

# CHILD NUTRITION AMONG THE PENANS OF THE UPPER BARAM, SARAWAK

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## INTRODUCTION

Sarawak, famous for its many tribes who have descended from former headhunters and who continue to live in communal longhouses, has one little-known tribe of nomads called the Penans. Historically, the Penans have never headhunted nor lived in communal longhouses. Unlike the other tribes, the Penans live in small nomadic bands that roam the deep jungle hunting and gathering whatever edible foods may be found. Highly-skilled with the blowpipe, poison darts and the spear, the Penans have roamed the deep jungles of the Baram and Upper Rejang as far back as can be historically traced. Headhunted by their neighbouring tribes, today they number about 5,500, many of whom continue to live as their wandering fore-fathers did.

More recently, however, the Penans have come to appreciate the advantages of a settled mode of life and have increasingly begun to settle in groups of upto 200 or more people, particularly in the Lio Matu area of the Upper Baram. This change has, however, entailed a whole new way of life for the nomads, who often with little success, have had to learn new skills in food cultivation. Consequently, food availability and distribution have been affected

as reflected by child health, particularly child nutritional status. It is estimated that the infant mortality rate among Penan children is approximately 200 per 1,000 live births, as compared with 28 per 1,000 live births in Peninsular Malaysia.

This paper reports the findings of a study into the ecology of child nutrition among the semi-settled Penans of the Upper Baram.

The observations reported in this study were compiled during a number of field trips to the Upper Baram between September 1982 and April 1984. During the field studies, a total of 79 Penan children aged 12 years or less were examined.

## FOOD SOURCES OF THE PENAN CHILD

### Hunting, gathering and fishing

Nomadic Penans live in small bands of about three to ten families, who in turn are usually regrouped into a number of hunting parties. The families live in raised lean-tos made from sticks and large leaves (Fig. 1). From the base camp, hunting-gathering parties, accompanied by hunting dogs, each day forage for food from the surrounding jungles. In general the men hunt with poison darts and spear-tipped blow-pipes, while the women and children concentrate on gathering edible shoots, plants, fruits and small creatures. When a large animal such as a wild boar or deer is killed, most of it is consumed within a day or two, and is shared among members

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of the group. The Penans will hunt most animals but commonly prefer the larger creatures such as wild boar, varieties of deer, and monkeys. Smaller animals such as squirrels, bamboo rats, civet cats and birds are also hunted if larger animals are not available. The availability of game such as wild boar is seasonal. During seasons when wild boar is plentiful, surplus food may be preserved; the oil is collected after the water is removed by boiling, while the meat is preserved by smoking. Small fish and prawns are scooped up from the waters with a simple basket.

In more recent times, the Penans have acquired shot-guns, which has increased their ability to hunt wild boar and larger animals such as deer. However, they continue to hunt smaller animals such as squirrels and birds with their blow-pipes and poison darts. Gathering of edible plants, fruits and shoots are still done by the women and children. A wide variety of edible shoots are collected as food. These include the shoots of bamboos, ferns, palms and a banana-like plant.

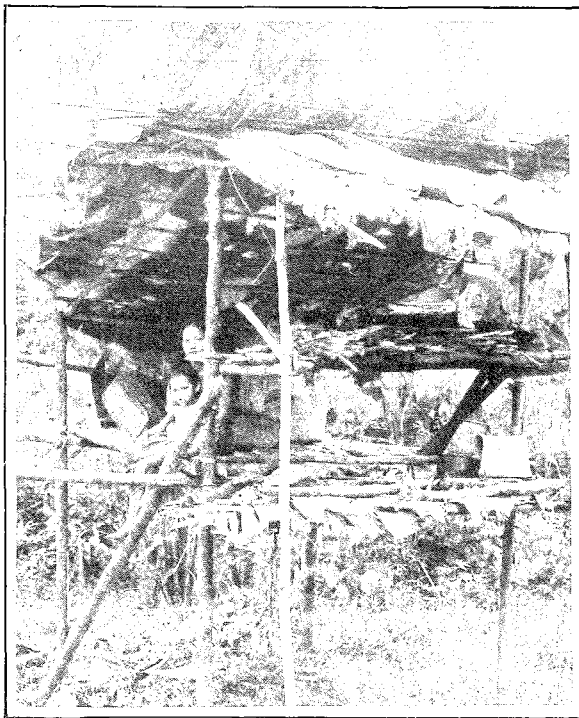


Fig. 1 Nomadic Penan mother and child in a lean-to made of sticks and leaves.

## Sago

For a number of historical reasons, the staple food of the Penans is sago, most of which is gathered from the jungle. The Penans recognise at least seven varieties of wild sago. Sago is a starch, obtained from the pith of the sago palm. It is extracted from the palm by scraping the pith with a special axe-like tool, after which the sago flour is extracted from the pulp. The dried flour is then stored for use when required.

Sago palms are relatively scarce in the surroundings of the Penan settlements, but are readily available in the deep jungles. Consequently, for most of the larger Penan settlements in the Upper Baram, sago is only available in large quantities several days away by foot. Smaller sago palms may be found about two hours by foot from the settlements but most Penan families prefer to travel further afield, some two to three days away, where both animal life as well as sago palms are more readily available.

## Rice, tapioca and maize

The nomadic Penans have never had a history of agricultural cultivation. However, many of the Penan families have begun to learn these skills with varying degrees of success. Some of the families that have settled for 20 or more years are able to obtain 50 – 60% of their staple requirements by cultivating rice, tapioca or maize. However, most Penan families are relatively newly-settled and at best can obtain only about 20% of their requirements through the cultivation of rice, tapioca and maize.

## Vegetables and fruit trees

Some of the longer-settled Penan families have acquired the skill of growing small quantities of vegetables such as cucumbers, gourds and beans. However, these are still rare and few. Among settled groups, there may be the occasional fruit tree but these are few and far between.

## Breast-feeding

The majority of Penan children are breast-fed for upto 24 months. However, weaning begins when the child is about six months old. At this time, sago is introduced to the child. By the time the child is a toddler, he is increasingly dependent upon larger proportions of sago mixed with small quantities of meat, fish or vegetables, added for taste.

Bottle-feeding, although seen among the Penans is, up to now, not an important problem among the Penans of the Upper Baram. However, it is likely to become a problem as communications improve.

## Preparation of sago

As noted earlier, the staple diet of Penans is sago. Much of the sago is collected from the jungles and stored in the form of a crude brown flour. In its commonly prepared form called *na'oh*, sago is a sticky, paste-like substance made by mixing sago flour with several times its volume of hot water. *Na'oh* is normally eaten together with some meat or fish; if these are not available, it can be consumed with some vegetables such as palm shoots or fern shoots. *Na'oh* is picked up by twirling a stick in the pot and bringing the coated stick to the mouth. By and large, the quantity of meat, fish or vegetables added to *na'oh* is very small and is meant principally to enhance its otherwise bland taste.

## Composition of sago

Sago as a food is a good source of carbohydrates

but is a poor source of other important food components such as proteins, fats and vitamins. Consequently, compared with other staple foods used in the region, such as rice, sweet potato and tapioca, sago stands out as an outstandingly inadequate food particularly for the growing child (Table I). It should be noted, for example, that rice contains 8 grams of protein per 100 grams of rice, as compared to 0.2 grams in sago, and 1.8 grams of fat compared with 0.1 grams in sago.

## MALNUTRITION IN PENAN CHILDREN

### Height for age

As noted earlier, 79 Penan children aged 12 years and below were examined anthropometrically for malnutrition and classified according to the criteria outlined by Waterlow.<sup>1</sup> In terms of height for age, this is depicted in Fig. 2. It will be noted that only 25% of children can be classified to have a normal height, while 75% suffered from varying degrees of stunting.

### Weight for height

As age was not easy to determine accurately, it seems better to examine weight in terms of height to estimate the proportion of wasting among the Penan children. This is depicted in the form of a bar chart (Fig. 3). Using Waterlow's criteria, it will be noted that 53% of children can be described as normal under this classification, while 7.6% can be described as moderate to severely wasted.

TABLE I  
COMPOSITION OF 100 GRAMS OF EDIBLE PORTION OF RICE, SWEET POTATO,  
MAIZE, TAPIOCA AND SAGO

Food Item	Protein	Fat	Carbohydrate	Thiamine	Riboflavin	Niacin	Ascorbic acid
	(grams)			(milligrams)			
Rice (unpolished)	8.0	1.8	76.0	.38	.14	5.5	0
Sweet potato	2.0	.5	31.3	.10	.09	.5	23.8
Tapioca (fresh tuber)	.8	.2	39.3	.06	.20	.2	35.9
Sago	.2	.1	87.5	0	0	.1	0
Maize ( <i>Zea mays</i> )	9.2	4.6	69.3	.22	.12	1.7	8.8

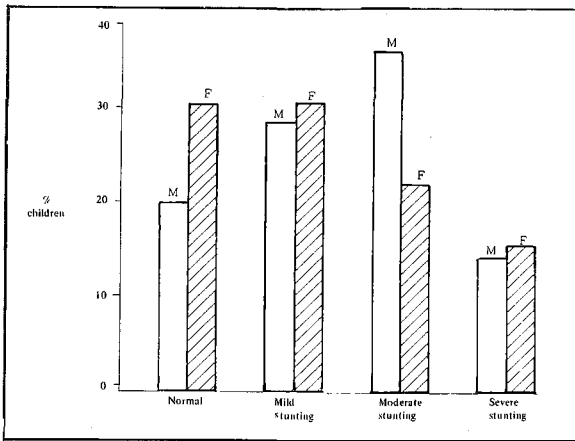


Fig. 2 % distribution of Penan children (0-12 yrs), according to grade of stunting (Waterlow's classification).

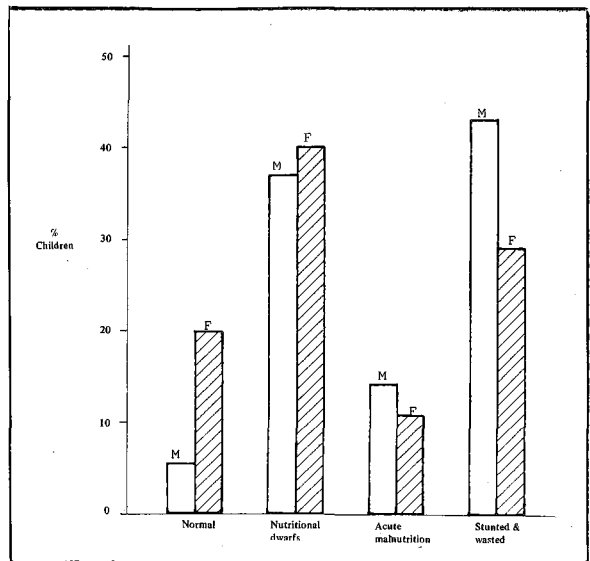


Fig. 4 % distribution of Penan children (0-12 yrs), according to Waterlow's classification: cross-tabulation of wasting and stunting.

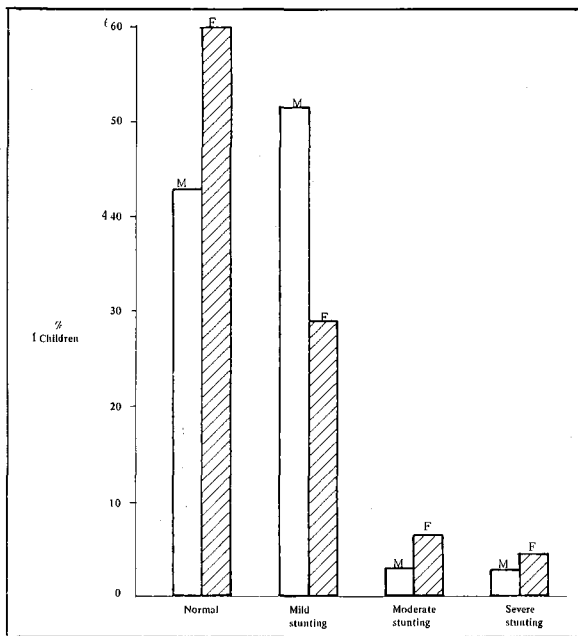


Fig. 3 % distribution of Penan children (0-12 yrs), according to grade of wasting (Waterlow's classification).

### Cross-tabulation of wasting and stunting

By cross-tabulation of wasting and stunting according to Waterlow's classification, it is possible to classify the 79 children examined into the four

categories, namely normal children, nutritional dwarfs, acutely malnourished children, and stunted and wasted children (Fig. 4). Only 14% of the Penan children can be classified as normal, while 39% are nutritional dwarfs, 11% are acutely malnourished and 36% are both stunted and wasted.

### DISCUSSION

It is clear from the data that Penan children are malnourished, suffering both from stunting as well as wasting in one form or other. Only 14% of children can be described as normal. Undoubtedly there is both a deficiency of carbohydrates as well as of protein. The staple diet of sago seems to be grossly inadequate even though it is supplemented by small quantities of meat, fish and vegetables (wild shoots).

It should be pointed out that all the 79 Penan children examined were from families in various stages of transition from a nomadic to a settled form of life. Nonetheless, the majority of families were still largely dependent upon hunting and gathering as a means of obtaining food supplies. Such families in transition lack the skills of their settled neighbours, such as the Kayan and Kenyah who are skilled

agriculturalists with a long tradition of food cultivation. For example, the Kayan and Kenyah own large tracts of agricultural lands on which they grow rice, maize, tapioca, vegetables and fruit trees.

Not only are the Penans unskilled in food cultivation, they have little experience in the settled mode of life with its attendant need to maintain good house-keeping, environmental sanitation and good personal habits. Consequently, the vicious cycle of infection leading to malnutrition which in turn leads to low resistance and further infection, is much more pronounced among the Penans.

Undoubtedly, one answer to the Penan problem of child malnutrition is the primary health care approach towards health, particularly through the seven essential elements including measures for the promotion of food supply and proper nutrition.<sup>2</sup>

## REFERENCES

- <sup>1</sup> Waterlow JC. Classification and definition of protein-calorie malnutrition. *Brit Med J* 1972; 3: 566-568.
- <sup>2</sup> *WHO Formulating strategies for health for all by the year 2000*. Geneva: Wld. Hlth Org, 1979.