COMMON COOKING INGREDIENTS USED AND THE DIETARY INTAKE DURING THE CONFINEMENT PERIOD AND BREASTFEEDING PRACTICES OF IBAN AND ORANG ULU WOMEN IN TUDAN, MIRI, SARAWAK

TOH TING JII PERPUSTANAAN UNIVERSITI MALANSIA SABAH

THESIS SUBMITTED IN FULFILLMENT FOR THE BACHELOR DEGREE OF FOOD SCIENCE WITH HONOUR

SCHOOL OF FOOD SCIENCE AND NUTRITION UNIVERSITI MALAYSIA SABAH 2010



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UNIVERSITI MALAYSIA SABAH

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DECLARATION

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ACKNOWLEDGEMENT

I wish to express my deepest gratitude and appreciation to my supervisor, Dr Yasmin B.H. Ooi of the School of Food Science and Nutrition, Universiti Malaysia Sabah who has been patient enough to advise, guide and supervise me throughout the past few months. Her continuous encouragement provided me the necessary impetus to complete the research and publish this thesis.

I would like to express special gratitude and appreciation to the Nutritionist of Miri Division, Miss Catherine Mering and all the nurses in the clinic who have provided me informative details of the local community.

I would like to thank my friends and family, especially my son, who have been providing me the courage to complete my thesis.

Last but not least, appreciation also given to all the personnel who involve directly and indirectly, including all my respondents and Ministry of Health to approve the ethical application of this study.

Thank you.

TOH TING JII 17 MAY 2010



ABSTRACT

COMMON COOKING INGEDIENTS USED AND THE DIETARY INTAKE DURING THE CONFINEMENT PERIOD AND BREASTFEEDING PRACTICES OF IBAN AND ORANG ULU WOMEN IN TUDAN, MIRI, SARAWAK.

Women recruited were 74 Iban and 23 Orang Ulu with full-term infants aged 2 to 12 months attending Klinik Kesihatan Tudan. Data on dietary intake during the confinement period was collected using diet history interview. Majority of the respondents had normal BMI index (18.5-24.9 kg/m²), secondary school education (70.1%), monthly household income less than RM1000 (32.0%) and were unemployed (77.3%). Mean age of the women was 25.8 ± 5.3 years, and ranged from 16 to 38 years at the time of the interview. Mean body weight, height and BMI were 57.5 \pm 11.1 kg, 153.1 \pm 6.6 cm, and 24.5 \pm 4.1 kg/m², respectively. Most women (82%) practised 30 days of confinement. Equivalent number of the women (33.0%) practised four meals and five meals a day in their confinement period. Ginger (66.0%) is more commonly used in preparing the confinement dishes than Kacangma (50.5%) and rice wine (47.4%). Most women (63.9%) drank tonic alcoholic drink. Respondents had insufficient mean energy intake (77.5%) and calcium (70.7%). Mean intake of protein, iron, thiamin, riboflavin, niacin, Vitamin A and C were 53.1%, 88.5%, 30.0%, 40.7%, 51.4% and 12.2% above RNI. Vegetables and fruits were not restricted in their confinement diet. Most women (56.7%) practised non-exclusive breastfeeding, 41.2% breastfed exclusively and only 2% did not breastfed at all.



ABSTRAK

Subjek merupakan ibu Iban (n=74) dan ibu Orang Ulu (n=23) yang mempunyai anak berumur dua hingga dua belas bulan. Maklumat pemakanan dalam bulan pantang selepas bersalin telah dikumpulkan dengan temu duga sejarah pemakanan. Kebanyakan ibu mempunyai indeks BMI normal (18.5-24.9 kg/m²), pendidikan sekolah menengah (70.1%), pendapatan keluarga bulanan di bawah RM1000 (32.0%) dan tidak bekerja (77.3%). Min umur ibu adalah 25.8 ± 5.3 tahun, dan berumur dari 16 hingga 38 tahun pada masa temu duga. Min berat badan, ketinggian dan indeks BMI adalah 57.5 ± 11.1 kg, 153.1 ± 6.6 cm, and $24.5 \pm 4.1 \text{ kg/m}^2$. Kebanyakan ibu (82%) mengamalkan 30 hari pantang selepas bersalin. Ibu-ibu biasanya makan tiga kali (33.0%) dan empat kali (33.0%) sehari dalam bulan pantang. Halia (66.0%) lebih banyak digunnakan oleh ibu-ibu dalam masakan mereka berbanding dengan Kacangma (50.5%) dan arak putih (47.4%). Kebanyakan ibu (63.9%) meminum minuman tonik yang beralkohol. Min pengambilan tenaga harian (77.5%) dan min kalsium (70.7%) subjek adalah tidak mencukupi berbanding RNI Malaysia. Min pengambilan protein, iron, thiamin, riboflavin, niacin, Vitamin A dan C adalah 53.1%, 88.5%, 30.0%, 40.7%, 51.4% dan 12.2% lebih daripada RNI. Pengambilan sayur-sayuran dan buah-buahan tidak dihadkan dalam bulan pantang. Kebanyakan ibu (56.7%) mengamalkan penyusuan ibu tidak esklusif, 41.2% mengamalkan penyusuan susu ibu esklusif dan hanya 2% tidak menyusukan anaknya.



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LIST OF SYMBOLS

cm	Centimeter
g	Gram
Kcal	Kilocalories
m	Meter
ml	Mililiter
mg	Miligram
SPSS	Statistical Package for Social Science
рд	Microgram
%	Percentage



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CHAPTER 1

INTRODUCTION

1.1 Background

In our countries, a month after post-partum is still perceived as a critical time for the new mothers. It is perceived that new mothers are weakened after the birth process because of the blood loss. During this critical moment, new mothers are susceptible to many illnesses. Each ethnic used unique cooking ingredients during the post partum month to protect and recover the new mothers' health. The traditional post partum diet which is generally restricted diet (diet avoid of certain foods) may have important health consequences in reducing the nutritional content of breast milk.

The World Health Organization's (WHO) recommends that infants be exclusively breastfed for the first six months of their life for optimal health and development. It also recommends that infants should continue to be breastfed for up to two years of age and beyond while weaning onto semi-solid food (WHO, 2009). Breast feeding benefits both mothers and infants biologically and emotionally. Breast milk provides an important foundation for future health of infants. However, there are various reasons mothers stop breastfeeding their infants before six months.

There are no published studies on the practices of Sarawakian ethnic groups as well as description of the relationship (if any) between post partum dietary practices and breastfeeding. A cross-sectional study will be carried out to study the relationship between dietary intake of post partum period and the breastfeeding practices of childbearing mothers of Iban and Orang Ulu in Tudan, Miri.



1.2 Background of research site

The coverage of Klinik Kesihatan Tudan, Miri starts from Pujut 7 to Kuala Baram. The population is estimated at about 100,000. There are various ethnic groups staying in this area, including Ibans, Orang Ulus Malays, Chinese, *etc*. Each ethnic group practises relatively different post partum diet during their confinement month (first month of post partum). The beliefs and practices of each ethnic group have common goals, namely, the maintenance of well-being and preservation of life of a new mother and her newborn (Muecke, 1976).

1.3 Objectives

- 1. To study common cooking ingredients used and the dietary intake during the post partum period of Iban and Orang Ulu women in Tudan, Miri.
- To study breastfeeding practices of Iban and Orang Ulu women in Tudan, Miri.
- To study the relationship between the dietary intake during the post partum period and breastfeeding practices of Iban and Orang Ulu women in Tudan, Miri.
- 4. To study the impact of such practices on nutritional status of infants.

1.4 Hypothesis

The hypothesis is that there is association between the dietary intake during the post partum period and breastfeeding practices of women in Tudan, Miri. The above variables have direct influence on nutritional status of infants.



CHAPTER 2

LITERATURE REVIEW

2.1 Baby-Friendly Hospital Initiative

While breastfeeding is a natural act, it is also a learned behaviour. An extensive body of research has demonstrated that mothers and other caregivers require active support for establishing and sustaining appropriate breastfeeding practices. WHO and UNICEF launched the Baby-friendly Hospital Initiative in 1992, to strengthen maternity practices to support breastfeeding. The BFHI has been implemented in about 16.000 hospitals in 171 countries and it has contributed to improving the establishment of exclusive breastfeeding world-wide.

The Hospital Rakan Bayi in Malaysia, which is an example of a campaign identified under the Baby Friendly Hospital Initiative (BFHI), is a program to create conducive conditions in the hospital for mothers who wish to breastfeed their babies successfully (KKM, 2006). The Breastfeeding Policy statement has been amended since year 2006: "All mothers are encouraged to breastfeed their baby exclusively for six months and continue to breastfeed until the child is two years old. Complementary foods have to be given from six months onwards. This means that from birth to sixth months of age, babies are breastfeed exclusively, no water or milk substitute and complementary food are needed." (KKM, 2006)

Under this policy, all antenatal mothers attending Government Polyclinic is given a health education on Importance of Breastfeeding. All mothers are taught the anatomy of the breast, how to latch-on properly, the proper position to breast feed their infants as well as being explained the benefits of breastfeeding to both mother and infant. All nurses and health sister are required to confirm the mothers have at least attend once of the health education on this particular topic.



The Baby-Friendly Hospital Initiative is one of the most important strategies implemented to empower exclusive breastfeeding practices through involvement of maternal and child services in Malaysia government hospitals as well as private hospitals. At the end of year 2006, out of 128 hospitals under the Ministry of Health, 116 of them have been recognized as Baby-Friendly Hospitals (*Hospital Rakan Bayi*).

2.2 Breastfeeding

Breastfeeding is an unequalled way of providing ideal food for the healthy growth and development of infants; it is also an integral part of the reproductive process with important implications for the health of mothers. A recent review of evidence has shown that, on a population basis, exclusive breastfeeding for 6 months is the optimal way of feeding infants. Thereafter infants should receive complementary foods with continued breastfeeding up to 2 years of age or beyond.

To enable mothers to establish and sustain exclusive breastfeeding for 6 months, WHO and UNICEF recommend:

- Initiation of breastfeeding within the first hour of life
- Exclusive breastfeeding that is the infant only receives breast milk without any additional food or drink, not even water
- Breastfeeding on demand that is as often as the child wants, day and night
- No use of bottles, teats or pacifiers

In Malaysia, the National Nutrition Policy was developed to address the country's nutritional challenges toward enhancing the health and nutritional well being of the people (MOH, 2005). Improving breastfeeding and complementary feeding practices and improving food intake and dietary practices are the thrust areas which reinforced in the current National Plan of Action for Nutrition II (NPAN II) (2006-2015).



The definitions of certain infant feeding practices are listed in Table 2-1. A child can be classified as following a certain practice if criteria listed for that practice are met.

Feeding practice	Requires that the infant receive	Allows the infant to receive	Does not allow the infant to receive
Exclusive breastfeeding	Breast milk (including milk expressed or from a wet nurse)	ORS, drops, syrups (vitamins, minerals, medicines)	Anything else
Predominant breastfeeding	Breast milk (including milk expressed or from a wet nurse) as the predominant source of nourishment	Certain liquids (water and water- based drinks, fruit juice), ritual fluids and ORS, drops or syrups (vitamins, minerals, medicines)	Anything else (in particular, non- human milk, food- based fluids)
Complementary feedinga	Breast milk (including milk expressed or from a wet nurse) and solid or semi-solid foods	Anything else: any food or liquid including non- human milk and formula	NA
Breastfeeding	Breast milk (including milk expressed or from a wet nurse)	Anything else: any food or liquid including non- human milk and formula	NA
Bottle-feeding	Any liquid (including breast milk) or semi- solid food from a bottle with nipple/teat	Anything else: any food or liquid including non- human milk and formula	NA

^a The term complementary feeding, reserved to describe appropriate feeding in breastfed children 6 months of age or beyond, is no longer used in the indicators to assess infant and young child feeding practices. The previously used indicator 'Timely complementary feeding rate' (1), which combined continued breastfeeding with consumption of solid, semi-solid and soft foods, was difficult to interpret. This indicator has therefore been replaced by the indicator 'Introduction of solid, semi-solid or soft foods' which is a measure of a single feeding practice. Nevertheless, the term complementary feeding is still very useful to describe appropriate feeding practices in breastfed children 6–23 months of age and will continue to be used in programmatic efforts to improve infant and young child feeding as guided by the *Global Strategy on Infant and Young Child Feeding (8)*. The timely complementary feeding rate can also be calculated using the data generated for measuring the new and updated indicators.

Source: (WHO, 2008)



2.2.1 Benefits of breastfeeding for infants

Breastmilk promotes sensory and cognitive development, and protects the infant against infectious and chronic diseases. Exclusive breastfeeding reduces infant mortality due to common childhood illnesses such as diarrhoea or pneumonia, and helps for a quicker recovery during illness. These effects can be measured in resource-poor and affluent societies (Kramer, 2001).

For the infant, the principal advantages of breast milk are nutritional, immunological and anti-bacterial. Breast milk is an excellent sole source of nutrition for the first four to six months of a child's life. Colostrums, which is produced during the first few days of post partum, give immunological protection for the new born. Moreover, breast milk is a sterile fluid and contains powerful anti-bacterial agents (Gray 1980, Short 1984). Because of the species-specific character of breast milk, and all substitute feeding preparations differ markedly from it, human milk is uniquely superior for infant feeding (Hambraeus *et al.*, 1975).

Research in developed and developing countries, including middle-class populations in developed countries, provides strong evidence that human milk feeding decreases the incidence and/or severity of a wide range of infectious diseases (Heinig, 2001) including bacterial meningitis, (Cochi *et al.*, 1986; Istre *et al.*, 1985) bacteremia, (Istre *et al.*, 1985; Takala *et al.*, 1989) diarrhea, (Dewey *et al.*, 1995; Howie *et al.*, 2003; Popkin *et al.*, 1990; Beaudry *et al.*, 1995; Bhandari *et al.*, 2003; Lopez-Alarcon *et al.*, 1997) respiratory tract infection, (Lopez-Alarcon *et al.*, 1997; Oddy *et al.*, 1999, 2002, 2003) and urinary tract infection (Pisacane *et al.*, 1992; Marild *et al.*, 2004).

2.2.2 Benefits of breastfeeding for mothers

For the mother, breastfeeding encourages the contraction of the uterus. It promotes an affectionate bond between mother and child. It is economical, an important consideration in the Third World, and it is convenient. Besides this, other important health benefits of breastfeeding and lactation are also described for mothers. The benefits include decreased postpartum bleeding and more rapid



uterine involution attributable to increased concentrations of oxytocin (Chua *et al.*, 1994), decreased menstrual blood loss and increased child spacing attributable to lactational amenorrhea (Kennedy *et al.*, 1996), earlier return to prepregnancy weight (Dewey *et al.*, 1993), decreased risk of breast cancer (Newcomb *et al.*, 1994; Lee *et al.*, 2003; Tryggvadottir *et al.*, 2001; Enger *et al.*, 1998; Jernstrom *et al.*, 2004), decreased risk of ovarian cancer (Rosenblatt *et al.*, 1993) and possibly decreased risk of hip fractures and osteoporosis in the postmenopausal period (Cumming *et al.*, 1993; Lopez *et al.*, 1996; Paton *et al.*, 2003).

Moreover, through the prolactin elevating effect of nipple stimulation, breastfeeding delays the return of normal ovarian function and thereby lengthens the interval between births (McNeilly 1979, Hatcher *et al.* 1990). This latter effect also advantages the child by lessening the likelihood of displacement from the breast by a new pregnancy. Weaning foods are grossly inadequate in many developing countries, and children weaned too soon are at risk of various protein-calorie deficiencies, such as kwashiorkor and marasmus, causing general debilitation, arrested development, wasting and, possibly, death (Jelliffe and Jelliffe 1989). Where medical services are poor or largely absent, children who are breast-fed are more likely to survive than those who are not (McCann *et al.*, 1981).

2.3 Human milk composition

2.3.1 Colostrum

Colostrum is a thick, often yellow fluid produced days 1 - 3 after infant birth. Colostrum provides about 58 - 70 cal/100ml and is higher in protein, and lower in carbohydrate and fat, than mature milk (produced two weeks after infant birth). Secretory immunoglobulin A and lactoferrin are the primary proteins in colostrum. The concentration of mononuclear cells (a specific type of white blood cell) from the mother that provides immune protection is highest in colostrum. Colostrum has higher concentrations of sodium, potassium, and chloride than are found in mature milk (Murtaugh, Sharbaugh, & D.Sofka, 2005).



2.3.2 Water

Breast milk is isotonic with maternal plasma. This biological design means that infants do not need water or other fluids to maintain hydration, even in hot climates (Almroth, 1978). As a major component of human milk, eater allows suspension of milk sugars, proteins, immunoglobulin A, sodium, potassium, citrate, magnesium, calcium, chloride, and water-soluble vitamins (Murtaugh, Sharbaugh, & D.Sofka, 2005).

2.3.3 Energy

Human milk provides approximately 0.65 cal/ml although the energy content varies with its fat composition (Murtaugh, Sharbaugh, & D.Sofka, 2005). Breastfed infants consume fewer calories than those fed human milk substitute (Axelson, Borulf, & Righard, 1987).

2.3.4 Lipids

Lipids are the second largest component of breast milk by concentration (3-5% in mature milk). Lipids provide half of the energy of human milk (Jensen, 1995). Cholesterol concentration in breast milk ranges from 10-20 mg/dL, and changes with the time of day (Jensen, 1995).

2.3.5 Protein

The concentration of proteins synthesized in the breast is more affected by the infant's age than by maternal protein intake and maternal serum proteins. Proteins synthesized by the breast are variable because hormones that regulate gene expression and guide protein synthesis change with time (Rosen, Jones, & Rodgers, 1986). Enzymes present in human milk may also protect infants' health by facilitating reactions that prevent inflammation (Murtaugh, Sharbaugh, & D.Sofka, 2005). Human milk proteins include several types such as casein, whey proteins and non-protein nitrogen. Casein is the major type of protein in mature milk. Casein's digestive products, casein phosphopeptides, keep calcium in soluble form and facilitate its intestinal absorption (Murtaugh, Sharbaugh, & D.Sofka, 2005). Whey proteins are proteins that remain soluble in water after casein is precipitated from milk by acid or enzymes.



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