

**FACULTY OF MEDICINE AND HEALTH SCIENCES**

**THE LEVEL OF KNOWLEDGE, ATTITUDE AND PRACTICE ON  
COMPLEMENTARY FEEDING AMONG CAREGIVERS IN  
KAMPUNG JERIAH, SIBU, SARAWAK FROM 23<sup>RD</sup> SEPTEMBER 2013  
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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:** The period for complementary feeding is crucial for young infants. Lack of awareness in knowledge, attitude and practice towards complementary feeding among caregivers will lead to improper practice of complementary feeding which may affect the health of children under their care.

**Objective:** The purpose of this study is to determine the level of knowledge, attitude, and practice (KAP) on complementary feeding among caregivers in Kampung Jeriah, Sibul, Sarawak.

**Methods:** This is a cross-sectional study done among 60 caregivers in Kampung Jeriah, Sibul, Sarawak. Non-probability sampling method was adopted to select at least one caregiver from each household in the village. A self-administered style of data collection was used. The data was analysed for descriptive data of mean, median, frequencies and standard deviation using SPSS version 20.0.

**Results:** Among the respondents, the levels of KAP are 61.7%, 50% and 60% respectively. In this study, the respondents with lower income have significantly better knowledge regarding complementary feeding ( $p=0.01$ ). The results also showed that respondents aged 25-44 years old had good practice towards complementary feeding as compared to younger or older group, which is reflected in the  $p$  value 0.032. Almost half of the respondents with good level of knowledge (48.6%) started to give complementary food to their child at age 6 months old.

**Conclusion:** Generally, the respondents had a satisfactory level of knowledge and practices towards complementary feeding. However, the level of attitude on complementary feeding was relatively low compared to the level of knowledge and practice. Statistically, there was no significant correlation between the three components (knowledge, attitude and practice on complementary feeding). It was recommended that more health education should be held by the health authority on complementary feeding so that the knowledge, attitude and practice of caregivers on the topic could be improved.

### **List of Abbreviations**

DHO	Divisional Health Officer
EFSA	European Food Safety Authority
KAP	Knowledge, Attitude and Practice
MOH	Ministry of Health
SESCO	Sarawak Electrical Supply Company
SPSS	Statistical Package for Social Sciences
WHO	World Health Organization

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# CHAPTER 1

## INTRODUCTION

### 1.1 Background of Study

According to the Pan American Health Organization (2003), complementary feeding or weaning is the process starting when breast milk alone is no longer sufficient to meet the nutritional requirements of infants, and therefore other foods and liquids are needed, along with breast milk. This indicates that the very introduction of solid food is the true beginning of complementary feeding. However, this does not indicate the total cessation of breastfeeding, but the addition of other methods of feeding (Raphael 1976). WHO (1998) recommended that the term 'complementary feeding' should be used to replace the terms 'weaning' and 'weaning food' as these terms were traditionally used to describe reduction in breastfeeding.

Proper complementary feeding is started at an appropriate time and is very important for infants in achieving normal physical and mental well-being (Lawrence & Lawrence 2005). Breastfeeding should be continued until 6 months of age in order to protect the infants from morbidity and mortality that is associated with gastroenteritis (WHO 2001). Hence, complementary feeding and continued breastfeeding were recommended at the age of 6 months after the first 6 months of exclusive breastfeeding. However, the knowledge, attitudes and practices (KAP) of complementary feeding are depending on factors such as family social-economic status, education level of caregiver, custom and beliefs. This was supported by a finding from Infant Feeding Survey in 2005 whereby only 2 % of mothers from United Kingdom followed the advice to start their infants' complementary feeding at around six months old. It was also noted that mothers who started early complementary feeding on their infants appeared largely to be affected from informal sources. This condition was improved over time as the same survey conducted in 2010 showed only 30% of mothers introducing early complementary feeding in comparison with year 2005 where 51% of mothers had introduced complementary feeding by then (Infant Feeding Survey 2010).

The European Food Safety Authority (EFSA) (2009), concluded that complementary feeding in between the age of 4 to 6 months is safe and will not predispose to any health problems. There are evidence of increased risk of obesity,



coeliac disease, diabetes Type I and infections when the complementary feeding starts before 4 months of age. On the contrary, the infants' development as for height and weight gain can decline if complementary feeding starts after age of 6 months (EFSA 2009).

There are several risk factors that influence the early infant complementary feeding, which includes misunderstanding of the infants' need. According to some studies done before, many shows that mother had a misconception that early complementary feeding can help relieve the hunger and sleep of the infants (Anderson et al. 2001; Wright et al. 2004). Some of the individuals decide to give complementary food to their infants before 4 months old. They are influenced by the decision made by people around them as they believe that there are no serious impacts of early complementary feeding (Anderson et al, 2001; White 2009). Based on studies done by Wright et al. (2004), Scott et al. (2009), White (2009) and Tarrant et al. (2010), mothers of bottle fed and shorter period of breastfed infants tend to practice early complementary feeding. The same studies also showed that young, single mothers with poor education, low income and who smoke are more likely to give complementary feeding to their infants earlier.

Agostini et al. (2008) stated that early and late complementary feeding has bad impacts on health. According to Wright et al. (2004), early complementary feeding will damage the immature guts, kidneys and immune functions which will lead to complications such as diarrhoea, allergies, coeliac diseases and others. In addition to these, another research conducted by Zutavern et al. (2008) also confirmed that early complementary feeding will increase the risk of eczema. Complementary feeding should not be delayed beyond six months of age as this increases the risk of nutrient and energy deficiencies. Iron deficiency anaemia and rickets is more common in infants of late complementary feeding after 6 months (Department of Health of London 1994).

Other than early and late complementary feeding, the caregivers also have different recipes of complementary food. However, it is very important that the introduction of solid foods is structured. According to Lewis (2004), the recommended meal begins with just one mini-meal mid-morning, followed by a second mini-meal introduced after 2-3 weeks. A third meal can be introduced a



further 2-3 weeks after that. It was also mentioned that the easiest and most recommended first food for complementary feeding is baby rice which is usually sold in powder form and easy to be prepared. This is because the taste and texture are similar to milk and most infants are used to it.

In order to prevent issues regarding complementary feeding as discussed above, some measures can be taken to improve the efficiency of complementary feeding. Department for Children Schools and Families in UK (2010) stated that activities include parent-infant groups, baby weighing sessions and access to other health care professionals including dietician can provide valuable information about complementary feeding.

## **1.2 Problem statement**

The period for complementary feeding is crucial for young infants. It is well known that reduction in breast milk consumption and the protection it provides during gastrointestinal infection can increase the risk for diarrheal illness in children during complementary feeding (Mata et al. 1976). Other than that, introducing solid food too early may undesirably increase renal solute load, compromise the maintenance of lactation amenorrhea, and possibly expose the infant to dietary antigen. On the other hand, leaving complementary feeding too late may impair growth because the nutrients density of liquid diet is low (Gibney et al. 2006). Inadequate KAP of complementary feeding among the caregivers will cause inappropriate age of complementary feeding, such as early complementary feeding, late complementary feeding and improper preparation of complementary diet to the child. Malnutrition is also another common problem during complementary feeding due to inadequate knowledge and special needs of growing child (Kliegman et al. 2011).

Nutritional status in children is most vulnerable during the complementary feeding stages when both macro and micronutrients may be insufficient to maintain growth and development. Poor quality of complementary food and improper complementary feeding practices predispose infants to malnutrition, growth retardation, infection, diseases, and high mortality. The practice of complementary feeding followed are depending on the knowledge, attitude and belief of the



caregivers, while the practices are passed from one generation to other as every young generation is supported by older generation in handling of complementary feeding (Onofiok & Nnanyelugo 2005).

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

There are still limited studies conducted about knowledge, attitude and practice (KAP) of complementary feeding among residents in Malaysia. Lack of awareness of KAP towards complementary feeding among the residents will lead to the improper practice of complementary feeding by caregivers which may affect their children's health, due to early or late complementary feeding and improper preparation of complementary diet. This study was aimed to determine the level of KAP on complementary feeding among the caregivers of children less than 4 years old in Kampung Jeriah to find out if they have the appropriate knowledge and attitude about complementary feeding and proper practice of complementary feeding. Besides that, this research can be added to the pool of data of complementary feeding in Malaysia. It is also hoped to improve awareness on complementary feeding among caregivers through this research.

### **1.4 Research questions**

- i. What is the socio-demographic profile of the caregivers of Kampung Jeriah?
- ii. What is the level of knowledge on complementary feeding among the caregivers of Kampung Jeriah?
- iii. What is the level of attitude of the caregivers of Kampung Jeriah towards complementary feeding?
- iv. What are the complementary feeding practices of the caregivers at Kampung Jeriah?
- v. What are the relationships between KAP on complementary feeding and socio-demographic profile (gender, age, primigravida/first child, educational level, working status, income and number of children)?



## **1.5 Research objectives**

The general objective of this research is to assess the level of KAP with regards to complementary feeding among caregivers of Kampung Jeriah in Sibu, Sarawak.

The specific objectives of this research are to:

- i. Identify the socio-demographic profile of the caregivers of Kampung Jeriah.
- ii. Determine the level of knowledge, attitude and practice on complementary feeding among the caregivers of Kampung Jeriah.
- iii. Determine the inter-relationships between KAP on complementary feeding and socio-demographic characteristic (gender, age, primigravida/first child, educational level, working status, income and number of children).

## **1.6 Research hypotheses**

- i. There is positive relationship between the level of knowledge and the level of attitude towards complementary feeding.
- ii. There is positive relationship between the level of knowledge and practice of complementary feeding.
- iii. There is positive relationship between the level of attitude and practice of complementary feeding.
- iv. There are positive relationships between socio-demographic profile (gender, age, primigravida/first child, educational level, working status, income and number of children) with the level of KAP on complementary feeding.

## **1.7 Operational definition**

- i. Breastfeeding: A process when mother or wet nurse or other people (only applied for milk expressed) give breast milk to infant or toddler who either directly sucks from breast or by milk expressed. It can occur before complementary feeding and during complementary feeding. The process was done to satisfy infant or toddler's need.
- ii. Exclusive breastfeeding: A process when mother or wet nurse only give breast milk to infants who under 4-6 month of life (before complementary feeding). According to the World Health Organization (WHO) (2008), exclusive



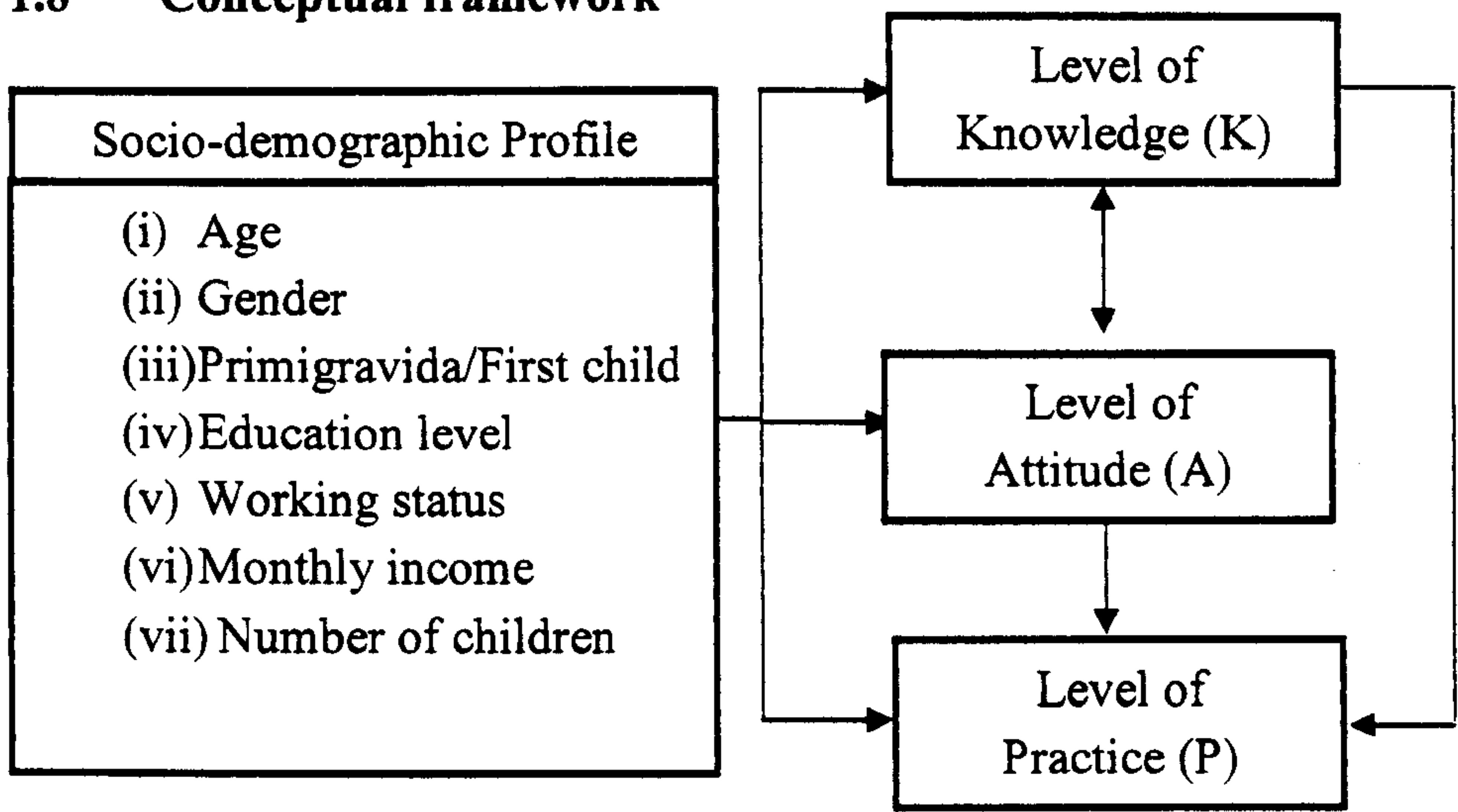
breastfeeding is feeding infants (0 –5 months of age) exclusively with breast milk (including milk expressed or from a wet nurse).

- iii. Caregiver: An individual who attends to the needs of a child (The American Heritage Dictionary of English Language 2009). A person with the main task of taking care of his or her infant when complementary feeding. Caregivers are usually the ones responsible for complementary food handling and preparation, which encompasses of type of complementary diet, buying, cooking and serving complementary food. In this research, the caregivers are the mothers and guardians who are taking care of the children's needs.
- iv. First child/ Primigravida: A woman who is pregnant for the first time.
- v. Working status: It depends on whether the caregivers are working or not. They may work outside fulltime, work at home, or as a housewife. In this research, working caregivers are those who spend more time working outside the house with income while taking care of the child during the period of complementary feeding. Housewives are not considered as working caregiver as they spend more time taking care of the children.
- vi. Complementary feeding: The process starting when breast milk alone is no longer sufficient to meet the nutritional requirements of the infants, and therefore other foods and liquids are needed, along with breast milk (Pan American Health Organization 2003). According to the WHO, complementary feeding is a transition from exclusive breastfeeding to family food which typically covers the period from 6 to 18-24 months of age. Complementary feeding should be timely, meaning that all infants should start receiving food in addition to breast milk from 6 months onwards. It should be adequate, meaning that the complementary food should be given in the appropriate amounts, frequencies, consistencies and using a variety of food to cover the nutritional needs of the growing child while maintaining breastfeeding.
- vii. Knowledge: Information regarding caregivers' awareness on the importance of complementary feeding, time of complementary feeding, impact of early and delayed complementary feeding and sources of proper complementary diet acquired through experience, education, health promotion, health profession or family members, i.e. the theoretical or practical understanding of importance of complementary feeding in infant.



- viii. Attitude: A settled way of thinking or feeling, typically predicting the behavior among caregivers towards the importance of complementary feeding with regards to personal awareness, time of complementary feeding and complementary food preparation.
- ix. Practice: The proper habit or application of the knowledge and attitude of complementary feeding among caregivers on their infants.

1.8 Conceptual framework





## **CHAPTER 2**

### **LITERATURE REVIEW**

#### **2.1 Definition of complementary feeding**

Complementary feeding was defined by the World Health Organisation (WHO) (2003, p.8) as ‘the process starting when breast milk alone is no longer sufficient to meet the nutritional requirements of infants, and therefore other foods and liquids are needed, along with breast milk’ whereas British Dietetic Association (2013, p.1) described the term weaning as ‘the introduction of solid foods into the diet of a baby who is drinking breast milk or formula milk’. Initially, the term weaning was widely used but it indicated withdrawal from or complete cessation of breastfeeding, of which was not encouraged. Therefore, WHO (1998) recommended that the term ‘complementary feeding’ should be used to replace the terms ‘weaning’ and ‘weaning food’. According to WHO (2003), complementary food should be introduced when the baby is at 6 months of age (180 days) while breastfeeding is maintained and the range of target age for complementary feeding to take place is within 6 to 24 months of age.

Based on WHO (2003), complementary feeding was recommended to start from 6 to 24 months of age and breastfeeding or bottle feeding is continued at the same time. This is because extra nutrition is essential for optimal growth and development of the infants at the recommended age of complementary feeding. Solid food needs to be given to the infant at the right time and in the adequate amount, safely as well as appropriately (WHO 2013). Inappropriate complementary feeding practices such as early or late introduction of complementary feeding can impair the infants’ health, growth and development (Dewey et al. 2001).

#### **2.2 Epidemiology of complementary feeding**

The prevalence of timely introduction of complementary food (6-9 and 10-23 months of age) among the WHO regions showed that a total of more than 60% of countries introduced complementary food in a timely manner. In developed countries such as United Kingdom (UK), the practice of complementary feeding occurs at 4 to 6



months of infant age as encouraged by the Department of Health Recommendation. This was shown, as evidenced in 2000, in which 85% of mothers in UK started to introduce solid food to their offsprings by 4 months of age (Foote & Marriott 2003). Countries in the South-East Asia region, which includes Malaysia, reported of 75% of timely introduction of complementary food in these countries (WHO 2013).

Apart from the recommendations from the relevant organizations, practices of complementary feeding may differ from one community to another depending on the types & characteristics of the community namely urban, rural and squatter. In Malaysia, a study done among the rural communities in Kelantan, showed that a majority, with a percentage of 59.3% started complementary feeding when the infant was aged of 4 to 6 months old, whereas 28.3% started before 4 months of age, and 12.5% after 6 months of age. The reasons given for starting complementary feeding were mostly due to perceptions of mothers on insufficient milk, child who are always hungry and as a result of advices from health clinic staffs (Zulkifli et al. 1996). In contrast, a study done in the squatter's community of Kampung Sentosa, Kuala Lumpur showed higher percentage of early complementary feeding with 95% of working mothers and 54% of full time housewives fed their child with complementary food as early as 2 months of age (Khor 1989). Besides that, the same study also discovered that socio-economic issue played a main role in early complementary feeding (Khor 1989). These showed that there are multiple and various factors that could affect the initiation of complementary feeding among the mothers and caregivers.

### **2.3 Sources of information on complementary feeding**

There are many sources available which provide information for caregivers on complementary feeding. Gildea et al. (2009) noted that, in a study conducted in Ireland, health workers became the major source of knowledge about complementary feeding among the caregivers. They also stated that other important sources of knowledge of complementary feeding were obtained from grandparents and the internet (Gildea et al. 2009). In another article, the doctor's role in conveying knowledge and support to the mothers on ensuring appropriate nutrients for the infants through complementary feeding was also heavily emphasised (Mutch 2004).

There was a bit of conflicting opinions among certain studies regarding sources of information that is commonly used by parents regarding complementary feeding. Current studies showed that most of the parents received knowledge on complementary feeding from multiple sources and it was unlimited. This was supported by a study conducted by Moore et al. (2012) on the sources of which most of the caregivers gained their information of complementary feeding in UK in first-time mother. About 74% of the first-time mothers used information gained from more than three sources to feed their children with complementary food (Moore et al. 2012). However, 56% of them reported to have received conflicting advices, which commonly occurred in younger mothers, and this contributed to their confusion about complementary feeding (Moore et al. 2012). This study divided the sources of knowledge complementary feeding into formal and informal advices. In formal advices, the study showed that 77% of respondents received complementary feeding information from their health visitor. This was followed by 56% of formal advices gained from leaflets, 17% from the general practitioners, and 14% from other health professionals such as dieticians, pharmacists or other medical practitioners (Moore et al. 2012). On the other hand, the informal advices from this study have shown that 88% of mothers gained their knowledge from the Internet. However, 81% of them gained the knowledge from books, 78% from friends and 68% from the baby's grandmother (Moore et al. 2012). These showed that there are multiple sources which could provide information regarding complementary feeding to mothers and caregivers.

A program known as nutrition counseling training was recommended by WHO to train the health workers. This was based on the rationalization that these health workers are the ones who are responsible for giving advice to the caregivers on feeding children with complementary food (Complementary Feeding, 2013). In order to have better delivery of information regarding complementary feeding from the health care providers, the World Health Organisation (WHO) have come up with a guideline entitled 'Complementary feeding: Family Foods for breastfed children' that could help them to guide the caregivers (Complementary Feeding, 2013). Besides that, another study found that the knowledge of health workers seemed to be improved in terms of its components as well as their counseling skills (Pelto et al. 2004). As a result, the caregivers who obtained complementary feeding information



from these health workers who acts as a source of knowledge, were expected to have better knowledge on complementary feeding. (Pelto et al. 2004). Similarly, another study showed that caregivers could easily remember and understand the information gained from the trained health workers (Zaman et al. 2008). Apart from that, Liaqat et al. (2006) concluded that the sources of information on complementary feeding among caregivers were different according to their level of education. A majority of caregivers who graduated from colleges and other undergraduate studies were able to understand and were aware of the information given by their health workers which became their important source of information as well as to increase their own awareness on complementary feeding (Liaqat et al. 2006).

#### **2.4 Types of food and nutrition in complementary feeding**

Complementary food offered to an infant is fundamental to the development of the child mentally and physically. So, it should consist of characteristics according to nutritional needs, energy requirement, consistency of food (liquid, semisolid and solid), appropriate texture and viscosity (Kumar et al. 2005). As mentioned before, an appropriate complementary feeding should be given timely, adequately, safely and properly fed to the infant (WHO 2013).

Samour and King (2005) mentioned that nutrient requirements become greater than that of which breastfeeding or bottle-feeding could provide when an infant reaches 4 to 6 months of age. These authors also mentioned that the child will become malnourished if solid food is not introduced in sufficient quantity and at the right time. Besides that, in most developing countries, childhood malnutrition is very common and the prevalence of malnutrition increases dramatically from the age of 6-18 months. The main factor responsible for this deterioration is due to poor nutrition (Michaelsen 2000). The recommended calories required are 40% to 50% fat, 7% to 11% protein and the remaining from carbohydrates, vitamins and minerals (iron, zinc and calcium). Water to energy ratio of 1.5ml/kcal was also recommended by Samour and King (2005).

Complementary food should be adequate in amounts, frequency, consistency and usage of variety food that comprises the nutritional needs of the growing child

while maintaining breastfeeding (WHO 2013). Frequency of the feeding for complementary food should increase according to their age. WHO (2013) recommended that complementary feeding should start with 2-3 times a day between 6-8 months, 3-4 times daily between 9-11 months and 4-5 times daily between 12-24 months with additional nutritious snacks given 1-2 times per day.

The consistency of the food should be gradually changed according to the advancing age of the child. The consistency should start with a liquid based food, followed by an upgrade to semisolid food and then gradually to solid food (Dewey et al. 2001). Initially, an infant would spit out the food when introduced with complementary food but this does not suggest that the baby dislikes the food. This occurs due to difficulties faced by the baby to learn swallowing semisolid food, as previously, they only know how to suckle the breast for milk (Kumar et al. 2005). Food should be stored, prepared and given in a safe manner. Thus, proper food hygiene should be practiced by the caregivers to minimize the risk of contamination of food with pathogens. Furthermore, the food should be fed with correct feeding method such as responsive feeding where the caregiver responds to the child hunger and encourages the child to eat (WHO 2013).

According to NHS choices (2013), the first food that could be given for children aged from six months and onwards was mashed or soft cooked vegetables, fruits and porridge. Examples of this food were potato, carrot, parsnip, apple, pear, banana and melon. Other than that, baby rice or cereals which are mixed with breast milk, formula milk or water could be given. Breast milk or formula milk should also be continuously fed to the infants in addition to complementary food (Dewey et al. 2001). Cow's milk must not be used as a drink until one year of age but could be used to mix food. In order to have a variety of choices, soft cooked and mashed meat, chicken, fish, eggs and dairy products with less sugar such as yogurt could be added into the diet. However, for infant aged below 1 year of age, egg white should be avoided. Sips of water in an open cup could also be introduced throughout the meal (NHS 2013). All dairy milk except for low-fat milk, skimmed milk, sweetened condensed milk and creamer can be given to children above 6 months old who are non-breastfed. However, choose flavored milk that has less or no sugar and avoid adding sugar to milk (MOH Malaysia 2013).