Some Medical and Economic Aspects of the prevalence of Malnutrition in Sri Lanka

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THE problem of malnutrition has been a chronic situation and much discussed in medical circles for over three decades. The fuel crisis of 1973 was an emergency situation. When this was superimposed on the chronic food lack in many developing countries, the incidence of malnutrition was heightened. The problem is now perceived widely and is of grave concern beyond hospitals.

The first need is to define the problem in a way that priorities are identified so that relevant measures would be adopted to tackle the problem. Not only must we have the numbers affected but also a subclassification to show the ecology, family and community environment in which they live.

This definition could be achieved by the following studies :

a) nutritional surveillance of the community.
b) analysis of hospital data to further identify risk groups within the community.

The survey done by CARE, U. S. Health, Education Welfare and the Ministry of Health from September 1975 to March 1976 was to provide a statistically valid assessment of the nutritional status of the preschool population in Sri Lanka. Anthropometric measures such as weight for height and height for age were combined as suggested by Waterlow to classify nutritional status. Tables I and II show the distribution of acute and chronic undernutrition by SHS areas and age.

TABLE I

% Acutely Undernourished		*% Chronically Undernourished*		*Inf. Mortality Rate 1974*	
R'pura	8.8	Kandy	49.6	N'eliya	78
Kandy	8.3	Badulla	49.4	Badulla	73
B'caloa	8.4	Kegalle	39.6	Kandy	71
Galle	8.2	Matale	38.9	R'pura	66
Matale	7.2	R'pura	37.3	Matale	65
Kegalle	7.1	B'caloa	36.5	Kegalle	60
A'pura	6.9	Galle	33.3	K'tara	52
K'tara	6.2	A'pura	30.7	Galle	50
Matara	6.0	K'gala	30.4	B'caloa	45
Vavuniya	3.8	Matara	29.7	Colombo	42
Badulla	3.8	Vavuniya	29.6	Matara	40
K'gala	3.7	Jaffna	28.4	Amparai	39
Puttalam	3.1	Kalutara	26.8	K'gala	38
Colombo	4.9	Puttalam	24.4	Hambantota	35
Jaffna	3.7	Colombo	20.7	Mannar	34
Average	6.6	Average	34.7	A'pura	36
				Trincomalee	32
				Moneragala	30
				Puttalam	28
				Polonnaruwa	23
				Vavuniya	22
				Jaffna	21

TABLE II

Age (Months)	*% Acutely Undernourished (weight per cent).*	*Chronically Undernourished (weight per cent).*
6–11	5.0	11.8
12–23	10.8	24.8
24–35	6.9	33.1
36–47	4.8	40.8
48–59	5.0	41.9
60–71	6.2	46.2
Average–Sri Lanka	6.6	34.7

This baseline survey will be useful not only for ongoing surveillance but also to assess change resulting from remedial programmes. Acute undernutrition suggests a recent deficiency either due to an acute unavailability of food or to acute disease. Short term measures such as nutrition therapy and treatment of infections would help relieve acute deficiency. But long term measures are certainly necessary to eradicate chronic undernutrition which is due to chronic hunger. It is obvious that districts like Ratnapura, Kandy, Batticaloa and Galle are the worst off. The survey also indicates that children of the age group 12 to 23 months are the high risk group for remedial measures.

Table III would finally illustrate the magnitude of the problem—that approximately 40% of Sri Lankan children are so malnourished that they need some nutrition intervention programme.

TABLE III

%Gomez Second and Third degree combined	
Kandy	54.6
Badulla	50.6
Ratnapura	49.7
Matale	45.9
Kegalle	43.4
Galle	44.6
Batticaloa	42.3
Kurunegala	39.6
Anuradhapura	38.4
Matara	37.2
Vavuniya	36.4
Kalutara	35.7
Puttalam	34.6
Jaffna	32.5
Colombo	29.1
Average	42

An analysis of the differential infant mortality rate in different districts in Sri Lanka shows the strong correlation between nutritional status and high child mortality (Table I). There is then an urgent need for nutrition intervention in these same areas. At the same time it must be stated that it is now possible to reverse severe

malnutrition fast enough to reduce its old high fatality risks. This is because nutrition therapy is mostly based on the use of Triposha (WSB). If this programme can be popularised in more provincial paediatric units, the mortality rates in those areas could be reduced.

Analysis of hospital data has been done both retrospectively and prospectively in the University Paediatric Unit, Colombo, to identify factors that would place a child " at risk of malnutrition ".

TABLE IV

Severe PCM and Breast Feeding

	Marasmus	*Kwashiorkor*
Total number of cases ..	100 ..	16
Not recorded ..	1 ..	1
Not established ..	13 ..	0
Breast fed less than one month	14 ..	1
Do. 1–3 months	28 ..	3
Do. 3–6 months	15 ..	3
Do. 6–12 months	10 ..	1
Do. more than one year	19 ..	7

Firstly, Table IV reveals the clinical presentation. The majority had marasmus which would reveal a chronic state of hunger or calorie inadequacy prevalent in Sri Lanka rather than an acute famine situation (which would have revealed a high incidence of Kwashiokor).

This high incidence of marasmus is related to poor breastfeeding (Table IV). It is obvious that artificial feeding is a failure among these families. With the population explosion and the world shortage of milk, the prices of infant milk foods are ever soaring. Therefore it is necessary to promote breastfeeding at all levels and to remove any prestige value on tinned milk foods.

TABLE V

Severe PCM — Age

	Marasmus	*Kwashiorkor*
Total number of cases ..	100 ..	16
Not recorded ..	3 ..	0
0–1 year	39 ..	1
1–2 years	25 ..	10
2–3 years	19 ..	2
3–4 years	11 ..	1
4–5 years	0 ..	0
Over 5 years	3 ..	2

Age distribution is displayed in Table V. Marasmus occurs in infancy and Kwashiokor in the older child. Boys and girls are equally affected and there is no special risk of malnutrition for a girl baby in Sri Lanka.

It has been shown for many years that those families who are affected by malnutrition come from groups who earn less than Rs. 300/– a month (Table VI.) The pattern is similar to the rest of the developing countries and indeed that is why malnutrition remains a problem of these countries.

TABLE VI

Severe PCM — Family Income
Total No. of Cases — 116

	Series	*Urban Average*	*National Average*
Not recorded ..	36(31%) ..	— ..	—
Less than Rs. 100/– ..	43(37.1%) ..	3.5% ..	8.3%
Rs. 101/– — 200/– ..	31(26.7%) ..	17.7% ..	35.3%
Rs. 201/– — 400/– ..	6(5.2%) ..	39.6% ..	37.2%
Rs. 401/– & above ..	Nil ..	39.2% ..	19.2%

Further analysis of this socioeconomic background is displayed according to father's education and thus his employment. (Table VII).

TABLE VII

Severe PCM — Father's Education
Total Number of cases — 116

	Series	*Urban Average*	*National Average*
Not recorded ..	19(16.4%) ..	— ..	—
Not schooling ..	19(16.4%) ..	7.2% ..	11.6%
Primary ..	34(29.3%) ..	39.1% ..	47.9%
Secondary ..	38(32.8%) ..	38.4% ..	32.4%
G.C.E. (O/L) ..	6(5.2%) ..	12.9% ..	7.1%
G.C.E. (A/L) ..	0 ..	2.4% ..	1%

Mother was working only in families where the father was dead or separated. There were no families with malnourished children where both parents were working.

There are many social problems and acute crises such as loss of a parent by death or separation or loss of employment, shifting of residence (rural to urban) unhappy marriages — all contribute to precipitation of severe malnutrition in children. Table VIII shows an analysis of 50 consecutive admissions of malnourished children in 1975 supporting this observation.

TABLE VIII

Factors Immediately Preceding Onset of Malnutrition
50 Malnourished Children in 1975

Post Measles	20
Following Gastroenteritis ..	25
Unmarried parents	4
Unsatisfactory parental relationship ..	7
Parental separation	5
Death of parent	4
Loss of employment	13
Other sudden hardships ..	7

It is necessary to stress that the chief role of medical personnel in minimising the effects of malnutrition is to prevent and effectively and rapidly cure those infections that push children on minimal nutritive intake into severe malnutrition. Fifty malnourished children in hospital were compared with fifty others in hospital, but not malnourished, in respect of incidents of infections (Table IX). Gastroenteritis particularly a history of recent gastroenteritis and poor dietetic therapy often lead to

severe malnutrition. Not only mothers but even doctors need better knowledge of nutritional support during acute and chronic illness. It has been known for many years that milk should not be routinely withheld with the onset of diarrhoea.

TABLE IX

Associated Infections

	Kwashiorkor	*Marasmus*	*Not Malnourished*
Total No. of cases	57	154	46
No. with Helminthiasis	33(57.7%)	73(47.4%)	12(26%)
Whipworm	30(52.6%)	56(36.4%)	7(15.2%)
Round worm	20(35.1%)	50(32.5%)	9(15.6%)
Hook worm	14(24.6%)	31(20.1%)	1(2%)
Gastroenteritis (NS)	22(38.6%)	42(27.3%)	—
Respiratory Infections	19(33.3%)	21(13.7%)	—
Skin infections	7(12.7%)	8(5.2%)	—
Measles	5(8.8%)	2(1.3%)	—
T. B.	2(3.5%)	1(0.7%)	—
Ameobiasis	3(5.2%)	8(5.2%)	2(4.3%)
Giadiasis	0	4(2.6%)	1(2%)
Strongyloides	0	0	1(2%)
Salmonellosis	1(1.3%)	2(1.3%)	—
Shgellosis	1(1.3%)	4(2.6%)	—

The interaction between measles and malnutrition has been documented in many countries. Table VIII illustrates this. The problem of measles has been accentuated recently since both morbility and mortality have increased and must necessarily be related to poor nutritional status among children. Measles immunisation must be considered urgently for those at risk of malnutrition.

Certain cultural beliefs in respect of measles leading to low protein diet and withholding therapy must also be rectified to reduce this association between measles and malnutrition.

It is necessary to highlight the link between large family size and malnutrition. 59.5% of the series in the University unit in Colombo had more than four children in the family.

TABLE X

Severe PCM and immunisation
(Indicates utilisation of NCH service)

Total Number of Cases	116
Not recorded	5
Immunisation complete	Nil
Immunisation incomplete	30(26.7%)
Immunisation Nil	81(69.9%)

Finally Table X demonstrates that malnutrition is seen among those who do not avail themselves of free health facilities provided by the state. A question which could be raised here is whether any preventive programme should be solely MCH clinic based. There is a need for a catalytic force of lay health workers who are non-professional and preferably volunteers to motivate mothers to utilise free health facilities already available. The basis for preventive programmes should be around regular assessment of growth, active promotion of breastfeeding, education on food values and home made weaning foods, knowledge of food and personal hygiene, immunisation, family planning and simple curative therapy for minor infections. In the wake of fluctuating food prices with changes in food availability, there must be a system of information where mothers would know the cost per nutritive value of foods (and not cost per pound) so as to equip them with the knowledge of how best to spend their money and prevent malnutrition of their children.

The importance of nutritional surveillance by regular collection and evaluation of data is to confirm the need for planning strategy for national programmes. The need to implement any definite action is thus soundly based. International agencies cannot then be accused of foisting carbon copies of other country programmes, incurring unnecessary expenditure when such are not really justified.

Looking beyond the hospital where children are treated for severe malnutrition, it is necessary to evolve both short term and long term policies concerning the community at large. Until then the prevalence of malnutrition will hinder the progress of generations to come.

References:

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The child is particularly susceptible to protein-calorie malnutrition (PCM) between the ages of 1 and 5 or 6 years. If PCM remains untreated, it can be fatal.

World Health Organization, Geneva.