

POPULATION & SOCIAL INDICATORS OF FOOD AND NUTRITION IN PENINSULAR MALAYSIA

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SUMMARY

Health, including nutrition is not independent but is closely associated with the social and economic environment. Malnutrition itself can cause death, but more commonly, it can cause considerable ill-health, physical retardation, impaired mental performance, loss in productivity and a decline in the quality of life. The effects of malnutrition as obstacles to socio-economic development are now well recognised.

In a rapidly developing country like Malaysia, the nutritional and nutritionally-related problems present themselves with contrasting features. While population indicators such as toddler mortality, incidence of low birthweight and food balance sheet studies suggest an improving nutritional situation, methods of direct assessment have shown that chronic protein-energy malnutrition and anaemia are still common amongst pre-school children in both the rural and urban disadvantaged sectors. Moderate anaemia also affects a significant proportion of older children and women of child-bearing age. Intestinal parasites, another indicator of under development at the local level, are ubiquitous in the rural setting and urban slums owing to unsatisfactory waste disposal.

In striking contrast, diseases associated with dietary excesses and increasing affluence have now emerged as the major killers. This changing pattern of mortality and morbidity along the lines encountered by the industrialised societies is now dramatised by the fact that road accidents are now claiming a large number of victims.

It is clear that while continued efforts should be given to the improvement of the nutritional health of both rural and urban poverty communities, little time should be wasted in considering the adoption of public health measures aimed at stemming the rising number of deaths associated with our increasing affluence, particularly those diseases that are nutritionally linked, such as coronary heart disease, hypertension and diabetes mellitus, not forgetting the increasing road toll afflicted by the motor vehicle.

INTRODUCTION

Compared to many Third World countries, Malaysia is fortunate in recent years to have enjoyed relative political and economic stability. Worldwide inflations have largely escaped Malaysia and inflation rates have been well below that of many industrialized countries. Under such a favourable climate and assisted by its export earnings from rubber, tin, timber, palm oil and crude petroleum, the country has been able to forge ahead with its numerous restructural and developmental projects aimed at poverty eradication and the reduction in the gap between

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TABLE I
TODDLER MORTALITY RATES

Year	Per Thousand Population (Peninsular Malaysia)			
	All races	Malay	Chinese	Indians
1957	10.65	14.11	6.59	9.00
1970	4.20	5.61	2.09	3.82
1971	4.00	5.25	1.90	4.30
1972	3.37	4.33	1.76	3.54
1973	3.73	4.75	1.99	4.09
1974	3.13	3.97	1.61	3.70
1975	3.07	4.00	1.44	3.35
1976	2.56	3.26	1.18	3.07
1977	2.85	3.71	1.29	3.13
1978	2.30	2.91	1.18	2.38

Source: Vital Statistics, Peninsular Malaysia.
Department of Statistics.

the extremes of the socio-economic classes.

Over the recent decade, the country's Gross National Product (GNP) has been increasing at an average annual rate of about 7.0% and its per capita annual GNP has now exceeded the U.S. \$1,500 mark. ¹ This has given rise to the hope that by 1990, Malaysia may join the ranks of the developed nations. Undue emphasis on economic performance and per capita GNP growth however may conceal poverty and malnutrition in those segments of the population that have been bypassed by economic growth around them. ^{2,3} In the long run, socio-economic development can improve a country's nutrition, but malnutrition need not necessarily disappear in the course of socio-economic development.

The assessment of the nutritional status of a population therefore not only assumes public health significance but in a developing economy, nutritional indicators and trends can also provide a basis for Government policy and planning.

This paper discusses recent trends in population indicators that relate to food, nutrition and nutritionally-related health situation in Malaysia. This overview is also supplemented whenever possible with data obtained from recent community level nutrition assessment surveys.

TODDLER MORTALITY

The death rate of children 1 to 4 years has for many years been accepted as a rough indicator of protein-calorie malnutrition. In countries where

TABLE II
DISTRICTS WITH TODDLER MORTALITY RATES
GREATER THAN 5.00 PER 1,000 POPULATION
1978

Peninsular Malaysia	2.30
Kelantan	
Pasir Mas	5.22
Kedah	
Baling	6.24
Trengganu	
Ulu Trengganu	5.09
Dungun	5.35
Marang	8.98

Source: Vital Statistics, Peninsular Malaysia, 1978
Department of Statistics

toddler mortality rate (TMR) is high, malnutrition and infective diseases are known to be widespread.

Along ethnic lines, the Malays suffer the highest toddler mortality, being 2.91 per thousand compared to 2.38 for the Indians and 1.18 for the Chinese for 1978 (Table I). There is also considerable variation in TMR from state to state. Districts with a TMR of over 5.0 per thousand (a little over twice the national average) are located mostly in the rural districts of Kelantan, Trengganu and Kedah, all with predominantly Malay population - Table II.

However if one examines the annual percentage rate of decline of TMR over two separate 10 year periods namely, 1957-1967 and 1968-1978, one finds that while the average annual percentage decline in TMR was higher for the predominantly urban Chinese during the first decade after Merdeka, this is now reversed in favour of the predominantly rural Malay population (Fig. 1).

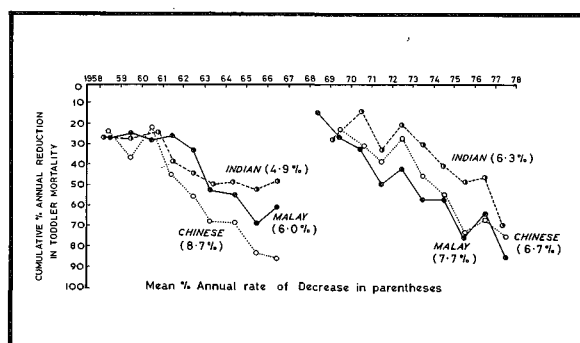


Fig. 1 Cumulative % annual reduction in toddler mortality (Peninsular Malaysia).

This is suggestive of a quickened pace of improvement in the health and socio-economic conditions of the rural Malay community. Although not necessarily nutrition related, it reflects to a large extent the consequence of recent Government policy and actions in improving the standard of living of the rural people. ⁴

INCIDENCE OF LOW BIRTHWEIGHT

Birthweight is influenced by many factors, the most important of which is maternal nutrition during pregnancy. Since adequate maternal nutrition is invariably related to socio-economic status and other environmental variables, the incidence of low birthweight in a population is not only an indirect indicator of the general health and socio-economic development of a country, but also a reflection on the gap between the privileged and the less privileged.

A birthweight of 2.5 kg or less is regarded as low. Recent national statistics and birthweight studies indicate the Indians suffer the highest incidence of low birthweight, followed by the Malays and Chinese.

During 1978, the national incidence for low birthweight was 17.5 percent in Indians, 10.8 percent in Malays and 7.9 percent for Chinese. Whereas in the city of Kuala Lumpur, the incidence was 14.5 percent for Indians, 7.6 percent for Malays and 5.6 percent for Chinese. These latter figures for the Malays and Chinese appear extremely favourable considering the fact that the corresponding figure for U.S.A. and Britain is around 6 percent and many developing countries still report incidence of low birth weight exceeding 30 percent. ⁵

RECENT TRENDS IN FOOD PATTERN AND AVAILABILITY

One of the major factors determining nutritional status is the nature and extent of food supply. National food supply analysis and its presentation as a food balance sheet was developed by the FAO for disclosing trends in the availability of specific food items which can be translated into calories, protein, fat and other nutrients per head of population. Each food item potentially available for human consumption may be estimated as follows:

TABLE III
ENERGY AND PROTEIN AVAILABILITY AND
THEIR ADEQUACY IN PENINSULAR MALAYSIA
(per capita per day)

Year	1961/70	1971/78
Per capita Calories Available	2453	2550
Per capita Calories Requirement (Estimated)		2080
Calories as % of Requirement	118	123
Per capita Protein (g) Available	50	52
Per capita Requirement (g) (Estimated)		48
Protein as % Requirement	104	108

Food available = production + imports - exports ± change of stock - (uses for seeds, feed and post-harvest losses).

The daily per capita availability for each food item is then obtained by dividing the food available by the total population during the period.

The details of such an analysis done by the FAO, Rome (1980) for Peninsular Malaysia dating back to the period 1961-1970 and continuing from 1971 onwards to 1978 are now shown in Tables III, IV and V.

Table III shows the per capita daily availability of calories and protein and their adequacy in relation to nutritional requirements. It is evident from this Table that the calorie availability per capita daily has increased from a mean of 2453 during 1961-1970 to 2550 during 1971-1978. Similarly, protein availability has also increased, albeit marginally, from 50 g to 52 g for the

TABLE IV
PATTERN OF FOOD AVAILABILITY FOR
CONSUMPTION IN PENINSULAR MALAYSIA
(Edible portions per head per day in gram)

FOOD GROUPS	1961/70	1971/77
Cereals	365	384
Rice	279	304
Wheat flour	61	68
Roots & Tubers	16	16
Sugar	86	93
Pulses	9	7
Tree Nuts (excluding oils)	12	11
Vegetables	101	94
Fruits	175	162
Fish	51	54
Meat	39	40
Poultry	13	17
Eggs	14	21
Milk & Milk Products	25	29
Oil & Fats (separated)	25	28

Source: Statistics Division, FAO, Rome.

corresponding periods. Expressed as percent of requirement, calorie availability now stands at around 123 percent, while protein availability is at 108 percent. These suggest a positive balance for calories and protein over requirements and do not seem to indicate the existence of a food shortage at the national level.

Table IV indicates that the pattern of food availability in terms of quantities of edible portions per capita per day and demonstrates that generally there has been an increase in the supply of rice, wheat flour, sugar, poultry, eggs, milk and fats in recent years. The availability of sugar at 93 g per capita daily is particularly high and if this trend is to continue, it may well adversely affect the prevalence of dental caries, obesity and possibly coronary heart disease.

It would also seem that the availability of legumes, vegetables and fruits have declined somewhat. This is undesirable in view of the fact that pulses are a good source of protein while fruits and vegetables are excellent sources of vitamins, (ascorbic acid and beta-carotene) and certain minerals. Besides, legumes, fruits and vegetables provide fibre which is an important component of a healthful diet.

Table V gives the contribution of calories and

TABLE V
CALORIES AND PROTEIN AVAILABILITY
IN PENINSULAR MALAYSIA
(per capita per day)

	1961/70		1971/78	
	Calories	Protein	Calories	Protein
Cereals - total	1333	8	1393	8
Rice	1023	26	1095	27
Wheat flour	221	18	250	19
Others	89	6	48	6
Roots and Tubers	31	2	32	2
Sugar	306	-	324	-
Pulses	31	2	24	1.5
Tree - Nuts	48	2	44	2
Vegetables	26	1	25	1
Fruits	87	1	81	1
Meat	89	5	86	5
Poultry	16	2	21	2
Fish	41	7	43	7
Eggs	21	2	30	3
Milk & Milk Products	70	2	83	3
Oil & Fats				
Veg.	161	-	186	-
Animal	58	-	50	-
Stimulants & Spices	22	-	20	-
Alcoholic Beverage	113	-	108	-
TOTAL	2453	50	2550	53
		* (36%)		* (38%)

* % animal protein

Source: Statistics Division, FAO, Rome.

protein from various food items for Peninsular Malaysia during the periods 1961-1970 and 1971-1978. It shows that for the period 1971-1978, the main sources of dietary energy were provided by rice and wheat flour (55 percent of total calories), sugar (13 percent) and separated oils and fats (9 percent). The major suppliers of dietary protein were rice (36 percent), fish (14 percent), meat and poultry (14 percent) and eggs and milk products (11 percent) with animal protein providing around 38 percent of the total protein. The protein:energy ratio of the Malaysian diet was 8.2 percent which is slightly lower than a protein:energy ratio of 10 percent recommended for national planning.

It is well known however that food balance sheet analysis gives no indication of the unequal distribution of food between the various socio-economic groups. Segments of the community with extreme availabilities of calorie and protein,

TABLE VI
* PREVALENCE OF PROTEIN-CALORIE
MALNUTRITION IN PRE-SCHOOL CHILDREN
(Poverty kampongs and urban disadvantaged)

	Urban Disadvantaged 1977		Kelantan Fishing Kampongs 1979		Johore Padi-growing Kampongs 1981	
"Under-weight"						
Severe	1%	(1/106)	2%	(1/73)	1%	(2/166)
Moderate	11%	(12/106)	16%	(12/73)	36%	(60/166)
Total	12%	(13/106)	18%	(13/73)	37%	(62/166)
"Wasting"						
Severe	0%	(0/90)	0%	(0/67)	0%	(0/166)
Moderate	1%	(1/90)	3%	(2/67)	3%	(5/166)
Total	1%	(1/90)	3%	(2/67)	3%	(5/166)
"Stunting"						
Severe	2%	(2/96)	2%	(1/64)	7%	(12/166)
Moderate	3%	(3/96)	22%	(14/64)	29%	(48/166)
Total	5%	(5/96)	24%	(15/64)	36%	(60/166)

* Grading of the severity of protein-calorie malnutrition is in accordance with Waterlow (1976)³

associated with inadequacies or excesses are bound to exist. For the purpose of national planning, the per capita daily availability of calories and protein should be aimed at levels well in excess of their estimated requirements, in order to allow for unequal distribution and plate waste.

COMMUNITY NUTRITION STATUS BY DIRECT ASSESSMENT

In contrast to indirect population indicators, the direct assessment of the prevalence of malnutrition for population groups is done by means of cross-sectional nutrition surveys which can be comprehensive or limited in scope. Unless it is severe, malnutrition may not be obvious and it is essential in its assessment to employ a variety of techniques which may include all or a combination of the following: clinical examination, anthropometric measurements, biochemical estimations of blood and urine, food consumption and dietary history, enquiry on socio-economic conditions of the community and study on worm infestations.

Communities that are found to have multiple abnormalities by the above methods of nutritional

TABLE VII
PREVALENCE OF ANAEMIA IN PRE-SCHOOL
CHILDREN
(Poverty kampongs and urban disadvantaged)

	n	Mean Haemoglobin g/dl	% anaemic (Hb < 11 g per dl)
Urban disadvantaged	141	12.0 ± 1.3	18%
Kelantan (fishing)	64	11.2 ± 1.2	33%
Johore (padi-growing)	123	12.3 ± 1.5	16%

assessment can certainly be regarded as malnourished.

Several such comprehensive types of community nutritional assessments have been conducted recently with emphasis on young children and women of childbearing age of the poverty segment of both the rural and urban population. Some of the results of these surveys which involved an urban disadvantaged community, a fishing kampong in Kelantan and a padi-growing community in Johore are now shown in Tables VI, VII and VIII.

It may be seen from these Tables that although the prevalence of acute malnutrition in the form of moderate "wasting" was low (1-3 percent), the moderate forms of chronic malnutrition as manifested by "underweight" (12-37 percent) or

TABLE VIII
PREVALENCE OF PROTEIN DEFICIENCY
IN PRE-SCHOOL CHILDREN
(Poverty kampongs and urban disadvantaged)

	n	Mean Serum Albumin g/dl	% with low Serum Albumin (< 3.5 g/dl)
Urban Disadvantaged	139	4.3 ± 0.4	2%
Kelantan (fishing)	54	3.7 ± 0.3	15%
Johore (padi-growing)	63	4.2 ± 0.3	0%

“stunting” (5-36 percent) were relatively common. There was also a moderate prevalence of anaemia (16-33 percent), while ironically protein deficiency appeared more of a problem in a fishing village than elsewhere. ^{6,7} (Table VIII).

INTESTINAL PARASITISM

The frequency of soil-transmitted helminthic infestations is another good indicator of underdevelopment at the local level. In rural Malaysia and the urban squatter areas, the presence of helminthic parasites such as *ascaris* and *trichuris* is ubiquitous, while hookworm by comparison is less common.

Recent unpublished results of two nutrition surveys conducted in rural communities in Kelantan and Johore revealed that over 50 percent of the community surveyed had *ascaris* and *trichuris* infestations or both, with hookworm affecting 15-20 percent of the population. Helminthic infestations were also more frequent in children than in adults. ^{6,7}

The nutritional damage to the host is dependent on the intensity of these infestations. Heavy hookworm infections can lead to blood loss resulting in low haemoglobin and albumin levels ; heavy *trichuris* infections can cause rectal bleeding while *ascariasis* can cause malabsorption of nutrients.

NUTRITION AND AFFLUENCE

It is a cause for satisfaction that life expectancy at birth has increased (Table IX). With increasing affluence, people eat not to satisfy the nutritionist,

TABLE IX
LIFE EXPECTANCY AT BIRTH
IN YEARS
(Peninsular Malaysia)

Year	Male	Female
1972	62.8	67.8
1973	63.3	68.0
1974	63.9	68.7
1975	64.2	69.3
1976	66.2	71.4
1977	66.1	71.6
1978	65.9	71.0

Source: Vital Statistics, Peninsular Malaysia
Department of Statistics.

TABLE X
SOME MEDICALLY CERTIFIED AND INSPECTED
CAUSES OF DEATH *
(Peninsular Malaysia)

	1968	1973	1978
Nutritional Deficiencies and Anaemias	306	329	53
Diarrhoeal diseases (including amoebiasis, dysentery and enteritis)	844	721	510
Malaria	173	63	33
Tuberculosis	1208	908	630
Malignant Neoplasm	1511	1727	2275
Ischaemic Heart Disease	806	1168	1766
Cerebrovascular Disease	1039	1595	1747
Diabetes	205	285	387

* Only one-third of all deaths are certified and inspected.

Source: Vital Statistics, Peninsular Malaysia
Department of Statistics.

the planner or agriculturist, but to satisfy themselves. Regrettably, palatability and emotional satisfaction are of primary importance to the consumer while nutritional benefit seems to be of secondary concern. ⁸

Income and affluence play a significant role in food selection. Perisse ⁹ showed in an analysis of 85 countries that as income rises, there is a tendency for greater consumption of animal fats, animal protein and refined sugar, accompanied by a fall in the consumption of the complex carbohydrate in cereals. As mentioned earlier, a similar trend now seems evident for Malaysia. Such a dietary pattern when consumed in excess is known to increase the risk to cardiovascular disease, malignancy, diabetes and obesity.

Recent statistics on the medically certified causes of death indeed indicate a rising trend for cancers, cardiovascular and cerebrovascular disease (Table X). But what appears alarming is that these major killers seem to be overshadowed by deaths attributed to road accidents (Table XI).

Recent trends in other health and socio-economic indicators of Malaysia are shown in Table XII and their comparison with those found for the

TABLE XI
ROAD ACCIDENTS IN PENINSULAR MALAYSIA

Year	* Number of Deaths
1971	1548
1972	1712
1973	1922
1974	2303
1975	2317
1976	2405
1977	2515
1978	2561

* Including deaths arising from injuries.

Source: Traffic Division, Royal Malaysia Police,
Statistical Report on Road Accidents,
West Malaysia, 1978.

TABLE XII
MALAYSIA — SOME BASIC AND SOCIO-ECONOMIC
DATA (RECENT TRENDS)

Population (Million)	1970	1976	1980
Malaysia	10.40	12.24	13.55
Peninsular	8.78	10.24	11.25
Malays	53%	54%	54%
Chinese	36%	35%	35%
Indians	10%	10%	10%
Others	1%	1%	1%
Rate of natural increase	2.6%	2.5%	2.5%
GNP per capita US\$	380	870	1675
Population per doctor	3,700	3,850	3,440
Rural health services (MHC : population ratio)	1:138,100	1:110,251	1:102,597
Passenger motorcars per 1000 population	26	43	63
Newspaper circulation per 1000 population	75	135	209
T.V. sets per 1000 population	22	49	90

Source: Economic Report, 1981/82, Ministry of Finance,
Malaysia

less developing countries, developing countries and
the developed countries are found in Table XIII.

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TABLE XIII
HEALTH & RELATED SOCIO-ECONOMIC
INDICATORS

	LDC	Develo- ping	Peninsular Malaysia	Developed
No. of countries	31	89	1	37
Population (millions)	283	3001	11.25	1131
Infant mortality per 1000 live born	160	94	28	19
Life Expectancy at birth	45	60	66	72
% low birthweight infants	30%	17%	11%	7%
% pop. to safe water	31%	41%	60%	100%
Literacy rate (adult)	28%	55%	70%	98%
GNP per capita	US\$170	US\$520	US\$1675	US\$6230
Pop. per doctor	17,000	2700	3400	520
Pop. per nurse	6,500	1,500	730	220

Source: 1) WHO Chronicle (1981) 35 : 224
2) Economic Report 1981/82, Ministry of Finance,
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