

# NUTRITION IN A RAPIDLY-DEVELOPING ECONOMY-MALAYSIA

E-Siong Tee

Division of Human Nutrition, Institute for Medical Research,  
50588 Kuala Lumpur, Malaysia

## ABSTRACT

Malaysia has achieved sustained rapid economic growth with low inflation rate, and has attained substantial progress in alleviating poverty. Because of the tremendous socio-economic development and parallel improved health care, health and nutrition situation in the country have improved steadily over the years. Health indicators such as life expectancy at birth, and infant, toddler and maternal mortality rates, often used as proxy indicators of nutrition situation, have shown clear improvements. Increases in *per capita* availability of various nutrients have also been recorded. Studies in various parts of the country have shown that the nutritional status of Malaysians have been improving over the years. Serious malnutrition has largely been eradicated, although mild-to-moderate undernutrition exists in various rural and urban underprivileged communities. On the other hand, the rapid development has brought about changes in the food consumption patterns and life styles of Malaysians, and a resultant different nutritional problems. Significant proportions of the affluent segments of the population are now known to be afflicted with various diseases associated with overnutrition, namely obesity, hypertension, coronary heart disease and cancer. Nutrition activities and programmes in the country are being directed to tackle both facets of the malnutrition problem in a rapidly-developing economy. Tackling the undernutrition problems remains as priorities for the nation, while particular attention is also being given to overnutrition and chronic diseases. In order to obtain updated data on the nutritional problems in the country, extensive studies of various functional groups will be carried out in the next four years.

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## 1 Introduction

Rapid advancements in the socio-economic situation in Malaysia has resulted in significant changes in the life-styles of communities, including food habits, and food purchasing and consumption patterns. Increasing urbanisation puts further strain on the available health services and other facilities in the cities. There has been increased consumer awareness and sophistication among Malaysians. These changes have resulted in a definite change in the food and nutrition issues facing the communities in Malaysia over the past two decades. These new dimensions in the nutrition situation pose great challenges to the nutritionists and other health workers in the country. Like many other societies in transition, Malaysia needs to re-define its policies and programmes to tackle the food and nutrition issues facing the communities.

This paper provides an overview of the nutritional situation in Malaysia, as an illustration of the nutrition scene in a rapidly developing economy. Data are presented to illustrate the nutrition situation of Malaysians, the undernutrition problems afflicting the disadvantaged, as well as some insight into the nutritional problems associated with overnutrition and changing life-style. The data are far from being comprehensive and serve only to give a gross picture of the malnutrition problems.

## 2 Background

Malaysia has undergone tremendous socio-economic development since the 1960's, after the country gained independence in 1957. Several selected key socio-economic data for Malaysia are tabulated in Table 1 to illustrate the improved conditions in the country over the past decade.

Malaysia has achieved sustained rapid economic growth with low inflation rate, and has attained substantial progress in alleviating poverty amongst the multi-racial communities. With this scenario, it is important to continuously monitor the nutrition situation in the country.

### 3 Health and Nutritional Indicators

Several mortality rates have often been used as proxy indicators of the nutrition situation in the country. Some of these data were compiled from various reports of the Department of Statistics Malaysia to illustrate the improving nutrition situation in Malaysia.

Infant, toddler and maternal mortality rates in Peninsular Malaysia, compiled from various sources, are given in Figure 1 and Table 2 to illustrate the health and nutritional status of these vulnerable groups of the population. It can be seen that there has been a dramatic decline in these rates since the country gained Independence in 1957. Infant mortality rates declined from 76 in 1957 to around 13 in 1989. Over the same period, toddler (1-4 years) mortality rates dropped from 10.7 to 1.0, while maternal mortality recorded a decline from 3.20 to 0.20.

However, as can be expected, there were considerable variations in the health status of communities in different parts of the country. Figures 2,3 and 4 show that there were marked decline in these mortality rates for all the states in the country over the years. These figures also illustrate the differences in the mortality rates prevailing in the different states. The highest mortality rates were found in the states of Terengganu, Kelantan, Kedah, Perak and Pahang. Those states with better health status, as reflected by low mortality rates, were the Federal Territory, Selangor and Penang. These differences between the various states appeared to have remained essentially the same since a decade ago, as seen from data in the figures.

Within each state, there were again wide variations in mortality rates in the different districts. For example, in Kelantan and Kedah, there were a few districts with infant mortality rates about twice that of the national average. At the same time, several districts in these states recorded

death rates of infants at about the level of the national average.

A similar picture was seen with regards to birth-weight data, although statistics in this area was less comprehensive. As shown in Figure 5, prevalence of infants born with <2.5kg had declined in most of the states, and there was considerable variation in this prevalence rate in different parts of the country.

It is clear that although these indices do give an indication of the overall nutritional status of the country or state, they do not show the problems existing at the micro level. Thus, while the overall nutrition situation in the country has improved over the years, pockets of malnutrition exist in various parts of the country.

### 4 Food Availability Data

Food balance sheet provides information on nutrient availability and pattern of supply of food items in a country. Although such data do not represent the actual consumption of communities, they do provide information on the gross food situation in a country.

Table 3 and Figure 6 give some data extracted from food balance sheets for Malaysia, taken from reports of the Food and Agriculture Organization. Over the years, from 1961, there was a trend of increasing per capita availability of the major nutrients, calories fat and protein.

Data on per capita food availability may only be used as a rough indicator of the food and nutrition situation of a country. Bearing in mind the problem of inequity of food distribution, these data also do not give insight on the nutritional status of communities at the local levels. More exact consumption data would have to be obtained through direct assessment studies.

### 5 Nutrient Deficiencies

While mortality data do give an indication of the overall nutritional status of the country or state, they do not show the problems existing at the micro level. Thus, while the overall nutrition situation in the country has improved over the years, recent studies have indicated that pockets of malnutrition exist among various rural and urban underprivileged communities.

Overt nutritional deficiencies have rarely been encountered, but mild-to-moderate undernutrition affects significant proportions of the population. The major nutrient deficiencies in the country are protein and energy malnutrition, iron deficiency anaemia, vitamin A deficiency and endemic goitre. Growth retardation has been reported to occur among rural preschool and school-age children. The prevalence of acute undernutrition (wasted) and severe chronic undernutrition (wasted and stunted) is low, but a considerable amount of chronic undernutrition (stunted) and underweight are known to exist. Iron Deficiency anaemia remains a problem of considerable magnitude, afflicting mainly women of child-bearing age and young children. Vitamin A deficiency does not appear to pose a serious problem in the country. Goitre has been found to affect selected communities in the interior parts of Peninsular Malaysia, while the problem is known to be of a considerable magnitude in Sarawak. Details of these deficiency problems will be discussed in the second paper to be presented in this Seminar (Tee, 1991).

## 6 Dietary Changes

An analysis of food availability data for the country in the past two decades has indicated possible dietary changes of Malaysians. Although these data should not be equated with consumption levels, food balance sheet data are useful in indicating probably trends in food consumption patterns. Such analysis has also been reported by Khor (1991) for Malaysia and Khor *et al.* (1991) for the ASEAN region.

The increasing supply of calories and fat in Malaysia over the last two decades has already been pointed out above (Figure 6). Examining further the sources of the available calories, a decline in calories from complex carbohydrates, notably cereals, has been observed (Figure 7). At the same time, the availability of other fiber-rich foods, such as fruits and vegetables, has not increased. There was a concomitant increase in the proportion of calories from oils and fats, sugars, and meat, fish and eggs over the last two decades. Analysing the percentage contribution of the three main nutrients carbohydrates, fat and protein to

the total available energy over the past two decades (Figure 8), it can be seen that there was a definite decline in the proportion of energy from carbohydrates, while an increase in the percentage contribution of fat was observed. These changes are particularly evident from the 1980's. No major change in the proportion of energy supplied by proteins was observed. However, there has been a definite shift towards an increased availability of animal protein, especially from fish, meat, milk and eggs (Table 3).

These changes in food availability in Malaysia are consistent with the generally observed patterns for nations with increased national wealth. Using data from food balance sheets of 85 countries, Perisse *et al.* (1969) have shown that the general trends of national food consumption patterns is a function of income. With a rise in income, there is a steep rise in the consumption of separated fats and of unseparated edible animal fats. At the same time, there is a reduction in the consumption of unseparated vegetable fats. As a result of this, the proportion of energy derived from fats rises steeply with income. There is also a striking change in the type of carbohydrate foods consumed. With a rise in income, nations tend to consume less of starchy staples and there is a sharp rise in the consumption of sugar and sugar-sweetened foods. As a consequence, the proportion of energy supplied by carbohydrates declines as income rises.

## 7 Overnutrition and Chronic Diseases

As a result of the rapid pace in socio-economic development and increased affluence in Malaysia, there has been a definite change in the nutritional problems in the country. The population is now faced with the other facet of the malnutrition problem, namely chronic diseases associated with dietary excesses and imbalances, such as hypertension, coronary heart disease and certain types of cancers, as evident from mortality data and epidemiologic data.

Mortality data for Peninsular Malaysia have shown that deaths due to diseases of the circulatory system and neoplasms have been on the rise since the 1970's (Figure 9). On the other hand, deaths due to infectious and parasitic diseases,

and conditions in the perinatal period reduced in number, reflecting the improved health care facilities in the country over the past three decades (Khor, 1991). Within the category of "diseases of the circulatory system" the three main causes of death are ischaemic heart disease, cerebrovascular disease and diseases of pulmonary circulation and other forms of heart disease.

Official statistics of medically certified and inspected mortality in Peninsular Malaysia for 1989 show that diseases of the circulatory system tops the list of ten leading causes of death in the country (Table 4). Ranking third in the list is deaths due to neoplasms, and the two major cancer sites are (a) the digestive organs and peritoneum, and (b) respiratory and intrathoracic organs. These two categories together constitute slightly over 40% of all medically certified deaths. It should be pointed out that medically certified and inspected deaths amounted to only 38% of all reported deaths in Peninsular Malaysia in 1989.

Studies into these diet-related chronic diseases are relatively recent undertakings in the country. Studies into the relationship between diet and coronary heart disease (CHD) were carried out from the 1960's. Several studies on serum lipid levels of Malaysians have shown that hyperlipidemia was also a problem amongst the more affluent segments of the population (e.g. Chong, 1961; Lau *et al.*, 1962; Chong *et al.*, 1971). In his review of serum cholesterol level and prevalence of hypercholesterolemia among various population groups in the country, Chong (1986) has shown that urban Malaysians were faced with greater risk to CHD (Table 5).

Comparative studies of various coronary risk factors among aborigines in the deep jungle and those in the periurban and jungle-fringe revealed low levels of serum lipids and absence of CHD in the former group, while the latter tended to have higher serum cholesterol and blood pressure values (Burns-Cox *et al.*, 1972). A more recent study of these risk factors was reported for 406 male executives in two urban areas, Kuala Lumpur and Petaling Jaya (Teo *et al.*, 1988). Mean values of selected risk factors of the subjects are shown in Figures 10 and 11. Mean total cholesterol, triglycerides and fasting glucose levels were found to

increase with the older age groups. The prevalence of these risk factors (Figures 12a and 12b) was also reported to show a rising trend with age, with the exception of uric acid and cholesterol. Even in the younger age group (25-34 years), there was an appreciable prevalence of most of the risk factors studied. Examining the prevalence of the three major risk factors: hypertension, hypercholesterolemia and smoking (Figure 13), the investigators reported that 15% of the subjects had all three risk factors. Slightly more than half (51.5%) of the subjects had one or more of these three risk factors. The investigators noted that several of the risk factors studied were comparable with those reported for other more industrialised countries.

## 8 Nutrition Intervention Programmes

Various programmes have been implemented by the Ministry of Health Malaysia to overcome the undernutrition problems faced by the communities. The regular programmes being undertaken include (a) the provision of maternal and child health care (including domiciliary delivery and family planning) and outpatient services through a network of rural clinics, mobile teams, riverine and subsidiary clinics and in Sabah and Sarawak, the flying doctor services, and in some metropolitan areas, through Local Authority Clinics; (b) provision of health services to school and preschool children through visiting school health teams; and (c) nutrition surveillance through community and clinic-based activities.

A new programme initiated in 1989 was the rehabilitation of malnourished children from poverty families. The programme is an intensive multi-agency effort to eradicate poverty and enable the very poor to join the main stream of development. Malnourished children identified through clinic attendance were provided with food assistance and multivitamin supplements. These children were closely followed up by home visits and regular monthly weighing and taking of height measurements at the clinics. Parents of the children were also given advice and education on proper child care. The total number of beneficiaries by December 1990 was 14,059. Preliminary analysis of some of the data collected to monitor progress of the children indicated significant reduction in

the number of malnourished children (Safiah, 1991).

The Ministry of Education has also implemented several regular programmes to overcome the malnutrition problems amongst school children. The school health programme include health and nutrition education activities, school health services, healthy living in schools, and collaborative programmes between schools and the community. Two feeding programmes are currently being implemented in schools, namely the school supplementary feeding programme and the school milk programme (Sahari, 1991).

In recent years, attention has also been paid towards arresting the rise in diet-related chronic diseases. There has been serious efforts to improve the life-style of the population through various programmes and activities. Many government and private organizations in the country are promoting fitness amongst their staff members through fitness seminars. These seminars are aimed at improving life style, including changes to dietary patterns and increased physical activities. On a nation-wide scale, the Ministry of Health launched the Healthy Life Style Campaign in May 1991. The campaign has been scheduled to extend over a six-year period, and will cover six main health problems. Commencing with the problem of cardiovascular disease this year, other issues to be covered are AIDS, cancer, diabetes mellitus, childhood diseases, and food poisoning.

## 9 conclusions

Available data show that nutritional status of Malaysians has been improving over the years. Frank nutritional deficiencies are rarely encountered. Nevertheless, mild to moderate malnutrition exists amongst various population groups, especially the vulnerable groups in socio-economically disadvantaged communities. Growth retardation and anaemia are the major problems encountered, while vitamin A deficiency and iodine deficiency goitre are prevalent among selected population groups.

In contrast, it has become evident that the other extreme of the malnutrition problem, that of dietary excesses, is afflicting the affluent segments of the population. Associated with changes

in food consumption pattern and life style, coronary heart disease has emerged as a major cause of death in the country. Studies into risk factors of the disease have shown that these are prevalent among the urban Malaysians.

Nutrition activities in the country have been geared towards ameliorating both faces of the malnutrition problem. There has been a definite change in the trend in nutrition research. Proper characterisation of the nutritional problems provided input for the implementation of suitable intervention strategies. Tackling the undernutrition problems remain as priorities for the nation as larger proportions of the population are afflicted by or at risk to nutritional deficiencies. Socio-economic development and poverty eradication has been given emphasis at all times. Development of health services infrastructure continues, and specific intervention programmes have been implementation for needy communities. On the other hand, emphasis has also been given to tackling problems of nutritional excesses and imbalances. The importance of nutritional balance and fitness have been given particular attention in recent years. A national programme for the control and prevention of CHD has also been planned. It is hoped that both facets of the malnutrition problem shall be adequately contained, for the betterment of the quality of life of Malaysians.

## ACKNOWLEDGEMENT

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Table 1. Key Data for Malaysia, 1980-1990

	1980	1989	1990*	1991**
<b>Population</b>				
Peninsular Malaysia ('000)	11,442	14,300	14,617	14,943
Sabah ('000)	1,013	1,420	1,470	1,534
Sarawak ('000)	1,309	1,633	1,669	1,716
Malaysia ('000)	13,764	17,353	17,756	18,193
<b>Vital statistics</b>				
Infant mortality rates (per thousand)	23.9	14.2	13.5	12.6
Crude birth rate (per thousand)	30.9	30.0	27.1	28.0
Crude death rate (per thousand)	5.3	4.7	4.7	4.6
Crude rate of natural increase (per thousand)	25.6	25.3	22.4	23.4
<b>Life expectancy at birth</b>				
(Peninsular Malaysia)(years)				
Males	66.4	68.7	69.0	69.5
Females	70.5	73.1	73.5	73.9
<b>Gross National Product</b>				
Gross National Product (GNP) (current prices)(million ringgit)	51,390	96,447	109,852	123,600
Gross Domestic Product (GDP) (at 1978 prices)(million ringgit)	44,512	72,134	79,103	85,460
Per capita GNP (ringgit) (current prices)	3,734	5,558	6,187	6,794
Annual GDP growth rate (%) (1987 prices)	+ 7.4	+ 8.8	+ 9.7	+ 8.0

\* provisional figures

\*\* forecast

Source: Department of Statistics (1991)

Table 2. Maternal Mortality Rates in Peninsular Malaysia 1957-1982

Year	Maternal Mortality Rates (per 1,000 live births)	Year	Maternal Mortality Rates (per 1,000 live births)
1957	3.20*	1980	0.63
1967	1.68*	1981	0.59
1972	1.07	1982	0.50
1974	0.96	1985	0.37
1976	0.78	1986	0.30
1977	0.79*	1987	0.28
1978	0.84	1988	0.26
1979	0.69	1989	0.20

(Source: \*Hamid Arshat et al, 1984; others from Department of Statistics)

Table 3. Protein and Calorie Availability in Malaysia, 1960's to 1980's

	1961- 65	1967- 71	1972- 74	1975- 77	1979- 81	1982- 84	1986- 88
daily per caput supply of:							
calories	2352	2474	2523	2596	2518	2549	2665
protein	48.2	51.2	51.4	55.8	56.0	58.0	57.6
fat	41.2	42.4	44.1	45.9	51.6	56.8	75.7
% animal proteins	30.3	32.6	32.4	36.6	44.5	43.1	45.3

Source: Tabulated data from FAO food balance sheets

Table 4. Ten Leading Causes of Medically Certified and Inspected Deaths in Peninsular Malaysia, 1989

Causes of death	Number	Percent of total deaths
1 Diseases of the circulatory system	7,889	29.6
2 Accidents, poisonings, and violence	3,580	13.4
3 Neoplasms	3,151	11.8
4 Diseases of the respiratory system	2,221	8.3
5 Certain conditions originating in the perinatal period	1,995	7.5
6 Symptoms, signs and ill-defined conditions	1,901	7.1
7 Infectious and parasitic diseases	1,469	5.5
8 Diseases of the digestive system	1,174	4.4
9 Diseases of the genitourinary system	965	3.6
10 Congenital anomalies	789	3.0

Total medically certified and inspected deaths for 1989 = 26,639

Source: Department of Statistics (1991)

Table 5. Serum Cholesterol Levels and Prevalence of Hypercholesterolemia Among Various Population Groups in Malaysia

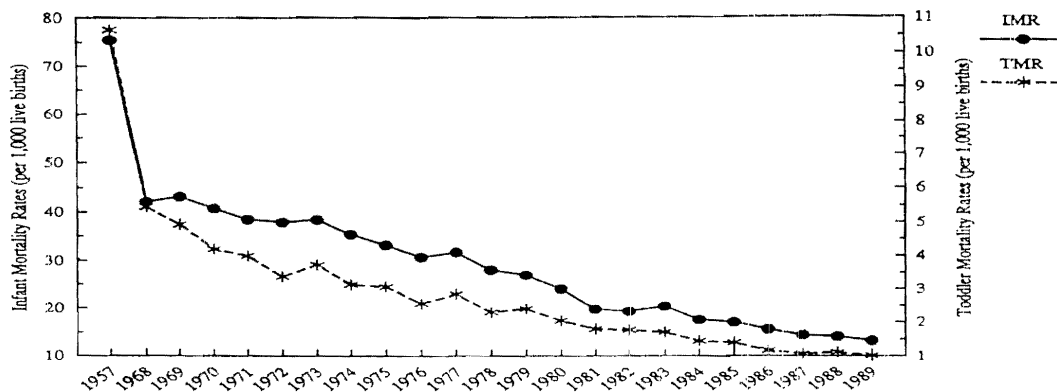
Population groups	No. of subjects	Serum cholesterol (mg/dl) (mean $\pm$ SD)	Hyper- cholesterolemia <sup>1</sup> (%)
Urban executives	251	231 $\pm$ 45	24
Soldiers	158	199 $\pm$ 39	6
Rural dwellers and farmers	195	180 $\pm$ 38	3
Aborigines	89	146 $\pm$ 30	0

<sup>1</sup>Serum cholesterol in excess of 260 mg/dl

Source: Chong (1986)

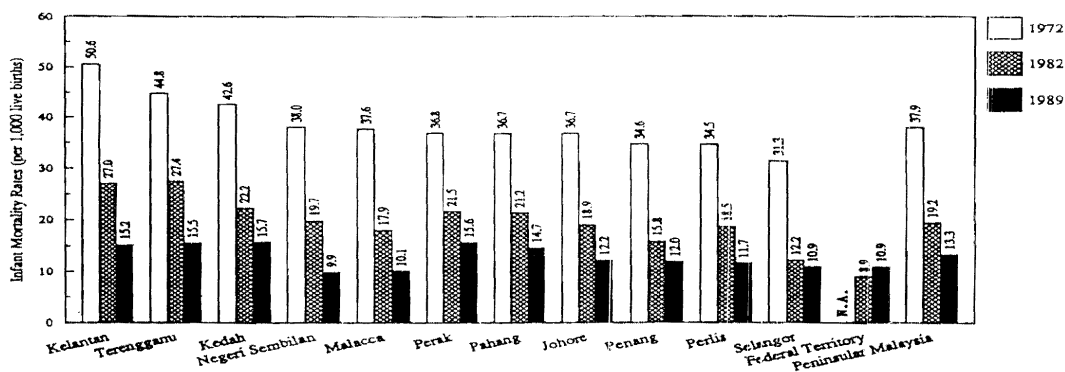


Figure 1. Infant and Toddler Mortality Rates in Peninsular Malaysia, 1957 to 1989



Source: Plotted using data from reports by Department of Statistics

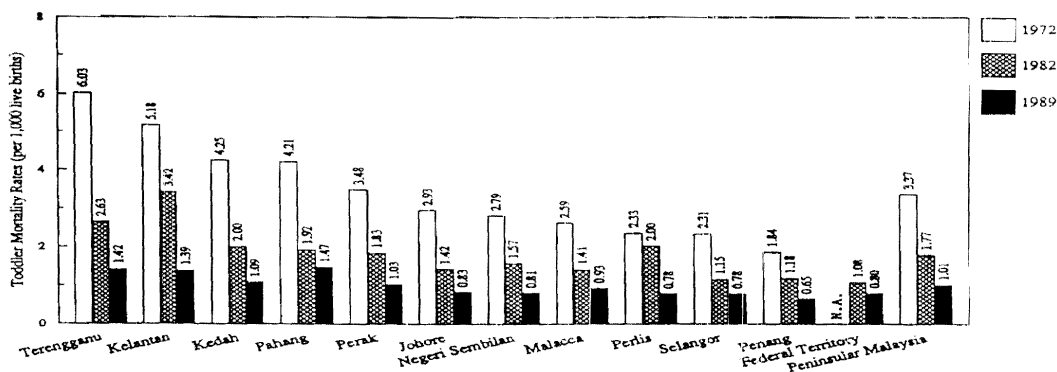
Figure 2. Infant Mortality Rates of Various States in Peninsular Malaysia, 1972, 1982 and 1989



Source: Plotted using data from reports by Department of Statistics

N.A. = data not available

Figure 3. Toddler Mortality Rates of Various States in Peninsular Malaysia, 1972, 1982 and 1989



Source: Plotted using data from reports by Department of Statistics

N.A. = data not available

Figure 4. Maternal Mortality Rates of Various States in Peninsular Malaysia, 1972, 1982 and 1989

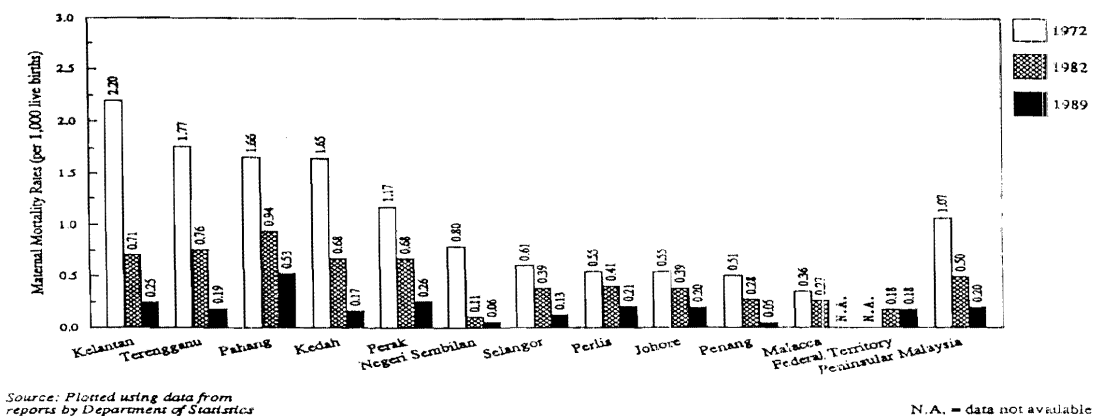


Figure 5. Prevalence of Low Birth-Weight in Various States of Peninsular Malaysia, 1978 and 1982

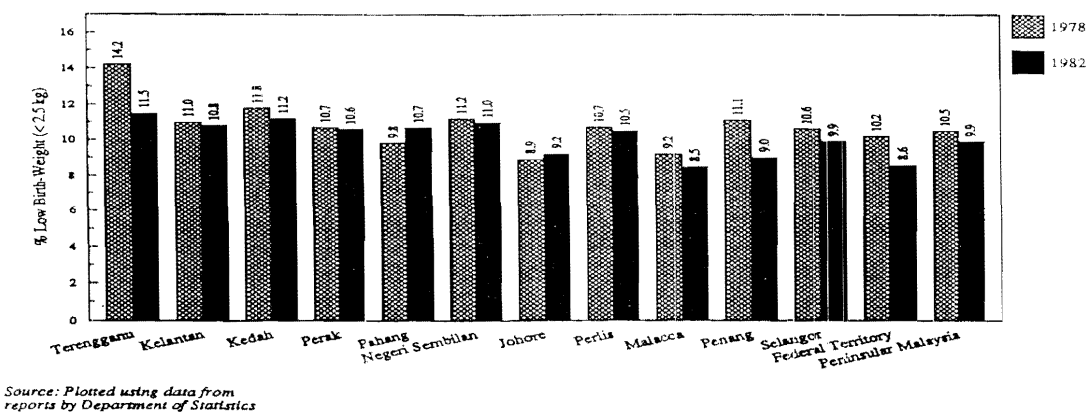


Figure 6. Changes in Availability of Calories, Protein and Fat in Malaysia, 1961 to 1988

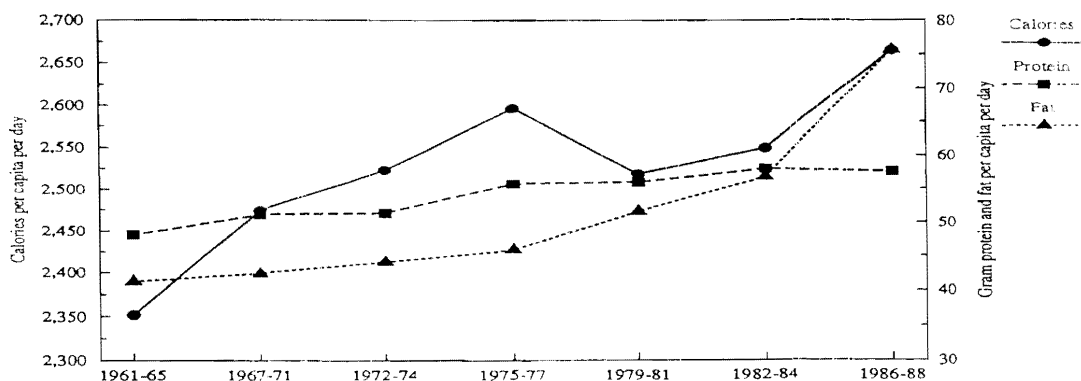
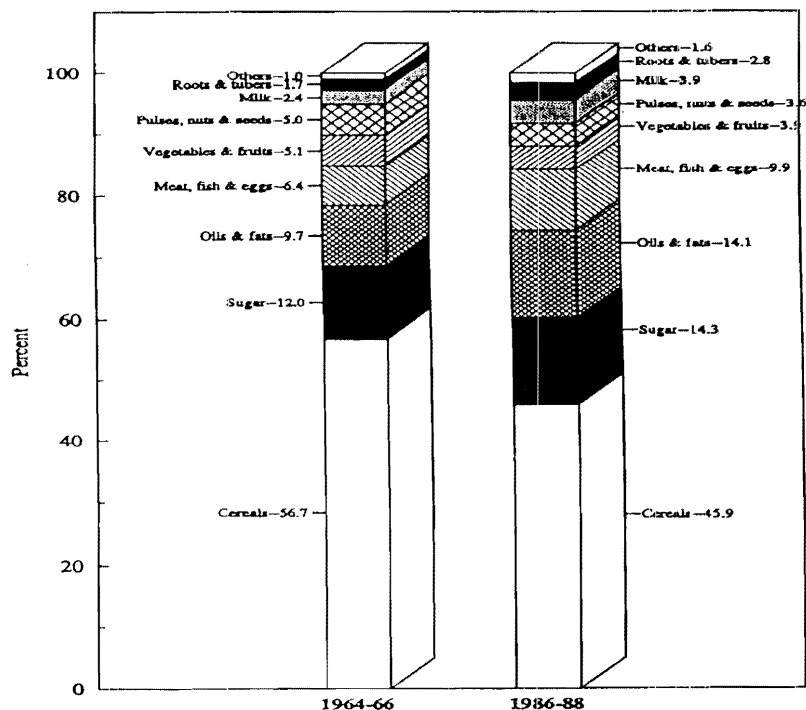
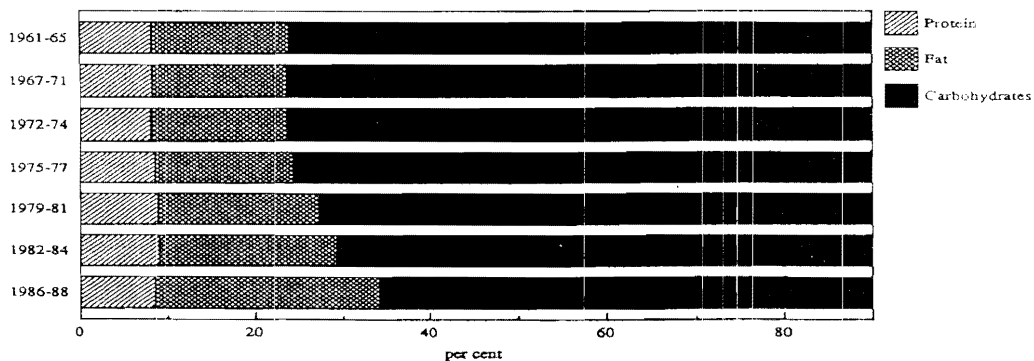


Figure 7. Changes in Sources of Calories in Malaysia, between 1960's and 1980's



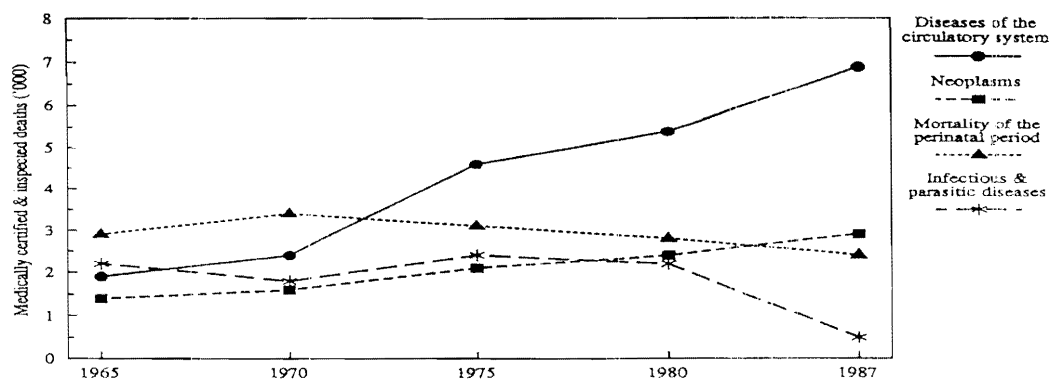
Source: Plotted using food balance sheet data from FAO

Figure 8. Changes in Composition of Calories from Protein, Fat and Carbohydrates in Malaysia 1960's to 1980's



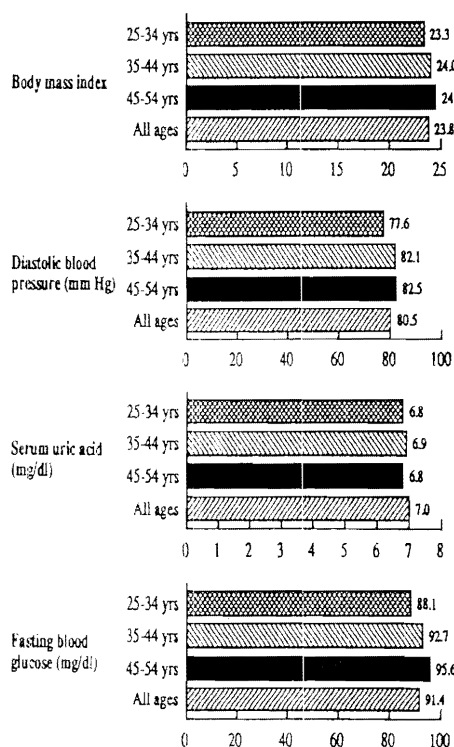
Source: Plotted using food balance sheet data from FAO

Figure 9. Trends of Leading Causes of Death in Peninsular Malaysia, 1965 to 1987



Source: Repotted from Khor (1991)

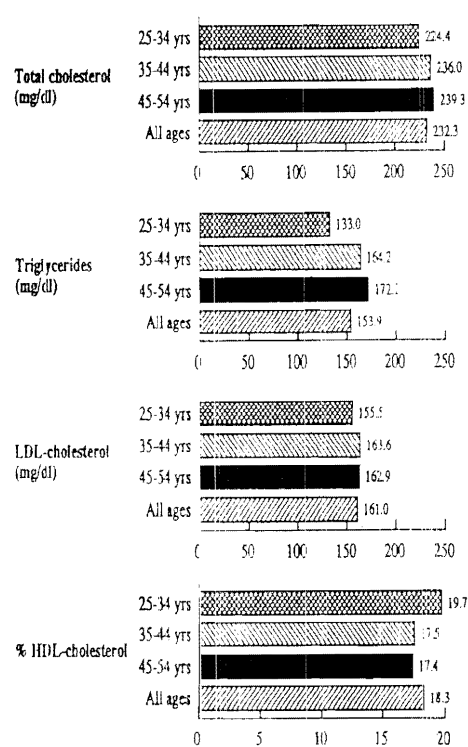
Figure 10. Mean Values of Selected Coronary Risk Factors Among Malaysian Male Executives



Source: Teo et al. (1988)

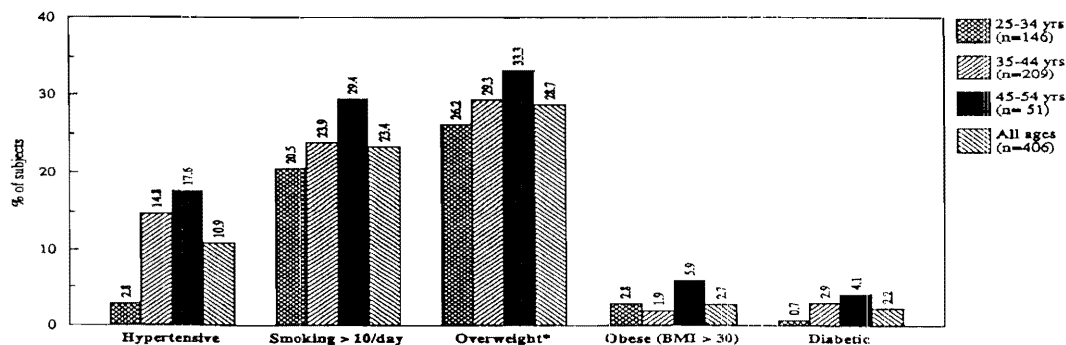
25-34 yrs, n=146; 35-44 yrs, n=209  
45-54 yrs, n=51; all ages, n=406

Figure 11. Mean Serum Lipid Levels of Malaysian Male Executives



Source: Teo et al. (1988)

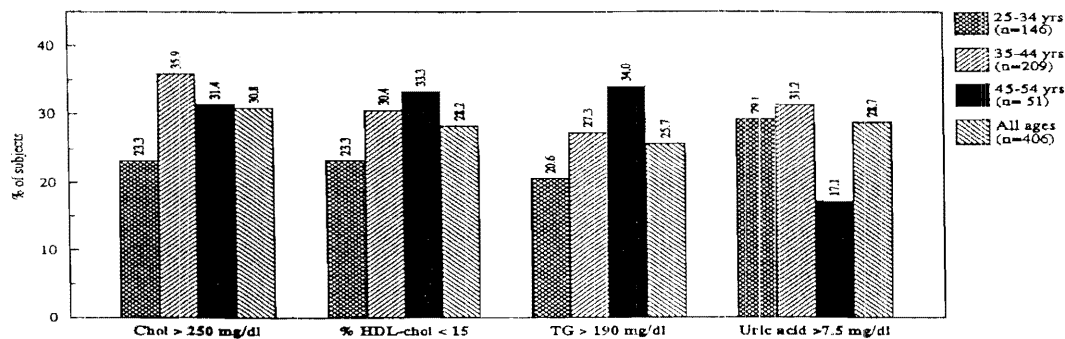
25-34 yrs, n=146; 35-44 yrs, n=209  
45-54 yrs, n=51; all ages, n=406



Source: Teo et al. (1988)

\* BMI = 25-30

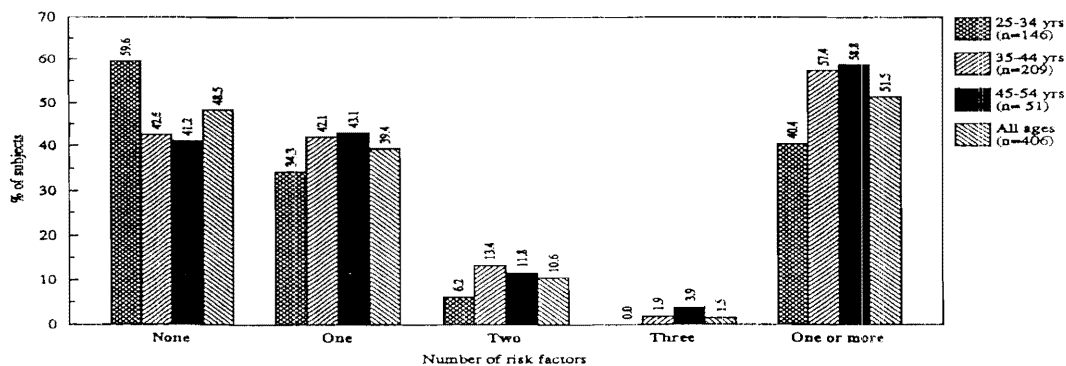
Figure 12a. Prevalence of Coronary Risk Factors Among Malaysian Male Executives



Source: Teo et al. (1988)

Chol = cholesterol  
TG = triglycerides

Figure 12b. Prevalence of Coronary Risk Factors Among Malaysian Male Executives(continued)



Source: Teo et al. (1988)

\* Hypertension, cholesterol > 250 mg/dl,  
and smoking > 10 cigarettes/day

Figure 13. Prevalence of the Three Major Coronary Risk Factors\* Among Malaysian Male Executives

# **INTERNATIONAL SEMINAR ON NUTRITION IN HEALTH AND DISEASE**

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