



**FACULTY OF MEDICINE AND HEALTH SCIENCES**

**KNOWLEDGE, ATTITUDE AND PRACTICE ON  
FOOD HIGIENE AMONG THE HOMEMAKERS IN  
BUKIT AUP, SIBU, SARAWAK FROM 8<sup>TH</sup> JULY  
2013 TO 20<sup>TH</sup> SEPTEMBER 2013**

**Year 4 Medical Students**

**Community Medicine and Public Health Posting**

**Rotation 2**

**2013/2014**

**Supervisors**

**Assoc. Prof. Dr Ong Puay Hoon**

**Dr. Aye Aye Aung**

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### Declaration

We hereby declare that this project report is based on our original work except for citations and quotations which have been duly acknowledged. We also declare that it has not been previously and concurrently submitted for any other degree or award at Universiti Malaysia Sarawak or other institutions.

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## ABSTRACT

**Background:** Foodborne diseases are a potential threat to the public health. Despite all the Food Act and Regulation, the problem of foodborne diseases is still not uncommon in Malaysia.

**Objective:** The purpose of this study is to determine the level of knowledge, attitude, and practice (KAP) with regards to food hygiene among homemakers of Bukit Aup in Sibul, Sarawak.

**Methods:** This was a cross-sectional study done among 101 homemakers in Bukit Aup, Sibul, Sarawak. A Non-probability sampling method was adopted to select at least one homemaker from each household in the village. An interviewer-guided style of data collection was used. The data was analysed for descriptive data of mean and median, frequencies and standard deviation using SPSS.

**Results:** Among the respondents, the level of good KAP are 53.5%, 39.6% and 58.4% respectively. A significant positive correlation is noted between attitude score and practice score ( $r=0.203$ ,  $p<0.05$ ) using Pearson correlation analysis. Out of a total number of 457 villagers, 33 of them (7.2%) had gastrointestinal health complaints in the past six months. There were 36 episodes (7.9%) of abdominal cramp or pain, followed by 18 episodes (3.9%) of diarrhoea and three episodes (0.7%) of vomiting.

**Conclusion:** Generally, it was observed that the respondents had a satisfactory level of knowledge and practices of food hygiene. However some of the respondents had some lapses in their responses to queries on food hygiene attitude.

### **List of Abbreviations**

CDC	Centre for Disease Control and Prevention
FAO	Food and Agricultural Organization
KAP	Knowledge, Attitude and Practice
MOH	Ministry of Health
SPSS	Statistical Package for Social Sciences
WHO	World Health Organization

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# CHAPTER 1

## INTRODUCTION

### 1.1 Background

Food hygiene is “all conditions and measures necessary to ensure the safety and suitability of food at all stages of the food chain” (Codex Alimentarius Commission, 2009). Generally, the principles of food hygiene cover hygienic practices of food handlers from initial production to the consumption of the food.

Foodborne diseases are a potential threat to the public health. One possible cause of foodborne diseases is the lack of practice of food hygiene during food processing and preparation. The WHO has developed five main keys to safer food, which include keeping clean, separating raw and cooked food, cooking thoroughly, keeping food at safe temperatures and using safe water and raw materials (World Health Organization [WHO], 2006). These five keys to safer food are of immense importance in developing countries, and equipping food handlers in countries with such information could impact significantly on food hygiene.

In Malaysia, The Food Act 1983 (Laws of Malaysia, 2006) had also received royal assent providing nationally consistent food hygiene requirement in the country. Few sections have been added in 2006, they are:

- Section 5: Power to take sample
- Section 10: Directors may order food premises or appliances to be put into hygienic and sanitary condition
- Section 11: Closure of insanitary premises

This Act is to protect the public against health hazards and fraud in the preparation, sale and use of food, and for matters related to food (Laws of Malaysia, 2006). In addition to the Food Act 1983, the Food Regulation 1985 also acts to reduce

foodborne diseases but is limited to food prepared, produced or package for export outside Malaysia.

Despite these Food Act and Regulation, the problem of foodborne diseases is still not uncommon in Malaysia. This issue is mainly due to improper food hygiene, dirty cooking environment, unfavourable personal hygiene and unsatisfactory cleanliness during food preparation, giving rise to various food and water borne diseases (Ministry of Health [MOH], 2012).

Foodborne diseases outbreak can be attributed to many factors, and one of it is the inferior conduct of personal hygiene during the process of food preparation among food handlers (Bas, Ersun, & Kivanc, 2006; Tan, Cheng, Soon, Ghazali, & Mahyudin, 2013). This is because unhygienic handling of food will lead to dissemination of pathogens through cross contamination. Tan et al. (2013) reported that despite various hygiene standards and practices as well as training and education of food handlers have been put in place, the issue of foodborne diseases remains as a public health concern in many countries around the world. Hazrina, Mohhidin, Nasyira and Roslan (2012) also stated that the lack of KAP towards food hygiene is the main reason for foodborne diseases. Pathogens arising from unhygienic food practices are transmitted through several different routes, including food, water and person-to-person contact.

## **1.2 Problem statement**

Food hygiene has been a worldwide issue in the public health sector as well as the domain of economics and politics since a decade ago (Food and Agricultural Organization of the United Nations [FAO], 2004). Deficiency of KAP of the community towards food hygiene leads to the emergence of foodborne diseases (Hazrina et al., 2012). The subject of food hygiene encompasses starting from the stage of production, processing and storage until the stage of handling and distribution.

The recent mission of the MOH in Malaysia includes encouraging participation of the community on individual commitment and measures for improvement of their quality of health, especially in the context of food hygiene (MOH, 2012).

To date, most of the studies regarding food hygiene have been conducted on food handlers of restaurants, schools and other commercial sectors (Egan et al., 2006; Norazmir et al., 2012). There are still limited studies conducted among the community in the rural areas, considering the household environment as well as handling of food. As such, lack of awareness of food hygiene among residents in rural areas, for instance in the community of Bukit Aup, may predispose the local inhabitants to the risk of various foodborne diseases which lead to the inordinate increment in the total of hospital admissions. This study was aimed to determine the level of KAP on food hygiene among the homemakers of the Bukit Aup to find out if they follow the proper practices to avoid outbreak of any foodborne diseases.

### **1.3 Significance of the study**

The incidence of foodborne diseases and food poisoning had been on the rise within the past few years. Based on the review by the MOH of Malaysia in the year 2011, it shows that the incidence rate of food poisoning comprises a total of 56.25 per 100,000 populations, which is a significant increment in comparison to year 2009 with a total incidence rate of 36.17 per 100,000 populations. Other diseases such as cholera, dysentery, hepatitis A and typhoid are also commonly related to improper handling of food and insufficient awareness on food hygiene. This particular study will be a contribution in the development of further intervention programmes regarding food hygiene among the homemakers. A baseline data about the KAP among the homemakers can be visualised and appropriate programmes

undertaken in order to make substantial improvements in maintaining high-quality food hygiene standard.

#### **1.4 Research questions**

- i. What is the socio-demographic profile of the homemakers of Bukit Aup?
- ii. What is the level of knowledge on food hygiene among the homemakers of Bukit Aup?
- iii. How is the attitude of the homemakers of Bukit Aup towards food hygiene practice?
- iv. How are the food hygiene practices of the homemakers of Bukit Aup?
- v. What are the relationships between KAP on food hygiene and socio-demographic profile (age, gender, occupation, marital status, education level, number of persons staying in the house for the past six months and monthly income)?

#### **1.5 Research hypotheses**

- i. There is a relationship between the level of knowledge and the level of attitude towards food hygiene.
- ii. There is a relationship between the level of knowledge and food hygiene practice.
- iii. There is a relationship between the level of attitude and food hygiene practice.
- iv. There are relationships between the level of KAP with socio-demographic profile (age, gender, occupation, marital status, education level, number of persons staying in the house for the past six months and monthly income).

## **1.6 Research objectives**

### **1.6.1 General objective**

The objective of this study is to determine the level of KAP with regards to food hygiene among homemakers of Bukit Aup in Sibul, Sarawak.

### **1.6.2 Specific objectives: To**

- i. describe the socio-demographic profile of the homemakers of Bukit Aup.
- ii. determine the level of knowledge on food hygiene among the homemakers of Bukit Aup.
- iii. determine the attitudes of the homemakers of Bukit Aup towards food hygiene practice.
- iv. assess the food hygiene practices of the homemakers of Bukit Aup.
- v. determine the inter-relationships between KAP on food hygiene and socio-demographic characteristic (age, gender, occupation, marital status, education level, number of persons staying in the house for the past six months and monthly income).

## **1.7 Operational definitions**

- i. Food hygiene: The actions taken to ensure that food is handled, stored, prepared and served in such a way and under such condition, as to prevent, as far as possible the contamination of food.
- ii. Foodborne diseases: Diseases that usually transmitted through ingested food which comprises a broad group of illnesses caused by microbial pathogens and parasites (WHO, 2008). It usually occurs as a single exposure common source epidemic or outbreak due to exposure of a group of persons to a common noxious agent, which enters the body through the gastrointestinal tract and often causes the first symptoms there. Nausea, vomiting, abdominal cramps and diarrhoea are frequent complaints in foodborne diseases.



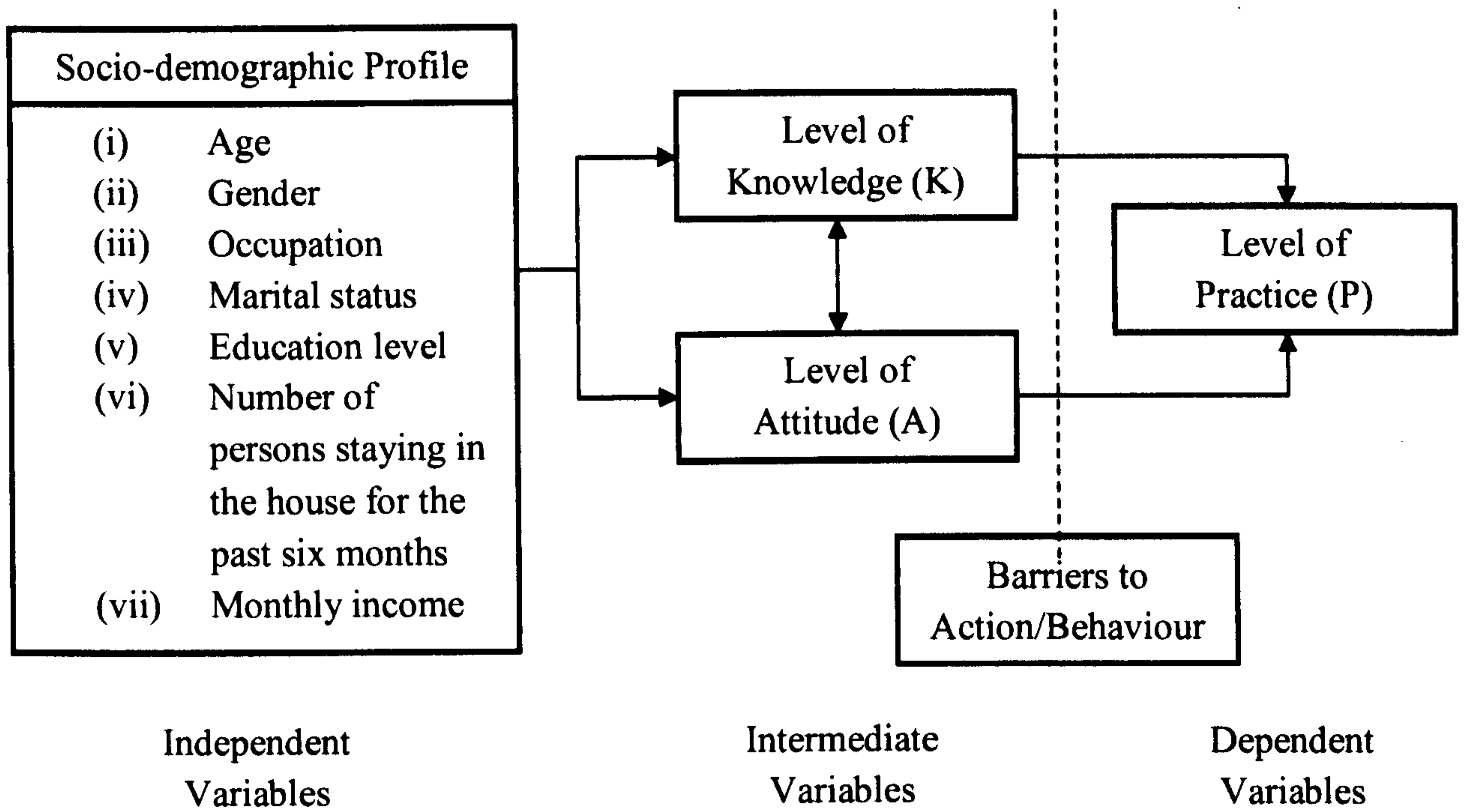
- iii. **Homemaker:** A person with the main task of taking care of his or her household family, including adults and children. It is a gender-neutral term for a housewife or a househusband. Traditionally, the duties of a homemaker are usually done by women. However, a man can also replace a woman's place as the homemaker of a particular household. Homemakers are usually the ones responsible for food handling and preparation, which encompasses of planning meals, buying, cooking and serving food. Hence, it is essential for homemakers to understand the importance of food hygiene in order to increase the quality of food handling.
- iv. **Household:** A family i.e. the basic residential unit in a community, in which economic production, consumption, inheritance, child-rearing and shelter are organised and carried out. It comprises of the homemaker and the other members of the family. It does not include any non-members of the family.
- v. ***Pintu*:** A specific term referring to the private units of a longhouse in the state of Sarawak, each with a single door for each household. These are separated from each other by walls of their own and contain the living and sleeping space for each household (Morrison, 1962). It is a structure that functions as the habitat for residents in the longhouse. The social unit that lives in a *pintu* is known as a household. A *pintu* may consist of one or more than one household. A *pintu* consists of at least one homemaker. If improper food handling is carried out by the homemaker, it will have a direct detrimental effect to the household components living in that particular *pintu* in conjunction to consumption of any contaminated food.
- vi. **Knowledge:** Information and skills regarding personal awareness, environmental hygiene, food and its preparation, storage and water supply

among homemakers acquired through experience or education, i.e. the theoretical or practical understanding of importance of food hygiene at home.

- vii. Attitude: A settle way of thinking or feeling, typically predicting the behaviour among homemakers towards the importance of food hygiene with regards to personal awareness, environmental hygiene, food and its preparation, storage and water supply.
- viii. Practice: The habit or application of the knowledge and attitude among homemakers regarding their personal awareness, environmental hygiene, food and its preparation, storage and water supply.
- ix. Diarrhoea: The passage of 3 or more loose or liquid stools per day, or more frequently than is normal for the individual.
- x. Bloody diarrhoea: The passage of 3 or more loose or liquid stools per day, or more frequently than is normal for the individual with visible blood and mucus in the stools.
- xi. Abdominal pain: Pain or discomfort that is perceived anywhere in the abdominal area caused by ingestion of contaminated food or water, excluding the other causes of abdominal pain (indigestion, constipation, menstrual pain, lactose intolerance, pelvic inflammatory disease, hernia, gallstone, kidney stone, appendicitis).
- xii. Vomiting: The forceful expulsion of the contents of one's stomach through the mouth and sometimes the nose caused by ingestion of contaminated food or water, excluding the other causes of vomiting (motion sickness, vertigo, pregnancy, drug reaction, metabolic disturbances, brain pathology).

- xiii. Anal itching: An intense itching in and around the anus caused by ingestion of contaminated food or water, excluding other causes of anal itching (skin allergies or infections, anorectal pathology).

**1.8 Conceptual framework**



## **CHAPTER 2**

### **LITERATURE REVIEW**

#### **2.1 Definitions of food hygiene**

Food hygiene is defined as all conditions and measures necessary to ensure the safety and suitability of food at all stages of the food chain (Codex Alimentarius Commission, 2009).

#### **2.2 Proper food hygiene in the community**

##### **Personal hygiene**

Basically, personal hygiene involves many aspects including hand hygiene, clean attire, individual's health, habit and behaviour (Tan et al., 2013). Based on their research, food handlers with insufficient personal hygiene can cause spreading of foodborne diseases due to cross contamination or close contact. Their study also states that the common causes of outbreaks of foodborne diseases are due to poor personal hygiene among food handlers. Therefore, the knowledge of food handlers in ensuring the personal hygiene is important because inadequate personal hygiene has been shown to be the crucial contributing factors of foodborne diseases in many food retails. The improper practices, for instance, not using head cover, having long nails and nail polish, wearing jewellery, having skin infections and bad habits such as touching the mouth or face with hands during working time among food handlers led to cross contamination. Another point from this study is that the food handlers that have knowledge of food hygiene did not apply their knowledge during handling foods. Some of them whom had training and significant knowledge on good personal hygiene fail to practice it in handling the foods where they did not wash their hands after eating or drinking and did not dry their hands after washing.

One of the elements of personal hygiene is hand hygiene. Therefore, proper hand washing is one of the most potent ways of preventing the spread of foodborne diseases. All bacteria are unable to be seen through the naked eyes and thus water alone is not enough to ensure the cleanliness. Cleansing and disinfecting agents must be used together with water in order to eradicate the pathogens on hands and utensils. The hands should be washed using those agents especially after defecating as well as before and after handling the food materials (WHO, 2002). However, the possible factors leading to the difficulty in practising hand washing are the inconvenient position of the sink in the working area, the time factor and too much food to be prepared (Green & Selman, 2005). Toivenen, Holah, Taylor, and Brown (2000) proved that the transfer of microorganisms to the hands was because of inadequate personal hygiene after using the toilet, while Devita, Wadhera, Theis, and Ingham (2007) found that contact surfaces contaminated were more frequent in hands as compared to food-contact surfaces. Therefore, proper hand washing procedure must be practiced by all food handlers to lower the risk of microbial spread (Sobel et al., 1998).

### **Food safety**

Codex Alimentarius Commission (2009) defines food safety as food that is not harmful to the consumer when it is prepared and/or eaten according to its intended use. People all over the world have taken the food safety issue lightly and thus the problem related to foodborne disease had increased tremendously. There were many outbreaks caused by *Salmonella*, *Vibrio cholera*, enterohaemorrhagic *Escherichia coli* and Hepatitis A virus (Kaferstein & Abdussalam, 1999).

In maintaining the food hygiene and safety, all stages ranging from harvesting, storing, transporting and distributing the food products should be taken into consideration as the transmission of bacterial can occur at any of the stages

(Cuprasitrut, Srisorrachatr, & Malai, 2011). This can lead to diseases related to food contamination or better known as foodborne diseases. Even in a developed country like United States, foodborne diseases were estimated causing 76 millions illnesses, 325,000 hospital admissions and 5000 mortality cases each year (Mead et al., 1999).

Yang et al. (1998) mentioned that one way to decrease the outbreaks of foodborne diseases was food safety educations for consumers and food handlers. There are several aspects of the food safety that should be considered including food preparation, food handling and food storage.

Firstly, in food preparation, hand washing is one of the earliest things to be considered. Hand washing can prevent the transmission of the infection caused by bacteria. Food handlers need to wash hands before preparing food (Yang et al., 1998).

Secondly, during food handling, the food must be from the safe source, the food must be cooked properly, cooled properly, the intervals of preparation of the food and eating must not be more than 12 hours and the food handlers have to be hygienic (Bruhn & Schutz, 1998).

Thirdly, regarding the food storage, there would be increase in food contamination if the food is not stored at appropriate temperature and not covered (Cuprasitrut et al., 2011). The way the food is being cooked and stored need to be taken seriously because undercooked food and wrong methods of food storage contribute to the major factor of foodborne diseases (Cogan, Slader, Bloomfield, & Humphrey, 2002). To avoid pests harbour in the kitchen, the food should be stored and enclosed (Kiyu et al., 2006).

### **Environmental hygiene**

Firstly, in measuring the environmental hygiene, kitchen hygiene is crucial in order to maintain the food safety. This is to prevent cross contamination as kitchen is the major place or area for the cross contamination to occur. There was *E.coli* K12

contamination upon kitchen utensils even after they were being washed and rinsed (De-Wit, Broekhuizen, & Kampelmacher, 1979). By washing the kitchen utensils with detergent-based plus rinsing them, this had shown a decrease in contamination (Cogan et al., 2002).

Secondly, in longhouses, the most frequent trouble faced by the community was the stray animals, which increase the risk of communicable diseases and infections. To reduce the risk of the diseases, the wandering animals should be removed and the animals that are consumed for food need to be contained (Kiyu et al., 2006).

Thirdly, to maintain the environmental hygiene, appropriate waste or garbage disposal is important. It should be ensured that the waste or garbage was not hoarded and not simply thrown on the ground (Kiyu et al., 2006).

However, the usual misconception regarding the environmental hygiene gives the negative impact to the attitude of the people. The misconception regarding home hygiene is that the interpretation of dirt is good. They do not know the difference between 'dirt' and 'germs'. This causes lack of ability among the public in maintaining home hygiene (Bloomfield, Stanwell-Smith, Crevel, & Pickup, 2006).

### **Water supply**

Water supply for human usage must be safe, clear and healthy. Potable water can be defined as water that is free from pathogenic agents, chemical substances, odour and unpleasant taste and suspended particles which can be used for domestic usage. Non-potable water can be defined as water which has industrial or domestic waste, parasitic agents or chemical substances (Roday, 2006). A safe water supply of proper quality is important in maintaining good hygiene among community. Prevention of waterborne diseases depends on proper water supply, adequate nutrition, food hygiene, and sanitation. Chlorination is the most effective method in providing

microbiological safety in a water supply. In adequate doses, chlorination is able to eliminate most micro-organisms in 30 minutes. The practice of chlorination in water supply shows significant reduction in the incidence of waterborne diseases. The common water related diseases are *cholera*, *amoebiasis*, *gastroenteritis* and *diarrhoeal* diseases, *typhoid fever*, and *schistosomiasis* (Trevor & Etteinne, 2000).

### **2.3 Foodborne diseases**

#### **Incidence and outbreak**

Foodborne diseases can be defined as diseases that usually transmitted through ingested food which comprise a broad group of illnesses caused by microbial pathogens, parasites, chemical contaminants and biotoxins (WHO, 2008). Foodborne diseases which commonly presented with diarrhoea killed almost 2.2 millions people annually in the world. The annual incidence of acute diarrhoea, the common presenting symptoms of food poisoning in Malaysia is 13,474,728 and it affects mostly the teenagers and young adults (Gurpreet, Tee, Amal, Paramesarvathy, & Karuthan, 2011). DeLong et al. (2008) stated that the incidence of foodborne diseases is increasing globally and the burden of foodborne diseases in many regions or on a global level is underreported. Lim (2002) also suggested that the majority of foodborne diseases are undiagnosed or unreported and hence the incidence reported may represent only the tips of the iceberg. The true dimension of the burden of foodborne diseases is still unknown as a result of poor documentation and absence of reliable data.

In comparison of rural area and urban area, Gurpreet et al. (2011) stated that rural residents had a higher incidence of food poisoning compared to urban residents. They also commented that *bumiputera* ethnic group in Sarawak recorded the highest level of incidence. Sarawak Health Department (2007) reported that the incidence rate of food poisoning outbreaks is in fluctuating trend from year 1997 to year 2006 which