



Evaluation of basic knowledge on food safety and food handling practices amongst migrant food handlers in Peninsular Malaysia



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ABSTRACT

This study was aimed to measure the basic knowledge on food safety and food handling practices among migrant food handlers as these information is scarce in Malaysia. A cross-sectional study was conducted face-to-face amongst 383 migrant food handlers from three major cities in Peninsular Malaysia through questionnaire. Socio-demographic information of all respondents was collected. Questions on food safety knowledge (i.e. food cleanliness and hygiene, symptom of foodborne illnesses and foodborne pathogens) and food handling practices were assessed. The compiled data were analyzed by using the Statistical Packages for Social Science (SPSS) 16.0. Overall, migrant food handlers had poor level of knowledge on food safety with an average food handling practice. Significant effects were observed between respondents' food safety knowledge and socio-demography (country of origin and educational level) and two factors namely; respondents' nationality and attendance at food training programs showed significant associations with their food handling practices. Multiple logistic regression analyses revealed that attendance at food training programs was a significant and independent predictor of the respondent's food handling practice. The study's findings highlighted issues with regards to the extent of knowledge acquisition on food safety and hygiene by migrant food handlers. Therefore, this warrants improvements not only in the better delivery methods of training modules but also tight enforcement of attendance at the programs by the respective authorities.

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1. Introduction

Foodborne diseases are responsible for the majority of mortality and morbidity worldwide with up to 30% of population in industrialized countries suffering from foodborne illness annually (WHO, 2014). The consumption of food and water contaminated with potential foodborne pathogens such as bacteria, viruses, parasites and toxins accounts for more than 250 different foodborne illnesses (Linscott, 2011; Scallan et al., 2011; Scallan, Hoekstra, Mahon, Jones, & Griffin, 2015; WHO, 2014). Each year, approximately 48 million or 1 in 6 individuals in the United States fall sick, 128,000 are hospitalized and 3000 die from foodborne related illness (CDC, 2014), thus proving the importance of food safety and hygiene practices in the prevention of such illnesses.

The food service industry in Malaysia become more attractive as a results of change in life style from home cooking to "dining out" especially among urban dwellers, and lead to the phenomenon 'mushrooming' of the local food industry (Yeo & Leu, 2014). This has created a high demand for manpower in the food service industry resulting in the increase of employment of migrant workers from 6.6% in 2000 to 11.9% in 2013 (MEF, 2014). Unfortunately, an upward trend of food poisoning cases was also recorded with more than half of the linked to insanitary food handling (MOH, 2007) despite better food hygiene awareness (Zulkifli, 2007). Mishandling of food and the lack of hygiene can facilitate the transmission of foodborne diseases from farm to fork i.e., from the stage of food production, processing to packaging and distribution of food to presentation for food consumption (Abera, Biadegelgen, & Bezabih, 2010; Rall et al., 2010), thus enabling pathogens to contaminate edible products after ingestion of the contaminated food and multiply sufficiently to cause serious illness. The incidence of food and water borne

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diseases in Malaysia (i.e. cholera, typhoid/paratyphoid fevers, viral hepatitis A, food poisoning and dysentery) was approximately 60.97 cases per 100,000 populations, with the majority denoted as food poisoning (56.25) and a mortality rate of 0.03 (MOH, 2013). Unhygienic food handling practices, the use of untreated water and poor environmental sanitation were some of the determinants identified (MOH, 2012; Siow & Norrakiah, 2011).

In order to improve the worker's basic understanding on food safety a food handling training program was introduced in Malaysia is governed under the 1983 Food Act and 1985 Food Regulation. The program was initiated in 1996 and controlled by the Food Quality Control Division (FQCD) of the Ministry of Health (MOH), Malaysia. It comprises of a 3-h lesson, aimed to educate food handlers on food safety, personal hygiene and cleanliness in the food premises (FQCD, 2012). While cleanliness of a premise is categorized into three bands; A the highest grade, B for moderate and C for low cleanliness. Despite this program in place, a total of 151,198 food handlers were trained in 2012 however, in the same year, 3447 (2.6%) of the 132,526 food premises inspected were shut down due to bad hygiene premises under Section 11, Food Act 1983 (FQCD, 2012).

Numerous studies have highlighted the need for food safety training and education for food handlers, due to lack of knowledge on microbiological food hazards, optimal food storage temperatures, risks of cross contamination and the importance of personal hygiene (Bas, Ersun, & Kivanc, 2006; Mudey et al., 2010; Nuchprayoon, Sanprasert, Kaewzaithim, & Saksirisampant, 2009). These assessments were based on the KAP approach, as knowledge (K) is believed to be the precursor that influences an individual's practice (P) and the information will lead to a change in attitude (A) and consequently a change in behaviour (Bas et al., 2006). Unfortunately, these findings failed to show that the knowledge gained was subsequently translated into practical application in the workplace. Although food hygiene training programs gave exposure and increased knowledge about food safety of the attendees, this did not always translate into positive changes in food handling behaviour (Angelillo, Viggiani, Greco, Rito, & Collaborative Group, 2001; Clayton, Griffith, Price, & Peters, 2002; Green et al., 2005). It is suggested the implementation of strategies by combining surveillance and monitoring, good manufacturing practices and good hygiene practices (GHP), the use of International Organization for Standardization (ISO) method 9001, hazard analysis critical control point (HACCP) and Total Quality Management (TQM) (Aruoma, 2006; Soon, Singh, & Baines, 2011), all which can contribute to significant impact on the prevention of foodborne outbreaks (Osimani, Aquilanti, Babini, Tavoletti, & Clementi, 2011). However, these measures in Malaysia are voluntary and facilitated under Food Act 1983 and Food Hygiene Regulations 2009 (Food Act 1983).

At present, to the best of our knowledge, there have not been any attempt to determine the food safety knowledge status of migrant food handlers in Malaysia. Many previous studies on food safety knowledge in Malaysia have all focused on specific groups such as youth and local food handlers (Low, Jani, Abdul Halim, Alias & Moy, 2016; Norazmir, Noor Hasyimah, Siti Shafurah, Siti Sabariah, Ajau & Noraziansha, 2012; Abdullah Sani & Siow, 2014; Tan, Abu Bakar, Abdul Karim, Lee & Mahyudin, 2013; Mazni, See, & Mohamed Adil, 2013; Abdul Aziz & Mohd Dahan, 2013; Ghazali, Othman, Mohamad Nashuki, & Roslan, 2012; Siow & Norrakiah, 2011; Mohd Zain & Naing, 2002; Toh & Birchenough, 2000). Therefore, it is highly relevant to gauge the extent of food safety knowledge particularly migrant food handlers due to the increased labour demand in the food service sector, and the impact on the general health status of the public. This study aimed to explore the socio-demographic profile of migrant food handlers and evaluate

the basic knowledge on food safety and food handling practices through questionnaire with a series of pertinent questions.

2. Materials and methods

2.1. Study design

A cross-sectional survey through questionnaires and direct observation was adopted for the study and implemented from October 2014 until May 2015 among migrant food handlers from 55 food establishments across three different states in Peninsular Malaysia namely; Selangor, Ipoh and Kuala Terengganu.

2.2. Study instrument

Data were collected using a structured, paper-based questionnaire written in bilingual language (Malay and English), along with a cover letter explaining the purpose of the study and the voluntary nature of participation. Codes were assigned to each participant to maintain anonymity. All questionnaires were followed by face to face interview with the aid of pictorial show cards corresponding to the questionnaire to ensure the accuracy of the responses. Migrant food handlers in direct or indirect contact with food preparation and handling time, regardless of their employment status were included.

The questionnaire was designed by adapting and modifying questions based on previous studies (Norazmir et al., 2012) and the Malaysian Ministry of Health (MOH) guidelines in food safety and hygiene. The questionnaire was validated on 16 food handlers and it was then revised and the final questionnaire contained only 45 items (Tables 1–6) which were divided into three sections: (i) socio-demographic, (ii) food safety knowledge and (iii) food handling practices. Respondents were asked to choose from among three options-true, false or do not know for questions on food safety knowledge and three options-yes, no or do not know for questions on food handling practices. A right answer was considered as 'correct knowledge' and wrong answer as 'no knowledge'. Scores were totalled and converted into percentages. The score below 50% of food safety knowledge and food handling practices questionnaire is accepted as poor knowledge (Bas et al., 2006; Siow & Norrakiah, 2011).

2.3. Ethical consideration

Ethical approval (MECID no: 20143-40) for this study was obtained from the University of Malaya Medical Ethics Committee. Both informed and written consents were sought from all participants. The assurance of confidentiality and anonymity was maintained throughout the study.

2.4. Data analysis

Fig. 1 illustrates the conceptual framework for analysis. Data were processed and analyzed using the Statistical Package for Social Sciences software, version 16.0. Demographic data of all respondents were presented as frequency values and percentages. Mean scores for food safety knowledge and food handling practices were calculated and charts were drawn for visual interpretation. A multivariate analysis of variance (MANOVA) was used to examine the effects of the demographic variables (i.e. age, gender, geographical origin, educational level, marital status and attendance at food training) on each of the three components of food safety knowledge (i.e. food cleanliness and hygiene, symptoms of foodborne diseases and foodborne pathogens). Cross tabulation and relationships among multiple variables were carried out

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