AN INQUIRY INTO THE STATE OF FOOD, NUTRITION AND HEALTH IN PLANTATIONS

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THE plantations in Malaysia are the mainstay of the present booming economy and the workers' contribution to our prosperity is considerable (Menon, 1979). This study aims to assess the nutritional status of the plantation workers and their families as reflected by their food and dietary habits, and indirectly the significance of nutrition as a component of health and socio-economic status.

MATERIALS AND METHODS

Two plantations in the state of Selangor were selected for this study. One was a rubber plantation and the other had both rubber and oil palm. Trained interviewers were used in the survey. They commenced their work after two weeks of residence and familiarisation in the plantations. Selected households, especially those with children were visited regularly and the following information gathered by personal interviews and observations: - family size, employment status, income, expenditure on food, activities related to food production, food and dietary habits. Details are given in the report of the (Student Service Corps Project (Persatuan Bahasa Tamil, 1978.) The nutritional value of the foods purchased and consumed was calculated using food composition tables (Oliveiro, 1955). The nutrient requirements of the households were determined using the working table of suggested daily dietary intakes for West Malaysia prepared by a Technical Sub Group (University of Malaya, 1969). The adequacy of the actual intakes was determined with reference to the recommended national dietary allowances.

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RESULTS

The personnel and household particulars of the two plantations are summarised in Table 1. The employment level was higher in plantation II and this also accounts for the higher family income. The average family size in both the plantations was eight.

TABLE 1:

PERSONNEL AND HOUSEHOLD PARTICULARS IN PLANTATIONS SURVEYED

	Plantation I	Plantation II
No. of households	80	95
No. of persons per household	8	8
Population studied	20	27
Size of sample (household)	138	195
No. of persons employed per household	2—3	3
Total income per family (cash remuneration) per month	$394	$506

The expenditure on food and food items in the two plantations are summarised in Table II. The average household spent 66% and 54% of their total cash income on food in plantations I and II respectively. Expenditure on rice and sundry items (beverages, alcohol, sugar, fruits, milk and other items not listed) formed the major portion of the expenditure on food.

Rice and sundry items were consumed at the greatest frequency (daily). Meats were consumed once a week or less; eggs and fish once or twice a

TABLE II:

EXPENDITURE ON FOOD AND FOOD ITEMS AMONGST PLANTATION WORKERS*

	Plantation I	Plantation II
Food expenses as a % of cash income	66.2	54.01
Food expenditure per person per month (M$)	32.50	36.45
Meat	25.00	29.70
Fish	26	25.80
Dhall (pulses)	9.20	9.85
Rice	78.45	79.35
Vegetables	27.00	32.75
Eggs	7.20	7.85
Sundry	88.00	87.00
Total	206.85	273.30

* Average expenses per family per month

week. The preparation and cooking of rice and vegetables involved considerable washing and boiling, which process would destroy most of the water soluble vitamins.

The drinking of alcoholic beverages was prevalent amongst the older generations in both the plantations. The amount spent averaged $13/- and $7/- per family per month. Table III summarises the activities related to food production. A certain amount of cultivation of vegetables is done by the workers and this was more evident in the case of families in plantation I. Cattle rearing and poultry farming were undertaken by some families, largely for home consumption of eggs and milk. However, the amount of eggs and milk available and consumed was small.

The nutrient intake of plantation workers and their families expressed as percentages of the recommended national allowances are presented in Fig. I. The diets were found to be inadequate in calories, protein, calcium, iron and riboflavin. The deficits in calcium, iron and riboflavin were quite marked. On the whole, plantation I was worse off.

TABLE III:

FARMING AND GARDENING ACTIVITIES AND DRINKING HABITS IN PLANTATIONS

	Plantation I	Plantation II
	% of households	
Cattle rearing	17.6	36.2
Poultry farming	53	70.4
Vegetable gardening	7 5	30
Percentage of adult population who drink	62	74

The contribution of calories from carbohydrate, fat and protein in the diets is shown in Fig. 2 The bulk of the calories were derived from carbohydrates.

Figure 1

Nutrient intakes of plantation workers as percentage of the recommended national allowances.

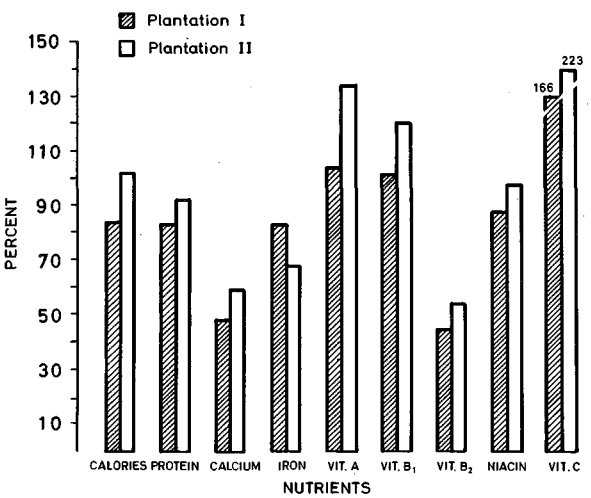
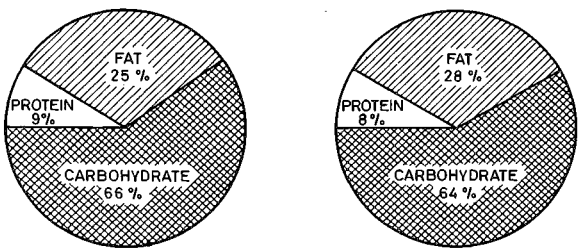


Figure 2

Percent Calories from Different Nutrients in the Diets of Plantation Workers.



DISCUSSION

The income of the plantation worker fluctuates, depending upon his work output in terms of latex collected or oil palm fruits harvested. However, there is a minimum wage for most workers. The average family size of eight in a family with low income could by itself be a source of socio-economic problems.

The expenditure on food is high. In 1973, the average rural household spent 41.3% of their budget on food items according to the Malaysia Household Expenditure Survey (1973) and the cost to produce the minimal nutrient requirements in 1976/77 was $160/- for a family of 4 - 5 persons (Salleh and Chan, 1979). This works out to $284/- for a family of eight persons. Because of inflation, these figures have to be adjusted upwards. Spending so much money on food (66% and 54% of their income) means that expenditure on other necessities of life and education have to be curtailed.

The calorie intake was below 90% of the recommended allowance in plantation I. This would unfavourably affect their working capacity and health. As for children, their potential for growth and development would be adversely affected.

Protein intake in both the plantations was low. Most of the proteins in the daily diet seemed to be derived from rice and vegetable sources and so of poor quality. Poor quality proteins are not well utilised by the body for growth and development.

The calcium intake was surprisingly low. This again was due to the very small amounts of foods rich in calcium that were consumed in the plantation. Foods like eggs, milk, cheese, fish were consumed infrequently. Deficiency of calcium affects the formation of good bones and teeth.

Iron was deficient in the diets and this has been confirmed by the high prevalence of nutritional anemias in plantations, especially amongst women (Menaka and Chandrasekharan, 1978). The deficiency can again be attributed to diets poor in animal products, and also the poor utilisation of iron from vegetable sources. Even though the vitamin A intake appeared to be adequate, this may not actually be the case, as the major source of vitamin A was in the form of pro-vitamin A (carotenoids), which are not well utilised, if the diets are poor in protein and lipids (Chandrasekharan, 1975).

Thiamine (B_1), though adequate in the diets, may be lost during the processing and cooking of foods. Riboflavin (B_2) was deficient in the diets, because of the low intakes of animal products including eggs. The niacin intake appeared to be marginally adequate. Some other water soluble vitamins like folic acid are also bound to be deficient in the diets as confirmed by the high prevalence of folic acid deficiency anemias in women (Menaka and Chandrasekharan, 1978). The only nutrient consumed in excess appeared to be ascorbic acid (vitamin C), but here again the process of preparation and cooking would have destroyed most of the vitamin.

A multiplicity of reasons can be attributed to the inadequacies in the nutrient intakes in plantations, and this would include socio-economic, availability of cash, relative prices of staples and important food items, cultural and social practices. It would be difficult to assign or assess the relative importance of the various factors.

The improvement in the socio-economic status, would facilitate consumption of protein rich foods of animal origin which would also lead to an increase in the intake of the other essential nutrients. Other measures like health education

(including nutrition education), improvement in environmental sanitation, agriculture extension services, food subsidies for infants and vulnerable groups, would contribute towards better nutrition, better health and so increased productivity and prosperity in the country (Chandrasekharan, 1979). An important area that merits further study is the effect of better nutrition and health on the productivity and profits in plantations.

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SUMMARY

Food expenses accounted for 66% 54% of the total income in the two plantations. The nutritional value of foods purchased and consumed and the adequacy of nutrient intakes in two plantations was studied. The diets were found to be inadequate in calories, protein, calcium, iron and riboflavin. Carbohydrates provided the bulk of the calories. The significance of the findings are discussed.

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