significant difference.

Based on table 8, the result indicated that the personal hygiene was significantly different with age and level of education. The increasing age and education level will make a person become more aware to do a healthy life. Food handling practices was significantly different with age and area of residence. Some areas provide adequate facilities for sanitation practices. Eating place preferences was significantly different with level of education. Generally with a higher level of education, a person will be better off getting a job so prefer a place to eat with a clean place when buying food. Age and level of education simply contribute to the knowledge and practice of food security, but in general knowledge is not enough to make a person do good food safety practices, it is one of the determining factors is the pattern of habits that someone does.

## CONCLUSIONS

This study revealed moderate level of knowledge and practice among citizens in Greater Jakarta. Results showed that food safety knowledge was considered as the most influential factors in predicting personal hygiene and both predictors made statistically significant contributions to personal hygiene. The personal hygiene was significantly different with age and level of education. The increasing age and education level will make a person become more aware to do a healthy life. Food handling practices was significantly different with age and area of residence.

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