

## A PRELIMINARY STUDY ON FOOD SAFETY KNOWLEDGE, ATTITUDE AND PRACTICES AMONG HOME-BASED FOOD PROVIDERS IN KLANG VALLEY, MALAYSIA

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The home-based food business is on high demand due to its convenience and feasibility, however, services and food quality of the product are still questionable (Kimes, 2011). This is because; home kitchen does not only accommodate food-related activities, as it may also be a space for other activities, such as for school or work activities, socialising area, laundry, and even accessible by pets to roam around freely (Wills *et al.*, 2015). Therefore, foods prepared by home-based food operators are at risk of food safety issues and cross-contamination (Wills *et al.*, 2015).

According to the Department of Statistics Malaysia (2016), there has been an increasing rate of foodborne illnesses with food poisoning ranked as the highest incident at 47.3 per 100,000 population or approximately 14,433 cases. With the alarming number of cases reported for food poisoning, food handlers should observe excellent hygiene practices to ensure safe and appropriate ways of handling food products. Various studies on food safety KAP among food handlers have been conducted (Lee *et al.*, 2017; Nik Husain *et al.*, 2016; Sun *et al.*, 2014) but studies related to home-based food providers are still in scarcity. Hence, the objective of this paper is to discuss the preliminary findings related to the food safety KAP level among home-based food business operators.

In this paper, the findings were discussed based on a cross-sectional survey method that was conducted among home-based food providers in Klang Valley. The questionnaire was distributed through social media, such as Facebook, Instagram, and WhatsApp applications.

The questionnaire used for this study had been adapted from previous studies (Siau *et al.*, 2015; Abdul Mutalib *et al.*, 2012). This bilingual (Malay and English languages) self-administered questionnaire was segmented into four sections: demographic profiles, food safety knowledge, food safety attitude, and food safety practices. Three options were provided for the knowledge items, including “Correct”, “Wrong”, and “Not Sure”. Only the correct option was awarded one point, whereas wrong and unsure answers were given zero points. The response options for the attitude domain was a 4-point Likert scale consisting of ‘strongly disagree’, ‘disagree’, ‘agree’, and ‘strongly agree’. Meanwhile, the three responses for the food safety practices were ‘never’, ‘sometimes’, and ‘always’. Data collected from this study was then subjected to descriptive statistics and Pearson correlation analysis using SPSS (SPSS Inc. version 24).

A total of 111 responses were received from home-based food providers in Klang Valley, Malaysia. The majority of the respondents were females (n = 94, 84.7%), Malays (n = 109, 98.2%), and were between 21 and 30 years old (n = 76, 68.5%). More than half of the respondents held a first-degree (n = 59, 53.2%). Most of the respondents had their typhoid injection (n = 77, 69.4%), attended a food safety training course (n = 72, 64.9%), and ran their business for less than 2 years (n = 74, 66.6%).

Table 1 summarises the food safety knowledge among the home-based food providers in Klang Valley. The majority of the respondents (n = 81, 72.98%) displayed excellent food safety knowledge scores at above 75%. About a quarter of them (n = 28, 25.22%) had moderate knowledge score

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(knowledge scores between 50 and 74%), while the remaining ( $n = 2$ , 1.8%) had poor scores (less than 50% for knowledge).

As shown in Table 1, 90% of the respondents responded to questions regarding hand-washing procedures, personal hygiene, correct storage of food, and assurance of food safety. The study outcomes are in line with that reported by Abdul-Mutalib *et al.* (2012), which exhibited a high level of knowledge on hand-washing procedures and correct food storage methods. However, more than 50% of the respondents gave incorrect responses regarding the temperature danger zone, whereas more than 30% of them gave incorrect responses related to wearing a watch during food preparation, reheating food, and the need for typhoid injection. Similar findings were also reported by Webb and Morancie (2015) and Faour-Klingbeil *et al.* (2015) where majority of their respondents had limited knowledge related to food temperature requirements. Well & Morancie (2015) also reported that the university employees in Trinidad and Tobago did not know that jewelry that should not be worn on the hands or arms while handling food.

In addition, poor food safety knowledge was observed among the respondents especially on temperature control and cross-contamination which can spark into major public health concerns. This is because; temperature control is a vital critical

control point in food production and food service. Besides, acknowledging the many factors that can result in cross-contamination is crucial to ensure food safety (Aung & Chang, 2014).

The attitude exerted by home-based food providers towards food safety is summarised in Table 2. The respondents strong felt that food should not be touched with a wounded hand. Comparatively, Sani and Siow (2014) found that 82.8% of food handlers were aware of the danger of handling food with wounded hands. However, Faour-Klingbeil *et al.* (2015) reported that 43% of their respondents disagreed with this notion because they believe that if the wounds are properly covered with waterproof bandages, foodborne pathogens cannot be transmitted through wounds.

All the respondents agreed that hands should be properly cleaned and washed prior to preparing food and working with dirty hands should be avoided. Similar findings were reported by Abdul-Mutalib *et al.* (2012) and Al-Shabib *et al.* (2017), whereby almost all food handlers agreed that hand washing is mandatory before handling food. If one fails to wash his/her hands properly, the prepared food could become contaminated. A previous study revealed that the bacterial count on a food handler's hands exceeded the safe threshold levels (Lee *et al.*, 2017), which signified poor hand-washing practice among food handlers.

**Table 1.** Food safety knowledge among home-based food providers ( $n = 111$ )

Statements	Correct (%)	Wrong (%)
Taking care of personal hygiene is vital to ensure safe food preparation.	100	0.0
Wearing a watch during food preparation can cause food contamination.	62.2	37.8
Washing hands using warm water and soap before handling food reduces the risk of food contamination.	91.9	8.1
The use of mouth cover can reduce the risk of food contamination.	98.2	1.8
Cooked food cannot be kept more than 4 hours at room temperature.	71.2	28.8
Foods "temperature danger zone" are between 5°C to 63°C.	45.9	54.1
The safe temperature of cooked food should be above than 63°C or below than 5°C.	46.8	53.2
Improper holding temperature of food is the leading factor of foodborne illness.	87.4	12.6
Freezer storage practices prevent the growth of harmful bacteria.	92.8	7.2
Leftover cooked food can be kept in a refrigerator for more than 4 days.	92.8	7.2
Cooked food can be reheated many times.	94.6	5.4
Reheating food is more likely to contribute to food poisoning.	54.1	45.9
Preparation of the food in advance is more likely to contribute to food poisoning.	45	55
It is critical that the sources of the food are checked to ensure that it is safe.	99.1	0.9
"First-in first-out" (FIFO) method ensures the earlier ordered foods are used first.	93.7	6.3
The same towel can be used to wipe equipment, hand and table.	98.2	1.8
Food can be prepared on the floor if there is not enough working table.	96.4	3.6
Typhoid injection can prevent food handlers from typhoid infection.	66.7	33.3
Cross-contamination occurs when raw foods are stored together with ready-to-eat foods.	82.9	17.1
Cross contamination is one of the factors that contributed to food poisoning.	88.3	11.7

**Table 2.** Food safety attitude among home-based food providers (n = 111)

Statements	Disagree (%)	Agree (%)
Food should not be touched with a wounded hand.	0	100
Defrosted food should not be refrozen.	25.2	74.7
Separate kitchen utensils must be used to prepare raw and cooked food.	8.1	91.9
Raw food and cooked food need to be kept separately.	2.7	97.3
The same towel can be used to clean different places.	91.9	8.1
Jewellery such as ring can be worn while handling food.	88.3	11.7
We should not rub our hand on the face while handling food.	9	91
The apron can be used as a towel to clean hand.	86.5	13.5
We must cover our mouth and nose when sneezing.	3.6	96.4
Working with dirty hand should be avoided.	1.8	98.2
Hands should be washed by using water and soap before preparing food.	0	100

**Table 3.** Food safety practices among home-based food providers (n = 111)

Statements	N (%)	ST (%)	A (%)
I touch unwrapped food with a bare hand.	38.7	53.2	8.1
I refreeze defrosted foods.	33.3	62.2	4.5
I use separate kitchen utensils to prepare raw and cooked food.	7.2	15.3	77.5
I keep raw food and cooked food separately.	2.7	9	88.3
I use the same towel to clean different places.	74.8	14.4	10.8
I wear jewellery while handling food.	83.8	15.3	0.9
I rub my hand on my face while handling food.	92.8	7.2	0
I clean the work area before start working.	0	5.4	94.6
I use my apron as a towel to clean my hand.	64	35.1	0.9
I chew gum while cooking.	94.6	5.4	0
I wash my hands by using water and soap before start work.	0	9.9	90.1
I use a tissue to cover my nose and mouth when I am sneezing.	0.9	19.8	79.3

Note: N refers to "Never", ST refers to "Sometimes", A refers to "Always"

As for defrosted food, most of the respondents (75%) were aware that it should not be refrozen which is similar to a report by Sani and Siow (2014). This indicated that home-based food providers had a better understanding regarding defrosted and refrozen food, where Abdul-Mutalib *et al.* (2012) reported that only 12% of the respondents were aware of the adversities of refreezing defrosted food. Besides, a high level of awareness related to personal hygiene attitudes among the food handlers was observed and in accordance with the study carried out by Abdul-Mutalib *et al.* (2012). More than 80% of the respondents disagreed to using the same towel to clean different places and disapproved apron being used as a replacement for a towel to wipe hands. In addition, more than 90% of the respondents were aware that they should not rub their faces while handling food and should cover their mouth and nose when sneezing.

Most of the respondents exercised good food safety practices (Table 3), including cleaning of the workstation prior to cooking (94.6%), not chewing

food (94.6%), no face rubbing while handling food (92.8%), and to properly wash hands before handling food (90.1%). They also adhered to good practice by ensuring that separate kitchen utensils were used in preparing and cooking food (77.5%), separating raw from cooked food (88.3%), and not wearing jewelry while handling food (83.8%). On the contrary, some of the practices exercised by the respondents can directly or indirectly cause food poisoning or cross-contamination. The respondents were found prone to touch food with bare hands (61.3%), refreeze defrosted food (66.7%), and use an apron to wipe their hands (36%). These findings are almost similar to a study reported by Abdul-Mutalib *et al.* (2012). Such practices require further attention from the food handlers. Nonetheless, the respondents in this study were found to have better personal hygiene practices compared to the previous study by Sani and Siow (2014). According to Sani and Siow (2014), only 46.6% of their respondents maintained good personal hygiene.

Therefore, it is important for food handlers to have good food safety practices because negligence can result in fatality (Lokuruka *et al.*, 2016). As mentioned by Nik Husain *et al.* (2016) and Cortese *et al.* (2016), most of the respondents reported good food safety practices, but during the actual observation, they failed to conform to the correct practices. Therefore, it is important to always educate food handlers on safe food-handling practices so as to ensure that they are completely aware of the consequences of their actions.

In conclusion, this study found that the KAP level among the home-based food business providers was satisfactory. However, more emphasis is required to right the wrong hygiene practices among these food providers to prevent possible cross-contamination, to be aware of temperature-control procedures, and in maintaining good personal hygiene. Continuous education and training would enhance their KAP level, especially in areas where food handlers seem to be lacking. In addition, the Malaysian authorities should increase their effort in reaching out to the home-based food providers on food safety awareness and by organizing training periodically to ensure the preparation of safe-to-eat food for consumers.

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