

**DIETARY STATUS OF EXCLUSIVELY BREASTFEEDING MOTHERS: THE INFLUENCE OF  
TRADITIONAL POSTPARTUM DIETARY PRACTICES**

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**ABSTRACT**

Human milk is recognized as the normative standard for infant feeding (Moretti, 2012; WHO, 2011). It is a unique food that contains both nutrients and non-nutritive bio-active factors suited to human infants. The World Health Organization (WHO) and United Nations Children's Fund (UNICEF) strongly advocate exclusive breastfeeding for the first six months after birth as the optimal way of feeding infants based on evidence which showed beneficial effects on child health, growth and development as well as positive implications on maternal wellbeing (WHO, 2009; UNICEF, 2016). The Malaysian government has consequently adopted this recommendation in its Malaysian Dietary Guidelines (MDG) which encourage mothers to practise breastfeeding from birth until six months and continue to breastfeed for two years (Key Message 1, MDG, 2013). The aim of this review was to discuss the potential influence of traditional postpartum dietary practices on maternal dietary status during exclusive breastfeeding period. Besides duration, the nutritional quality of human milk is also an important aspect of breastfeeding. One of the factors that may influence this is the maternal diet.

Lactation comes with a higher nutritional demand and greater than that of pregnancy. Thus, there is a need to optimize maternal food intake during lactation period in order to meet the elevated energy and micronutrients requirements. However, among Asian populations, maternal nutritional intake during this crucial period may be affected by the common traditional postpartum practices which involve dietary restrictions and prohibitions. These practices, however, may impact mothers' ability to meet the increased energy and nutrients needs during breastfeeding period. Inadequate dietary intake during lactation may compromise the nutritional status of the mother, her recovery back to health, and her human milk production. Consequently, inadequate amounts of human milk may pose malnutrition risk for the infant. Thus, it is crucial for the mother to maintain good nutritional intake especially during the confinement period in order to ensure optimal recovery, breastfeeding success, and satisfactory nutritional status of her baby.

**KEYWORDS:** Human milk, Dietary status, Traditional practices, Exclusive breastfeeding

**ACKNOWLEDGEMENT:** This study is funded by IIUM Research Initiative Grants 2015 (RIGS15-014-0014).

## Introduction

Adequate nutrition is critical to child health and development. It is recognized that the first two years of life is a critical period for the promotion of optimal growth, health, and behavioural development of children (World Health Organization, 2009). During the earliest stage of childhood, breastfeeding is an unequalled way of providing ideal food for the healthy growth and development of infants, as mentioned in the Quran, 'Mothers may breastfeed their children for two complete years for those who wish to complete the nursing period' (2:233). Breastfeeding is also an integral part of the reproductive process with important implications for the health of mothers.

According to the WHO, exclusive breastfeeding is the consumption of human milk without supplementation, except for vitamins, minerals, medicines, water, and drops of syrup (WHO, 1991). It includes breastfeeding both from a wet nurse and maternal feeding of expressed breast milk. During the last two decades, the WHO has been strengthening its advocacy on exclusive breastfeeding for the first six months as the optimal way of feeding infants. This is based on reviews of evidence which showed benefits on child health, nutritional, immunologic, developmental and psychological status, positive implications on maternal hormonal, physical and psychological wellbeing, as well as benefits on family socioeconomic status (Kramer and Kakuma, 2002). The Malaysian government has consequently adopted this recommendation in its MDG which encourage mothers to practise breastfeeding from birth until six months and continue to breastfeed for two years (National Coordinating Committee on Food and Nutrition (NCCF), 2010). The recommendation has been strengthened as Key Message 1 in the more recent MDG (NCCFN, 2013).

Lactation comes with a higher nutritional demand and greater than that of pregnancy. Thus, there is a need to optimize mothers' food intake during lactation period in order to meet the elevated energy and micronutrients requirements. However, among Asian populations, maternal nutritional intake during this critical period may be affected by traditional postpartum practices which involve dietary restrictions and prohibitions. This may impact mothers' ability to meet the increased energy and nutrients needs during breastfeeding period. Inadequate dietary intake during lactation may compromise the nutritional status of the mother, her recovery back to health, and her human milk production. Consequently, inadequate amounts of human milk may pose malnutrition risk for the infant. To this date, studies addressing the influence of traditional postpartum dietary practices on mothers' nutritional status are still lacking. Thus, this review aims to discuss the influence of traditional postpartum dietary practices on maternal dietary status during exclusive breastfeeding period from the available literature.

### Nutritional Requirement during Lactation Period

One of the important factors that influences the success of breastfeeding is an optimal nutritional status of the mothers. Lactation is a period where maternal energy needs increase by 25-30% (Bertz et al., 2012). In order to produce each litre of human milk, approximately 700 kcal are required (Cervera and Ngo, 2001). On average, a lactating mother will produce 20 - 30 ounces (about 850 ml) of human milk each day. It is crucial that mothers have sufficient nutritional intake in order to restore health and increase breastfeeding success. According to the latest Recommended Nutrient Intakes for Malaysia (RNI), breastfeeding mothers need an additional 500 kcal of energy (NCCFN, 2017) compared to non-lactating female adults. Other than that, protein requirement also increases by 19g per day for the first six months, to fulfil the nutritional requirement of lactation. Institute of Medicine (IOM) recommends an intake of 135 to 175g of carbohydrate for pregnant and 160 to 210g for breastfeeding, women (Institute of Medicine, 2005). This is to ensure adequate production of milk, prevent ketonemia, and maintain normal maternal blood glucose during breastfeeding (Mahan & Escott-Stump, 2008). The vitamins, minerals, and fibre recommended intakes during lactation are as presented in Table I.

**Table I** Vitamins, minerals, fibre, and water intake recommendation during lactation period

<b>Nutrient</b>	<b>Recommended Value*</b>
Thiamine (mg/day)	1.5
Riboflavin (mg/day)	1.6
Niacin (mg/day)	17
Pantothenic acid (mg/day)	7.0
Pyridoxine (mg/day)	2.0
Folate ( $\mu$ g/day)	500
Cobalamin ( $\mu$ g/day)	5.0
Vitamin C (mg/day)	95
Vitamin A ( $\mu$ g/day)	850
Vitamin D ( $\mu$ g/day)	15
Vitamin E (mg/day)	7.5
Vitamin K ( $\mu$ g/day)	55
Calcium (mg/day)	1000
Iodine ( $\mu$ g/day)	200
Selenium ( $\mu$ g/day)	41
Zinc (mg/day)	8.8-9.5
Iron (mg/day)	10-15
Sodium (mg/day)	1500
Potassium (g/day)	5.1
Phosphorus (mg/day)	700
Fibre (g/day)	20-30
(serving/day)	$\geq 5^a$
Water (ml/day)	1600-2000
(glass/day)	8-10 <sup>a</sup>

Sourced from \*RNI (2017) and <sup>a</sup>Malaysian Adult Nutrition Survey (MANS), 2015

### Maternal Dietary Intake during Lactation Period

A study by Durham and colleagues (2011) which involved assessment of maternal dietary intake among new mothers reported that the average calorie intake of the women did not meet the energy recommendations regardless of types of feeding they provided for their babies (fully breastfeeding, mixed feeding, or formula feeding). Maternal calorie intake has been identified as one of the factors that determine the duration of exclusive breastfeeding period (Fikawati, Syafiq, & Mardatillah, 2017; Syafiq, Fikawati, & Widiastuti, 2015). A total of 201 of breastfeeding mothers were followed up for six

months. These mothers were divided into a group receiving milk supplementation, a group receiving milk and egg supplementation, and a control group. The findings of the study revealed that the calorie intake of those who succeeded to exclusively breastfeed for six months was significantly higher compared to those who did not, regardless of group. Exclusively breastfeeding mothers of the group which received milk supplementation consumed on average 2,121 kcal per day, whereas mothers who did not exclusively breastfeeding consumed only 1,643 kcal/day (Fikawati *et al.*, 2017). In addition, the multivariate analysis revealed that calorie consumption is the most dominant factor (OR: 0.65) that determines the duration of exclusive breastfeeding period.

A prospective study in Taipei assessed the dietary intake of 130 breastfeeding women during the first year postpartum (Lyu, Lo, Chen, Wang, & Liu, 2009). It was found that the mean calorie intake at one and six months postpartum were  $1,830 \pm 595$  and  $1,740 \pm 645$  kcal/day, respectively. At 12 months postpartum, the mean calorie intake increased to  $2,050 \pm 723$  kcal/day. The macronutrient distribution of protein, fat, and carbohydrate were at 15%, 33%, and 52%, respectively, which were within the recommended range by IOM (2005). It was also found that some micronutrients such as vitamin A, vitamin B<sub>1</sub>, and niacin were slightly higher at six and 12 months postpartum compared to at one month. This was probably due to the cultural practice of 'doing-the-month' after the delivery (Lyu *et al.*, 2009).

Maternal iron status has an influence on iron status of the infants (Committee on Nutritional Status During Pregnancy and Lactation, 1991). Studies among breastfeeding women found that only 9 to 15% of them have inadequate intake of iron (dos Santos, Sichieri, Marchioni, and Verly Junior, 2014; Poh, Wong, and Karim, 2005). This suggests that maternal iron intake during breastfeeding period is achievable via daily diet intakes. The same studies revealed that the prevalence of inadequate vitamin C intake was 56% and 94%, respectively. Vitamin C enhances iron absorption and helps to prevent megaloblastic anaemia in infants (Cook and Redd, 2001; Jacob, 1994). In addition, it was found that more than 50% of breastfeeding women had low intake of calcium (Durham *et al.*, 2011). Breastfeeding women loss approximately 3% of their calcium stores over three months of breastfeeding, and this steadily increases to 6% after six months (Heringhausen & Montgomery, 2005). Hence, it is important for breastfeeding women to have adequate calcium intake.

Despite the increased nutritional requirements, among Asian populations, maternal nutritional intake during this crucial period may be affected by the common traditional postpartum practices which involve dietary restrictions and prohibitions.

### **Traditional postpartum confinement practices**

Postpartum care in the Western population adopts a biomedical model where physicians play an important role in maintaining good health of the mother and her infant after delivery (Kim-Godwin, 2003). On the contrary, traditional non-western practices view birth as a holistic and personal system. It involves moral values, physical aspects, and relations to the society and environment. Traditional postpartum confinement practice is a norm among South East Asian, as well as, East- and South Asian communities (Haron and Hamiz, 2014; Barennes *et al.*, 2009; Pillsbury, 1978) . This practice has been passed by the ancestors from generation to generation. There are some justifications for these practices. Among them are to: maintain close mother-infant contact, recuperate from birth, and protect the mother and her baby from harm such as postpartum haemorrhage and stomach problems (Piperata, 2008). Postpartum confinement practices commonly involve behavioural precautions, hygiene care, as well as dietary restrictions.

The health belief and practices may be distinct across cultures, but they have some similarities. The common ideas are the importance of restoring balance in 'hot and cold' states within the body. For example, giving birth is a 'cold' period where proper care is needed to balance this through heat therapy, modification of foods, and use of warm clothing (Kim-Godwin, 2003). For instance, in Thailand, traditional practices surrounding postpartum period is associated with the 'Yue

*Fai'* or 'lying by the fire' (Phongphit and Hewingson, 1990). It is believed that mothers become 'cold and wet' after childbirth. Thus, mothers should lie by a hot fire to warm their bodies and dry out their insides. In Vietnam, the postpartum culture is largely similar to the Chinese. According to their traditional medicine, health requires balance between *am* and *duong* which is equivalent to the Chinese *yin* and *yang* concept (Ladinsky, 1987). In their culture, pregnancy is considered as 'hot' state. Once the woman delivers her baby, she goes into 'cold' state.

Similarly, majority of Malaysian mothers also adhered to certain traditional postpartum regimen and practices (Abdul-Basir, Abdul-Rahman, Abu-Bakar, & Mohd-Shukri, 2018; Fok & Manager, 2016; Suraya & Jamaludin, 2014). After delivery, mothers are advised to observe their food intake and adhere to traditional practices, such as hot compress or *bertungku* (applying heat on the body using heated stone wrapped in herbs) and roasting or *bertangas* (lying on a bed over a fire), which are believed to reduce their susceptibility to illness (Heh, 2004). These are claimed to be helpful in improving blood circulation, strengthening the pelvic floor, calming the nerves, improving breastmilk flow, and returning their body weight to pre-pregnancy weight (Fadzil, Shamsuddin, & Wan Puteh, 2015). Commonly, Malaysian women practise confinement for 40 to 44 days (among Malays) and 30 days (among Chinese and Indians) after childbirth. During this vulnerable period, practices include postpartum massage, use of traditional herbs such as ginger, local roots, and plant-based spices, and beliefs and adherence to food taboos. The confinement duration varies between 30 - 100 days. The health beliefs and practices may be distinct across cultures, but they share a lot of similarities as well.

### **Postpartum dietary practices and its implications**

Maternal dietary intake may be affected due to traditional postpartum food taboos. A study by Kaewsarn, Moyle, and Creedy (2002) in Thailand revealed that most of the respondents adhered to food restrictions. For example, buffalo meat is considered to be harmful. It is traditionally believed that the meat is toxic and poisonous for postpartum women. Hence, they are prohibited to eat buffalo meat. Other than that, fresh vegetables and fish are considered as dangerous foods by most women as they may cause sickness to the women and could decrease human milk production. The food restrictions are generally encouraged by women's mothers and relatives. They believe that adhering to these restrictions will be good for mothers' and baby's health.

A study was conducted in Myanmar to investigate beliefs and practices surrounding postpartum period among the women (Sein, 2013). It was found that almost all of the respondents (95%) observed traditional postpartum practices after childbirth. They believed that hot food, cold food, food inducing wind or acidity, and food causing hypertension, dizziness and drowsiness, should be avoided. Among the beliefs surrounding postpartum dietary practices include consideration of pork as a 'hot' food. Meanwhile, duck and some vegetables such as roselle and cucumber are regarded as cold food which would cause abdominal cramps. The respondents also perceived that sea fish and seafood would cause drowsiness. In addition, some foods might cause hypertension including fermented bamboo shoot, preserved salted fish, and anchovy sauce. On the other hand, chicken is believed to have wound healing ability whereas soup promotes human milk production (Sein, 2013).

Majority of the Vietnamese women believed that they need to eat a lot during postpartum period, as this would help them to rebuild their strength, promote recovery, and improve their breastfeeding (Lundberg & Trieu Thi Ngoc Thu, 2011). Although they need to eat in large quantities, the types of food that they can eat are restricted. Unlike the women in Myanmar, Vietnamese mothers consume 'hot' or 'warm' food such as meat and eggs. These foods are thought to enrich the blood, help with recovery, encourage expulsion of lochia, and stimulate lactation. Apart from that, the food can be made 'warmer' by adding ginger and wine. This is similar to the Chinese belief. Fresh fruits and vegetables are considered as 'cold' and they need to be avoided during puerperium. However, they are allowed to eat boiled vegetables. Some of the respondents did not eat chicken or seafood as

they fear the foods would cause allergy. The most common food eaten is pig's trotter with papaya or red bean and potato, cooked and eaten with rice. It is believed that these foods would help to stimulate lactation.

A cohort study in Singapore by Chen and colleagues (2013) involving three different ethnics (Chinese, Malay, and Indian) revealed that a majority of the mothers adhered to traditional restrictions during the first three weeks postpartum (Chinese: 95%, Malay: 92%, Indian: 80%). During this period, the women were more likely to increase their fish consumption and milk-based drinks, and decrease their consumption of noodles, seafood, and chocolates and sweets. In addition, about three quarter of the Malay and 57% Indian participants increased their plain water intake, while 53% of Chinese participants decreased it. Other than that, beef and egg consumption were decreased among Malay participants. It was believed that these foods inhibit a woman's general recovery (Manderson, 1981). As postpartum period coincides with lactation which increases the energy and nutrients requirements of the mothers, this practice may impair their ability to meet their nutritional recommendations.

In Malaysian cultures, it is typical for mothers to avoid the intake of some foods such as seafood, certain fish, red meat, fruits and vegetables. These foods are perceived to have properties such as, "cold" (spinach, pumpkin, and cucumber), "windy" (cold rice, yams, and sweet potato), and "itchy" (seafood, chicken, and egg) that may hamper health recovery and thus should be avoided (Kamil & Khoo, 2006). These practices were believed to preserve balance in the four body elements (water, air, fire, and earth), restore normal sexual function, improve mother's energy and well-being, promote wound healing, and return mothers to pre-pregnancy weight (Hishamshah et al., 2010).

On the other hand, these traditional dietary restrictions may affect the quality of maternal diets. A study in Malaysia showed that the mean energy intake of Chinese women during confinement is 19% lower than our RNI (Poh *et al.*, 2005). In addition, more than 90% of mothers did not meet nutritional requirements for some micronutrients and minerals such as vitamins A and C, as well as calcium. Most dietary aspects of 'doing the month' were adhered to which limited the food choices of the mothers. There were also lack of fruits and vegetables intake which are sources of fibre, as well as vitamins and minerals. In consequence, this may not only affect the women's health and recovery, but also the production and nutritional quality of human milk.

In another research by Hishamshah and colleagues (2010) in Penang, all the women studied (n=68) were aware of and adhered to traditional postpartum practices. Their sources of information regarding these practices were mainly from family traditions and advices of traditional midwives. Other than avoidance of certain foods, restriction of fluid intake and consumption of traditional herbs were also practised. Ironically, the women also reported health complications such as constipation and haemorrhoids related to the dietary restrictions and traditional herbs intake. In spite of that, they were not hesitant to follow the same traditions again in the future.

## Conclusion

Exclusive breastfeeding for the first six months is regarded as the optimal way of feeding infants due to the numerous health benefits on child and maternal health. However, breastfeeding success is not without its challenges, one of which is inadequate nutritional intake during lactation. Despite the increased requirements, nutritional intakes of breastfeeding mothers have been found to be below recommendation. Postpartum dietary confinement practices have been shown to affect maternal dietary intake during lactation period and possibly influences the nutritional composition of the human milk. Thus, it is crucial for lactating mothers to consume adequate energy and nutrients in order to meet the increased energy and nutrients demand, and also ensure a better human milk quality. However, studies on maternal dietary intake during lactation period among Malaysian mothers are still few and far in between. An investigation is needed to assess maternal dietary intake during exclusive lactation period which is also concurrent with postpartum adherence to certain traditional dietary restrictions, especially during the confinement period. As maternal diet influences

human milk composition, energy and nutrients inadequacy may be reflected in the mothers' breastmilk. There is also much to be explored about the human milk composition of Malaysian mothers whose dietary patterns are culturally unique.

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