Nutritional Problems in Children Aged 1-24 Months: Comparison of Hill-Tribe and Thai Children

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Abstract

A cross-sectional survey was conducted in Maecham district, Chiang Mai. The objective was to determine the magnitude of nutritional problems in children aged 1-24 months, both of hill-tribe and Thai communities, where breast-feeding is highly prevalent. Three hundred and fifty nine children were recruited, 252 were hill-tribe (Karen and Lahu), and 107 were Thai children. Anthropometric measurements were taken and mothers were interviewed. In a group of hill-tribe children, the prevalence of malnutrition (Z score of weight for age < -2) was 25.0 compared with 12.1 per cent for Thai children ($p < 0.01$). The prevalence was highest in children aged between 12-24 months. This corresponded to the time children were weaned. The prevalence of stunting (Z score of height for age < -2) in hill-tribe and Thai children was 25.4 and 12.1 per cent respectively ($p < 0.01$). There was no significant difference of wasting (Z score of weight for height < -2) between hill-tribe and Thai children, 9.1 and 8.4 per cent respectively. The mean (SD) Z scores of weight for age, weight for height, and height for age for both groups declined significantly as the age increased ($p < 0.001$). In conclusion, this study revealed the nutritional problems of young hill-tribe children were more severe than those of Thai children. The factors that could be related with this, were socioeconomic status, as also genetics, as well as cultural beliefs concerning child raising. Such ethnic minorities therefore should be considered as special cases in programs of health and nutrition promotion.

Key word : Nutrition, Wasting, Stunting, Hill-Tribe, Breast Feeding

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Malnutrition in children is still an important public health problem in Thailand[1], particularly among hill-tribe ethnic minorities living in the North. There seem to be several explanations for this existing problem among this population, for example: culture and belief; way of living and childcare and low literacy of women. Apart from these, health services provided to hill-tribe communities are also not able to fully cover the country, as it is difficult to reach them, especially in the remote highlands. Health promotion and disease prevention programs such as growth monitoring, immunization, antenatal care, health education, etc. were launched and have been promoted *via* the primary health care system for many years, but the achievements are still low in some particular areas. Most of the children in these communities are breast-fed in the first year of life. It is also not uncommon for some children to be breast-fed until the age of two years. This study aimed to demonstrate the magnitude of the nutritional problem and to describe patterns of breast-feeding and weaning practices in hill-tribe children aged 1-24 months old. This was compared with Thai children living in the same area.

METHOD

A cross-sectional survey was conducted in Chiang Mai, Thailand from December 1998 to March 1999, as part of a research study to evaluate vitamin A status in lactating women. The three subdistricts in Mae Cham district, identified for the survey by local public health officials, were around 150 kilometers from the heart of Chiang Mai. All the children (approximately five hundred) aged 1-24 months were invited to take part in the study. Children with congenital heart diseases, prematurity and severe congenital anomalies were excluded. Mothers or care-givers were interviewed in local dialects by community health workers for the following information: date of birth, illness in the past month, immunization, feeding practice, breast-feeding and weaning time, food supplementation as well as the history of pregnancy and delivery. Children were examined and measured for weight, height, and upper arm circumference. The Salter scale was used for weighing and weight was recorded in kilograms. The Starters measure mat, recommended by the Child Growth Foundation, UK was used to record length in centimeters. The nutritional status of children was compared to the WHO reference population[2]. Data management and analysis was performed in Epi Info program version 6. Malnutrition was determined by the standard deviation score (Z score) of weight for age less than –2. Wasting and stunting were defined by the Z scores of weight for height and height for age less than –2, respectively[3]. Mean Z scores were compared among different age groups. The statistical test for significance; a *t*-test was used to test the different of mean Z scores, and a Chi-square test was used for the comparison of the prevalence of malnutrition, wasting and stunting between the groups.

RESULTS

Four hundred and five children participated. This number was approximately 85 per cent of the overall initial number of children. Forty-six out of 405 were excluded as some data were missing and the records were not complete. The total number of children analyzed was then 359. Two hundred and fifty-two of them were hill-tribe (Karen and Lahu ethnic groups), and 107 were Thai children. Mean age (SD) of the hill-tribe children was 11.9 (6.3) months compared to 12.0 (6.7) for Thai ($p > 0.05$). Seventy-four per cent of hill-tribe mothers were not educated compared to 11.2 per cent that of Thai women ($p < 0.001$), however, both groups were not significantly different in level of economic status. Thirty-eight per cent of hill-tribe mothers had more than 2 children compared to 6.5 per cent for Thai mothers (Table 1).

The mean birth-weight (SD) of hill-tribes was 2,780.8 (502.5) grams compared to 2,916.5 (468.9) grams for Thai children ($p < 0.05$). Patterns of feeding and age at first supplementing food and weaning are shown in Table 2. Eighty-nine per cent of hill-tribe children were still breast-fed compared to 59.8 per cent for Thai children ($p < 0.0001$). In a group of children aged less than six months, 45.8 per cent were exclusively breast-fed compared to 55.2 per cent for Thai. The mean age of children for first supplementary food was not significantly different between the groups. The mean Z scores of weight for age, weight for height and height for age are presented in Table 3. They all declined significantly as the age increased ($p < 0.001$). The mean (SD) mid-arm circumferences of hill-tribe and Thai children were 13.6 (2.96) and 14.4 (2.08) centimeters respectively ($p < 0.001$). The prevalence of malnutrition for hill-tribe children was 25.0 per cent compared to 12.1 per cent for Thais ($p < 0.01$). It was shown that malnutrition in hill-tribes was highest,

Table 1. Maternal characteristics of the study population.

Characteristics	Hill-tribe (n=252)	Thai (n=107)
Mean (SD) age of children (months)	11.9 (6.35)	12.0 (6.74)
Mean (SD) age of mothers (years)	25.3 (6.38)	26.7 (6.00)
Mean (SD) maternal parity[a]	2.62 (1.64)	1.69 (0.75)
Mother with 3 or more children (%)[b]	38.5	6.5
Mother with no education (%)[b]	74.0	11.2
Mothers with very low economic status (%)	40.1	31.1

[a] P-value <0.05; [b] P-value <0.001

Table 2. Breast feeding and food supplementation in children.

Feeding pattern	Hill-tribe (n=252)	Thai (n=107)
Still breast-feeding (%)*	89.3	59.8
Exclusively breast-feeding in the first 6 months (%)	45.8	55.2
Mean (SD) age for first supplementary food (months)	3.8 (4.38)	3.7 (1.84)
Mean (SD) age for weaning breast milk (months)	11.5 (6.16)	10.7 (3.89)

* P-value <0.0001

Table 3. Mean Z-scores of weight for age, weight for height and height for age.

Age (months)	No.	Mean (SD) of Z-scores Weight for age*	Weight for height*	Height for age*
1-5	88	0.12 (1.14)	0.50 (1.25)	-0.39 (1.32)
6-11	95	-0.91 (1.23)	-0.43 (1.30)	-0.66 (1.32)
12-17	94	-1.64 (0.94)	-0.97 (0.99)	-1.38 (1.47)
18-24	82	-1.43 (0.97)	-0.70 (1.33)	-1.65 (1.38)
Total	359	-0.97 (1.27)	-0.40 (1.34)	-1.01 (1.46)

* P-value <0.001; WHO reference population.

49.3 per cent in children aged between 12-17 months (Fig. 1). For Thai children, the highest prevalence of malnutrition was 22.2 per cent in children aged 18-24 months. Twenty-five per cent of hill-tribes were stunted compared to 12.1 per cent for Thais ($p < 0.01$). There was no significant difference in prevalence of wasting between the groups, 9.1 and 8.4 per cent respectively (Table 4).

DISCUSSION

This study revealed the magnitude of nutritional problems among young children living in a remote area where breast-feeding practice is highly prevalent. Although it could not represent all the children in Chiang Mai Province, at least it has shown that the problems are more serious in the hill-tribe ethnic minorities, compared to the Thais living in the same area. Hill-tribe children were more likely to have lower weight at birth and to be twice more malnourished than Thais during the first two years of life. The result suggested that malnutrition was at its highest prevalence in children aged between 12-24 months. This corresponded to the time children were weaned. It is possible that in

Table 4. Prevalence of malnutrition, wasting and stunting.

Prevalence (%)	Hill-tribe (N=252)	Thai (N=107)	P-value
Malnutrition[a]	25.0	12.1	0.006
Wasting[b]	9.1	8.4	0.828
Stunting[c]	25.4	12.1	0.005

[a] Z score of weight for age less than –2; [b] Z score of weight for height less than –2;
[c] Z score of height for age less than –2.

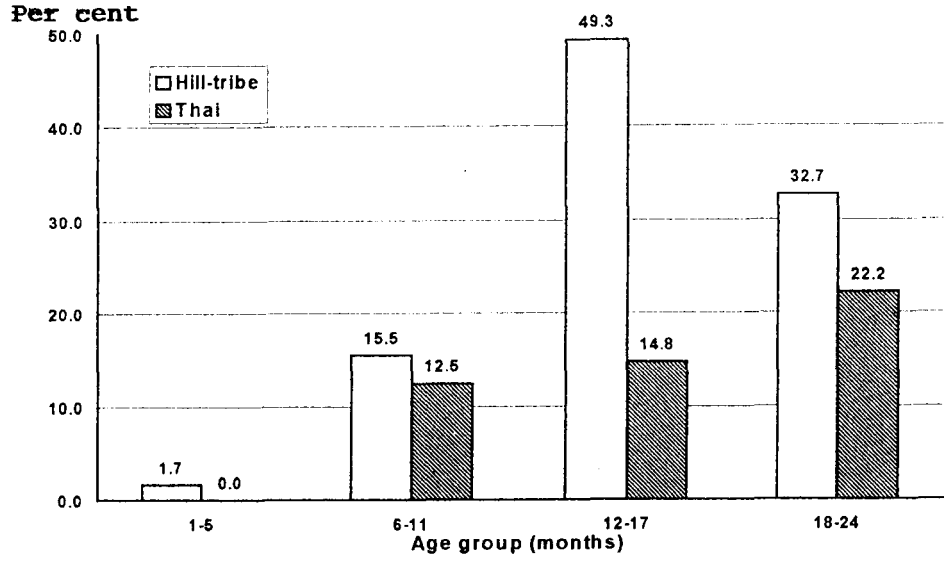

Fig. 1. Prevalence of malnutrition by age : Hill-tribe and Thai children.

poor communities, the complementary food at the weaning period is limited[4]. This is supported by previous studies, which demonstrated the relationship of prolonged breast-feeding without appropriate food supplementation and malnutrition in children[5]. Our study showed the differences of some maternal factors between the two groups; number of children in a family and maternal education, which could be related with their child nutrition[6]. However, cultural beliefs and practices of child raising, as well as genetics, may have some effect on child growth[7]. In conclusion, as the result showed the nutritional problem was most obviously seen in hill-tribes, therefore, these ethnic minorities should be considered as special cases for programs of health and nutrition promotion.

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ปัญหาโภชนาการในเด็กอายุ 1–24 เดือน: การศึกษาเปรียบเทียบเด็กไทยและเด็กชาวเขาบนพื้นที่สูง

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รายงานนี้เป็นการวิจัยเชิงสำรวจในอำเภอแม่แจ่ม จังหวัดเชียงใหม่โดยมีวัตถุประสงค์เพื่อศึกษาปัญหาโภชนาการในเด็กอายุ 1–24 เดือน ในพื้นที่ที่มีอัตราการเลี้ยงลูกด้วยนมแม่สูง และเปรียบเทียบความชุกของการเกิดภาวะทุพโภชนาการระหว่างเด็กชาวเขากับเด็กไทยในพื้นที่เดียวกัน จำนวนตัวอย่างทั้งหมด 359 ราย เป็นเด็กชาวเขา (กะเหรี่ยง และลัวะ) 252 ราย เด็กไทย 107 รายมารดาได้รับการสัมภาษณ์และกลุ่มตัวอย่างได้รับการประเมินโดยการชั่งน้ำหนัก และวัดความยาวหรือส่วนสูง ในกลุ่มเด็กชาวเขาพบความชุกของภาวะทุพโภชนาการ (Z score ของน้ำหนักต่ออายุน้อยกว่า –2) ร้อยละ 25 เทียบกับ ร้อยละ 12.1 ในกลุ่มเด็กไทย ($p < 0.01$) เด็กที่มีอายุระหว่าง 12–24 เดือน ซึ่งเป็นช่วงเวลาหลังจากที่เด็กส่วนใหญ่หย่านมแม่พบว่าเป็นกลุ่มที่มีอัตราชุกของภาวะทุพโภนาการสูงสุด ความชุกของภาวะการเจริญเติบโตช้า (Z score ของส่วนสูงต่ออายุน้อยกว่า –2) ในเด็กชาวเขาและเด็กไทย เท่ากับ ร้อยละ 25.4 และ 12.1 ตามลำดับ ($p < 0.01$) ส่วนภาวะเลี้ยงไม่โต (Z score ของน้ำหนักต่อส่วนสูงน้อยกว่า –2) พบว่าไม่มีความแตกต่างกัน คือ ร้อยละ 9.1 และ 8.4 ตามลำดับ ค่าเฉลี่ยของ Z scores ของน้ำหนักต่ออายุ น้ำหนักต่อส่วนสูง และส่วนสูงต่ออายุ มีค่าลดลงสัมพันธ์กับอายุที่เพิ่มขึ้นในเด็กทั้งสองกลุ่ม การศึกษานี้แสดงให้เห็นถึงความรุนแรงของปัญหาโภชนาการในเด็กชาวเขาที่ยังคงอยู่ และมีมากกว่าเมื่อเทียบกับเด็กไทย ปัญหาดังกล่าวอาจเกี่ยวข้องกับสถานะทางเศรษฐกิจ พันธุกรรรม รวมทั้งความเชื่อและวัฒนธรรมในการเลี้ยงดูเด็ก ดังนั้นการแก้ปัญหาโภชนาการในชนกลุ่มน้อยนี้จึงต้องมีมาตราการที่เฉพาะและเหมาะสมในแต่ละพื้นที่ด้วย

คำสำคัญ : โภชนาการ, การเจริญเติบโตช้า, ภาวะเลี้ยงไม่โต, ชาวเขา, การเลี้ยงลูกด้วยนมแม่

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