

## Malaysia Food Safety Concern - Bringing HACCP to the Community

**Risyawati Mohamed Ismail\***

Asian Halal Institute, School of Technology Management & Logistics, College of Business. Universiti Utara Malaysia, 06010, Sintok, Kedah

**Fatin Aiman Abd Latiff**

Asian Halal Institute, School of Technology Management & Logistics, College of Business. Universiti Utara Malaysia, 06010, Sintok, Kedah

**Mastora Mustafar**

Asian Halal Institute, School of Technology Management & Logistics, College of Business. Universiti Utara Malaysia, 06010, Sintok, Kedah

### Abstract

Food safety has become a huge concern among health authorities in Malaysia due to its serious impact. Despite effort from the health authorities, cases of food borne illness are still happening through the countries. This resulted in several quarters aiming to bring HACCP to the communities including small, free-lance food business owners which usually not under the authority's radar. However, while HACCP works in controlling food production in manufacturing facilities, repeating the same feat seems colossal on the much smaller food operators. The more complex system and practices of smaller food operator needed a massive orchestrated effort from all part of the society.

**Keywords:** HACCP; Food safety; Food borne illness; Malaysia; Food.



CC BY: [Creative Commons Attribution License 4.0](https://creativecommons.org/licenses/by/4.0/)

### 1. Introduction

Food supply chain is a complex and a very important aspect in ensuring the wellbeing of human, therefore eliminating the risk of food related diseases is crucial. Food sector is one of the largest contributors to Malaysia economy and remains as one of the primary source of income for local community in Malaysia (Rahman *et al.*, 2011), and is viewed as a critical aspect in the overall national economic development as they constitute fundamentally in phrases of profits distribution and employment generation (Rahman *et al.*, 2011). The economy of the food industry has transformed to a very solid and experienced speedy conversion in most recent years as an outcome of responding to the intensifying competition and customer demand, and for this reason, food industry has been increasingly recognised as one of the sectors that could generate significant monetary advantage to Malaysia.

Apart from being one of the largest economic contributors to the nation, food industry need to remain committed delivering safe food to consumers. Food producers are required to maintain high safety standards in compliance with strict conditions set by the Ministry of Health Malaysia (MOH). However, the required standard in food safety is yet to be achieved by various stakeholders in the sectors as food safety related incidents are still high and recorded the highest incidence rate in the form of communicable disease in food and water-borne disease category, at 44.18 per 100,000 populations (Ministry of Health Malaysia, 2011). It has been reported by World Health organization (World Health Organization, 2007), that in the year 2005 alone, relatively 1.8 million people died from food safety incidents and the number is significantly increasing each year. Malaysia was also not spared from recording a significant number of food safety related incidents since 2006; mostly related to food poisoning in schools (Ramalinggam *et al.*, 2012). Due to such worrying numbers, it has indirectly captured public consciousness on the importance of food safety awareness and compliance.

### 2. Background

Trends of food poisoning cases in Malaysia was on the increase each year, especially cases related to school canteens. For the last 5 years, an average of 8,000 cases of food poisoning were reported annually with 2,325 cases of food poisoning reported in schools up till April 2016 (Berita Harian Online, 2016). Selangor came out as the state with the highest reported cases of food poisoning, followed by Kedah, Perak and Kelantan while Perak recorded over 1,000 cases of food poisoning incidents in schools (Astro Awani Online, 2016). Statistics published by the Food Safety and Quality Division, MOH showed an increase in food poisoning cases over the past year with 3,822 cases on 2010, 3,959 cases reported in 2011, 4,305 cases in 2012 and 5,017 cases in 2013, 5,208 cases in 2014, 5,678 cases in 2015, 6,012 cases in 2016 (Ministry of Health Malaysia, 2016). A total of 30,314 inspections were carried out by MOH from 2015 until June 2016 including inspections of 24,280 schools' and educational institutions' canteens as well as 6,034 boarding schools' canteens throughout Malaysia. Through these examinations,

a total of 261 canteens or 0.9% were forced to shut their operations immediately under Section 11 of Food Act 983 as the food service operators failed to obey the stated regulations (Ministry of Health Malaysia, 2016).

### 3. Food Safety

The term “safe food” represents divers meaning depends on the target audiences. For instance, consumers, special interest groups, law makers, industry, and academia will have its own unique descriptions based on the positions and point of views. However, much of the food safety information received by the public comes through the media. Consequently, the media’s point of view might influence the interpretation of the public’s perspective in regards of food safety (Seward *et al.*, 2003). Safe food can be described as food that has been handled appropriately through each stages of food preparation processes from the time it received, until the time it is served; including thoroughly washing the fish and poultry that will be cooked (Ababio and Adi, 2012) food prepared on clean and sanitized surfaces (Seward *et al.*, 2003) with sterilized utensils and free from hazardous substance (Ababio and Adi, 2012). Safe food is also defined as food which is free from contamination (FAO, 2003), safe to eat upon consumption (World Health Organization, 2014) within its shelf life, been stored and distributed under appropriate temperature control (Food Safety and Standards Act 2006) and food that maintain its nutrients without any damages neither through its look nor smell (Seward *et al.*, 2003). By referring to Henson and Traill (1993), food is considered safe when there is a possibility of not suffering from consumption of a specific food. In other words, food safety best explained as the scientific disciplines describing the handling, preparation, and storage of food in order to prevent foodborne illness (Mohd and Mohd, 2014).

Food is an important basic need in public health and crucial for mankind’s survival. Food consumed daily should be clean, healthy, balanced Griffith *et al.* (2010) and free from any germs and impurities to maintain health and also one of the factors to prevent diseases (Ababio and Adi, 2012). Despite the importance of food, food consumed now are no longer safe for consumption. This statement has been supported by a report from World Health Organization WHO (2014), who identifies foodborne outbreaks is a major worldwide public health threats in the 21<sup>st</sup> century. WHO has also estimated that approximately 30% of people in industrialized countries suffers from foodborne illness each year (WHO, 2014). This can be seen from a series of recorded and compiled documentation of foodborne disease on each continent in the past decades; the results proves that the cases of foodborne illness are increasing significantly (WHO, 2014).

Developing countries including Canada, Denmark, England, France, Germany, New Zealand, Norway, Serbia, and the United States (Van *et al.*, 2013) is no exception. Food safety has also emerged as a global challenge, and developing countries are also have been the victims of devastating perils of foodborne illness (Akhtar *et al.*, 2014). For instance, in the United States of America, it was estimated that approximately 9.4 million cases of foodborne diseases causing 55,961 reported hospitalizations and 1,351 deaths each year (Garayoa *et al.*, 2011). Much worse, undocumented cases are likely to be even greater in developing countries where hundreds of millions of people suffer from diarrhoea, the most common symptom of foodborne illnesses (Borchers *et al.*, 2010). Apart from the human suffering, the economic and social impact of foodborne diseases is enormous (Low *et al.*, 2016).

In the local setting, Malaysia is not spare from these food safety incidents. With the rapid development of Malaysian economy, profits and efficiency are turning into a noteworthy objective of the food enterprise development which has indirectly contributes to major food safety hazards (Liu *et al.*, 2014). Regardless to the increment in Malaysian food industry, food safety incidents have become increasingly serious in recent years; severely damaged one’s daily routine, having negative consequences on the development of the food industry as well as the whole Malaysian economy (Liu *et al.*, 2014). In this research, a total of 40,000 food safety incidents occurring from 2011 to 2016 Liu *et al.* (2014) are taken as the research object and from the incidents, an analysis was done from areas of food category, the main responsibility and the possible causes, with the specific end goals to propose some improvement strategies in every link. This situation represents a global sense of urgency in one’s nation to develop and execute actionable strategies to strictly address unsafe food products and foodborne diseases, as food safety is definitely a global concern. It has been identified at domestic, regional and international levels as a public health priority; millions of human’s life are at risk due the unsafe food consumption that often leads to deaths. Therefore, a strong food product safety management system need to be well executed in most countries to ensure a safe global food chain.

### 4. Malaysia Food Safety Incidents

As mentioned earlier, Malaysia’s food poisoning cases are on rise each year. These can be seen from the statistics provided by the MOH, which reported a total of 5,265 food poisoning cases in the country school canteens and cafeterias which is equivalent to 43% of the 12,122 food poisoning cases reported in 2014. In addition, a total of 246 premises were forced to shut their operations down due to failure to comply with Part II of Food Regulations 1983, in year 2013 itself, and the number is increasing each year, and most of food poisoning cases associated with outbreaks occurs in academic institutions, festive gatherings and also foods that were prepared at home.

### 5. Foodborne Disease Outbreak in Education Institution in Malaysia

As previously stated, most of foodborne illness episodes occurred in education institutions and school canteens or cafeteria due to improper handling practices, meals prepared too early and was left out uncovered until it was served, and inappropriate cooking temperature (Sani and Siow, 2014). All of these were major contributors to food poisoning cases. As a result, a total of approximately 40,000 cases were reported from year 2011 till 2016 (Soon *et*

*al.*, 2011). This is in agreement with Abdul-Mutalib *et al.* (2015) who noted that educational institutions were considered as the leading culprits of foodborne outbreaks. The ultimate goal of food service operators in these institutions were to produce safe and hygiene food for consumption as both the students and educators acquire clean and healthy food to stay active throughout the whole school session. Among the food poisoning cases highlighted in the media includes the following, one of which resulted in 3 fatalities.

### Case 1 - A wedding gone wrong at Tanjung Dawai, Kedah

A wedding feast or locally known as 'kenduri' should have been celebrated with joy and happiness however in this case it resulted in tragic death of three guests and 65 others hospitalized for serious food poisoning case. This unfortunate incident took place at Kampung Huma, Tanjung Dawai, Sungai Petani, Kedah on October 1<sup>st</sup>, 2013. The guests started showing severe foodborne symptoms which included acute diarrhoea and vomiting in the evening of the event. The first victim, a 24 years old female whom suffered so bad to the point of experiencing paralysis and was pronounced dead upon arrival at the local hospital at noon on the same day. Another two victims succumbed later in the same day. Upon investigation, all of the food poisoning victims had eaten a chicken dish during the wedding feast (Asiaone, 2013). The Kedah State Health department later confirmed the presence of highly pathogenic Salmonella bacteria on in the chicken base dish served during the wedding. The bacteria is commonly found in livestock and investigation showed that those who prepared the dish, had failed to clean the chicken properly.

### Case 2 – Sick school kids in Kota Bharu Kelantan

29 pupils of Sekolah Kebangsaan Tiong, Kota Bharu, Kelantan suffered from food poisoning after having a meal at the school canteen. The incident happened on April 7, 2016. The affected food poisoning victims were said to have eaten spicy chicken dish during recess period at the school canteen. Early symptoms shown were nausea, stomach ache and vomiting. As the result, the school canteen was forced to shut its operation for two weeks pending further investigation. The canteen was also severely warned and the school authority sanctioned termination of their service if it is proven that there was negligence upon food handling processes by the food service operators.

### Case 3- Chilli prawn incident in Kedah

The third case happened on October 6<sup>th</sup>, 2016, where 48 boarding school students from SMK Guar Chempedak, Yan Kedah were rushed to the local hospital after showing food poisoning symptoms after consuming foods from the school canteen. As the result the state Health Department has ordered the canteen to be closed. Upon investigation, it was suspected that the chilli prawns, sardine and kaya dumplings prepared in the hostel's kitchen to be the cause of the food poisoning episode (The Straits Time, 2016).

The following Table 1.0 showed how foodborne disease remained as the main cause of community health problem, second only to dengue. (Source: Health Fact (2017) MOH Malaysia)

Table-1. Malaysia Communicable Diseases Statistics For 2016

Incidence Rate and Mortality Rate of Communicable Diseases, 2016 (per 100,000 Population)		
Communicable Diseases	Incidence Rate	Mortality Rate
<b>Food and Water Borne Diseases</b>		
Cholera	0.54	-
Dysentery	0.40	0.00
Food Poisoning	55.21	0.02
Hepatitis A	0.27	-
Typhoid	0.57	0.01
<b>Vector Borne Diseases</b>		
Dengue	318.13	-
Dengue Haemorrhagic Fever	2.01	0.75
Malaria	7.27	0.01
Plague	-	-
Typhus	0.00	-
Yellow Fever	-	-
<b>Vaccine Preventable Diseases</b>		
Acute Poliomyelitis	-	-
Diphtheria	0.10	0.02
Hepatitis B	12.29	0.18
Measles	5.01	0.02
Neonatal Tetanus <sup>1</sup>	0.01	-
Other Tetanus	0.05	0.01
Pertussis	0.94	0.01

Ever since the fatal incident at Tanjung Dawai, less food poisoning cases were recorded till date. This could be due to a comprehensive and more rigorous approach in term of monitoring and training from the food governing agency throughout Malaysia.

While this improvement is encouraging, to date there are still food poisoning related incidents which keep on recurring, causing prolonged concern among customers.

## 6. The Food Management System

The life of world's population is at enormous risk as there can never be an absolute guarantee that the food consumed is entirely safe to be eaten. It is just certainly impossible to test and check every single food items for toxin, contaminants, adulteration, and pathogens before consumption, or even during food handling processes. If so, foods will be prohibitively expensive. Unsafe food products produced and foodborne diseases contributed to the increase statistics of preventable deaths of over millions of people annually. This situation, thus, represent a worldwide urgency in which each nation urged to develop and implement actionable strategies to address unsafe food products and foodborne diseases. It is certain that each country has a bureau that command and oversees food safety; ensuring food produced with no harm, high quality, safe and nutritious to consume, regulates and controls the amount of food additives in food products, and levels of acceptable unavoidable contaminants during food handling processes (Borchers *et al.*, 2010). Therefore, food product safety management system is critical to enable safe food products throughout the entire food product lifecycle; which involved with food products from its origin up to the consumption and ultimate disposition. The effectiveness of food product safety management system specifies safe food products for global consumption. However, the real truth of every nation, from the least to the most developed nations, every food products safety-oriented organization is lack of holistic, integrated and strategic approach to enable effective food product safety management a success (Boddie and Kun, 2014). Eventually, in food safety management, food service operators with a thorough knowledge in food safety issues and positive attitude towards food safety during the entire process of food preparation and handling activities have a competitive advantage over those who do not (Ko, 2013).

In recent years, there has been an increasing amount of literature on the food poisoning cases which involves food service operators. The true incidence of foodborne illness was unknown due to lack of foodborne investigation and surveillance where the incidence took place (Soon *et al.*, 2011). There are various factors contribute to foodborne diseases which includes unsafe food sources, improper cooking methods, improper storage, contaminated equipment, poor personal hygiene, insanitary food handling procedures, unhygienic working environment, the attitude of the food service operators themselves and contaminated equipment are major contributors to outbreaks of foodborne diseases (Borchers *et al.*, 2010b; Sani and Siow, 2014). Adding to this, Soon *et al.* (2011) cited from Smerdon *et al.* (2001) agreed that inappropriate storage, inadequate heat treatment and cross contamination are also some of the main risk factors of foodborne illness.

## 7. Hazard Analysis and Critical Control Point

The establishment of Hazard Analysis Critical Control Point (HACCP) is also part of the government's initiatives to prevent unwanted effects caused by food poisoning, and thus ensuring high quality food produced (Jianu and Chiş, 2012). HACCP system has also been used worldwide as the most prevalent means to control food safety, and the system is a very compact and details that makes it an important component of food safety in the international trade. The HACCP system is a common-sense approach in identifying, quantifying, and controlling food safety hazards. It allows detailed examinations of processes to identify hazards and determine whether they can be controlled (Ko, 2013).

HACCP system has emerged as the mainstay in the catering services to ensure safe food preparation following a precautionary basis, by identifying hazards throughout the production process and establishing preventive measures (Garayoa *et al.*, 2011). However, not all restaurants implement HACCP. Even large, well-established food companies find it a difficult challenge to cope with HACCP as it contains many interrelated factors (Taylor, 2001). Small and medium sized enterprises often perceive the difficulties associated with the HACCP system to be insurmountable (Gilling *et al.*, 2001; Ko, 2013; Route, 2001). A recent study conducted by Kane (2011), discovered that the introduction of new food hygiene legislation has been considered as a problem for small restaurant. For an example, the introduction of HACCP is a huge obstacle for independent operators, whom may be forced to close the operation if they failed to comply with the stated regulation (Kane, 2011). Catering, for instance faced problem in implementing HACCP due to the complexity of the operations involved. Most of its workers involved part timers whom did not receive proper food handling training and are not subjected to constant food safety awareness training. Similarly, other food service operator such as small restaurants would not be able to retain workers who are knowledgeable enough in food safety and at the same time, has considerably more products and ingredients to handle than the larger mass producer would be expected to have within a giant factory (Kane, 2011).

## 8. Preventing Future Tragedy

Despite government effort which includes the compulsory training for food handlers and the introduction of local hygiene standard such as MeSTI, there is no guarantee that food safety related fatal incidents can be avoided. Freelance food services such as catering business operate from various locations which includes their own home. Putting this type of business in the same category as a registered restaurant and canteens might not be doable or fair.



Even if a more stringent approach is taken in term of compulsory hiring of 'qualified' food operators, it is still a hit and miss situation when the source of the problems remained in the practice of individual food handlers.

At this point, despite rigorous effort from the MOH, an intervention program is badly needed to ensure better protection against food borne illness. Intervention strategies that includes surveillance and monitoring, training and education programs, food product safety management systems, premises grading system and premise inspection was set up by the government as an effort to curb this never ending food poisoning episodes (Seward *et al.*, 2003).

## Acknowledgement

This research is funded by UUM its University Grant, award number S/O 13622. The author is also a Research Fellow with the Asian Halal (AHAL) Institute, School of Technology Management & Logistic, College of Business, UUM.

## References

- Ababio, P. F. and Adi, D. D. (2012). Evaluating food hygiene awareness and practices of food handlers in the kumasi metropolis. *Internet Journal of Food Safety*, 14(2): 35-43.
- Abdul-Mutalib, N. A., Syafinaz, A. N., Sakai, K. and Shirai, Y. (2015). An overview of foodborne illness and food safety in Malaysia. *International Food Research Journal*, 22(3): 896-901.
- Akhtar, S., Sarker, M. R. and Hossain, A. (2014). Microbiological food safety: a dilemma of developing societies. *Critical Reviews In Microbiology*, 40(4): 348-59.
- Asiaone (2013). Food poisoning leaves 3 dead 65 warded. Available: <http://news.asiaone.com/news/malaysia/food-poisoning-leaves-3-dead-65>
- Astro Awani Online (2016). Food poisoning in Malaysia. Available: <http://www.astroawani.com/topic/keracunan-makanan-di-malaysia>
- Berita Harian Online (2016). kes keracunan makanan di sekolah setakat. 2: 325. Available: <https://www.bharian.com.my/node/148373>
- Boddie, W. S. and Kun, L. (2014). Global food safety product management, A holistic, integrated, strategic approach (proposed). *Health and Technology*, 4(2): 135-43.
- Borchers, A., Teuber, S. S., Keen, C. L. and Gershwin, M. E. (2010). Food safety. *Clinical reviews in allergy & immunology*, 39(2):
- Borchers, A., Teuber, S. S., Keen, C. L. and Gershwin, M. E. (2010b). Food safety. *Clinical reviews in allergy & immunology*, 39(2): 95-141.
- FAO (2003). Assuring food safety and quality: Guidelines for strengthening national food control systems. In food and nutrition paper no. 76. Rome. *Food and Agriculture Organization of the United Nations (FAO)*:
- Food Safety and Standards Act (2006). *Act no. 34 of 2006 with Comments. Short notes & important gazette Notifications*. 3rd edn: 9-10.
- Garayoa, R., Vitas, A. I., Díez-Leturia, M. and García-Jalón, I. (2011). Food safety and the contract catering companies, Food handlers, facilities and haccp evaluation. *Food Control*, 22(12): 2006-12.
- Gilling, S. J., Taylor, E. A., Kane, K. and Taylor, J. Z. (2001). Successful hazard analysis critical control point implementation in the united kingdom, Understanding the barriers through the use of a behavioral adherence model. *Journal of Food Protection*, 64(5): 710-15.
- Griffith, C. J., Livesey, K. M. and Clayton, D. A. (2010). Food safety culture: the evolution of an emerging risk factor? *British Food Journal*, 112(4): 426-38.
- Health Fact (2017). MOH Malaysia.
- Henson, S. and Traill, B. (1993). Consumer perceptions of food safety and their impact on food choice. In g. G. Birch & g. Campbell-platt, *Food safety, The challenge ahead*. Andover, Intercept. 39-55.
- Jianu, C. and Chiş, C. (2012). Study on the hygiene knowledge of food handlers working in small and medium-sized companies in western Romania. *Food Control*, 26(1): 151-56.
- Kane, K. (2011). Evolving methods of haccp, Costs and benefits. *Worldwide hospitality and tourism themes*. 3(5): 413-21.
- Ko, W. H. (2013). The relationship among food safety knowledge, Attitudes and self-reported haccp practices in restaurant employees. *Food control*, 29(1): 192-97.
- Liu, Y., Zhang, Q. and Li, Q. (2014). A research on mechanisms and countermeasures of the food safety incidents occurring on food supply Chain. *Journal of Service Science and Management*, 7(04): 337.
- Low, W. Y., Jani, R., Halim, H. A., Alias, A. A. and Moy, F. M. (2016). Determinants of food hygiene knowledge among youths, A cross-sectional online study. *Food Control*, 59: 88-93.
- Ministry of Health Malaysia (2011). Malaysia health statistics.
- Ministry of Health Malaysia (2016). Official Portal.
- Mohd, N. N. and Mohd, N. N. I. (2014). Consumers' attitude toward the food safety certificate (fsc) in Malaysia. *Journal of Food Products Marketing*, 20(1): 140-50.
- Rahman, A. H. A., Ahmad, W. I. W., Mohamad, M. Y. and Ismail, Z. (2011). Knowledge on halal food amongst food industry entrepreneurs in Malaysia. *Asian Social Science*, 7(12): 216.
- Ramalingam, R., Ganesan, T. and Ravindran, N. (2012). Perspektif global terhadap perlindungan pengguna melalui undang-undang keselamatan makanan. *Jurnal Undang-Undang & Masyarakat*, 16: 43-53.
- Route, N. (2001). *Haccp and smes, A case study. Making the most of haccp*. Woodhead Publishing Ltd: Cambridge.

- Sani, N. A. and Siow, O. N. (2014). Knowledge, attitudes and practices of food handlers on food safety in food service operations at the universiti kebangsaan Malaysia. *Food Control*, 37: 210-17.
- Seward, R. S. A., Schmidt, R. H. and Rodrick, G. E. (2003). Definition of food safety. *Food safety handbook*. 1-9.
- Smerdon, W. J., Adak, G. K., O'Brien, S. J., Gillespie, I. A. and Reacher, M. (2001). General outbreaks of infectious intestinal disease linked with red meat, england and wales 1992-1999. *Communicable Disease and Public Health*, 4(4): 259-67.
- Soon, J. M., Singh, H. and Baines, R. (2011). Foodborne diseases in Malaysia. *A review. Food Control*, 22(6): 823-30.
- Taylor, E. (2001). HACCP in small companies: benefit or burden? *Food control*, 12(4): 217-22.
- The Straits Time (2016). 48 students suffer food poisoning after meal in Malaysian school hostel canteen. Available: <http://www.straitstimes.com/asia/se-asia/48-students-suffer-food-poisoning-after-meal-in-malaysian-school-hostel-canteen>
- Van, D. J. M., Neil, K. P., Parish, M., Gieraltowski, L., Gould, L. H. and Gombas, K. L. (2013). Foodborne illness outbreaks from microbial contaminants in spices, 1973–2010. *Food microbiology*, 36(2): 456-64.
- WHO (2014). *Initiative to estimate the global burden of foodborne diseases, Information and publications*. WHO: Geneva.
- World Health Organization (2007).
- World Health Organization (2014). Global health observatory (gho) mortality and global health estimate.