UNIVERSITI PUTRA MALAYSIA

ASSESSMENT OF FOOD SAFETY KNOWLEDGE, ATTITUDE AND PRACTICES AMONG FOOD HANDLERS IN RESTAURANTS, PUTRAJAYA, MALAYSIA

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By

ROSNANI BIN AB. HAMID

Thesis Submitted to the School of Graduate Studies, Universiti Putra Malaysia, in Fulfilment of the Requirements for the Degree of Master in Science

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Inappropriate food handling is the main contributing factor often associated with the food borne outbreak and thousands of millions of people around the globe fall ill and many die as a result of eating unsafe food. The incidence or the number of food poisoning cases reported is increasing in Malaysia and statistics showed that in 2002 the incidence rate of such disease is only 23.1 per 100,000 populations; comparably in 2011 it has increased to 56.25 per 100,000 populations.The aim of this study is to evaluate the level of knowledge, attitude and practice on food safety among food handlers working in restaurants in Putrajaya, Malaysia. A total of 127 food handlers were randomly selected from 23 restaurants and the data collected in October2013 through self-administered questionnaires was analyzed using the SPSS Version 16. The respondents comprising of 36% or 46 Malaysians and 63.8% or 81 were non-Malaysians, of which 38.6% or 49 had attended food hygiene training program before being engaged in food business. Generally the food safety knowledge was good with the mean score 90.3 ± 7.78. However, respondents' lack of knowledge related to reheating of cooked food (75.1 ± 25.66) and the safe temperature of cooked food (71.9 ± 33.54). Knowledge differed significantly by age groups (F=2.530; *p*=0.044). Respondents had a positive attitude about food safety with mean score 93.9 ± 6.81, although there were significant differences between trained and untrained workers (t=2.406; *p*=0.018), Malaysian ethnic groups (F=2.502; *p*=0.034), Malaysians and non-Malaysians (t=3.273; *p*=0.001) and due to differences in education levels (F=6.057; *p*=0.003). The mean score for practice was 92.9 ± 7.64 and again there were significant differences related to education levels (F=1.345; p=0.003), gender (t=-2.120; *p*=0.036) and ethnicity of Malaysian workers (F=2.502; *p*=0.034). This study revealed that a strong relationship was found between knowledge and attitude on food safety (r=0.26; *p*=0.002) and between knowledge and practice (r=0.0203; *p*=0.022). In summary, this study suggests that food workers in Putrajaya displayed good knowledge, a positive attitude and an excellent practiceon food safety. Yet results showed that food workers are still lacking in basic knowledge on food safety, particularly on reheating and safe

temperature of cooked food. As a conclusion, this study can be used as a stepping stone for other researchers to embark on studies concerning food safety in Putrajaya. It is hoped this study will bring about positive managerial implications where the relevant health authority is able to utilize the information to develop more effective strategies towards improving the food safety in the Federal Administrative Centre, in ensuring that food sold, served and consumed in restaurants are not only safe but most importantly, the food borne diseases can be prevented in Putrajaya.

Keywords: Knowledge, Attitude, Practices, Food Safety, Putrajaya.

Abstrak tesis yang dikemukakan kepada Senat Universiti Putra Malaysia sebagai memenuhi keperluan untuk Ijazah Master Sains

PENILAIAN PENGETAHUAN, SIKAP DAN AMALANMENGENAI KESELAMATAN MAKANAN DALAM KALANGAN PENGENDALI MAKANAN RESTORAN DI PUTRAJAYA, MALAYSIA

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Pengendalian makanan yang tidak selamat adalah faktor utama yang sering dikaitkan dengan kejadian wabak penyakit bawaan makanan dan berjuta manusia jatuh sakit di seluruh dunia dan ramai antaranya meninggal dunia akibat memakan makanan yang tidak selamat.Insiden atau kes keracunan makanan yang dilaporkan meningkat di Malaysia dan statistik menunjukkan pada tahun 2002 kadar insiden adalah 23.1 per 100,000 penduduk; berbanding pada tahun 2011 telah meningkat kepada 56.25 per 100,000 penduduk. Tujuan kajian ini adalah untuk menilai tahap Pengetahuan, Sikap dan Amalan mengenai keselamatan makanan dalam kalangan pekerja restoran di Putrajaya, Malaysia.Sejumlah 127 pengendali makanan dipilih secara rawak daripada 23 restoran dan data dikutip pada bulan Oktober 2013 menggunakan borang soalselidik yang diisi sendiri yang dianalisis menggunakan perisian SPSS versi 16. Responden terdiri daripada 36% atau 46 warga Malaysia and 63.8% or 81 bukan warga Malaysia, di mana 38.6% or 49 pernah menghadiri program latihan kebersihan makanan sebelum diambil berkerja dalam perniagaan makanan. Secara keseluruhan pengetahuan mengenai keselamatan makanan adalah baik dengan skor min 90.3 ± 7.78. Walau bagaimanapun responden dikesan kurang pengetahuan berkaitan memanaskan makanan yang telah dimasak (75.1 ± 25.66) dan suhu selamat makanan yang telah dimasak (71.9 ± 33.54). Terdapat perbezaan signifikan dalam kumpulan umur ($F=2.530$; $p=0.044$). Responden mempunyai sikap positif terhadap keselamatan makanan dengan skor min 93.9 ± 6.81, namun terdapat perbezaan signifikan di antara responden yang telah menjalani latihan dan yang tidak pernah menjalani latihan kebersihan makanan ($t=2.406$; $p=0.018$), mengikut etnik bagi warga Malaysia ($F=2.502$; $p=0.034$), warga Malaysia dan bukan warga Malaysia ($t=3.273$; $p=0.001$) dan tahap pendidikan ($F=6.057$; $p=0.003$). Skor min amalan adalah 92.9 ± 7.64 dan sekali lagi terdapat perbezaan yang signifikan berkaitan tahap pendidikan ($F=1.345$; $p=0.003$), jantina ($t=-2.120$; $p=0.036$) dan etnik bagi warga Malaysia ($F=2.502$; $p=0.034$). Dapatan kajian juga menunjukkan perhubungan yang kukuh di antara pengetahuan dan sikap ($r=0.26$; $p=0.002$) serta pengetahuan dan amalan ($r=0.203$; $p=0.022$). Sebagai ringkasan, kajian ini mendapati pekerja makanan di Putrajaya menunjukkan pengetahuan yang baik, sikap yang positif dan amalan yang cemerlang dalam keselamatan makanan.Namun dapatan kajian mendapati pengendali makanan masih kurang pengetahuan asas kebersihan makanan, khususnya mengenai pemanasan

makanan dan pengawalan suhu selamat untuk makanan yang telah dimasak. Sebagai kesimpulan, kajian ini boleh dijadikan batu loncatan kepada penyelidik lain untuk untuk meneruskan kajian yang berkaitan dengan keselamatan makanan di Putrajaya. Adalah menjadi harapan kajian ni telah memberi kesan positif di mana pihak berkuasa yang berkaitan boleh menggunakan maklumat yang dikumpul untuk membangunkan strategi yang lebih berkesan ke arah menambahbaik aspek kebersihan makanan di Pusat Pentadbiran Persekutuan, dalam memastikan makanan yang dijual, dihidang dan dimakan di restoran bukan sahaja selamat, tetapi apa yang lebih penting, penyakit-penyakit bawaan makanan dapat dihindari di Putrajaya.

Katakunci: Pengetahuan, Sikap, Amalan, Keselamatan Makanan, Putrajaya.

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This thesis was submitted to the Senate of Universiti Putra Malaysia and has been accepted as fulfilment of the requirement for the degree of Master of Science. The members of the Supervisory Committee were as follows:

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Declaration by graduate student

I hereby confirm that:

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LIST OF ABBREVIATIONS

FAO	Food and Agriculture Organization
FHTP	Food Hygiene Training Program
KAP	Knowledge, Attitude and Practice
MOH	Ministry of Health Malaysia
WHO	World Health Organization

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CHAPTER 1

INTRODUCTION

This topic has seven parts. The initial part of this Chapter explains on the background and the importance of the study. While for following part, subjects on diseases transmitted through food and water and their association are explained. The aims of the study will be emphasised under section 3 and section 4. The next section touches on its practicality and the importance to explore such topic from the practical viewpoints. The second last part will explain the arrangement or the organization of this report for easy reference and the last part focuses on the summary of this Chapter.

1.1 Background of the study

Diseases transmitted through contaminated food and water is a major cause of illness throughout the world. Many studies in many parts of the world have been carried out to show that consequentially this phenomenon causes such a substantial lost to humankind (Olsen et al.,2000). Under the Malaysia law, diseases that most concerned are Food poisoning and others include Typhoid (all types), Cholera, Hepatitis A, Dysentery or Leptospirosis (Act 342). The definition of food poisoning outbreak as narrated by the World Health Organization in its report, it says that any occurrence of more than two cases, manifesting common symptoms of disease, as a result of eating common food can be considered food poisoning outbreaks (WHO, 2007). Many reports have also associated that dirty hands of those involved in the preparation of food can be the source of spreading such dangerous bacteria, and technically what we describe as cross-contamination. Food contamination may possibly happen if those involved in the preparation of food disregard on hands washing throughout food processing. The most common organisms that can be originated from hands are *Staphylococcus aureus* and *Escherichia coli* (WHO, 2007). Food can be contaminated and spread if those involved in food preparation, and in this case food handlers or food worker had intestinal infections (Bas et al., 2006). Food handlers with outstanding hygiene practice can reduce the cross-contamination. Theoretically the knowledge, attitude and practices on food safety this can be improved on condition that all those involved in food industries are given adequate knowledge on the subject matter discussed (Griffith, 2000).

It is obvious the incidence or the number of food poisoning cases reported is increasing in Malaysia. Statistics showed that in 2002 the incidence rate of such disease is only 23.1 per 100,000 populations; comparably in 2011 it has increased to 56.25 per 100,000 populations (MOH, 2012). Records showed that the trend is consistence as what been reported or the statements issued by the Commonwealth Health Ministers' Update (CHMU, 2009).

A study in the United Kingdom showed that food borne illness caused an estimated of million cases, many hospitalizations and deaths annually (Adak et al., 2002). It was reported that majority of the food borne sicknesses in the United State of America, the United Kingdom, Australia and many European nationals were linked to food catering and insanitary food premises (AGHDA, 2005). Spearing et al. (2000) in his study

stated that outbreak of food borne disease costs the hospitals in Australia more than AU$120,000.00 or US$95,000 annually and the amount of more substantial to indirect costs such as medical cost, investigative costs, loss of productivity costs and miscellaneous.

1.2 Issues related to food safety

To study the association between the Knowledge, Attitude and Practices (KAP) of food handlers on food safety would offer the real time scenario on the food safety in this country. Many studies carried out side Malaysia had proven that unclean practices on food handling will contribute to series of food poisoning episodes (Griffith et al., 2000). The study will able to determine the status or the levels KAP on food safety among restaurant workers working in the study area. This study will determine the effectiveness of the training plan for food workers that had been put in place and introduced in Malaysia since 1996 (Jinap etal., 2003).

In Malaysia, the most commonly known reason for food poisoning report was due to food prepared in insanitary conditions and it was reported that more than half of the poisoning incidents associated to this (MOH, 2007). Many reports published showed that improper and unsuitable food processes such as food ready for consumption are prepared very early before being consumed (Griffith et al., 2000). Food being kept at ambient temperature until it was served among others main reason of food poisoning incidences (Tirado & Schmidt, 2000). What is more worrying it was reported most of the concerned foods were prepared in eating establishments which cater for public. It was also reported that institutions and other food service providers are considered as the leading locations for food borne outbreaks (Olsen et al.,2000). The five major reasons for bacteria to propagate were poor individual cleanliness, insufficient cooking, cross contamination, not practising safe temperatures and foods acquired from dangerous source (Medeiros et al., 2001).

KAP of those involved in food preparation should been enhanced as they have important roles in the avoidance of food illness. Training on food safety was seen as one of the program to increase their knowledge on food safety (Smith, 1994). It was also observed the existence of association between the KAP on food safety in a study among hawkers carried out in Kuala Lumpur (Toh & Birchenough, 2000). It can be suggested that there was a positive association between trainings and the hawkers' KAP scores in this study (Walker et al., 2003). It can be also concluded that echoing the teaching on food safety periodically will decreases food-related infection (Acikel et al., 2008).

A study carried out thus far showed that knowledge alone unaccompanied with good attitude will not show the way to changes in good food handling practices. In Italy, a study carried out among 411 food handlers showed that although food workers possessed a positive attitude on food hygiene, in reality these encouraging attitude was not witnessed during their daily activities in food preparation (Angelillo et al., 2001). Therefore, it is exciting to gauge the outcome of the Food Handlers Training Program (FHTP) which was introduced by the MOH Malaysia in 1996 (Jinap etal., 2003). This study will eventually determine has the said Program managed to inculcate the positive food safety culture among food service provider sector in Putrajaya.

As of to date there were no reported cases of food poisoning outbreak in Putrajaya though there were a rise of such cases in Malaysia (MOH 2012). Nevertheless, statistics showed that out of 199 food premises in Putrajaya inspected by Putrajaya Health Authorities 2011, about 5% of that were given closure order the Food Act 1983 as a result of insanitary circumstances. During that period 10 complaints were reported as a result of unclean conditions of the inspected food restaurants (MOH, 2012). Data showed that the food establishments in Putrajaya comprising of food stalls (104), restaurants (70), cafeterias (43), school canteens (21), cake house or ice cream stalls (16), caterers and kitchens (4) and hotels (2) (PJC, 2012). It would be interesting to explore he real food safety status in Putrajaya.

1.3 Research questions

The questions need to be addresses are-

a) What are the status of KAP on food safety in relation to their social demographic features?
b) Is there any association between the mean score of knowledge and attitude, Knowledge and Practices, and Attitude and Practices food handlers on food safety?
c) What is the mean score association of knowledge, attitude and practices on food safety between trained and untrained food handlers.

1.4 Research objectives

General objectiveis to investigate the knowledge, attitude and practices (KAP)levels on food safety among the respondents or employees involved in food preparation in restaurants in Putrajaya.

Specific objectives-

a) To investigate the relationship of socio-demographic profiles among restaurants employees;
b) To evaluate the level of Knowledge , Attitude, and Practices on food safety; and
c) To determine the relationship between KAP on food safety between those undergone training and those did not attend training.

1.5 The significance of the study

Based on the literature review, numerous studies have been instituted on Knowledge and Practices, and Attitude and Practices with regards to food safety in Malaysia, on the other hand none in Putrajaya. This study will garner new information on the status of KAP pertaining to food safety among food workers in restaurant in Putrajaya. It is utmost important for the health authority of the Putrajaya Health Office or the Putrajaya Corporation to develop a proper food safety plan as it is known fact that poor management is the causal aspect in food borne outbreaks. Food Agriculture Organization in one of their study recognised that poor knowledge and practices in food handling as the main contributing factor in food borne outbreaks and

it was said that the hands of food service employees of poor personal hygiene help to spread food borne diseases via cross-contamination (FAO, 1995).

At the beginning and during the data compilation process it was realized there was lacking of record and register on restaurant owner and its staff maintained by both health authorities. It is extremely important to have a complete data set on every single food handler as this will make easier to continuously monitor aspects of personnel hygiene, health requirements or sanitation condition of every food premises and the compliance of every legal requirements imposed to the food operators. As stipulated under the regulation 30, 31 and 32 of the Food Hygiene Regulations 2009 (Act 281), it is mandatory requirement that every food handler must examine annually, and any person who is involved in food preparation or serving shall undergo a food training programme as set by the Ministry of Health Malaysia. It is important to monitor closely that any food worker who is suspected having food waterborne illness or ailments shall not in anywhere be involved in preparation or serving food.

Realizing the importance to improve the present set back, a meeting was conducted by the stake holders where a consensus was made that a study on level of KAP among food handlers in Putrajaya should be instituted in 2013. The study will be helpful as during the data collection process, indirectly we be able to prepare a complete data base on food establishment and food workers in in Putrajaya. The main parties of this team are the, the Health Department of Federal Territory Kuala Lumpur, the Putrajaya Health District Office, the Health Unit of the Putrajaya Corporation and coordinated by the Department of Local Government of Ministry of Urban Wellbeing, Housing and Local Government.

1.6 Organization of the thesis

In summary and for easy understanding of the contents of this study, the report in this thesis consists 5 (five) Chapters and the details are briefly explained below:

Chapter 1 (One) explains some background and introduction of the study and the significance and the aims of this study.

Chapter 2 (Two) explore all those literatures pertaining to communicable diseases that spreads through the consumption of contaminated food. It will touch on the conceptual and theories of knowledge, attitude and attitude (KAP). Some information on the background or the establishment of Putrajaya is also explained.

Chapter 3 (Three) touches mostly on the study design such as tool used in data collection, sample selection or sample determination among the study population. The setting of objective and hypotheses are also explained in this part.

Chapter 4 (Four) focuses on the study's outcome and results such as the demographic characteristics of the respondents and other parameters set in the questionnaire. The scores on Knowledge, Attitude and the Practices on food safety are examined in detail. The relationship between of mean score of KAP on food safety among respondents is explained, and finally analysis based on their level of KAP on the relationship among those undergone food training course and those who did not on food safety are explained.

Chapter 5 (Five) explains based on the results in answering all the research questions set earlier. Other than that this part also explained the main significance points and the limitation endured to complete this task. Finally a suggestion for the next step or research directions with regard to food safety in Putrajaya is made.

1.7 Summary of Chapter 1

In summary, this Chapter explained the aim of the study in which to establish the status of Knowledge and Practices, and Attitude and Practices (KAP) on food safety among restaurants workers in Putrajaya. While under the specific objectives, the aims are to explore the characteristics features of those employed in restaurants in Putarajaya and their association with KAP mean score, the relationship and association between trained and untrained food handlers. The next Chapter is more to focus on the documents reviewed in context to this study.

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