

## Breastfeeding Practices and Nutritional Status of Orang Asli Children (Temuan and Mah Meri) in Sepang District and Carey Island, Selangor

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### ABSTRACT

**Objectives:** There is a lack of current published information on health and nutritional status of Orang Asli children. A study was conducted to assess breastfeeding practices, dietary intake and growth status of Orang Asli children in Sepang and Carey Island, Selangor. **Methods:** A total of 173 children (88 Temuan and 85 Mah Meri) from 137 households were measured for body weight and height. Information on breastfeeding practices and dietary intake was obtained from their mothers. **Results:** Most of the mothers (98.9%) breastfed their infants with a high proportion (86.8%) initiating breastfeeding within one hour after delivery. About 53% of the mothers reported discarding colostrum due to various reasons including the perception that colostrum is undesirable and can produce ill-health. Although many of these mothers (58.3%) discarded colostrum on their own initiative, about 25% of them reported that they were advised by health professionals. Among mothers who had stopped breastfeeding at the time of the study (n=48), the mean duration of breastfeeding was  $12.1 \pm 8.9$  months. About 33% of the mothers stopped breastfeeding before their infants were 6 months old and only 31% breastfed their children for more than 1 year. The percentages of significantly underweight, stunted and wasted were 48.9%, 5.2.2% and 4.3% respectively for children aged 1-3 years, whereas among children aged 4-6 years old, 35.8%, 50.6% and 1.3% were underweight, stunted and wasted, respectively. A higher proportion of Mah Meri than Temuan children in both age groups were significantly underweight, stunted and wasted. Despite the adequate intake of energy and most nutrients, the Orang Asli children had insufficient mean number of servings for all food groups – grain and cereals, fruits, vegetables, meat and fish, and milk and dairy products. **Conclusion:** In this study, undernutrition is a major health and nutrition problem among the Orang Asli children. The problem could be due to many factors that include poor infant and child feeding practices. Concerted efforts by various government and non government agencies are essential to improve the health and nutrition of Orang Asli.

**Keywords:** Orang Asli, children, dietary intake, breastfeeding, growth status

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### INTRODUCTION

Child nutritional status is an important indicator of the general well-being of a population. Household food security, care for mothers and children and appropriate health environment and services have been identified as important underlying determinants of child nutritional status.<sup>[1,2]</sup> However, due to poverty, households may not be able to achieve food security, have limited resources for care and lack access to safe water and adequate sanitation and health care services. The underlying determinants of child nutritional status and poverty

could be further affected by undesirable situations related to the existing political, economic, cultural and social systems.

Child malnutrition, which is predominantly due to poverty, is still prevalent in the developing world. The prevalence is expected to increase if the governments do not undertake prompt actions to address the problem. In 2005, it was estimated that 24.3% and 29% of children below five years old were underweight and stunted, respectively.<sup>[3]</sup> In these developing countries, malnutrition is responsible for more than 50% of deaths in young children. In addition, both macronutrient and micronutrient deficiencies will increase the children's risk of dying from five preventable communicable diseases such as pneumonia, diarrhoea, measles, malaria and HIV/AIDS.<sup>[6-8]</sup> Malnutrition is also associated with impaired growth and development as it can contribute to lifelong physical disabilities, mental retardation, impaired immune systems and inability to learn adequately. These impairments could well extend into adulthood to produce less physically active and economically productive adults and who are at risk of chronic diet-related diseases such as heart disease, diabetes and hypertension.<sup>[9]</sup>

Malaysia, as a developing country, has morbidity and mortality statistics representing a trend towards improvement in the health status of the young children. Although Malaysian's infant and child mortality rates have declined significantly over the past three and a half decades, the infant and child mortality rates of Orang Asli children have declined slowly compared to the rates of other ethnic groups.<sup>[10]</sup> Previous studies have shown that the Orang Asli children have poor health and nutritional status as indicated by the high prevalence of infections, underweight, stunted growth, insufficient food and nutrient intake and poor infant and child feeding practices.<sup>[11-16]</sup> Despite government efforts to improve the well-being of Orang Asli communities, there are many still living in poverty or are underserved due to the distance of their villages from towns and cities. Poverty, lack of access to health care facilities, poor knowledge and perhaps inappropriate cultural practices could contribute to the persistent health and nutrition problems in these Orang Asli communities.

This study was conducted to assess the nutritional status (dietary intake and growth parameters) of Orang Asli (Temuan and Mah Meri) children and breastfeeding practices of Orang Asli mothers as a basis for developing a culturally appropriate health and nutrition intervention for Orang Asli mothers and caregivers in an effort to improve the health and nutrition of Orang Asli children.

## MATERIALS AND METHODS

This study was conducted in Sepang District and Carey Island, Selangor. There were a total of 189 households from 9 villages in Sepang District (Temuan settlement) and 230 households from 5 villages in Carey Island (Mah Meri settlement). Temuan and Mah Meri are the sub-ethnic groups of Proto-Malay and Senoi, respectively. Each of these sub-ethnic groups has its own language, culture, social and economic activities and perceives itself as different from other sub-ethnic groups.

Households from both locations having at least one child aged 1-3 and/or 4-6 and/or 7-9 years old were invited to participate in the study. However, only 183 households (in Sepang District and in Carey Island) met this criterion and were willing to participate in the study. If a household consisted of more than 1 child aged 1-3 and/ or 4-6 and/or 7-9 years,



the youngest child was selected for this study for each age category. This study will only report on children in the age groups of 1-3 and 4-6 years old from 137 households.

Prior to the commencement of the study, permission to conduct this study was obtained from Jabatan Hal Ehwal Orang Asli Malaysia (JHEOA). The research protocol was approved by the Ethics Committee of the Faculty of Medicine and Health Sciences, Universiti Putra Malaysia. The subject's consent to participate in the study was obtained through a signed consent form which was read to each subject (mother) prior to data collection.

Individual interviews were carried out in the home setting using a pre-tested questionnaire. The questionnaire consisted of four parts namely, household demography and socio-economic information, child feeding practices, child's dietary intake (24-hour recall), and child's anthropometry measurements.

#### *Demographic and Socio-economic Characteristics*

Information such as income, household size, number of children, children's information (age, gender, education) and parental age, education and occupation were obtained from the mothers. Information on the age of children was made available through birth certificates provided by the mothers. In some cases where mothers were not able to provide the needed information, data were obtained from the fathers.

#### *Anthropometry Measurements*

The weight and height measurements of the children were taken using Tanita digital weighing scale (with accuracy of 0.1kg) and microtoise tape (with accuracy of 0.1cm), respectively. Child's age was calculated in months from the date of birth to the date of data collection. The age, weight and height were then transformed into three indices: weight-for-age, height-for-age, and weight-for-height. These three indices were expressed in terms of z-scores (WAZ, HAZ and WHZ) using the NCHS/WHO growth reference.<sup>[17]</sup>

Category	Standard deviation (SD) of the NCHS median
Low (Underweight/Stunting/Wasting)	< - 2 SD
Normal	- 2 SD ≤ x ≤ 2 SD
High	> 2 SD

#### *Breastfeeding Practices*

There were 7 questions to assess practices related to breastfeeding. These questions were posed to mothers who had children in the age group of 1-3 years old only as they were more able to recall their breastfeeding experiences. The World Health Organization<sup>[18]</sup> definition of ever breastfed (infants less than 12 months of age who were ever breastfed) was used in the study.

### *Dietary Intake*

The children's dietary intake was assessed using 24-hour dietary recall method for 3 days (2 weekdays and a weekend). The mothers were asked to estimate the foods consumed by the children using the common household measurements (cups, bowls, spoons, saucers and others). The data obtained were analysed as energy (kcal) and nutrients (carbohydrate, protein, fat, vitamin A and C, thiamine, riboflavin, calcium and iron) and were compared to the Malaysian Recommended Nutrient Intake (RNI).<sup>[19]</sup> In addition, the number of servings for each food group (grain and cereal, fruit, vegetable, meat and milk) was calculated based on the Food Pyramid for children.<sup>[20]</sup> In this study, the average of the three-day intake for energy, nutrients and number of servings food groups is reported.

### *Statistical Analysis*

Descriptive statistics such as mean, median, standard deviation, and percentages were analysed using Statistical Program for Social Science (SPSS 12.0). ANTHRO software was used to analyse the anthropometric data. Energy and nutrient intake of the children were analysed using Diet4 software which utilises the Malaysian food database.<sup>[21]</sup>

## **RESULTS**

### *Demographic and Socio-economic Characteristics*

The demographic and socio-economic characteristics of households and children in this study are shown in Table 1. There were a total of 173 children from 137 households in this study, with 88 Temuan (48 of 1-3 years old and 40 of 4-6 years old) and 85 Mah Meri (44 of 1-3 years old and 41 of 4-6 years old).

In both Mah Meri and Temuan groups, the average years of schooling was higher for fathers than mothers. Many of the Temuan (68.2%) and Mah Meri (54.1%) fathers were self-employed in that they worked as harvesters in their own palm plantation, storekeepers, fishermen and sculptors. A majority of the Temuan (88.6%) and Mah Meri (77.6%) mothers were housewives. However, they also helped their spouses in the palm plantations or in fishing.

The average household size for these sub-ethnic groups ( $5.68 \pm 1.95$ ) was higher than the national average household size of 4.6 reported in the Eighth Malaysian Plan.<sup>[22]</sup> The mean monthly household income for the Temuan group ( $601.37 \pm 355.22$ ) was higher than that of the Mah Meri group ( $518.93 \pm 296.95$ ).

### *Breastfeeding Practices*

The majority of the mothers (98.9%) reported that they breastfed their infants (Table 2). A significant proportion of the Temuan (80.8%) and Mah Meri (93.2%) mothers initiated breastfeeding within 1 hour after delivery upon advice from the clinic or hospital staff (e.g. physicians and nurses). The practice of discarding colostrum, the early milk which has nutritional and anti-infective properties, was quite common among the mothers, especially the Mah Meri group (65.9%). Common reasons reported by the mothers for discarding

**Table 1.** Child and household socioeconomic and demographic characteristics

Characteristics	Temuan		Mah Meri		Total	
	n (%)	Mean±SD	n (%)	Mean±SD	n (%)	Mean±SD
Child's gender (n=173)						
Male	50 (56.8)		38 (44.7)		88 (50.8)	
Female	38 (43.2)		47 (55.3)		85 (49.4)	
Child's age (years) (n=173)						
1-3	48 (54.5)		44 (51.7)		92 (53.2)	
4-6	40 (45.5)		41 (48.3)		81 (46.8)	
Parental education (years) (n=137)						
Father		6.17±2.52		6.88±2.26		6.51±2.41
Mother		5.74±2.70		6.71±1.96		6.23±2.40
Parental age (years) (n=137)						
Father		34.67±8.03		32.62±8.59		33.63±8.35
Mother		31.10±7.73		29.01±6.70		30.04±7.27
Occupation of father (n=137)						
Government employee	8 (12.0)		2 (2.9)		10 (57.3)	
Private employee	12 (18.0)		13 (18.6)		25 (18.3)	
Self employed	47 (70.0)		54 (77.1)		101 (73.7)	
Unemployed	-		1 (1.4)		1 (0.7)	
Occupation of mother (n=137)						
Working with income	8 (12.0)		14 (19.0)		22 (16.1)	
Working without income	8 (12.0)		3 (4.3)		11 (8.0)	
Housewife	51 (76.0)		53 (76.7)		104 (75.9)	
Household income (RM) (n=137)		628.27±430.74		536.99±303.44		581.63±372.63
Income per capita (RM) (n=137)		116.92±79.20		109.43±68.63		113.09±73.81
Number of children (n=137)		3.40±1.98		3.10±1.69		3.25±1.84
Household size (n=137)		5.84±2.19		5.46±1.85		5.64±2.03

**Table 2.** Breastfeeding and feeding practices among Temuan and Mah Meri children (1-3.99 years old) (n=92)

Characteristics n (%)	Temuan n (%)	Mah Meri n (%)	Total
Ever breast-feed? (n=92)			
Yes	(n=48) 47 (97.9)	(n=44) 44 (100)	(n=92) 91 (98.9)
No	1 (2.1)	-	1 (1.1)
First time breast-milk is given (n=91)			
1 hour after birth	(n=47) 38 (80.9)	(n=44) 41 (93.2)	(n=91) 79 (86.8)
≤ 24 hours after birth	6 (12.7)	3 (6.8)	9 (9.9)
> 24 hours after birth	3 (6.4)	-	3 (3.3)
Discard colostrum (n=91)			
Yes	(n=47) 19 (40.4)	(n=44) 29 (65.9)	(n=91) 48 (52.7)
No	28 (59.6)	15 (34.1)	43 (47.3)
Reasons for discarding colostrum (n=48)			
Tradition	(n=19) 11 (57.9)	(n=29) 12 (41.4)	(n=48) 23 (47.9)
Colostrum is dirty (e.g. germs, pus)	4 (21.0)	7 (24.2)	11 (31.2)
Advice from others	2 (10.5)	2 (6.9)	4 (8.4)
Child will be ill if given colostrums	1 (5.3)	2 (6.9)	3 (6.2)
Breast feels full of milk	-	1 (3.4)	1 (2.1)
No reason stated	-	2 (6.9)	2 (4.2)
People who advice discarding colostrum (n=48)			
Own initiative	(n=19) 7 (36.8)	(n=29) 21 (72.5)	(n=48) 28 (58.3)
Mother/ Mother in-law	4 (21.1)	3 (10.3)	7 (14.6)
Doctor	5 (26.3)	2 (6.9)	7 (14.6)
Nurse	2 (10.5)	3 (10.3)	5 (10.4)
Friend	1 (5.3)	-	1 (2.1)
Still breastfeeding (n=91)			
Yes	n=47 24 (51.1)	(n=44) 19 (43.2)	(n=91) 43 (47.3)
No	23 (48.9)	25 (56.8)	48 (52.7)
Age (month) child stopped breastfeeding (n=48)			
≤6	(n=23) 4 (17.4)	(n=25) 12 (48.0)	(n=48) 16 (33.3)
7-12	11 (47.8)	6 (24.0)	17 (35.4)
13-24	8 (34.8)	5 (20.0)	13 (27.1)
25-36	-	2 (8.0)	2 (4.2)
(Mean±SD)	12.78±6.97	11.44±10.53	12.08±8.93



colostrum were tradition or cultural practice (47.9%), colostrum is dirty (22.9%), advice from others (8.4%), colostrum has germs (6.2%) and child gets ill if given colostrum (6.2%). Although many of these mothers (58.3%) discarded colostrum on their own initiative, about 25% of them reported that they were advised to do so by health professionals (physicians and nurses). At the time of the study, 52.7% (n=48) of the mothers had stopped breastfeeding. About one-third of these mothers stopped breastfeeding before their infants reached the age of 6 months. For these mothers, the mean duration of breastfeeding was  $12.1 \pm 8.9$  months and only 31% of them breastfed their children for more than 1 year.

### *Growth Status of Children*

Tables 3 and 4 present the growth status (weight-for-age, height-for-age and weight-for-height) of the Temuan and the Mah Meri children aged 1-3 years and 4-6 years, respectively. In general, more children in the younger age group (1-3 years old) experienced underweight, stunting and wasting. The percentages of significantly underweight, stunted and wasted were 48.9%, 52.2% and 4.3% respectively for children aged 1-3 years, whereas among children aged 4-6 years old, 35.8%, 50.6% and 1.3% were underweight, stunted and wasted, respectively. In comparing the two sub-ethnic groups, a higher proportion of Mah Meri than Temuan children in both age groups were significantly underweight, stunted and wasted.

**Table 3.** Growth status (weight-for-age, height-for-age and weight-for-height) of Temuan and Mah Meri children (1-3.99 years old) (n=92)

Indicators	Temuan (n=48) n (%)	Mah Meri (n=44) n (%)	Total (n=92) n (%)
Weight-for-age			
Significantly underweight	8 (37.4)	27 (61.4)	45 (48.9)
Moderately underweight	21 (43.8)	11 (25.0)	32 (34.8)
Normal	9 (18.8)	6 (13.6)	15 (16.3)
High	-	-	-
Height-for-age			
Significantly stunted	22 (45.8)	26 (59.1)	48 (52.2)
Moderately stunted	17 (35.4)	7 (15.9)	24 (26.1)
Normal	9 (18.8)	9 (20.5)	18 (19.5)
High	-	2 (4.5)	2 (2.2)
Weight-for-height			
Significantly wasted	-	4 (9.1)	4 (4.3)
Moderately wasted	19 (39.6)	16 (36.4)	35 (38.0)
Normal	29 (60.4)	24 (54.5)	53 (57.7)
High	-	-	-

**Table 4.** Growth status (weight-for-age, height-for-age and weight-for-height) of Temuan and Mah Meri children (4-6.99 years old) (n=81)

Indicators	Temuan (n=40) n (%)	Mah Meri (n=41) n (%)	Total (n=81) n (%)
Weight-for-age			
Significantly underweight	8 (20.0)	21 (51.2)	29 (35.8)
Moderately underweight	27 (67.5)	16 (39.0)	43 (53.1)
Normal	5 (12.5)	4 (9.8)	9 (11.1)
High	-	-	-
Height-for-age			
Significantly stunted	16 (40.0)	25 (61.0)	41 (50.6)
Moderately stunted	16 (40.0)	12 (29.2)	28 (34.6)
Normal	8 (20.0)	4 (9.8)	12 (14.8)
High	-	-	-
Weight-for-height			
Significantly wasted	1 (2.5)	-	1 (1.3)
Moderately wasted	14 (35.0)	16 (39.0)	30 (37.0)
Normal	25 (62.5)	25 (61.0)	50 (61.7)
High	-	-	-

**Table 5.** Energy and nutrient intake of Temuan and Mah Meri children (1-3.99 years old) (n=92)

Energy/Nutrient	Temuan (n=48) Mean±SD	Mah Meri (n=44) Mean±SD	Total (n=92) Mean±SD
Energy (kcal)	946±584	976±385	956±519
% RNI* (Boys)	(96.54±59.67)	(99.67±39.28)	(97.64±52.97)
(Girls)	828±306.65	808±327	815±315
	(90.98±33.69)	(88.82±35.93)	(89.61±34.72)
Protein (g)	38.36±26.97	39.23±21.07	38.78±24.20
% RNI*	(225.69±158.70)	(230.79±123.98)	(228.13±142.40)
Calcium (mg)	376.47±588.76	307.57±236.34	343.52±454.56
% RNI*	(75.29±117.75)	(61.51±47.26)	(68.70±90.91)
Ferum (mg)	4.74±2.75	4.81±2.93	4.77±2.82
% RNI*	(79.02±45.91)	(80.27±48.88)	(79.62±47.09)
Vitamin A (mg)	369.75±424.64	292.46±204.64	332.78±338.27
% RNI*	(92.43±106.16)	(73.11±51.16)	(83.19±84.56)
Vitamin B1 (mg)	0.89±1.69	0.54±0.32	0.72±1.25
% RNI*	(179.16±339.82)	(109.69±65.45)	(145.94±250.76)
Vitamin B2 (mg)	1.22±2.02	0.74±0.544	0.99±1.52
% RNI*	(245.97±404.62)	(148.78±108.88)	(199.49±304.21)
Vitamin B3 (mg)	6.49±5.33	6.68±3.83	6.58±4.65
% RNI*	(108.18±88.83)	(111.36±63.94)	(109.70±77.52)
Vitamin C (mg)	26.27±15.60	21.05±15.89	23.77±15.87
% RNI*	(87.59±52.01)	(70.17±52.98)	(79.26±52.92)

\* RNI Malaysia<sup>[19]</sup>



**Table 6.** Energy and nutrient intake of Temuan and Mah Meri children (4-6.99 years old) (n=81)

Energy/Nutrient	Temuan (n=40) Mean±SD	Mah Meri (n=41) Mean±SD	Total (n=81) Mean±SD
Energy (kcal)	1075±384	1040±234	1056±308
% RNI* (Boys)	(80.23±28.69)	(77.61±17.46)	(78.82±22.99)
	909±315	1065±466	984±397 (Girls)
(Girls)	(70.51±24.45)	(82.60±36.16)	(76.28±30.84)
Protein (g)	37.54±16.57	41.56±16.11	39.57±16.36
% RNI*	(163.22±72.05)	(180.69±70.07)	(172.07±71.15)
Calcium (mg)	218.98±116.74	241.95±118.29	230.61±117.36
% RNI*	(36.49±19.45)	(40.32±19.71)	(38.43±19.56)
Ferum (mg)	5.79±4.60	5.86±3.11	5.83±3.89
% RNI*	(96.54±76.71)	(97.77±51.83)	(97.16±64.90)
Vitamin A (mg)	301.05±204.04	276.91±161.78	288.83±183.11
% RNI*	(66.90±45.34)	(61.53±35.95)	(64.18±40.69)
Vitamin B1 (mg)	0.50±0.25	0.53±0.25	0.52±0.25
% RNI*	(84.44±41.97)	(89.83±41.79)	(87.17±41.70)
Vitamin B2 (mg)	0.64±0.31	0.59±0.28	0.62±0.29
% RNI*	(107.91±52.03)	(99.86±47.94)	(103.84±49.85)
Vitamin B3 (mg)	6.01±3.33	6.09±2.57	6.05±2.95
% RNI*	(75.12±41.70)	(76.23±32.13)	(75.69±36.93)
Vitamin C (mg)	27.40±15.12	23.46±16.24	25.40±5.72
% RNI*	(91.33±50.42)	(78.21±54.14)	(84.69±52.42)

\* RNI Malaysia (NCCFN, 2005)

### *Dietary Intake of Children*

Tables 5 and 6 show the energy and nutrient intake of Temuan and Mah Meri children in both age groups (1-3 years and 4-6 years), respectively. In both sub-ethnic groups, the mean energy and nutrient intake was adequate for children aged 1-3 years old compared to the Malaysian RNI. For children aged 4-6 years old of Mah Meri and Temuan groups, energy and nutrient intake as percentage of the RNI was adequate except for calcium intake (38.4%). In general, the Temuan and Mah Meri children of both age groups had insufficient number of servings for the five food groups (Tables 7 and 8). Almost all of the children never or consumed very little fruits, vegetables, milk and milk products. The main reasons given by the mothers for not giving these three food groups to their children were that the foods are expensive and children do not like these foods, especially vegetables.

## **DISCUSSION**

Nutrition in the early life will affect future growth and development as early feeding practices influence the development of eating behaviours that eventually can contribute to life-long health and nutritional status. Breastfeeding has been recognised as the best method of infant feeding as breast milk does not only provide the infants with all the energy and

**Table 7.** Mean number of servings from food groups among children [1-3.99 years old] (n=92)

Food Groups	Temuan (n=48)	Mah Meri (n=44)	Total (n=92)
Cereal, cereal products and tuber	3.79±1.75	3.19±1.47	3.50±1.64
Meat, legume, fish and alternatives	1.12±0.60	1.32±0.90	1.22±0.76
Milk and milk products	0.47±0.93	0.63±1.34	0.55±1.14
Vegetables	0.49±0.50	0.32±0.32	0.41±0.43
Fruits	0.08±0.27	0.02±0.15	0.14±0.62

Food Guide Pyramid (Bright Start Nutrition, 2000)

Cereal, cereal products and tuber	6-10 servings
Meat, legume, fish and alternatives	2-3 servings
Milk and milk products	2 servings
Vegetables	2 servings
Fruits	2 servings

**Table 8.** Mean number of servings from food groups among (4-6.99 years old) children (n=81)

Food Groups	Temuan (n=40)	Mah Meri (n=41)	Total (n=82)
Cereal, cereal products and tuber	4.88±1.89	4.74±1.72	4.81±1.80
Meat, legume, fish and alternatives	1.59±0.77	1.46±0.64	1.52±0.71
Milk and milk products	0.10±0.26	0.08±0.26	0.09±0.26
Vegetables	0.63±0.67	0.32±0.26	0.47±0.52
Fruits	0.16±0.38	0.31±0.88	0.39±1.02

Food Guide Pyramid (Bright Start Nutrition, 2000)

Cereal, cereal products and tuber	6-10 servings
Meat, legume, fish and alternatives	2-3 servings
Milk and milk products	2 servings
Vegetables	2 servings
Fruits	2 servings

nutrients required in the first six months of life but other health benefits as well.<sup>[23]</sup> As the benefits of breastfeeding continue to be experienced by the infants beyond the first year of life, the World Health Organisation has recommended that breastfeeding be continued until the child is 2 years of age or beyond.<sup>[24]</sup> In our sample of Orang Asli, a majority of the mothers (98.9%) reported that they ever breastfed their infants with 86.8% of the mothers initiating breastfeeding within the first hour of delivery as recommended by World Health Organisation.<sup>[25]</sup> However, our findings on the mean duration of breastfeeding among mothers who have stopped breastfeeding (12 months) and the proportion of these mothers who breastfed their infants for less than 6 months (33%) or who continued to breastfeed their children beyond 1 or 2 years of age (31%) were not surprising. Osman and Zaleha<sup>[11]</sup>



reported that breastfeeding was a common practice among Orang Asli women in Post Betau and Post Lanau in that 90% of their children were breastfed. Although the study did not report duration of exclusive breastfeeding, the mean duration of breastfeeding in these two communities was approximately 18 months. In two different studies conducted in rural and semi-urban areas of Kelantan and Terengganu, the percentages of infants who were breastfed for 6 months or less and more than 1 year were 42-54% and 22-46%, respectively.<sup>[26,27]</sup> Although breastfeeding is universal, especially in the rural areas of Malaysia, many women were not able to breastfeed for a longer duration as recommended by the World Health Organisation.<sup>[18]</sup> Pain associated with breastfeeding, unease with the act of breastfeeding, inconvenient to current lifestyle, insufficient breast milk, employment and pregnant with another child were among the common reasons given by women for terminating breastfeeding.<sup>[28,29]</sup>

Colostrum, an early secretion during the first few days after delivery, is rich in anti-infective and immunological properties. However, in many cultures, colostrum is viewed as an undesirable substance which can contribute to ill-health in infants and this perception eventually leads to the practice of discarding colostrum.<sup>[30,31]</sup> In the developing countries, this harmful care practice does not only contribute to poor health and nutrition of the infants but is also one of the causes for neonatal mortality.<sup>[32]</sup> In the present study, more than half of the Orang Asli women, especially the Mah Meri (65.9%) discarded colostrum. In both sub-ethnic groups, tradition (47.9%) and the belief that colostrum is dirty (31.2%) were reported to be the main reasons for discarding colostrum. The different perceptions of colostrum among women may be due to various reasons such as education level, culture and contact with formal health care services.<sup>[28]</sup> Perhaps frequent contact with health professionals and enhanced health and nutrition knowledge on breastfeeding may change the Orang Asli women's practice of discarding colostrum.

Similar to other studies on growth status of Orang Asli children<sup>[11,14-16]</sup> a majority of the Orang Asli children in the present study were moderately to significantly underweight and stunted. The high proportion of underweight and stunting may eventually persist into the later years of childhood and adolescence and could adversely affect the health status (i.e. lowered resistance to infections, recurring sickness) and cognition of these Orang Asli children. For example, low school enrolment and poor academic achievement of children have been shown to be partially attributed to the children's compromised health and nutrition.<sup>[33]</sup> The lower percentage of wasting (38-33%) compared to underweight (83-90%) and stunting (78-85%) in this sample may reflect that their weights have been adapted to their low stature. Subsequently these children may appear to have body weights that are appropriate for their stunted heights.

The dietary intake of Orang Asli children have been reported to be inadequate in energy and some nutrients.<sup>[14-16]</sup> In our study, the Orang Asli children in both age groups seemed to have adequate intake of energy and most nutrients. Further analyses on the diet quality of the Orang Asli children, however, showed that they did not have adequate number of servings from each food group. In other words, the energy and nutrients in the diets of these Orang Asli children were from limited types of food. For example, sweet beverages (e.g carbonated and syrup drinks), snack foods (e.g. prawn or fish crackers, snack cakes, sweets and candies) and fried foods (e.g. fried bananas, banana or flour



fritters) that were consumed by the Orang Asli children were high in energy. The adequate intake of protein and iron could be due to the combination of plant and animal food sources as indicated by the number of servings from cereal and meat groups. However, plant sources may not provide high quality protein or heme-iron that could be efficiently utilised by the body. Fish and eggs which were the common foods in the meat group consumed by the Orang Asli children could also explain the adequate intake of vitamins A, B and iron. Although the number of servings from fruits, vegetables and milk/dairy products did not meet the recommendations, the consumption of certain vegetables (tapioca leaves, swamp cabbage, fern shoots and spinach) and roots (e.g. tapioca roots, yam) in the diets of the Orang Asli children may be good sources of certain nutrients (e.g. vitamins A and C, thiamine, riboflavin, iron and calcium) when eaten in adequate amounts. Osman *et al.* [34] reported that rice, sugar, cooking oil, fish and egg were the main food sources of energy and protein for the Orang Asli. As children tend to choose foods which are familiar to them, they consume similar foods repeatedly, prefer high sugar and fat foods and dislike most fruits and vegetables. These dietary patterns that are based on limited food choices and thus lack dietary variety may result in intake below the recommended levels for some nutrients and consequently poor growth and development. [5,35]

There are several limitations to the study. First, questions on other types of milk feeding, types of complementary foods given in the first year of life and duration of exclusive breastfeeding were not obtained which may provide a comprehensive representation of infant feeding practices of these sub-ethnic groups. The reason was that during the pre-testing of the questions, it was found that the mothers were not able to recall the information or the information given was contradictory to the findings from our home observations. For example, the mothers would report that they exclusively breastfeed their infants, yet the practice of giving water and boiled rice water to infants as early as 1 month old was common. The dietary information obtained using the 24 hour recall was more appropriate to indicate the consumption of the types of complementary foods and other milks (if any) in the diets of the infants as we found in our observations that foods given to the infants (< 12 months) were similar to those given to toddlers (12-36 months). For example, the women will give mashed soft rice and fish to the infant and soft rice and fish to the toddler. Second, as some of the information was obtained through maternal recall, recall bias might occur in that mothers might not be able to recall correctly their breastfeeding practices or the children's dietary intake (e.g. amount of foods). Nevertheless, the descriptive presentation of our data on breastfeeding practices of Orang Asli women and the dietary intake and growth status of the Orang Asli children do certainly contribute to recent information on health and nutritional status of Orang Asli that eventually could be utilised by various interested parties.

## CONCLUSION

Although breastfeeding is widely practised among Orang Asli women in this sample, they still practise disposal of colostrum and have shorter breastfeeding duration. Inadequate complementary feeding during the first two years of life may lead to growth faltering especially stunting that is difficult to reverse in later childhood years.<sup>[36]</sup> If food consumption of the Orang Asli children continues to be deficient in energy and nutrients during the pre-school years, the poor growth and development will persist into adolescence and adulthood.

Similar to previous studies on growth status of Orang Asli children, our findings on the high prevalence of underweight, stunting and wasting indicate that undernutrition still predominate in the Orang Asli population. The poor health and nutritional status of these Orang Asli children need to be addressed by relevant government agencies such Ministry of Health, Ministry of Rural Development and the Department of Orang Asli Affairs (Jabatan Hal Ehwal Orang Asli) through concerted efforts in health and socio-economic development. For example, the information on child feeding practices of Orang Asli children will be useful for planning intervention strategies that focus on improvements in mother's knowledge and skills in health and nutrition which will enhance the nutritional and health status of the children and eventually the entire community.

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