# Nutritional Status of the Under-5 Children of the Settlers of FELDA (Federal Land Development Authority) Scheme in Malaysia

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**Abstract**

A cross sectional survey was conducted in a village, Trolak Utara under FELDA (Federal Land Development Authority) scheme in Perak state, Malaysia. Nutritional status of the children in comparison with socio - economic development of the settlers was studied. As the community was homogeneous, simple random sampling technique was adopted for this survey. Nutritional status was determined anthropometrically and biochemically Anthropometrie measurement was compared with that of NCHS standard. Prevalence of malnutrition in terms of stunting was 34.4% whereas the prevalence of wastlng was 9.6%. Most of the malnourished children belonged to the age group of 3-4 years Amongst them 43% were underweight, 41% wasted and 30% were stunted. Near about half of the children (45.2%) were enemic. The high prevalence of anemia was attributed to low intake of iron ($p<05$). Mean protein intake of the children was more than the requirement (160% RDA). The mean intake of energy and iron was 83.8% and 78.5% of the RDA. Remarkable number of children (46.61%) had worm infestation. Most of the settlers (70.8%) earned M$ 1001 - 1500 per month and 21.7% of the settlers earned M$ 501 - 1000 per month. Three fourth of the settlers (75.81%) completed primary school level of education. Secondary school level was completed by equal about number of settlers (16%) and their spouses (15.8%). On the otherhand, 7.5% of the settlers never attended school.

**Key words** : FELDA Scheme in Malaysia, Nutritional status, under- five children, Haemoglobin.

## Introduction

Malnutrition is one of the catastrophes on human life affecting millions of lives worldwide. Malnutrition has been recognized as one of the major causes of morbidity and mortality among the children. Thus it is a great hindrance to the achievement of human resource potential. In developing countries, the most important socio-economic constrain in achieving proper nutrition is poverty[1]. Compared to many

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Third World countries, Malaysia enjoys a superior state of health system. The political and economical stability of the country can be considered to be far ahead of other ASEAN countries[2,3]. Although proxy indicators of the nutritional status of the country such as life expectancy at birth, toddlers mortality rate and food balance sheet statistics suggest an improved nutritional situation, malnutrition remain a problem and is considered as a threat to human development. In the absence of nationwide nutrition survey in the country a number of scattered studies were used as indicators of the magnitude of the problem instead[3,4,5].

The FELDA Scheme in Malaysia claims that it has selfcontained communities with all the facilities for a thriving settlement. Recognizing the problem of malnutrition as a barrier of socio-economic development, the present study was designed to provide an overview of socio-economic conditions and nutritional situation of FELDA settlers in Trolak Uttara and identify the conditions responsible for malnutrition if exist.

## Methodology

### Location and Subjects of the Study:

A cross sectional study was conducted in a selected village (Trolak Utara), an oil palm scheme under FELDA (Federal Land Development Authority) administration. Trolak Utara is situated 120 km north of Kuala Lumpur. The total household in the village was 480. The sampling frame of the study was household with under-five children (237) and the sampling unit was the children below five years (12-60 months). Out of them 120 households (about 50%) was selected purposively for study by simple random sampling technique.

### Collection of Data

Relevant information on socio economic status, health condition and dietary intake (24 hours recall method) was recorded by using pre-tested questionnaire.

### Anthropometric Measurement

Age of the children were confirmed from the birth certificate or village Health Care Center (Klinik desa) records. Weight of the children was measured by SECA Beam Balance to the nearest 0.5 kg without shoes. Height of the children were measured to the nearest 0.1 cm. by the Microtoise. The length of the children below 2 years were undertaken by Infantometor following the standard procedure.

### Haemogolobin Estimation

Blood was collected from target group during clinic day through finger prick. Heamoglobin levels were determined by Cyanmethaemoglobin method using a commercially available kit (Boehringner, Mannheim, Germany).

### Stool Examination

Stools were collected from the samples during the clinic day and examined as early as possible using direct smear method.

### Data Analysis

Anthropometric data were analysed by computer NCHS/CDC anthropometric software package. The results of 24 hours recall of the children were computed by computer. The nutrient analysis was based on the nutrient composition of Malaysian Food. The finding were compared with RDI for Malaysia.

## Results

A total of 120 under-five children were studied in a community under FELDA (Federal Land Development Authority) scheme in Malaysia. The age of the target population ranged from 12 to 59 months. Distribution of children according to age group (Table-1) reveals that majority (34.2%) of the children belonged to age group 36-47 months. Lowest number of children (15%) were below 24 months. On the other hand, 24.1% were in age group 24-35 months and 26.7% belonged to age group 48-59 months.

**Table-1. Distribution of children according to age groups**

| Age groups (Months) | Number of children | Percentage |
|---|---|---|
| 12-23 | 18 | 15.0 |
| 24-35 | 29 | 24.1 |
| 36-47 | 41 | 34.2 |
| 48-59 | 32 | 26.7 |
| Total | 120 | 100.0 |

Family income of the settlers was mainly derived from their agricultural output and incenitves as well as from other specific activities done in their agricultural block. To increase their income, some settlers involved in income generating activities during their free time. Most of the settlers (70.8%) earned M$ 1001-1500 per month. Whereas 21.7% settlers earned M$ 501-1000 per month. (Table 2) The mean income was M$ 1129.85K334.60 per month.

**Table-2. Distribution of Overall Income of Settlers in FELDA Scheme, Trolak Utara, (December 1988)**

| Overall (M$) Income/month | Number | Percentage |
|---|---|---|
| <500 | 3 | 2.5 |
| 501-1000 | 26 | 21.7 |
| 1001-1500 | 85 | 70.8 |
| 1501-2000 | 5 | 4.2 |
| 2001-2500 | 0 | 0.0 |
| >2501 | 1 | 0.8 |
| Total | 120 | 100.0 |

Information on formal educational qualification of the parents of the children (settlers) is presented in fig-1. It represents that most of the settlers (75.8%) and their spouses (62.5%) completed primary school level of education. Secondary school level was completed by about equal number of settlers (16%) and their spouses (15.8%). The number of settlers who never attended school was comparatively low (7.5%).

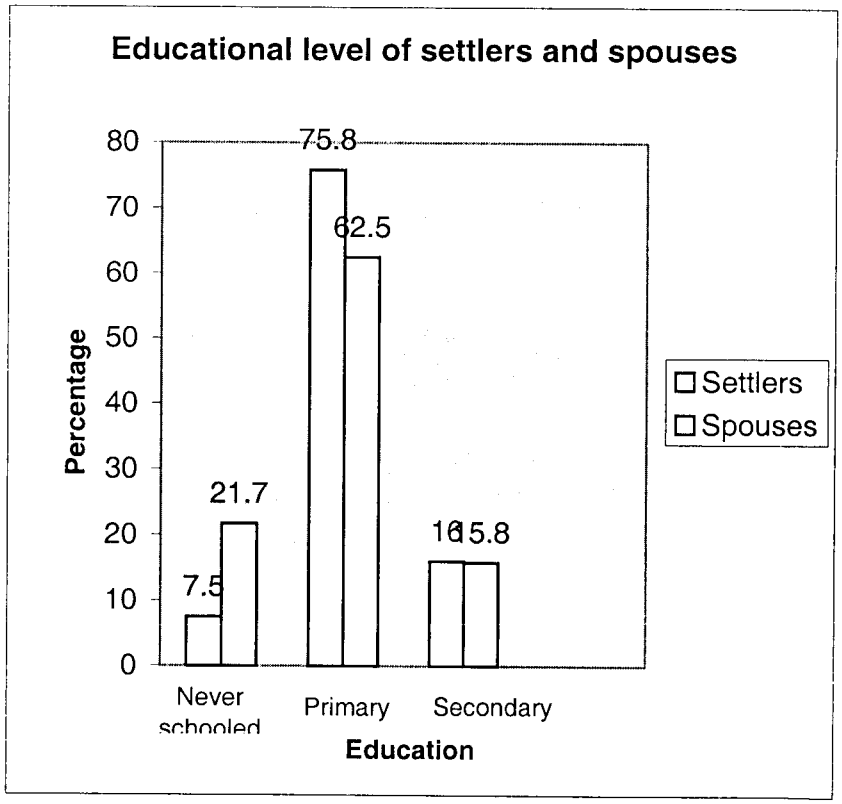


**Fig. 1**

Nutritional status estimated by anthropometric measurement is presented in table 3 and table 4. More children (34.4%) were stunted which indicates that they were suffering from chronic malnutrition for a long period. Prevalence of current acute malnutrition (wasting) was comparatively low (9.6%). Prevalence of malnutrition defined as underweight (W/A) was high (28%).

**Table 3. Prevalence of Protein Energy Malnutrition of children (n =120)**

| Nutritional level | Number | Percentage |
|---|---|---|
| Wasted (W/H) | 12 | 9.6 |
| Stunted (H/A) | 43 | 34.4 |
| Stunted and Wasted | 4 | 3.2 |
| Under weight (W/A) | 35 | 28.0 |

**Table 4. Prevalence of malnutrition by specific age group**

| Age Year | Underweight (W/A) | | Wasted (W/A) | | Stunted (H/A) | | Wasted and stunted | |
|---|---|---|---|---|---|---|---|---|
| | No. | % | No. | % | No. | % | No. | % |
| 1-<2 | 7 | 20.0 | 2 | 17.0 | 12 | 28.0 | 0 | 0.0 |
| 2-<3 | 6 | 17.0 | 2 | 17.0 | 11 | 26.0 | 1 | 25.0 |
| 3-<4 | 15 | 43.0 | 5 | 41.0 | 13 | 30.0 | 2 | 50.0 |
| 4-<5 | 7 | 20.0 | 3 | 25.0 | 7 | 16.0 | 1 | 25.0 |
| Total | 35 | 100.0 | 12 | 100.0 | 43 | 100.0 | 4 | 100.0 |

The age specific distribution of malnourished children (table 4) illustrates that most of the malnourished children belonged to the age group 3-<4 years. Among the underweight and wasted children, around 42% remain in this group. Most of the stunted children (30%) also belonged to this age group.

Blood hemoglobin profile among the children is shown in fig 2. The prevalence of anaemia (Hb level <11 g/dl) was 45.2%. Mean blood hemoglobin level was 11K1.5 g/dl and the range was 7.9 to 13.9 g/dl.

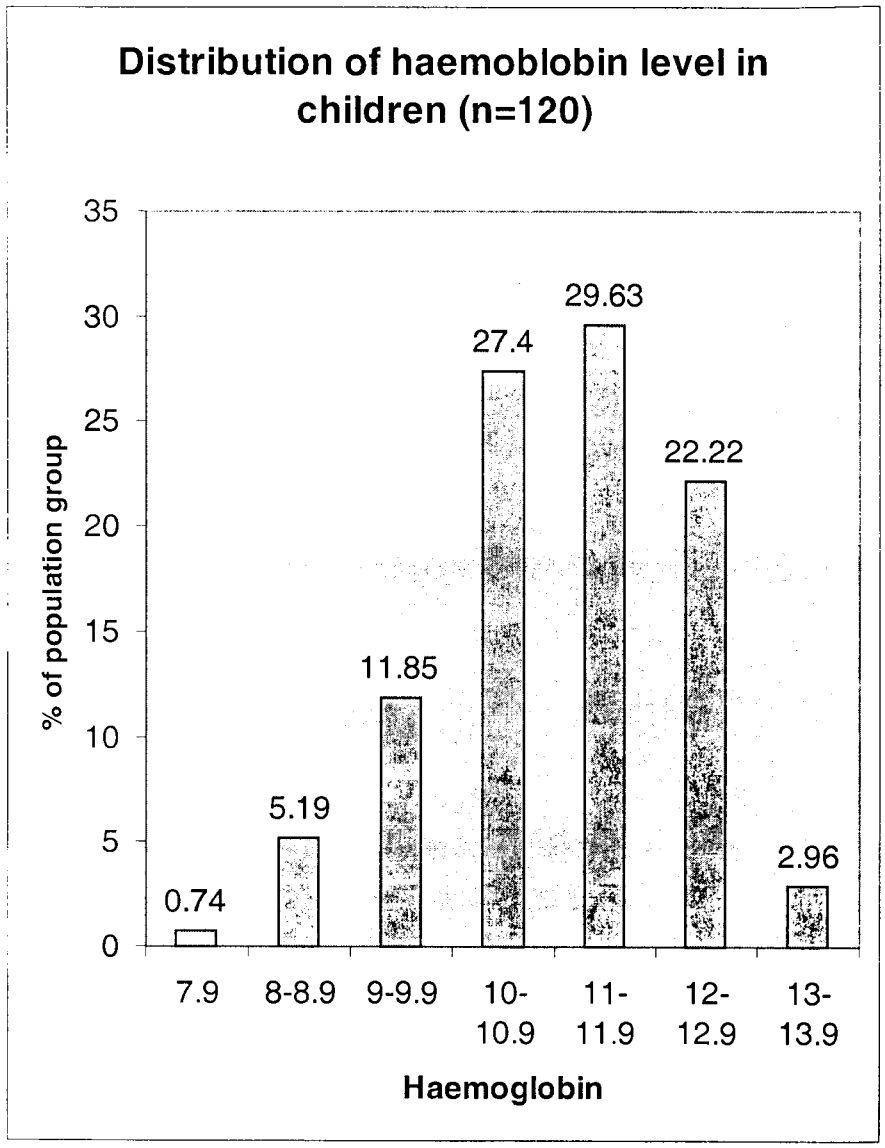


Fig. 2

Data from 24 hour dietary recall (table 5) reveals that the mean protein intake of the childrens (160.4% of RDA) was more than enough in comparison with the mean energy intake (83.8% RDA) and iron intake (78.5% RDA).

The distribution of anemic children according to iron intake is shown in table 6. Most of the anemic children (85.4%) had low dietary intake of iron, whereas 56% of the non-anemic children had low iron intake.

**Table 5. Mean Nutrient Intake of the Children (24 Hours dietary recall) compared with RDA**

| Nutrient | Mean Intake | SD | Mean RDA | % RDA. |
|---|---|---|---|---|
| Energy (kcal) | 1244.83 | 334.19 | 1485.33 | 83.8 |
| Protein (gm) | 39.45 | 16.23 | 24.60 | 160.4 |
| Iron (mg) | 7.85 | 6.37 | 10.00 | 78.5 |

**Table 6. Distribution of children according to iron intake**

| Nutritional Status | <RDA | >=RDA | Total |
|---|---|---|---|
| Non-anemic | 28 (56.0) | 22 (44.0) | 50 (54.9) |
| Anemic | 35 (85.4) | 6 (14.6) | 41 (45.1) |
| Total | 63 (69.2) | 28 (30.8) | 91 (100) |

Chi-Square = 7.79 df =1, p = 5.2439 x $10^{-3}$, Significant of 95% confidence limit

## Discussion

Federal Land Development Authority (FELDA) scheme in Trolak Utara, Malaysia was set up by the Malaysian Government in 1969 and the people settled down in 1972 with all the infrastructure provided. The aim of the scheme was to resettle the people, give them better home, better income and better future for their children.

The objective of the present study was to investigate the socio-economic development with respect to the nutritional status of the under five children of the settlers. Although the scheme was lucrative at a glance, problem of malnutrition still existed there, as identified from the study. The prevalence of stunting (Height/Age) was 34.4%, which indicated a long term or chronic malnutrition. But the rate of malnutrition defined as weight for age (underweight) was 28%. It is worthwhile to note that the economic conditions of the settlers was very low due to the decrease in palm oil price in the world market during 1986-87. Some families did not receive a single cent after loan repayment deduction and other individual deduction. However, FELDA tried to meet up the basic need through credit shop and provided them minimum loan. But it was also reported that some settlers used to take some food items from credit shop and sold in the other shops in a cheap rate for cash money. This critical situation which began 2-3 years ago in various FELDA scheme, might effect family food consumption as well as the nutritional status of the children at that period.

Apart from Protein Energy Malnutrition (PEM), the prevalence of anaemia (45.2%) was also remarkable. This had a profound effect on the physical behavior of the individual. Iron intake at household level was low. Remarkable number of households (88%) had low iron intake as compared with the recommended dietary allowance (RDA). There was also signficant difference between anaemic and non-anaemic children in iron intake ($p<0.01$).

Iron is a very important nutrient especially for growing age. Settlers gave emphasis on production of cash crop (oil palm) but the production of vegetable was negligible. Consumption of vegetable depended on the availability in the market and purchasing power of the family.

In addition to that, high prevalence (46.61%) of worm infestation may enhance the development of anaemia. Children were infested with Ascaris lumbricoides and Trichuris Tricura (2 cases). Although deworming program was provided by village health center, 78.3% of mothers did not know the cause of worm infestation, whereas parasitic or worm infestation is directly related to general hygiene and sanitation which in turn are dependent on socio-economic status of a community. Association between parasitic infestation and malnutrition have been reported in several studies[7,8,9]. Presence of intestineel parasites cause a mild anorexia and consumotion of less food than the uninfected children. Malabsorption syndrome accompanied by anaemia has been shown to occur in paients with heavy worm infestation.

It is quite obvious that family size influence family food consumption as well as the nutritional status of the children with limited income. Big family size may reduce the per capita food expenditure. In this study it was found that per capita food expenditure was negatively correlated with family size (r-0.55). No single factor appears to be responsible for parasitic infection and malnutrition, rather a collection of factors such as biological, economic and cultural practice working in synergestion, appear to be significant than any single factor, working independently.

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