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Association Between Sociodemographic Factors, Working Experience And Training Status With Knowledge Level Towards Food And Personal Hygiene Among Food Handlers In Kuala Lumpur, Malaysia

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Abstract: *Food borne illness seems to become more common in Malaysia. Thus, food handlers as the most important person need to play their role in providing safe food for their customers. Hence, nowadays it is compulsory for them to undergo food training course in order to gain knowledge on food and personal hygiene. However, not only training can affect level of knowledge but also working experience and socio-demographic characteristics. The purpose of this study was to determine the association between socio-demographic factors, working experience and training status with knowledge level towards food and personal hygiene among 180 food handlers who attended the vaccination programme in Dewan Bandaraya Kuala Lumpur (DBKL) clinic. The data were collected from 180 food handlers through the methods of questionnaire and analysed using the Statistical Package for Social Sciences (SPSS) version 21 for Windows. Based from the total answer answered by total 180 respondents, 96.11% score more than 80% of total questions correctly, indicating that majority of the food handlers have a good knowledge on food and personal hygiene with frequency of 174. In the demographic profile analysis showed there is no association between socio-demographic factors and knowledge when. While analysis test showed there was significant difference for knowledge based on working experience. The results showed that only working experience is associated with knowledge.*
Keywords: *Knowledge; food hygiene; personal hygiene; food handlers; working experience; training status*

I. Introduction

The phrase food safety is increasingly being used in substitution of food hygiene. Food safety encompasses a whole range of issue that must be addressed for ensuring the safety of prepared food. Food hygiene probably put too much focus on cleanliness but food safety required much more than a clean premises. The word food safety must be clearly understood because there is increase in incidence of food borne illness that led to global issue. [1]

The typhoid immunizations are a necessity and one of the important conditions before working as a food handler. This is to ensure the workers are free from typhoid infection and hence, guarantee a safer food product. Only after the immunization can the food handler get the food handling license given by the local authorities. After obtaining the license, the food handler will be noticed to attend food handling course over a time. [2] To reduce the cases of food borne illness, Malaysian Ministry of Health assigned few Non-Government Organisation (NGO) to conduct food handling courses in order to give a proper training to food handlers. [3]Asides from the food handling courses, another important aspects that provide proper knowledge on food and personal hygiene among food handlers is the working experiences .[4]

This study was be conducted with the aim to determine the association between sociodemographic factors, working experience and training status with knowledge level towards food and personal hygiene among food handlers in Kuala Lumpur/Klang Valley. The results of this study may help in identifying proper and suitable methods for planning health education programs for food handlers that will improve their knowledge, attitudes, and practices in the future.

II. Materials And Methods

Study design, Setting and Sample

This is a cross-sectional study of knowledge on food and personal hygiene among food handlers, and they were measured their association with working experience, training status and sociodemographic

characteristics. This study was carried out in Typhoid Vaccination Clinic in Dewan Bandaraya Kuala Lumpur (DBKL) among all the food handlers attending this clinic. Meanwhile, the inclusion criteria for food handlers were those who: 1) attend typhoid vaccination clinic in Dewan Bandaraya Kuala Lumpur (DBKL); 2) involved in food handling process including preparation of food, cooking or serving; 3) present during the conduct of study; 4) who is > 18 years old. However, food handlers who cannot understand Malay or English language in order to understand the exact meaning of questionnaire were excluded from the study.

Data collection

Data were collected over one week from 16 June 2014 until 25 June 2014. Data were collected from the morning until evening. The developed questionnaire was passed to the respondents and be interviewed face to face. The respondents were informed of the purpose of the study before be interviewed. Each respondent who completed the questionnaire was be given the token as a gift.

Questionnaire design

A quantitative evaluation was conducted to assess the knowledge of food handlers on food and personal hygiene. The questionnaire was developed referring on a previous study by Noor Azira. [5] The questionnaire consists of 4 parts: demographic profile; knowledge on food hygiene; knowledge on personal hygiene; general knowledge and it was collected using self-administered. In all the sections, the respondents were required to select true, false or do not know for each statement. The correct answers for each question was awarded 1 point while the false and do not know answer was awarded 0 point. After converting the score to 100%, the respondents who answer 80% correctly were considered having a good knowledge on food and personal hygiene. The entirequestionnaires used in this study are self-administered with both Malay and English version.

Pilot test

The questionnaire was randomly distributed to 30 respondents with Cronbach's alpha for each set ofthe questions range within acceptable limit (>0.8). As the results, the wordings in the questions were modified and unnecessary items were deleted to ensure data more accurate.

Statistical analysis

Statistical analyses were performed using SPSS Statistics version 21. Chi square test was used to determine the association between working experience and training status with sociodemographic status. Association between training status and knowledge also measured by chi square test while spearman correlation is used to determine the association between working experience and knowledge. Statistical significance for all tests was set at the level of $p \leq 0.05$.

Ethics approval

A letter attached with the proposal draft and questionnaire was submitted to the ethical committee at Ethics Committee for Research Involving Human Subjects, UPM and Dewan Bandaraya Kuala Lumpur (DBKL) to obtain permission and clearance to carry out the research. Consent form from the respondents was taken before the distribution of the questionnaire. All respondents' questionnaire answer will remain confidential.

III. Results

The distribution of respondents according to Gender, Race, Highest education level, Working experience and Training status (n=180). It shows that the majority of the respondents in our study were males (65.6%), Malays (83.9%), with certificate (SPM) as their highest level of education (30.9%) and the others position outside the kitchen such as the food transporter (32.2%). Otherwise half of the respondents (50%) attend food course with inexperienced less than 3 years in working (58.9%).

Table 1: The distributions of respondents based on socio-demographic characteristic.

Socio-demographic characteristic		**Distribution of respondents**	
		Frequency (n)	**Percentage (%)**
Gender	Male	118	65.6
	Female	62	34.4
Race	Malay	151	83.9
	Chinese	11	6.1
	Indian	5	2.8
	Others	13	7.2
Education level	None	21	11.6
	Certificate	56	30.9
	Diploma	39	21.5

	Bachelor	26	14.4
	Master/PhD	16	8.8
	Others	22	12.2
In-kitchen Position	Manager	14	7.8
	Cook	39	21.7
	Kitchen Helper	20	11.1
	Waiter	49	27.2
	Others	58	32.2
Training Status	Attend food course	90	50.0
	Did not attend food course	90	50.0
Working experience	Experienced (3 years or more)	74	41.1
	Inexperienced (less than 3 years)	106	58.9

Based from the total answer answered by total of 180 respondents, 96.1% score more than 80% of total questions correctly, indicating that majority of the food handlers have a good knowledge on food and personal hygiene with frequency of 173. Otherwise, 3.9% score less than 80% of total questions correctly, indicating that only 7 respondents have a poor knowledge on food and personal hygiene.

Table 2: Total knowledge level of food handlers for food, personal and general hygiene

	Frequency	**Percent (%)**
Good	173	96.1
Poor	7	3.9
Total	180	100.0

Table 3: Food handler's knowledge on food hygiene.

Statements	**True (%)**	**False (%)**	**Do not know (%)**
Washing hands before work reduces the risk of food contamination	100.0	0	0
Proper cleaning and handling of food utensils reduces the risk of food contamination	97.8	1.7	0.6
All person including children, adults, pregnant women and old-ages are at risk for food poisoning	91.1	5.6	3.3
Typhoid infection can be transmitted by food	70.6	10.0	19.4
The correct temperature for chillier is 4^{o}C- 8^{o}C	52.8	8.3	38.9
Hot ready to eat food should be maintained at >60^{o}C	52.2	9.4	38.3
Cold ready to eat foods should be maintained at <4^{o}C	41.7	13.3	45.0
Symptoms of food borne infections are diarrhoea, vomiting and stomach ache	97.2	0.6	2.2

Table 4: Food handler's knowledge on personal hygiene

Statements	**True (%)**	**False (%)**	**Do not know (%)**
Hand washing should be practised before preparing food	100.0	0	0
Hand washing should be practised after handling food	94.4	4.4	1.1
Hand washing using soap should be practised after coming out from toilet	98.3	1.7	0
Hand washing should be practised after touching body parts	91.7	5.0	3.3
Covering mouth and nose while sneezing orcoughing can reduce the risk of contamination	97.2	1.7	1.1
Short and clean nails can reduce the risk of contamination	97.8	1.7	0.6
Not required to tie back long hair before handling food	76.1	23.3	0.6

Table 5: Food handle's general knowledge on food and personal hygiene

Statements	True (%)	False (%)	Do not know %)
Preparation of food in advance is more likely to cause higher risk to food poisoning	70.0	17.2	12.8
Reheating food is more likely to cause higher risk to food poisoning	46.7	40.0	13.3
Incorrect procedure of cleaning and sanitization process to food handling equipment increase the risk of food borne diseases	93.3	1.7	5.0
Washing hands before handling food reduce the risk of food contamination	96.1	1.1	2.8
Reheating of previously cooked food can contribute to the increase of food contamination	56.7	28.3	15.0
Washing utensils with regular detergent leaves them free from contamination	70.6	23.3	6.1
Typhoid vaccine should be taken for every 3 years	80.0	8.3	11.7
Personal cleanliness is important while working	98.9	1.1	0
Hand washing should be practised before preparing food	99.4	0.6	0

Chi square test is used in order to determine the association between knowledge and socio-demographic status. Based on the Table 6, there is no association between all socio-demographic characteristics gender x^2 (1, n = 180) = .228, p > .05, age x^2 (1, n =180) = 2.801, p > .05, education level x^2 (5, n = 180) = 2.233, p > .05, race x^2 (3, n = 180) = 1.399, p > .05, position in kitchen x^2 (4, n = 180) = 2.667, p > .05 with knowledge.Thus null hypothesis is accepted

Table 6: Association between knowledge and socio-demographic characteristics.

Variable	Knowledge		n %	x^2	p
	Good	Poor			
Gender					
Male	114	4	65.6	0.228	0.693
Female	59	3	34.4		
Age Group					
Adult	50	0	27.8	2.801	0.193
Youth	123	7	72.2		
Education Level					
None	20	1	11.7	2.233	0.905
Certificate	54	3	31.7		
Diploma	37	2	21.7		
Bachelor	26	0	14.4		
Master	16	0	8.9		
Others	20	1	11.7		
Race					
Malay	114	7	67.2	1.399	1.000
Chinese	11	0	6.1		
Indian	5	0	2.8		
Others	13	0	7.2		
Position in Kitchen					
Manager	14	0	7.8	2.667	0.260
Cooker	38	1	21.7		
K. Helper	19	1	11.1		
Waiter	48	1	27.2		
Others	54	4	32.2		

There is no association between training status and knowledge on food and personal hygiene. Chi square test shown that there is more than 20% of the cells have expected count less than 5. Thus, fisher's exact test is used to determine the association between training status and knowledgex^2 (1, n = 180) = 3.716, p > .05 and revealed p=0.118. Null hypothesis is accepted.

Table 7: Association between training status and knowledge on food and personal hygiene

Variable	Knowledge		n (%)	x^2	p
	Good	Poor			
Training status				3.716	0.118
Yes	89	1	50		
No					
	84	6	50		

Spearman correlation is used to determine the relationship between working experience and knowledge on food and personal hygiene. Table 8 shown that there is significantly different and association between working experience and knowledge r^2 (1,180) = 0.014, p < .05. Thus null hypothesis is failed to reject.

Table 8: Relationship between working experience and knowledge on food and personal hygiene

Variables	Knowledge		n (%)	p
	Good	Poor		
Working experience				0.014
3 and more than 3 years	105	1	58.9	
Less than 3 years	68	6	41.1	

IV. Discussion

Chi square test is used in order to determine the association between knowledge and socio-demographic status. Based on the Table 6, there is no association between all socio-demographic characteristics with knowledge. Thus null hypothesis is accepted. The result of this study is same with previous study from Noor Azira [5] where there was no significant association between knowledge level and the respondents' socio-demographic characteristics when the p value of age (p=0.240), gender (p=0.836) and educational level (p=0.090). According to Noor Azira [5] also found no significant difference in food handlers' food hygiene and sanitation knowledge by educational level. Contradicts with study from Siew Lian Tan [7] their demographic variables such gender, nationality and highest level of education with statistically significant effects on hygiene knowledge. For hand hygiene knowledge, there was a significant difference in the mean personal hygiene knowledge score among different education levels (x^2=1.902,p=0.048). Food handlers who had attended tertiary education had significantly better knowledge of personal hygiene than those who had attended elementary (U = 54.000, p = 0.010, r = 0.440) and secondary education (U = 104.000, p =0.010, r =0.344). This shows that food handlers with higher educational level had more knowledge on food and personal hygiene compared with those who have poor knowledge. This is proved with the statement from Jianu and Chis [8], Martins, Hogg, and Otero[9] and Toh and Birchenough [10] who were reported that food handlers' knowledge of hygiene was influenced by their level of education.

In our study, there was no association between training status and knowledge on food and personal hygiene (p>0.05). However, Nyi[11] found that training status affect knowledge on food and personal hygiene. The research found by Nyi, was strengthened by Sneed [12]. This shows that food handlers who were trained will have higher knowledge regarding food safety which comprise of hygiene criteria and thus will lead to better food safety attitude and practice. The association between training and knowledge was not statistically significant as compared to what had been found by Sneed because there was a long gap between the last training programmes with presents [13]. Therefore, the food handlers may already forget about the training course or did not kept updated with the latest information regarding food safety.

In our study, there was an association between working experience and knowledge. An increase in duration of working would cause an increase in knowledge score. The finding are as the same as that founded by Lin which knowledge score increases as duration of working increases [14]. This could be explained that more experienced workers in food handling business would mean more knowledge gained about methods to ensure food is safe to be served.

V. Conclusion

From this study, it was concluded that there was no association between knowledge with socio-demographic factors and training status. However, there was an association between working experience and knowledge. This shown that working experience is the most factor which can affect the level of education. The food handlers might have a good knowledge on food and personal hygiene when they have a long duration of working experience even though they do not attend any food course.

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