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FROM THE EDITOR

OBJECTIVES AND HOPES OF THE IYC

The official logo of the International Year of the Child (IYC), which has been reproduced on the back cover of this issue, depicts two embracing figures, circled by laurel leaves, symbolizing the relationship between adult and child.

There is no sounder investment than the future of the child - and no greater responsibility for the adults of today.

Despite increased emphasis within the international community on development and economic cooperation, there remain an appallingly large number of children, especially in the developing nations, who lack even the rudimentary necessities of life. This need not and should not be. Much that is practical can be done to bring these children into the stream of progress and enable them to participate fully in the development of their societies.

The International Year of the Child, 1979 is concerned with all children in all countries, especially young children. Since 1979 is the 20th anniversary of the Declaration of the Rights of the Child, the IYC is an opportunity for each country to increase its efforts in carrying out national action programmes aimed at improving the welfare of children.

The main objective of the International Year of the Child - which is to encourage raising significantly, on a permanent basis, the level of services benefitting children - ultimately implies an increase in financial resources dedicated to this end. It is hoped that education and information activities in each country can shape public opinion and spur government action to increase the funds devoted to children's programmes - either for the country's domestic programmes or for assistance to other countries, or for both.

A major emphasis should be placed on increasing both international and national support of services for children in developing countries, by encouraging voluntary participation and financial support by Governments and the public regarding child-oriented programmes everywhere in the world.

The International Year of the Child offers a rare opportunity to demonstrate that intensified public and governmental awareness of children's needs can lead to concrete action of immense and, above all, lasting benefit to mankind's future - its children. It should be an occasion to re-affirm, not by words alone but by deeds, that the well-being of today's children is the concern of all people everywhere and that it is inseparably linked with the peace and prosperity of tomorrow's world.

- IYC Secretariat
United Nations, New York

THE BABY TOLL

Some 49 million of the world's people died in 1977. Of these, 12 million, or some one-fourth, were infants under one year of age. Thus, of the 122 million babies born last year, almost one in 10 did not live to celebrate its first birthday.

- INTERCOM
May 1978

TOPICS AND COMMENTS

THE ECONOMICS OF BREAST FEEDING*

While international research centres concentrate on improving food production, which has risen steadily during the last four decades, breast milk production has declined. Cornell nutritionist Michael Latham estimates that in 1976 the world's total production of human breast milk fell short of its potential by some 12 billion litres - a "loss" in monetary terms of some $6 billion. There is no such research effort to help ensure an adequate supply of breast milk, he points out, yet "breast milk is the only natural food product which is complete in its content of nutrients, which can serve as the only food of a human being during his period of most rapid growth, and is produced on every continent." He adds that proper formula feeding would cost 58% of average family income in Kenya and 76% in India.

In a study of breast feeding in St. Vincent, where bottle feeding combined with breast feeding has now become virtually universal, Cornell researcher Ted Greiner, basing his computations on local powdered milk costs, found that although Vincentian mothers of infants under 2 years could produce breast milk worth about $447,237, their babies actually receive breast milk worth $113,928. The annual loss of some $333,000 is equal to about 23% of the island Government's total 1974 expenditure on health.

The social costs of infant malnutrition related to bottle feeding are also high, declares Leah Margulies, programme director of the Interfaith Center for Corporate Responsibility (ICCR) Infant Formula Campaign. She cites a study of Israeli infants, in which hospitalizations for gastroenteritis for formula-fed babies 3 months and over were found to be 12 times as high as those for

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*Adapted from "Third World Use of Infant Formula Stirs Widening Controversy" Intercom, Vol. 6, No. 5, May 1978, p. 4-5.

for breast fed babies of the same age group, adding that although it is possible to measure or estimate such items as hospital costs, the burden of formula costs on the individual family, and the loss of foreign exchange to the country, the emotional and personal costs to infants, families, and medical personnel are immeasurable. The cost of increased fertility must also be taken into account, say health authorities. Breast feeding, says Alan Berg, has probably prevented more conceptions than all other forms of contraception.*

CAN THE TREND BE REVERSED?

What steps can be taken to encourage breast feeding in the Third World? Convenient, inexpensive facilities where mothers can nurse their infants could be provided by governments in urban areas, where privacy is virtually nonexistent. Such "creches" could also be provided by employers for working mothers whose schedules would include nursing breaks. This system is reported to be widely used in China, where infant formula is said to be almost unknown. In China, in fact, hospital accommodations are provided for the mothers of hospitalized infants to permit regular breast feeding. In Switzerland, monetary incentives are given to mothers who nurse their children at least 10 weeks, and paediatricians attending an IPPF** workshop went so far as to recommend the banning of formula imports by poor countries except where demonstrably necessary.

Editor's Notes:

*Berg, Alan. The nutrition factor. Washington, The Brookings Institution, 1973.

**International Planned Parenthood Federation.

Baby bottles have been banned for sale without a doctor's prescription in Papua, New Guinea, where violators of the new regulation, which declares the bottles to be health hazards, will face a US$250 fine.* Canada's Saskatchewan province is said to be considering measures regulating formula use. And in Algeria, the Government is producing its own brand of formula and restricting it to medical use.

A halt in the decline of breast feeding in developing countries, however, should be linked to the provision of adequate nutrition to the Third World's pregnant and nursing women. The provision of family planning services has a key role to play as well - too-close pregnancies mean both malnourished mothers and malnourished infants.

Education in the advantages of breast feeding can also play a part in its resumption, as evidenced by a recent survey which found that some 2 out of 5 U.S. mothers now nurse their babies - double the percentage of 15 years ago. ▲

*Editor's Note: See Cajanus, Vol. 10, No. 4, 1978, p. 261.

LOW BIRTH WEIGHT - WHAT SHOULD BE DONE TO DEAL WITH THIS GLOBAL PROBLEM*

By A. Petros-Barvazian and M. Behar

Although mortality and morbidity statistics, including infant mortality, are useful indicators of health and socioeconomic development, they are of limited value in reflecting the total health picture and quality of life of any population. They do not, for example, give an adequate indication of the effect of environmental influences on the growth and development of children during both prenatal and postnatal periods. Obviously the very rapid growth and development taking place during the intrauterine period are not easy to assess, but recent studies of the birth weights in different populations in relation to environmental influences during pregnancy, e.g. maternal nutritional deficiencies, infections, etc., have shown that birth weights can be an important indicator of health and development. A low birth weight (LBW) is one that is below 2500 grams.

MAGNITUDE OF THE PROBLEM

Exact figures on the global problem of low birth weight are not available, but it has been estimated (based on the population numbers in various regions and areas of the world, the crude birth rates, and results of sample surveys on the proportion of LBW) that there are about 22 million live-born LBW babies per year. This is roughly one-sixth of the total number of global live births per year. Further, it has been estimated that only about 5% (mostly pre-term) of all LBW babies in the world are born in

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*Condensed from a paper presented at the SAREC (Swedish Agency for Research Cooperation with developing countries)/WHO Workshop on Birth-Weight Distribution - an Indicator of Development, held in Sigtuna, Sweden, on 16-18 June 1977. Dr. Petros-Barvazian is Director, Division of Family Health, WHO, Geneva and Dr. Behar is Chief, Nutrition Unit, WHO, Geneva.

developed countries; the rest, around 21 million, are born in developing areas, roughly 16 million of these being small-for-date full-term and not pre-term babies.

Table 1: Incidence of Low Birth Weight (LBW) in selected Caribbean countries (CFNI-T-15-78)*

Countries of the Caribbean	LBW as % of total births
Antigua (1972)	13.2
Barbados (1975)	19.0
Dominica (1976)	10.1
Grenada (1974-75)	12.2
St. Kitts-Nevis-Anguilla (1975)	13.4
St. Lucia (1975)	9.3
St. Vincent (1976)	10.4

This table illustrates the magnitude of the problem in some English-speaking Caribbean countries.

These are mainly based on hospital births and do not indicate the ratio of the total births.

FACTORS ASSOCIATED WITH LBW

Apart from gestational age, the birth weight of any baby depends on the following factors relating to the mother: size or height, age, parity, socioeconomic status, education, smoking habits, and nutritional status and morbidity during pregnancy.

*Editor's Note: This table replaces the photograph in the original article.

Pathological factors related to complications during pregnancy may also influence the birth weight.

In the developing countries, high levels of maternal and child mortality and morbidity and adverse pre- and postnatal development of the child are associated with three interrelated conditions: malnutrition, infections, and unregulated fertility, which are often due to poor socioeconomic and environmental conditions (including scarcity of health and social services). Measures aimed at the correction or prevention of malnutrition and infections during pregnancy - i.e. prenatal care and MCH (Maternal and Child Health) and family planning care in general - should therefore help to reduce the numbers of LBW babies born in the developing countries. These measures can be expected to be more effective and to have a lasting effect only if, at the same time, there are improvements in the socioeconomic and environmental conditions and in the distribution of health and social services, especially in the underserved areas.

SOLUTIONS TO THE PROBLEM

Action to reduce the risk of LBW babies in already pregnant women is still possible by direct interventions of the health services. Both malnutrition and morbidity, including infections, during pregnancy are amenable to correction or can be prevented. Efforts to reduce the incidence of LBW in developing countries through prenatal care should therefore be concentrated on these factors. Practice of effective family planning would help to reduce the problem by influencing the mother's age at pregnancy, parity, and the spacing or interval between pregnancies. The prevention of pre-term births can be assisted by appropriate health care, including health education and self-care, before conception and before birth. In developing countries, however, the majority of LBW babies are born at term and are small-for-date mainly

because of poor maternal health, malnutrition, and morbidity before and during pregnancy.

Socioeconomic development and improvements in health of the currently underserved populations can be expected to improve the situation. Two difficulties, however, must be overcome for effective action in the health sector. One is concerned with the method for reaching and involving the total population in need, for which the primary health care approach is now being promoted. The other is to develop an appropriate technology for the effective application of available scientific knowledge under the conditions and limitations found in the developing countries and suitable to the life style of the populations. WHO is now actively collaborating with Member countries to overcome both difficulties so that the problem of low birth weight and other problems in the health field could be reduced, even if all of them cannot be completely resolved. ▲

CAJANAQUOTE

"The widespread practice of indiscriminately introducing complementary feeds to breast-fed babies in the first few months should be discouraged. However, this will only happen if nurses and doctors acquire a better working knowledge of the natural laws governing lactation. If these are intelligently and sympathetically applied this might help to half the rapid decline of breast-feeding in the early months after birth."

- D.P. Davies & C. Thomas

Why do women stop breastfeeding?

Lancet 1: 420-421, 1976

NEW FINDINGS ON INFANT NUTRITION*

By Roslyn B. Alfin-Slater, Ph.D. and Derrick B. Jelliffe, M.D.

Scientific discoveries sometimes come so fast and furiously that new theories not completely tested and evaluated are announced prematurely in the rush of events. Fortunately this is not the case with recent findings about nutrition in the earliest stages of human development - the foetus and the newborn.

For years, it had been assumed that the foetus was fed entirely through the placenta, which filtered out selectively appropriated nutrients form the mother's blood. While this is primarily true, recent work has shown that the foetus also obtains some nutrients from the amniotic fluid in which it is floating in the uterus. For some time, it has been recognized that some of this fluid is swallowed by the foetus, but this has been thought to be accidental or at least coincidental and of no significance. Now this seems to be of increasing importance.

The foetus' intestinal canal is complete and open for the last six months of pregnancy and it has been estimated that 1 to 2 pints of amniotic fluid can be swallowed each day. How much in the way of nutrients is absorbed is uncertain, but evidence suggests that a considerable amount of calcium and some amino acids can be obtained in this way.

Numerous facts are also coming to light with regard to the nutrition of the newborn. For example, since much of the caloric content of human milk is present as fat, questions concerning its digestion have been raised. New studies show that the baby has microscopical glands at the base of the tongue that secrete the fat-digesting enzyme, lipase, so that fat digestion actually commences in the mouth.

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*Reproduced from the Los Angeles Times Home magazine, 4 December 1977.

Studies with humans and animals have also shed light on the way the baby seeks out the mother's breast. In most species, this is a very active process. For example, the newborn piglet has to wriggle strenuously in the right direction over the sow's relatively huge body. This is even more remarkable when it is realized that the piglet is blind at birth. Its journey seems to be guided by its sense of smell, which has never been used before. The human infant is different in that it needs to be carried or directed to the breast. However, it also seems that there are highly potent hormones (pheromones) produced by glands on the surface of the breast that attract the infant.

COLOSTRUM

The mysterious and much neglected fluid, colostrum, is becoming appreciated as more and more research indicates its true significance. Colostrum is the thick, yellowish secretion produced in the early days of lactation. Until recently it was thought to be a sort of "not-yet-ready" breast milk with no real importance or function in the human. Investigations now disclose that colostrum is a special fluid providing not only nutrition, but protection against infection.

For example, colostrum contains three times as much vitamin A as "mature" human milk and is very rich in the minerals zinc and copper. It is relatively low in fat and the pattern of fatty acids is different from milk. The protein content, however, is high - double that of mature milk - and is entirely due to the large amounts of the specially designed antibodies present, which act within the infant's intestines and prevent invasion of harmful bacteria.

Overall, colostrum represents a bonus dose of several nutrients and a protective umbrella against various infections to which the newborn is susceptible. In some parts of the world,

human colostrum is being fed once daily to all low-birth-weight babies in hospitals as a biological protection against infection.

The recent findings about colostrum further endorse the barely understood mechanisms that have evolved over 200 million years and give still further indication that the most natural methods of nourishing the young human organism are best. ▲

MASHED BANANAS...FOR EXPORT?

Costa Rica is to begin exporting some of its bananas in a different form - mashed.

A baby food company has announced that it plans to export 40,000 pounds of banana puree per day to the United States for use in baby food, and this could generate some $2 million per year for Costa Rica.

The company is using fruit that does not meet standards for export in its whole, unpeeled form, and would normally be thrown away.

- 10 March 1978

Editor's Note: We wonder why Costa Ricans throw away bananas.

COMBINING CAREER AND BREAST FEEDING

This article is written with the aim of encouraging working women who wish to continue breast feeding their babies after returning to work. We find little practical help in the usual books, where our case is dismissed in a couple of brief paragraphs, which makes it appear that breast feeding cannot be continued after returning to work.

In fact, my own personal experiences have shown me that, with a bit of careful planning, both career and breast feeding can be happily combined, and that the advantages gained by both mother and baby make it well worth the effort.

My first two babies were breast fed only for the period of my maternity leave, combined with accumulated leave, being ten weeks and four weeks respectively. At the end of this period, although I had happily breast fed each of them, I automatically assumed that they would have to be weaned upon my return to work.

So I reluctantly gave up breast feeding at this time. Incidentially, I was having no problem in breast feeding the first one, until I received a visit from a well-meaning representative of a commercial baby-milk company. She weighed my daughter, declared her underweight and advised me to offer her formula after each feed.

My confidence was considerably shattered, and it was only after consulting both a Nursing Sister and Dr. Spock's "Baby and Child Care" that I was sufficiently reassured to ignore her advice. With subsequent babies, I refused to even allow such visitors into the house.

**Adapted from Consumer Bulletin, [Consumer's Association of Singapore], October-December 1977, p. 18-19.*

It was not until the birth of my third child that I decided to attempt to combine both career and breast feeding. By this time, I was living very close to my place of work and had access to a car, which meant that I was able to get home quickly, wasting little time in travelling. I was also fortunate in having an excellent household helper who was fully convinced of the value of breast feeding and who also had the welfare of my baby at heart.

This meant that if the baby started to cry soon after her feed, when I had already left for work, she did not automatically assume that she was hungry and gave her a bottle. Instead, she took the trouble to find out what was ailing the child and rectified it without disturbing ny feeding routine. A telephone was a great boon during this period, since I was able to ring home and reassure myself that the baby was contented and well-fed. This enabled me to concentrate on my work without worrying that she was screaming with hunger. It also enabled me to ring home to tell the household helper to feed the baby if I was unavoidably delayed at work.

We also found that a drink of water and lots of affection were effective in keeping the baby happy if I was delayed for half-an-hour, or if she was hungry earlier than usual.

In the case of my third baby, I returned home at lunch-time to feed her, but had to miss the mid-morning feed. I also gradually weaned her off the 2 a.m. feed by about two months of age, so that by the time she was 2½ months old, she was having four breast feeds and one bottle of formula in 24 hours.

By the age of four or five months, she seemed to require some additional formula as well as her breast feed, and by six months she had weaned herself from the breast. I felt that my milk supply would have lasted longer if I had been able to breast feed her more frequently and thus used less supplementary formula.

Consequently, with my fourth baby, I decided to continue the 2 a.m. feed for several months instead of encouraging him to cut it out at an early age. I made a greater effort to come home to give him the mid-morning feed for the first few months. In this way, he was almost entirely breast fed, except for the odd bottle if I was delayed at work. He was therefore receiving no formula routinely, and was receiving six breast feeds in 24 hours.

This baby was breast fed for almost a whole year, and I feel that the extra stimulation provided by the two additional feeds largely contributed to the longer milk supply.

A couple more hints which may make the breast feeding mother more comfortable are as follows: I always ensure that I drank adequate fluids during my working hours by taking flasks of cold milk and other beverages to my working place. I found that I was continuously thirsty and could drink one pint at a sitting.

I also made certain that I left home armed with plenty of home-made breast pads to spare me the embarrassment of leaking all over my dress in public. In fact, it was only for the first couple of weeks that I really needed them. After that, I found that my milk supply had settled down nicely and I rarely leaked between feeds. Of course, if I was delayed at work and had to miss a feed, my breast shields became invaluable. Similarly, if my colleagues politely enquired after my baby, the "let-down" reflex would occur and I would quickly change the subject.

Although I was fortunate in working close to my home, and having a car and a telephone, I also know of women who, armed only with a bicycle and fewer modern conveniences than I, have also successfully breast fed their infants while continuing to work. I would strongly encourage anyone who is keen to combine both work and breast feeding, to go ahead and try.

Each person must work out the details in accordance with her own life-style but the restrictions encountered are well worth the rewards to be had both by mother and baby. Breast feeding is a unique pleasure which can only be enjoyed for a short period of baby and mother life, and it seems a great pity to miss the opportunity. ▲

'PARENTS INSURANCE' BENEFITS BABIES

A new baby in Sweden comes with 9 months of paid baby sitting.

Mother - or father - can take advantage of 9 months of paid leave, 3 of which can be saved and spread out over the child's first 8 years in the form of full or partial days off from work. The length of paid leave for parents is 8 months at 90% of wages and one month at a new minimum rate of 32 Kroner (US$7.00) per day.

A new Swedish bill now under consideration would guarantee the right of parents of small children to shorten their working days without losing their jobs. They get no pay for the hours missed, but under the country's taxation and allowance system will feel a virtually insignificant cut in income.

- INTERCOM
June 1978

INTERNATIONAL YEAR OF THE CHILD - CHALLENGES AND COMMITMENTS*

by

A.C.K. Antrobus

International Year of the Child arose out of a resolution of the Economic and Social Council and the General Assembly of the UN.

This was adopted by the PAHO Executive Committee and the Directing Council, in turn, resolved that due note be taken of it in planned activities in the region for 1979. Among the aspects selected for special emphasis are "health education, nutrition, vaccination and the control of communicable disease." The end product of these activities must be "the integral well-being of all children, and particularly of the most disadvantaged, bearing in mind the relevant humanitarian implications and those of overall national development."

International Year of the Child is for all practical purposes no more than a *concept* in most Caribbean countries at this time. For 1979 this concept will have to be transformed into some kind of reality - a programme, a series of activities - something live, visible, audible or even tangible. For these outputs to be realized, there is going to be need for a number of inputs - information, ideas, organization, coordination, action and one may also add investigation and evaluation, recognizing, of course, that they require somewhat more specialized expertise and certainly a good deal more time.

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*A slightly edited version of a paper presented at the 6th Annual Meeting of the Caribbean Association of Nutritionists and Dietitians, Bridgetown, Barbados, 12 July 1978. Dr. Antrobus is PAHO Family Health Adviser, based in Barbados.

Let us look therefore at these types of inputs in turn and try to identify what you can do. For the most part I will be presenting my views within a national rather than regional context - for that is the suggested framework for International Year of the Child activities.

INFORMATION

Taking information first, it is still true to say that our public is inadequately informed on matters related to child health and nutrition - this, in spite of a quite marked increase in available information made possible by Bureaus of Health Education and such publications as CFNI's *Cajanus*. Maybe we have not yet explored, let alone exploited all of the many ways in which we can make people in general and schoolchildren and parents in particular better informed on matters pertaining to nutrition. We do not have to undertake it all by ourselves since we are not all fluent public speakers or arresting TV personalities, and we may not possess artistic or dramatic skills. But as we know only too well when we make that special effort to do something - a campaign for example, aren't we usually pleasantly surprised at the favourable and at times even welcoming response we get from the media and from our colleagues gifted with some artistic talent?

IDEAS

We need to pull together more and more ideas - and they need not be original, maybe better still if someone else has used them successfully.

During the last 18 months, I have come across two examples which demonstrate how otherwise dull information can be transformed into something live. The first comes from a London Police Sergeant who composed songs and jingles on that dreary subject - the traffic code for schoolchildren. In the other instance there were songs and dramatic sketches on family planning used at the

village level in Haiti to reinforce the routine aspects of day to day information and education. In the Caribbean we have the necessary flair to do these things. What we need is the will and the zeal to seek out the appropriate expertise from among our available talented people and "turn them on". As another example, artistic and literary competitions based on nutrition themes and with modest prizes could provide a stimulus for individual and group work among schoolchildren, and nutrition-centred games can be made into a popular pastime with the necessary imagination. Indeed Jamaican colleagues have shown some enterprise in this direction over the years. This is, in my opinion, still a vastly under-exploited area, full of potential for promoting nutrition education. If only someone could discover the nutrition equivalent of MONOPOLY we really would be on to a winner!

ORGANIZATION AND COORDINATION

What we have said so far is that the nutritionist can provide the technical information and generate some ideas for their translation into action; additionally she can identify and draw on other skills that are complementary to her own, but, at least, she must carry out her basic responsibility of ensuring that information reaches out to people and that any information to which they are exposed is correct and up-to-date. Above all, however, she has a tremendous responsibility to herself and her profession to be at all times well informed, and should be ahead of the popular magazine columns read by her clientele.

I would like to suggest that in International Year of the Child, three target areas be focused on: (1) day-care centres, (2) schools, and (3) adolescent groups. These provide direct points of entry for the nutritionist in both the areas of professional service and education.

Day care is an aspect of child health that is assuming increasing importance throughout the Caribbean. Centres are increasing in number in all countries even though in several this is happening in a disturbingly haphazard manner. There is concern about standards of hygiene, levels of social and psychological stimulation, recreational facilities, and, indeed, about the nutritional quality of diets.

In fact, within the last 5 years it has been recorded in one Caribbean country that a few such centres have played a significant role in the aetiology of childhood malnutrition. We are obviously in need of standards and norms for day care centres and, where these already exist, there is need for their enforcement (even though one is conscious of the delicacy of this issue in some cases). I see here a clear-cut role for the intervention of the nutritionist/dietitian as part of a child care team by providing much-needed expertise in order to establish better nutritional practices in this young age group. Even without this more formal type of input, is it not possible that as individuals or small groups you single out and adopt one such centre which you can offer your special skills and where, perhaps, you may usefully carry out dietetic innovations and experiments? This idea could, perhaps, be extended to the pre-schools and basic schools in those countries where they exist.

With regard to *schools*, the point has been made *ad nauseam* that they offer a ready-made channel into which much of our efforts in nutrition education should be directed. How many times hasn't someone stated - even at meetings such as these, that the school meal is a very appropriate vehicle for the education of school children and for the development of desirable food habits? But how many of you can honestly say that you yourself have pursued this idea, or even know of one of your colleagues who had pressed really

hard for an opportunity to do it? Maybe the challenge of International Year of the Child lies less in the area of ideas, of which there are many, and more at the level of implementation and action!

And what can we do for the *adolescent*...the *teenager*? So many of whom become child-mothers?...and baby-fathers as the Jamaicans so graphically put it? So many of whom are well into food-faddism - some starving themselves to the elusive goal of a zero waistline while, on the other hand, there are the chronic compulsive over-eaters who obliviously slither into a state of obscene obesity in its most grotesque form. They all need help both for their own sakes, as well as for the sake of their offspring.

In a few Caribbean countries where there are youth projects with the accent on family life education and a comprehensive approach to the basic problems of youth, there is bound to be ample opportunity for the nutritionist to find a place for her skills so that nutrition may not be neglected in the overall design for a better quality of life.

With regard to International Year of the Child itself, some countries have already appointed national committees to determine the nature of their programmes for 1979. And I am sure that those which are still lagging behind will soon be catching up by appointing a committee or working group. If the nutritionists have not yet been invited to serve on these committees, I suggest you make it your business as an individual or as a professional group that you arrange to have yourself included. There should be no qualms and no difficulty associated with declaring our interest in the International Year of the Child, and ensuring that we be given an opportunity to indulge this interest in some practical way during the year.

ACTION

I would like now to suggest in summary form a number of simply stated activities or mini-projects out of which you can make your own selection, as an individual or as a group:

(1) Adopt a day care centre - whether formally structured or a "private" centre run by a child-minder. The range of service could include:
   (a) preparing menus and giving dietary advice;
   (b) helping make or acquire visual aids in nutrition education for the children;
   (c) meeting with mothers' groups where these are organized;
   (d) serving on the committee.

   The same will apply to a pre-school or basic school.

(2) Intervention into primary and secondary schools:
   (a) where there is a programme in Family Life Education, undertake to assist with the nutrition component by developing or modifying syllabus or even doing a part of the teaching programme perhaps in your own favourite aspect of nutrition;
   (b) organize a visual aids project to be executed by the children themselves;
   (c) commit yourself to giving three talks - one per school term on some important issues in childhood nutrition.

(3) Involvement with adolescent groups:
   (a) identify at least one youth group for which you can become a sort of nutrition counsellor. Apart from anything else, they are ripe for consumer education;

(b) socially conscious groups may be quite readily persuaded to undertake nutrition-related projects if given the appropriate stimulus and professional support. You can help them identify and articulate some appropriate subject area for their involvement;

(c) a special target group for selected nutrition information could be the young teenage mothers, who, with their babies have special nutritional needs and tend to have available to them the least information on child nutrition.

(4) Opportunities also exist for the hospital dietitian in the children's and maternity wards and in the outpatient clinics, but I cannot elaborate on this as I know only too well the special nature of the constraints many of you face in such settings.

For individuals or groups that yearn for some more sophisticated level of involvement, there are several issues in the area of childhood nutrition that could bear scientific investigation and analysis. Maybe you can think of some of these to work at so that we can in the future base what we say less on impressions - as we are wont to - and more on facts. Remember, too, there are always funds for the right project - all you have to do is find the right donor.

International Year of the Child is bound to mean different things to different people. To the nutritionist and dietitian the meaning is clear - an opportunity to concentrate on the upliftment of the dietetic and nutritional indices of our children within the broader context of that eagerly sought goal - a better life. To the skeptic, International Year of the Child may seem to be no more than a gimmick, but even gimmicks have their place.

Should International Year of the Child mean nothing more than this, let us refashion and mould it into an instrument by means of which we will promote our involvement in some aspect of child nutrition in the Caribbean, and thereby bring additional, practical action into our professional life. ▲

"TWELVE RULES FOR BETTER CHILD CARE"

The following "Twelve Rules for Better Child Care" are being widely disseminated in India, and very similar messages are being promoted through all kinds of programmes, including the mass media, in Nepal:

- *Breast feed your child for as long as possible.*
- *Start to feed your young child soft food when he is four months old.*
- *Feed your young child five or six times a day.*
- *Continue to feed your child when he is ill.*
- *Give your child extra water when he is ill, especially if he has diarrhoea.*
- *When your child is ill, seek help early from the nearest health centre.*
- *Get your child immunized.*
- *Keep flies off food.*
- *Wash your own and your child's hands before feeding him.*
- *Give your child clean water to drink.*
- *Have only two or three children.*
- *Make sure there is two to three years space between each child.*

- *The Indian J. Of Nutr. 1977, 14(11) p. 331*

DEFINITIONS AND OVERVIEW OF THE PROBLEMS OF FEEDING THE WEANING AGE GROUP*

by

Dinesh P. Sinha

The process of weaning is fundamental to every species of mammal. In animal life, feeding changes from maternal milk to semi-solid or solid foods. Man has complicated the story in search of newer ways. In many parts of the world breast milk is very early supplemented or is entirely replaced by animal or artificial milk and solids are introduced without due consideration being given to the transition from liquids to solids. This is further complicated by the imprecise use of the word "weaning". According to Webster's New World Dictionary, one of the meanings of weaning is "to accustom the child to food other than its mother's milk". In fact, in some parts of the Caribbean, if an infant is started on cow's or artificial milk on day one of life, the mother is quite often asked "why did you wean the child so early?". Therefore, there are tremendous variations in the use of the word "weaning", weaning foods and weaning patterns. This makes it imperative to define the word "weaning".

An infant's nutritional needs can be entirely met until 6 months of age by breast milk and sunshine alone. During this period the infant is close to the mother, is supported by the mother and is nourished by the mother. Although mother's milk alone is not sufficient after 6 months, the infant is not yet ready to change to the predominantly solid "adult food" of the family.

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*Paper presented to the Technical Group Meeting on "Feeding the Weaning Age Group", Guyana, 23-27 October 1978. Dr. Sinha is a Medical Officer at the Caribbean Food and Nutrition Institute.

The infant not only has to be very gradually weaned on to the new and different foods, learn how to handle a mouthful of semi-solid and then solid foods after being accustomed to liquid, but he also has to be weaned from constant, close, comfortable contact with the mother. The term "weaning" is used in relation to the infant's transitional diet and mother's care and the process that occurs between the time when the young infant is exclusively on milk, preferably on breast milk, until he is on the full adult diet and is able to handle himself. This process is schematically illustrated in Figure 1. The progressive adaptation of the infant begins at 4-6 months of age and, depending on the circumstances, may continue up to 2½ to 3 years when he is fully on ordinary family foods. It is this age group, i.e. 6 months to 3 years, that is referred to as the weaning age group. The following discussion presents some of the biological and nutritional characteristics and problems in the feeding patterns of weaning age children.

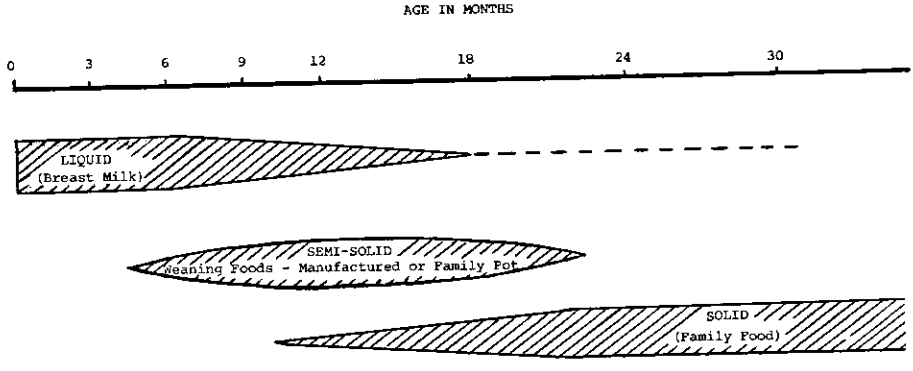

Figure 1: Schematic Diagram of an Ideal Feeding Pattern of a Young Child

The weaning age child has certain biological characteristics which make him particularly vulnerable as regards to health and nutrition[1]. These should be taken into account when considering the feeding problems. He is in a phase of rapid growth and his nutrient needs are comparatively higher than older children and adults (Table 1). Most family eating patterns are based on 2-3

meals a day. In tropical countries diets are mostly bulky cellulose foods. This meal pattern is unsuitable for the young child. His stomach size is small. Two to three meals a day would not only limit his protein intake but also his energy needs.

Table 1: Daily protein requirements

Age	Protein requirements (g/kg of body weight)	
	Male	Female
0-3 months	2.40*	
3-6 months	1.85*	
6-9 months	1.62	
9-12 months	1.44	
1-2 years	1.27	
2-3 years	1.19	
3-4 years	1.12	
4-5 years	1.06	
5-6 years	1.01	
6-7 years	0.98	
7-8 years	0.92	
8-9 years	0.87	
9-10 years	0.85	
10-11 years	0.82	0.81
11-12 years	0.81	0.76
12-13 years	0.78	0.74
13-14 years	0.77	0.68
14-15 years	0.72	0.62
15-16 years	0.67	0.59
16-17 years	0.64	0.58
17-19 years	0.61	0.57
Adult	0.57	0.52
In pregnancy (according to stage of pregnancy)		1-10
In lactation (first six months)		17

Source: Report of the Joint FAO/WHO Ad Hoc Committee of Experts on Energy and Protein Requirements (1971)

*Based on observed intakes (mean and 2 standard deviations) of healthy infants.

He, therefore, needs to be fed more frequently to meet his needs. His teeth have started erupting and he has to learn mastication. He has to acquire digestive and absorptive tolerance to the full adult diet. He has to develop a taste for new foods. His food, therefore, needs special preparation. He has lost transplacentally acquired maternal antibodies and is in the process of acquiring his own active immunity. Figures 2 and 3, which are taken from a study in Jamaica[2], illustrate the high rate of infection in this age group. Some of these infections are preventable, but some are not. The child has to acquire immunity against them during this period.

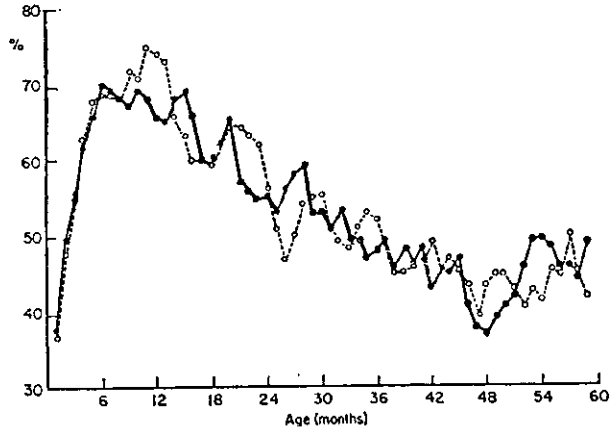

Figure 2: Percentage of children having at least one upper respiratory tract infection per month, by age (3-month moving average).

● Males; o Females

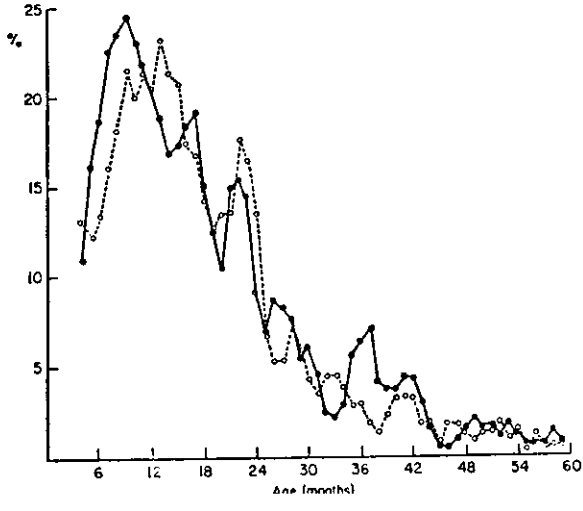

Figure 3: Percentage of children having at least one episode of diarrhoea per month, by age (3-month moving average).

● Males; o Females

However, each episode of infection costs him in terms of his nutritional status. A child loses a little weight even after regular immunization. He needs extra nutrition to handle these episodes of illnesses.

Psychologically, he is in a transitional phase and this is also reflected in both feeding and nutritional status. He is losing the constant, close, comfortable contact with the mother, but he is not yet the independent, mobile, articulate, "self-foraging", older child. He quite often refuses all feeds. It certainly alarms the parents, who cajole, bully, bribe and even batter the child to eat, and turn mealtimes into a battle field in the war between the generations.[3] Due consideration has to be given to these psychological changes in the child.

High mortality during infancy and early childhood has been observed throughout the developing parts of the world. A very high percentage of these deaths have been found to be due to nutritional deficiencies - particularly protein-calorie malnutrition. Table 2 shows mortality from nutritional deficiency in the Kingston-St. Andrew area of Jamaica in 1967-1970.[4]

Table 2: Mortality from nutritional deficiency (as underlying or associated cause) - Jamaica (Kingston-St. Andrew) 1967-1970

Age groups	Mortality	
	No.	Rates*
0-2 months	56	136.7
3-5 months	52	127.0
6-8 months	64	156.2
9-11 months	71	173.3
12-14 months	43	109.9
15-17 months	25	63.9
18-20 months	14	35.8
21-27 months	8	20.5
2-4 years	37	35.4
TOTAL	370	201.9

*Rates under 1 year of age per 100,000 live births; others per 100,000 population.

Available data from careful surveys conducted in the countries in the Caribbean do indicate that the problem of under-nutrition is concentrated mostly in the weaning age group (Figure 4). Thus in a Survey carried out in Guyana in 1971[5], only 5.8% of the infants under 6 months in rural areas were less than 80% of standard. This rose sharply to 35.4% in the second half of the first year and 45.2% by the fourth year of life. In urban areas of Guyana the degree of under-nutrition was less prevalent but the trend was similar. A similar pattern can be noticed in a Survey conducted in three villages in St. Kitts and Nevis.[6] Although the dimensions of the problem in St. Lucia, Barbados and Jamaica were smaller, a similar trend can be noticed in these countries.[7,8,9] On further analysis it appears that the proportion of those extremely under-nourished in St. Lucia, Jamaica and Barbados was extremely low. However, it is important to point out that under-nutrition is only one face of the double-faced monster called malnutrition. Not all of those above 80% of Harvard Standard of weight for age are well nourished. Those above 120% of standard are also malnourished - overnourished or obese.

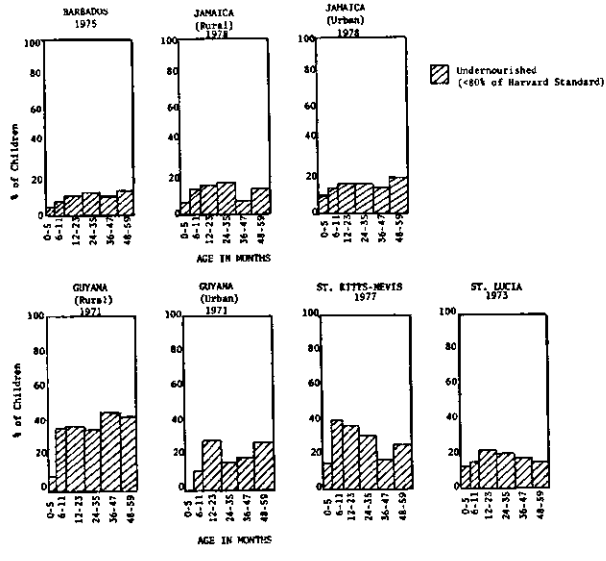

Figure 4: Prevalence of under-nutrition in some of the Caribbean countries

Figure 5 clearly shows that the three countries mentioned above have, no doubt, had a low rate of undernourished children compared to Guyana and St. Kitts-Nevis, but they have a higher percentage of children who are above 120% of standard. This is very marked in the first year of life, particularly the first six months of life. Evidences have been accumulating in recent years which seem to indicate that the total number of adipose cells becomes fixed in childhood and that over-nutrition in the first year affects the rate of fat cell multiplication,[10] leading perhaps to obesity in adult life. It also seems that rapid weight gain in infancy, particularly in the first six months, is associated with obesity in late childhood.[11] In the light of the above emerging hypothesis, and the fact that Caribbean countries have a very high rate of diabetes and hypertensive diseases in adults, it is very important to pay due attention to the over-nutrition in the early years of life which seems to be appearing in some of these figures. It is important to remember that faulty feeding not only results in under- but also in over-nutrition.

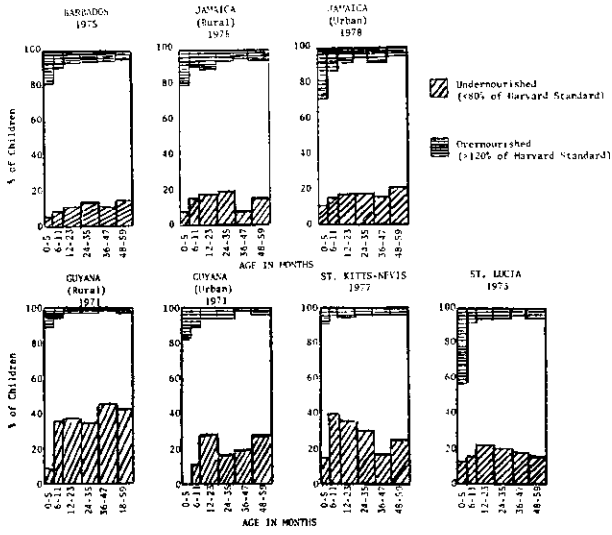

Figure 5: Prevalence of malnutrition (under-nutrition + over-nutrition in some of the Caribbean countries.

Further examination of some of the available data illustrates the problem areas. The results of the Guyana Survey[5] show that cereal or porridge was introduced too early in life (Table 3). Forty-nine percent of urban and 18% of rural children were given cereal or porridge daily before 4 months of age. This is too early to introduce solids. Cereal or porridge should not normally be started before 4 months.

Table 3: Introduction of cereal or porridge (daily) (Guyana 1971)

Ages of children	% of respondents	
	Urban	Rural
Less than 1 month	5.8	2.1
1-3 months	43.2	16.3
4-6 months	27.0	35.2
7-12 months	10.9	26.3
Over one year	10.3	17.4
Do not know	2.5	2.4

The cereal or porridge in a high percentage of cases (30-40%), consisted of plantain flour (Table 4), which is very low in protein and has almost no iron.

Table 4: Most commonly used cereals or porridge (Guyana 1971)

Main constituents of cereal or porridge	% of respondents	
	Urban	Rural
Plantain Flour	39.1	31.8
Oats	10.2	27.5
Farex	21.7	3.5
Barley Flour, Patent Barley	7.0	10.6
Barley (unspecified)	3.2	8.6
Nestle's cereals	5.7	3.5
Sago	3.2	4.6
Arrowroot	2.3	4.3
Corn Flour	3.2	2.1
Others	5.5	3.5

This seems to have been mixed with water only in 14-22%, milk in 22-36% and milk and water in the rest of the cases (Table 5).

Table 5: Preparation of cereal or porridge (Guyana 1971)

Porridge mixed with	% of respondents	
	Urban	Rural
Water	21.7	13.9
Milk	35.8	21.7
Milk and water	41.1	63.9
Others and do not know	1.2	0.3

Although 53% of rural and 75% of urban infants were already on cereal or porridge by 4-6 months, about 80% of them were given their porridge by bottle (Table 6).

Table 6: Consistency of porridge (Guyana 1971)

Consistency of porridge	% of respondents	
	Urban	Rural
Thin with bottle	76.9	82.1
Thick without bottle	23.0	19.4
Do not know	0.0	0.2

The porridge, which is thin enough to pass through the nipple, could only fill the belly with water and could never satisfy the nutritional needs of an infant. This can be rectified by switching the child to the family pot and not relying on the kinds of cereals or porridge mentioned in Table 4. However, such was not the case. Infants and children were introduced to the family pot fairly late and very slowly (Table 7).

To affection, love and understanding.

1

To enjoy these rights, regardless of race, colour, sex, religion, national, or social origin.

10

To be brought up in a spirit of peace and universal brotherhood.

9

8

To learn to be a useful member of society and to develop individual abilities.

7

To be among the first to receiv relief in times of disaster.

To adequate nutrition and medical care.

2

To free education.

3

Y
D

T

To full opportunity for play and recreation.

4

5

To a name and nationality.

6

To special care, if handicapped.

UN Declaration of the Rights Of The Child, 1959

Table 7: Introduction of child to the family pot (Guyana 1971)

Ages of children	% of respondents	
	Urban	Rural
<6 months	5.9	2.6
7-12 months	14.3	20.8
1-1½ years	26.3	22.3
1½-2 years	17.3	15.1
2-2½ years	7.1	7.1
>2½ years	5.3	5.9
No set time	7.1	6.5
Do not know	15.5	19.3

The problem is not confined to Guyana alone and a similar picture emerges wherever studies have been carried out. Thus, in a survey in Kingston, Jamaica,[12] 71% of children were on cereals by 3 months of age (Table 8).

Table 8: Percentage of infants being given a particular food at each examination, Kingston, 1970

Age	Orange juice	Cereal	Egg & Cheese	Veg. & Fruits	Meat & Fish
6 weeks	51%	1%	0%	0%	0%
3 months	91%	41%	2%	4%	1%
4 months	98%	71%	25%	26%	4%
5 months	98%	87%	47%	50%	10%
6 months	-	96%	67%	77%	17%
8 months	-	99%	85%	95%	39%
10 months	-	-	91%	99%	75%
12 months	-	-	94%	100%	93%
Never	1%	1%	5%	0%	0%

Although the commonest cereal was cornmeal, which is better than plantain flour mentioned earlier but by no means an adequate weaning food, this was given again by bottle in most cases and

therefore could not provide adequate nutrients to the child. Peas and beans were very rarely given. Although the Barbados Survey is ten years old, the same picture was seen.[13] First solid was introduced in 25% of the babies by 3 months (Table 9). The most common solid introduced was Irish Potato.

Table 9: At what age was the first solid introduced? (Barbados 1969)

Age	% of respondents	
<3 months	4.2)	
3 months	18.6)	31.6
4-5 months	8.8)	
5-6 months	11.1	
6-7 months	23.9	
7-8 months	7.2	
8-12 months	17.3	
>12 months	6.2	

Eating from the family pot was delayed and only 44% of babies were on the family pot by 18 months of age (Table 10).

Table 10: At what age does the child start to eat entirely out of the family pot? - (Barbados 1969)

Age	% of respondents
6 months	1.7
6-9 months	4.0
9-12 months	8.9
12-15 months	21.3
15-18 months	8.0
18-24 months	22.3
27-30 months	14.3
30-36 months	16.3

According to a report published by Gurney[14] 50% of the babies were receiving semi-solids in rural Trinidad, Grenada and Antigua by 6-7 months and by 3-4 months in Guyana and Montserrat. By the end of the first year, most of the babies were taking solids.

One of the important factors in the etiology of protein-calorie malnutrition is poverty. This seems so obvious and is also supported by the data from Barbados Survey[13] in Tables 11, 12, 13 and 14.

Table 11: Percentage of standard weight for age, or age and sex (850 children 0-15 years) against annual per capita family cash income

Income (in E.C.$)	% of standard weight			Total
	<80%	80-99%	≥100%	
<200	123	182	61	366
200 - 299	36	108	41	185
≥300	60	156	83	299
Total	219	446	185	850

$\chi^2 = 26.437$ $p = <0.01$

Conclusion: The nutritional status of children, as judged by percentage of standard weight for age (or age and sex), is positively associated with income level, the association being statistically significant at the 1% level.

Table 12: Percentage satisfaction of protein requirements among 130 families against annual per capita cash income

Income (in E.C.$)	% satisfaction		Total
	<100%	≥100%	
<200	29	25	54
200 - 399	11	22	33
≥400	9	34	43
Total	49	81	130

$X^2 = 11.293$ $p = <0.01$

Conclusion: Full or incomplete satisfaction of family protein requirements is positively associated with annual per capita family cash income, this association being statistically significant at the 1% level.

Table 13: Percentage satisfaction of calorie requirements among 130 families against their annual per capita cash income

Income (in E.C.$)	% satisfaction			Total
	<80%	80-99%	≥100%	
<200	27	18	9	54
200 - 399	8	11	14	33
≥400	8	15	20	43
Total	43	44	43	130

$X^2 = 17.125$ $p = <0.01$

Conclusion: The degree to which the calorie requirements of families are satisfied is positively associated with annual per capita family cash income, this association being statistically significant at the 1% level.

Table 14: Percentage satisfaction of iron requirements among 130 families against annual per capita cash income

Income (in E.C.$)	% satisfaction		Total
	<100%	≥100%	
<200	30	24	54
200 - 399	11	22	33
≥400	14	29	43
Total	55	75	130

$\chi^2 = 6.646$ $p = <0.05$

Conclusion: Full or incomplete satisfaction of family iron requirements is positively associated with annual per capita family cash income, this association being statistically significant at the 5% level.

Weight for age status of children up to 15 years of age and percentage satisfactions of protein, calorie and iron requirements of families are all significantly related to income. No information is available as to the poverty level of those who are above 120% of standard. In some countries where it has been looked into, women from poor classes seem to be more obese than the richer classes. Poverty, clearly, is an important part of the story of malnutrition, but not the entire story. A real increase in national income does not necessarily mean a reduction in malnutrition. A deliberate attempt needs to be made to reach those in the poor segment of the society to alleviate the problem of malnutrition.

Another important factor in the malnutrition of weaning age children is the maldistribution of the food within the family. Not all the children, as seen in St. Lucia Survey[7] (Table 15), whose caloric satisfaction was <80% were from the families whose

household caloric satisfaction was also low. The reverse was also true. Therefore, there is a need for proper distribution of food within the family so that the needs of the growing child can be adequately met. Even in poorer families a diversion of 3-6% of food from adults to the infant would be sufficient to meet his unmet needs and would not have great effect on other members of the family.[15]

Table 15: The numbers of children with two levels of satisfaction of energy classified according to the levels of satisfaction of the household as a whole

Child's satisfaction (%)	Household's satisfaction (%)		
	<80	≥80	Total
<80	21	12	33
≥80	12	16	28
Total	33	28	61

The following picture emerges from these facts:

There is a considerable degree of malnutrition prevalent among children in the Caribbean commonity. Most of these cases begin in and are concentrated among the weaning age children. There seems to be a definite relationship between poverty and under-nutrition. In those countries where under-nutrition has been controlled to a greater extent, over-nutrition in infancy is increasing. Faulty feeding may be at the root of both these problems.

The concept of "weaning" is neither fully understood nor properly managed. Liquid or semi-liquid foods are being continued for a longer time and solids are introduced without due consideration of the transition from liquid to solid. In some cases solids

are being introduced too early and being continued in inadequate amounts after six months of age. The use of nutritionally inadequate substitutes results from improper utilization of the family pot or any suitable manufactured weaning food, which depends on the availability of a particular food in a country or beliefs among the mothers. This nutritionally inadequate weaning food substitute is rendered more inadequate by wrong concentration. Therefore, there is a need for developing a properly balanced weaning food. This could be manufactured on a large scale or community-based on a small scale depending on the needs and capability of a particular country. Such foods by virtue of the cost involved in the processing do not reach those who need them most. Attempts should be made to ensure that such processed food should be affordable by the poorer class of the community. Alternatively, reinforcement is needed in feeding the child from the family pot using the multimix principle. This method should be based on scientific knowledge and available appropriate technology and the foods have to be low in cost and culturally acceptable. However, it is important to remember that whatever may be the food - manufactured weaning food or food from the family pot - a considerable educational input is needed to ensure that weaning is started at a proper time and that the child gets adequate nutrition.

Lastly, there is no single solution to a problem in the causation of which multiple factors are involved. Insufficient food, economic poverty, repeated pregnancies, parental ignorance, disease - prone environment, all provide a milieu in which malnutrition flourishes. Although one cannot adequately deal with all these factors at one time, we should keep these factors in mind while making recommendations and formulating guidelines for feeding the weaning age group.

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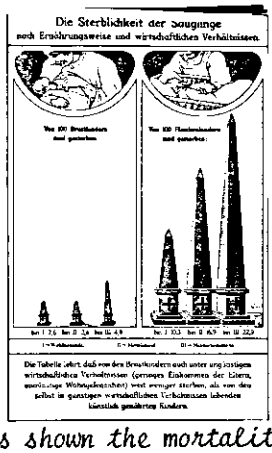
"THE EFFECT OF FEEDING BABIES AND SOCIOECONOMIC CONDITIONS ON INFANT MORTALITY" - 1918



On the left is shown the mortality for 100 breast fed babies ("Brustkinder"); on the right, mortality in 100 bottle fed babies ("Flaschenkinder") in wealthy (Group I), middle-class (Group II) and low-income (Group III) groups.

MORTALITY FOR 100 BABIES					
Breast fed			Bottle fed		
Group I	Group II	Group III	Group I	Group II	Group III
2.6	2.6	4.9	10.3	16.9	22.9

The table shows that far fewer breast fed infants die even of parents of low income living in poor quarters, compared to infants of favourable economic conditions that are artificially fed.

- *From Langstein, Rott: Atlas de Hygiene des Sauglings und Kleinkindes. Berlin, Julius Springer Verlag, 1918.*

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THE PROBLEMS OF FEEDING THE WEANING AGE GROUP: AN OVERVIEW OF AVAILABLE SOLUTIONS*

by

J. Michael Gurney

THE WIDER WORLD

Ancient History

The problem of weaning has been a concern of mankind since the development of our species. At birth a mammal is dependent on suckling for all its nutrient needs. Later it becomes relatively independent in its ability to avoid danger and to find its own food. In humans this transitional period is very long and the weaning period, the time when the child is becoming accustomed to the family food, is fraught with danger.

Milk in Infant Feeding

The use of milk from other animals as a human food dates from comparatively recent times when man became a herdsman. The widespread use of cow's milk in infant feeding is a much more recent development in Europe and North America made possible by large-scale scientific dairying and the development of a canning industry (Jelliffe, 1968). Consequently, an occidentocentric obsession with cow's milk for young child feeding has sometimes been observed. Cow's milk is a good food but not essential for young children. What should be the role of cow's milk products (or milk from other

*Based on a paper presented at the Technical Group Meeting on "Feeding the Weaning Age Group", Guyana, 23-27 October 1978. The section on recent Caribbean history is much shorter than in the original. Dr. Gurney is Director of the Caribbean Food and Nutrition Institute.

animals) in the Caribbean? Dried skim milk (DSM) despite considerable price rises remains an excellent cheap source of concentrated protein for the housewife, although it does cost foreign exchange.

In 1953 the Joint FAO/WHO Expert Committee on Nutrition expressed the situation quite well.

> *"In seeking to meet the nutritional needs of infants and young children in places in which supplies of animal milk are insufficient, it has often been customary to think in terms of producing 'milk substitutes', i.e. preparations, made from foods of vegetable origin, which resemble milk in appearance and nutritive value... This is probably an appropriate procedure where there is a strong traditional demand for a product resembling milk. Elsewhere, especially where this demand does not exist, it may be more satisfactory and easier to rely on food preparations and combinations which can fulfil nutritional requirements, without attempting to make available a product which looks like milk. These preparations and combinations should, in general, be based on foods which are locally available and which can be processed by methods applicable to individual families or 'at the village level'..."*

Protein

By 1955 a growing emphasis on protein was beginning to get out of hand (Joint FAO/WHO Expert Committee on Nutrition, 1955) so that, while by 1962 FAO and WHO had started to rein it in (Joint FAO/WHO Expert Committee on Nutrition, 1962) and emphasize "protein-calorie deficiency diseases", the horse had already bolted. For the rest of the nineteen-sixties and into the seventies we were away on the high-protein stampede, eagerly assisted by agro-industry and the food industry looking for outlets for the soya bean.

The soya bean is reasonably versatile but has been ridden too hard. It may well play an important role in commercial scale Caribbean weaning foods; but it is no gift horse in the long run.

Personally, I doubt its value in the home garden as we already have excellent legumes available and known in the Caribbean.

Now that things have calmed down a bit we can perhaps think clearly again about the weaning period. Milk and high-protein foods can be considered rationally and in their place and perhaps we can come up with a series of complementary strategies.

THE CARIBBEAN

In 1968 CFNI convened a conference on "Protein Foods for the Caribbean" (McKigney and Cook, 1969). This was followed by a feasibility study on "Industrial Production of Protein Foods for Infants and Young Children in the Caribbean" (FAO, 1970). The study considered that at the stage of regional development at that time a regional project specifically to manufacture low-cost protein-rich foods for infants on a Caribbean-wide basis appeared unlikely to succeed. It did, however, suggest some strategies for improving weaning diets.

The increasing awareness of the importance in both human welfare and economic terms of the importance of under-nutrition in the Caribbean led to the "Guidelines to Young Child Feeding in the Contemporary Caribbean" (PAHO, 1970) and the "Strategy and Plan of Action to Combat Gastro-enteritis and Malnutrition in Children Under Two Years of Age" (1975).

The Guidelines made recommendations under the headings of "food supplements" and "nutrition education", and the Strategy recommended the use of processed supplementary foods. Both the Guidelines and the Strategy made specific recommendations about, in particular, the content and marketing strategy for weaning foods.

Also during the seventies many experiments on processed foods have been tried in the Caribbean but I think it fair to say that up to now none of these have really got off the ground. The

developing primary health care services in many countries and the imaginative and factual mass media programmes in some, suggest that the groundwork has been laid. The question remains, however: what structure is most appropriate for our needs?

THE IDEAL WEANING FOODS

They are Energy Dense and Contain Nutrients in Proportion. The most concentrated energy is found in fats and oils (9 kcal. per gram). The next is in sugar (4 kcal. per gram). Protein (which also provides energy) is rarely available in a concentrated form. Starch becomes bulky on boiling (1 kcal. per gram) and is thus not a dense source of energy.

We must conclude that young children need fat, oil and sugar. But fat, oil and sugar provide "empty calories" (except that dark brown sugar provides iron); so foods concentrated in the other nutrients are needed as well.

The multimix principle is a good way to conceptualize the relationship between food intake and nutrient needs. (See *Cajanus*, Vol. IV, 1971, p. 185.)

They are Digestible. This implies semi-soft foods at first, becoming of a more varied and demanding texture as the child develops teeth and as his alimentary tract develops.

They are Reasonably Germ-free. In situations where home hygiene is imperfect and refrigeration unavailable this implies that food for the infant must be cooked before each meal.

They Must be Given Frequently. The young child's stomach is small and he is growing rapidly. Therefore, he needs feeding more often than the rest of the family.

They Must be Both Cheap Enough and Labour Saving. Malnutrition is strongly related to poverty. If the purchase of a particular food (such as a commercial baby-food or tonic) increases poverty, that food is likely to increase malnutrition. If a food takes too long to prepare it may not be properly used. This cost criterion applies at the family level, but it also applies nationally. Countries cannot easily afford imported weaning foods, but may, however, make decisions - in view of the needs - to devote some foreign exchange to foods for the weaning age group.

WHY DO WEANING AGE CHILDREN OFTEN RECEIVE INADEQUATE FOOD?

The answer can be categorized into three parts: lack of resources, lack of knowledge and lack of facilities.

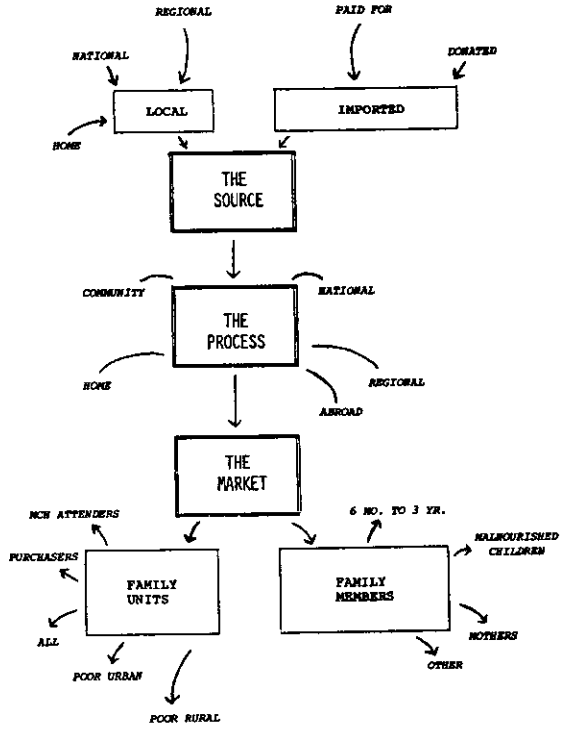
Lack of Resources. This is related both to poverty and to the availability of food at the retail outlets. If the weaning food comes from the family pot this factor is unlikely to be of major importance in most families in the English-speaking Caribbean. Only a small proportion of the total nutrient needs of the family are for the little child. (The infant needs less than 1,000 kcals., his mother and his elder sister at primary school both need around 2,200 kcals., while his father needs about 3,000 kcals. per day.) Thus diversion of adequate amounts of family food to the infant's need may not have a great effect on other family members in comparison with giving him an inadequate diet.

Lack of Knowledge. There appears to be a widespread misunderstanding among families in the Region of the food needs of young children. This is accentuated by the changing dietary patterns resulting from rapid urbanization, and the availability of new food types and their aggressive promotion.

Lack of Facilities. Is there an appropriate technology for the home that can be applied in this case? Are improved graters and grinders needed? Not every home can afford a refrigerator; what other facilities for proper food storage are appropriate?

WHAT CAN BE DONE ABOUT THE PROBLEM?

Figure 1 considers the source of the foods, the processing of the foods and their marketing.



The Source

The source nearest to hand is the backyard garden or the farm. This has few marketing implications and only indirect financial ones.

Next we can consider foods produced within the country and, in the context of the CARICOM Food Plan, the Region. However, all our countries are still highly import dependent for their food supplies and therefore any diversion of food to weaning age children takes away from other beneficiaries - such as North Atlantic processors. However, there may be a place for otherwise rejected foods in weaning foods (e.g. bananas) or even for production for this specific market.

An alternative source is imported foods: either donated foods (which are not really free when transportation and other within-country costs are considered) or those bought on the open market.

Presumably, our objective when considering the source of food for weaning age children, is to reduce imports and increase the amount and proportion from within the Region if the price is right.

The Process

Foods can be made suitable for weaning age children by processing in the home, in the community, in the country or in the Region. This implies three scales of processing: home production, village or community level technology and industrial manufacture.

Home Production. We have considerable experience of development of home-made weaning foods in the Caribbean. In the context of the multimix principle and the available technologies including mouth, fingers, knife, seive, spoon, grinder, electric blender, etc.

Village or Community Level Technology. This has been receiving greater emphasis recently in much of the world than before. With the exception of Haiti we in the Caribbean have only limited experience of the technology involved.

Industrial Manufacture. A reputable British Medical Textbook of 1908 (Hutchinson & Collier, 1908) in its section on infant feeding mentions seven brand names of industrially produced foods (Mellin's food, Allen & Hanbury's No. 1 food, Chapman's flour, Fairchild's zymine powders, Finkler's papain, Clay Paget milk and Labman's vegetable milk). Clearly a strong folk culture had developed from the industrial revolution overlaid by medical superstition.

A more recent study (Orr, 1977) of the contribution of new food mixtures to the relief of malnutrition "confirms the very limited role of these products in reaching low-income groups through the normal retail trade". The report states that "a major reason for emphasizing retail distribution (when projects were initiated) was the inadequacy of the institutional framework in developing countries". In the Caribbean, there is a relatively well developed Maternal and Child Health service and system of social welfare outlets. Perhaps there is a role for industrially processed foods here as a part of supplementary feeding programmes. But what should the scale of the industry be: regional, national, or a mixture of the two; or should we rely on imported processed weaning foods?

The Market

Home-made weaning foods fall outside the marketing system but well within the purview of a media campaign and out of face-to-face advice.

With marketed foods decisions have to be made on whether to give or sell the food to all family units, poor urban families, poor rural families, MCH attenders, day care centre inmates, or those who can afford to buy the foods, etc.

Within the family it is necessary to identify the target groups: weaning aged children, pregnant and lactating mothers, malnourished children or the entire family.

Whatever mix of food types is thought best for the weaning child, its promotion implies the need for education, particularly through the media and directed chiefly at mothers.

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NEWSPAPER CLIPPINGS

12 WEEKS WITH FULL SALARY FOR MATERNITY LEAVE

From The Jamaica Daily News, 11 October 1978

The BITU* has recommended to the Minister of Labour (Jamaica) that pending labour legislation should include a minimum twelve weeks' maternity leave with pay, covering the period prior to confinement and after confinement, and that expectant mothers who suffer miscarriages should come within the ambit of the legislation.

The legislation should cover the entire female work force for private sector and Government and statutory employees.

The BITU also urged the Minister to have the law provide that no employee should be dismissed because of her pregnancy; that the period of employment should be regarded as continuous; that there should be no reduction in remuneration after confinement; and that maternity leave entitlement should be granted after one year's continuous service.

The BITU recalled that the matter had been discussed at a meeting in September 1976, between the trade unions and employers' representatives, when the union had given its full support to legislation providing for adequate maternity leave with pay. ▲

WANTS MATERNITY LEAVE SCHEME EXTENSION OF NIS

From The Daily Gleaner, Jamaica, 16 October 1978

The Jamaica Employers' Federation (JEF) has asked the Minimum Wage Commission to consider a maternity leave scheme which is an extension of the National Insurance Scheme, or devise a suitable

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*Bustamante Industrial Trade Union

scheme specifically for the purpose of providing maternity benefits based on certain considerations.

In a letter to the Minimum Wage Commission of the Ministry of Labour, the JEF said that, before any steps are taken to promote responsibility for a scheme for the compulsory introduction of maternity benefits, actuarial studies should be taken to determine the practical limits of such accommodation.

The JEF said that they should include features such as the feasibility of a scheme as an extension of the National Insurance Scheme or devising a suitable scheme specifically for the purpose of providing maternity benefits based on: a qualifying period of at least 104 weeks (excluding any maternity leave) of continuous employment with the employer at the time the claim is made; and limiting eligibility to two pregnancies during the employment life of the claimant.

The Federation said: "We would emphasize that maternity is a social function - not a consequence of employment. The question of benefits is, therefore, a social responsibility, the cost of which must be borne by the society either from general revenue or through a scheme involving the contribution of the entire working population - including potential beneficiaries".

The JEF said that the matter was extensively examined at the level of the International Labour Organization and was covered by Convention No. 103 concerning Maternity Protection 1952 - an instrument not yet ratified by Jamaica.

The emphasis of the convention was on: a medical certificate to establish entitlements; a leave period of at least 12 weeks to include a post-natal period of at least 6 weeks; the provision of cash and medical benefits through compulsory social insurance or public funds; no liabilities to be borne by individual employer for the cost of such benefits to women employed by him.

"This is the background against which the question of maternity leave must, in our view, be considered", the Federation said.▲

NEW FREE MILK PROGRAMME

From The Jamaica Daily News, 12 October 1978

Guyana, at a cost of about two million dollars a year, has initiated a new free milk feeding programme in nursery schools. It is intended to cover eventually all 29,000 children in such institutions. The idea is to supplement the daily diet of the growing child.

Ninety-eight schools will receive pasteurized milk from the State's Livestock Development Company. Twenty-four thousand pints of pasteurized milk - prepared from powder - and 19,835 pounds of powdered whole milk will be used in the programme, at a cost of about Guy$84,000 for the remaining ten weeks of the current term.

The programme was preceded by two pilot projects in 1976 and 1977. In the first project, children from eight schools in seven areas were involved. In the second project organized between October and December 1977, the number was expanded to 60 schools catering for 4,300 students.

The programme is designed to ensure that those schools with the greatest need are the first to benefit. ▲

'TAKE A STAND FOR FOOD' TRINIDAD WOMEN TOLD

From The Daily Gleaner, Jamaica, 30 October 1978

Women in Trinidad and Tobago are being asked to "take a Stand for food" by the National Women's Action Committee (NWAC).

Leaflets are being distributed by the organizing body to indi-individuals and community organizations throughout the country acquainting those who may not be familiar with the facts relating to agriculture, nutrition and systems of importation now employed in the South Caribbean nation.

A lecture/discussion slated for 17 November, will be open to all members of the public. Women will, however, be the ones chiefly addressed, because according to an NWAC representative, women in the Caribbean are the ones who are called upon to deal with frequent, unexplained shortages and rising food prices, often without a matching rise in income.

It comes in the wake of a series of shortages and complaints from farmers about the shortcomings of existing agricultural programmes.

SHORTAGE OF BASIC PRODUCTS

Consumers have also been complaining of the absence of such basic household products as tea, potatoes and onions from the grocery shelves. Other necessities which have only recently made a reappearance include salt, table butter, cheese and evaporated milk.

AREAS FOR DISCUSSION

Areas for discussion will include the effect of industrialization on agriculture; the plight of the small farmer; land use and its effect on national agriculture; consumer protection re imported and local food; and children and nutrition.

The NWAC spokeswoman noted that the proposed school feeding programme demanded more women to be made familiar with the nutritional requirements of their children.

At present, more women in Trinidad and Tobago are working mothers than before. This relatively new situation is further complicated by the fact that a growing number of children attend schools out of their home community. The problem of providing all these children with a properly balanced mid-day meal will, the Government has promised, be solved by the implementation of a school feeding programme. Already a pilot project has been launched.

Programmes relating to food, health, nutrition and agriculture will only be successful if planned to benefit the majority of people, and if the people are able to utilize what is available to them for personal and national benefit. This, says the NWAC representative, can only come about when there is an aware and involved body of women in every part of the nation. ▲

SPOT CHECKS CARRIED OUT ON FOOD STALLS

From The Guyana Chronicle, 26 October 1978

The Meat and Food Inspection Division of the Georgetown City Council, over the past weeks, made spot checks on a total of 508 stalls in Georgetown's five muncipal markets that sell foodstuffs, cooked and uncooked.

These stalls include cook shops, cake shops, provision shops, butcher and poultry stalls, fish and shrimp stalls in Bourda, Stabroek, Kitty, Albouystown and East La Penitence/Ruimveldt markets.

According to a report from the Meat and Food Inspection Division, 66 of these stalls were found in default and as a result of the spot checks 52 of them were remedied. It was further stated that a total of 1,811 items of tinned foodstufs were

examined at stalls in five muncipal markets. Fifty tins of foodstuffs were found unwholesome and destroyed. Also, 519 items of poultry products were examined and ten were destroyed.

The report disclosed that the Division made checks on the National Flour Mill, the transit sheds of the Guyana Trading Corporation, the Guyana National Corporation, the Guyana National Engineering Corporation, John Fernandes Limited and the Guyana National Shipping Corporation and found that no contamination of foodstuffs occurred during the month in these sheds. ▲

CROSS-FERTILIZATION OF IDEAS AT HEALTH/NUTRITION COMMUNICATIONS FORUM

From The Daily Gleaner, Jamaica, 21 September 1978

A Health/Nutrition Communications Forum organized by the Ministry of Health and Environmental Control, Jamaica, took place from Sunday, 10 September to Friday, 15 September.

Coordinated by the Ministry of Health and Environmental Control, it was attended by Health Workers from all over the country as well as local and international consultants. The forum was funded by the US-AID as part of their contribution to the current Nutrition Education Campaign. The Academy for Educational Development in Washington was employed to prepare the format and logistics.

The forum was designed to stimulate discussions between the people who have active roles in Community Health Education, and consultants from other parts of the world who have been involved in similar projects.

Sessions each day included addresses, panel discussions, case studies of similar campaigns, and group workshops in which action plans for the national campaign were devised.

At the Plenary Session on the 15th, Action Plans and Recommendations to the national campaign were presented by group leaders representing the four island zones. Participation in the forum was so enthusiastic that sessions were frequently prolonged past the scheduled time. ▲

MEDICAL AUXILIARY SCHEME IN GUYANA

From The Sunday Gleaner, Jamaica, 29 October 1978

The Guyana Government has introduced a novel training scheme aimed at producing medical auxiliaries to provide much-needed relief to the ailing public.

The scheme, known as the Medex Training Programme, is conducted by the Ministry of Health and certified by the University of Guyana. It is designed to train health professionals who will be part of the team responsible for the delivery of preventive and curative community services.

Persons trained under the programme will be required to provide primary health care as auxiliaries to medical practitioners employed in the Public Service and will carry out their functions under the supervision of medical practitioners.

In recent times, there has been a movement towards specialization in the field of medicine and this has resulted in a form of fragmentation in the country's health services with some areas vital to development being neglected.

The Minister of Health explained that even in the developed countries, this question of specialization is being looked at with some concern as they are losing the good general practitioner, the good doctor who would visit the home. In recent years, he said, doctors have been burdened down by a number of duties which need not be performed by those who spent five to six years studying medicine.

It was the intention of the Government, the Minister explained, that the Medex would relieve the physician of these routine pressures. ▲

CARICOM SETS UP LAB TO TEST DRUGS, FOOD

From The Guyana Chronicle, 24 October 1978

The Conference of Ministers Responsible for Health have signed an agreement for the establishment of a laboratory capable of conducting specialized tests on pharmaceutical products to ensure their safety and efficiency. It will also conduct tests on other products suspected of causing illness, e.g. food containing hazardous amounts of pesticides, residue or other poisonous substances.

This laboratory, which is sited in Jamaica and constructed at the Jamaican Government's expense, will be available to all participating countries of the Region.

The laboratory will work in close association with the Caribbean Centre for Pharmaceuticals to be established within the CARICOM Secretariat. ▲

$800,000 TO UWI FOR FISHERIES RESEARCH

From The Daily Gleaner, Jamaica, 14 October 1978

The British Government through its Ministry of Overseas Development has approved a grant of $800,000 to the Department of Zoology at the University of the West Indies, Mona, to support a programme of research in fisheries biology. Under the terms of the grant the Department of Zoology will undertake a study of nearshore stocks of fishes, especially jack, goggle-eye and other herring-like species.

The research programme is aimed at obtaining biological and management data on these stocks of fish in the Caribbean with the intention of providing baseline data on which individual territories in the Region may make management decisions in relation to their own stocks.

The nearshore fish resources of the Caribbean are poorly known but present estimates indicate that they may represent a considerable food resource which is being underexploited. The purpose of the investigation is to assess the occurrence and potential yield of such nearshore fish species.

In order to locate and catch these fishes, the University's fisheries research vessel "Caranx" will be fitted with special mid-water trawls and echo-sounding equipment so that the fishing gear can be directly aimed at schools of fish. This type of gear is expensive and uneconomic for normal fishing purposes; University personnel will also be engaged in investigating suitable types of fishing gear for small boats. The research programme will be based at the Port Royal Marine Laboratory and will concentrate in the first instance on an area between Kingston and Savanna-la-Mar on the south coast and will later be extended around the entire coastline of Jamaica.

This grant will enable the Department of Zoology to extend further its overall programme of applied research in marine science. Under a previous grant from the British Government, the Department successfully undertook a stock assessment and biological study of the Jamaican trap fishery for reef fishes. ▲

NEWS BRIEFS

DRAFT GUIDELINES FOR WEANING AGE CHILDREN DEVELOPED

A major cause of the high prevalence of malnutrition found in the countries of the Region is improper feeding of children between 6 months and 3 years of age. At their Fourth Conference, the Ministers Responsible for Health in the English-speaking Caribbean expressed concern about the problem and recommended that a technical meeting "to identify means to rationalize the industrial production of weaning foods" be convened. CFNI, in collaboration with the UWI and the CARICOM Secretariat responded to this proposal by holding a Technical Group Meeting on "Feeding the Weaning Age Group" in Georgetown, Guyana from 23-27 October 1978. The overall objective of this Meeting was to determine the specific needs and resources existing in individual Caribbean countries and the Region as a whole, in order that the most appropriate strategy for feeding children of weaning age could be developed.

It was recognized that the major part of the nutritional intake of weaning children comes from the family pot. Nutrition education at the family level with emphasis on proper use of the family pot was, therefore, recommended as a valid approach to the problem.

It was also considered necessary to supplement the family pot diet with a processed weaning food which, both quantitatively and qualitatively, met nutritional requirements. The size of the target population and the availability of suitable resources would determine whether the weaning food would be produced on a commercial scale or at the community level. The details of different scales of production were discussed at the Meeting. A final report "Guidelines for Feeding the Weaning Age Group" will be published in early 1979. ▲

CFNI HOLDS WORKSHOP ON THE DIETARY MANAGEMENT OF DIABETES

In order to assist in the control of obesity and diabetes in the Region, the Caribbean Food and Nutrition Institute held a workshop on the dietary management of diabetes from 13-17 November 1978 in Castries and Vieux Fort, St. Lucia. This Workshop was directed at health and nutrition professionals and community workers in the St. Lucia Government services including physicians public health nurses, nursing tutors, food service supervisors and public relations officers.

Participants reviewed the clinical aspects of diabetes and the medical and dietary principles of diabetic management through lectures, discussions and demonstrations. Work groups developed daily diet plans to strengthen their abilities in the dietary counselling of the diabetic patient.

Technical guidance and supervision were provided by resource persons including Mrs. Marisse Louisy, Nutrition Officer, St. Lucia; Mrs. Loretta Lopez, Temporary Advisor for PAHO/WHO; and Miss Manuelita Zephirin, CFNI Public Health Nutritionist.

The chief teaching tool for the meeting was "Meal Planning for Diabetics" (CFNI, 1977), supported by related audiovisual materials. ▲

ST. LUCIA HOSTS CFNI POLICY COMMITTEE MEETING

The Twelfth Annual Meeting of the Committee on Policy to the Caribbean Food and Nutrition Institute was held in Castries, St. Lucia, from 28-29 November 1978.

The Meeting was attended by the PAHO/WHO Caribbean Programme Coordinator and representatives from the Faculties of Agriculture and Medicine, University of the West Indies. Participants from CFNI Member Governments were drawn from the Ministry of Agriculture, Trinidad & Tobago; the Ministry of Agriculture, St. Kitts/Nevis/Anguilla; the Ministries of Health and Agriculture, St. Lucia; the Ministry of Agriculture, Guyana; the Ministry of Health, Suriname; and the Ministries of Agriculture and Health & Environmental Control, Jamaica. The Committee also comprised representatives from the CARICOM Secretariat, the National Nutrition Centre, Barbados and the Director and staff of CFNI.

The Committee reviewed the programme of work and budget of the Institute for 1978, and finalized the 1979 programme. ▲

DIETITIANS AND PHYSICIANS MEET TO DEVELOP DIET MANUAL

The CFNI Trinidad Centre on the St. Augustine Campus of the University of the West Indies was the venue for a meeting of dietitians and physicians on 5-6 December. The group, including participants from Bahamas, Grenada, Guyana, Jamaica, St. Lucia and Trinidad & Tobago, met to develop a diet manual, which will give specific instructions for modifying normal diets to meet the needs of those persons requiring dietary care as part of their therapeutic regime. This publication will relate specifically to the problems of Caribbean countries and is expected to help promote uniformity in dietary management within the Region. ▲

DR. MAHLER APPOINTED FOR SECOND TERM AS DIRECTOR-GENERAL

Dr. Halfdan Mahler has been appointed by the Thirty-first World Health Assembly for a second five-year term as Director-General of the World Health Organization. His first five-year term of office ended 21 July 1978.

In accepting the appointment, Dr. Mahler thanked delegates for the courage they had shown in electing him to a second term, for, he said, "you will need courage and I will need courage if we are to mobilize that intensity, that commitment, that dedication, that only will have a chance of reaching the social health targets you have set". He promised to dedicate his total energy towards "the political struggle for health".

Dr. Mahler, who was born on 21 April 1923 at Vivild, Denmark, joined WHO in 1951. He became an Assistant Director-General of WHO in September 1970, and was appointed to his first term as Director-General on 14 May 1973. ▲

WORLD HEALTH ASSEMBLY APPROVES RESOLUTION ON ROLE OF HEALTH SECTOR IN COMBATTING MALNUTRITION

The Thirty-first World Health Assembly approved in its session of 24 May 1978 Resolution WHA 31.47 dealing with "The role of the health sector in the development of national and international food and nutrition policies and plans, with special reference to combatting malnutrition."

This Resolution follows previous recommendations of the World Health Assembly to Member Governments and WHO Director-General (WHA 27.43, WHA 28.42 and WHA 30.51) to further strengthen nutrition strategies and programmes to combat malnutrition.

Emphasis has been given to the expansion of national and international activities to prevent malnutrition in pregnant and lactating mothers and in young children through the promotion of breast feeding and the development of appropriate weaning practices with locally available and acceptable foods. ▲

APPOINTMENT OF NUTRITIONIST/ WOMEN'S AFFAIRS OFFICER AT CARICOM

Miss Magda Pollard has recently been appointed Nutritionist in the Health Section of the Caribbean Community Secretariat. This aspect of the work of the Secretariat is supportive to the overall plan to change the food consumption pattern of the Caribbean consumers, encouraging greater utilization of indigenous nutritious foods and thereby achieving a high level of regional self-sufficiency in food.

Miss Pollard will work closely with relevant sections of the Secretariat, such as the Agriculture Division. She will also liaise with Caribbean personnel including teachers, public health nurses, community development workers and agricultural extension workers, and with agencies such as CFNI.

As Women's Affairs officer she will coordinate the activities of all women's groups at the regional level and ensure the continued participation of Caribbean women in efforts aimed at eradicating malnutrition, particularly among pregnant and lactating women, infants and young children. ▲

WORLD FOOD PROGRAMME PROJECTS IN CARIBBEAN APPROVED

JAMAICA. An estimated 83,000 of the country's 400,000 children in the 0-4 age group require proper day-care attention, as at least 70% of Jamaican mothers are the sole breadwinner. Many are unable to pay for proper day-care facilities and are forced to send their children to "backyard nurseries" which have limited facilities.

The Government has started a programme to provide extra day-care centres throughout the island, and to improve conditions and upgrade the status of "backyard" and other privately owned centres. Grants will be provided for improving facilities and training staff in nutrition education and food management.

The World Food Programme is to provide food aid at a cost of $507,000 over three years for 5,830 children in 242 day-care centres. The criteria for selecting beneficiaries are to be based on three factors: working mothers as sole breadwinner, number of children in the family, and status of health and nutrition of children.

ST. LUCIA. About 32% of the children under the age of five are underweight and can be considered malnourished.

The Government, which has established a nutrition education programme besides an agricultural programme toward self-sufficiency and the use of locally available foods, has asked the World Food Programme to help in its efforts to reduce malnutrition among children. It has agreed to provide supplementary rations of wheat flour, dried skim milk and dried whole milk for three years at a total cost of $1,151,000. (WFP News, April-June 1978) ▲

FOCUS ON CFNI STAFF

CFNI Staff Members Attend XI International Congress of Nutrition

Dr. Michael Gurney, CFNI Director, attended the XI International Congress of Nutrition held in Rio de Janeiro, Brazil from 27 August - 1 September 1978. Dr. Gurney presented a paper at the workshop on "Priorities in Nutrition Research".

Miss Manuelita Zephirin, CFNI Public Health Nutritionist and Mr. Kenneth Leslie, Agricultural Economist, also attended the Meeting. Miss Zephirin participated in Meetings of the International Union of Nutrition Sciences Committee 11/V on Nursing Education of which she is a member, and in the workshop on nutrition education for medical and other health sciences. During the workshop she presented a report on the publication "Meal Planning for Diabetics".

Mr. Leslie participated in a forum of nutrition planners, held during the Meeting.

Mr. Leslie also served as consultant for a workshop on agricultural policies research in the Caribbean Region, held in the Dominican Republic from the 25-28 July 1978.

Reassignment of Dr. Curtis McIntosh

Dr. Curtis McIntosh formerly Scientist/Food Economist at the Caribbean Food and Nutrition Institute (Trinidad Centre) has been re-designated Agricultural Economist (Programmes and Training). Dr. McIntosh is still based at CFNI Trinidad Centre. ▲

FROM THE EDITOR

AN END TO HUNGER

For those who are poor, whether individuals or countries, it makes no difference how much food is available on the world market. The world's food, like its wealth, is unevenly distributed, both globally and within countries, and the poor are the ones who most acutely feel the lack of it.

The extract on page 76 suggests that food aid "can play a major role in improving the nutritional levels of the poorest countries and population groups...." and the pros and cons of this controversial subject are set out in the short review article which follows.

One basic fact needs to be recognized. The only real solution to the world food problem is to make the poor productive. For developing countries to rely on the goodwill of more affluent countries to meet food deficits can only be a short-term solution to the problem.

Without the development of Third World economies, there will inevitably continue to be shortages of both food and foreign exchange necessary for development. Poor countries will become increasingly dependent on affluent Western countries for food imports and food aid.

The New International Economic Order now being called for by the developing countries advocates the restructuring of international economic relationships to create more equitable terms of trade including food distribution systems. It will give developing countries the right to control their own economies and, most importantly, the raw materials through which they have been exploited for so long. Its establishment will have far-reaching results in every aspect of peoples' lives. What can CARICOM countries do to speed up the process?

We must effectively mobilize the agricultural sector to bring about increases in production as a means of optimizing self-sufficiency and also to generate food exports.

Our governments must undertake comprehensive land reform measures necessary to break the stranglehold of outmoded production systems so that the poorer people will benefit from the increased productivity.

Technical advice and credit facilities should be made available to the small farmer and the use of labour-intensive rather than capital-intensive farming methods promoted.

An efficient infrastructure of roads, railways and shipping lines strengthened by effective trade administration policies and machinery must be developed.

Programmes to improve marketing and distribution and to stabilize or control food prices, such as those described on page 93 should be implemented. New Food Aid Policies should be instituted, stressing "expertise, financial support and policy advice" in preference to gifts of food or food subsidies.

What can we as individuals do? Perhaps the most important thing is to increase our awareness of food and nutrition. Eating locally-grown foods combined so as to give optimum nutrition can replace "Westernized" food practices and tastes which rely heavily on imports from the Metropolitan countries. In the long run the real solutions to the problem of hunger will demand fundamental changes in our eating habits and way of life.

THE EDITOR ▲

FROM OUR READERS

THE EDITOR, CAJANUS

Dear Sir/Madam:

Many thanks for continuing to send us Cajanus. As you will note from the attached completed questionnaire, we think it is a very useful publication.

We take this opportunity however, to draw your attention to the incorrect information about the Jamaican Flour Crisis of January-February 1976. We enclose our article from the American Journal of Epidemiology and are puzzled by the source of your information. It would be very difficult to explain how fertiliser contamination could cause parathion poisoning.

We would appreciate your comments on this.

Dr. Peter Diggory
Caribbean Epidemiology Centre
Trinidad and Tobago

Editor's Note: We are sorry that this error occurred and have tried to rectify the situation by reproducing below the summary abstract of the article to which Dr. Diggory refers. Any queries regarding this article may be addressed to Dr. Diggory direct, at CAREC, P.O. Box 164, Port-of-Spain, Trinidad and Tobago.

While we are always careful to ensure that only sound and reliable information appears in Cajanus, and consult only the most impeccable source materials, we sometimes make mistakes. We, therefore, rely a great deal upon the continued vigilance and attentiveness of readers like Dr. Diggory to help us maintain a consistently high standard of credibility.

The summary abstract follows:

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U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE
from AMERICAN JOURNAL OF EPIDEMIOLOGY
Vol. 106, No. 2, 1977

FATAL PARATHION POISONING CAUSED BY CONTAMINATION OF FLOUR IN INTERNATIONAL COMMERCE[1]

H. J. PETER DIGGORY,[2] PHILIP J. LANDRIGAN,[3] KENNETH P. LATIMER,[2] A. C. ELLINGTON,[4] RENATE D. KIMBROUGH,[5] JOHN A. LIDDLE,[5] RICHARD E. CLINE[5] AND ANN L. SMREK[5]

Diggory, H. J. P., P. J. Landrigan (CDC, Atlanta, GA 30333), K. P. Latimer, A. C. Ellington, R. D. Kimbrough, J. A. Liddle, R. E. Cline and A. L. Smrek. Fatal parathion poisoning caused by contamination of flour in international commerce. *Am J Epidemiol* 106:145–153, 1977.

In January 1976, 79 persons in Jamaica were acutely poisoned by the organophosphorus insecticide parathion. Seventeen died. Cases occurred in three episodes at separate locations, but all patients had consumed wheat flour from a single lot consisting of 5264 cotton bags. Parathion in concentrations of <1 to 9900 ppm was identified in flour from six bags in this lot; three had splash marks. The flour had been milled in Western Europe from European wheat, carried in trucks to a dockside warehouse, and loaded aboard ship after 2–5 days' storage. In Jamaica, the flour had moved from quayside to outbreak locations along separate routes through two import houses. Site inspections and review of shipping records suggested that the likely point of contamination was the European port, where foodstuffs and insecticides were stored in the same warehouse.

food contamination; insecticides; outbreaks; parathion; poisoning

I read with great interest and concern, in *Cajanus*, Vol. 11, No. 2, the News Clippings and News Briefs on school feeding programmes in Trinidad and Jamaica.

It is well known that the nutritionally neediest groups are infants, toddlers and preschool children. School feeding programmes, unless focusing on spreading nutrition education to individual households and stimulating selective food production,

with full community participation in planning, implementation, and evaluation, could have only limited value. Of course, they have political appeal and could be an approach to improve income distribution if free or highly subsidized meals are provided to the children of low-income families. They could also generate employment for the private caterers and food factories. It is a matter of priority in resource allocation if such resources, including necessary foreign exchange for food imports, are available.

Many countries already experience a heavy burden on government budget for a school feeding programme as voiced at an International Workshop on School Food Service for Asia and the Pacific countries conducted here in 1976 under my coordination.

I am extremely pleased to read the news clipping "Schools Move Ahead in Food Planting" in some Jamaican schools and would be more pleased if the plants, hopefully the highly nutritious kinds, could be consumed, at least partly, by the children instead of all being used as fund-raising devices for school. The school garden programme should be systematically promoted to cover all schools in the Caribbean.

Dr. Y.H. Yang
Research Associate
East-West Resource Systems Institute
Honolulu, Hawaii

Editor's Note: Some readers will know Dr. Yang who was Deputy Director of CFNI from 1970 to 1973.

In reference to *Cajanus*, Vol. 11, No. 3, 1978 - Topics and Comments, I would like to refer you to a recent article regarding packaged soups in the U.S. magazine, *Consumer Reports*. I found it quite interesting and possibly of value to your library.

Dr. Robert Morris
Acting Country Representative
Pan American Sanitary Bureau
Trinidad and Tobago

Editor's Note: We quickly located the article (Consumer Reports, November 1978, p. 615-619: "Dried Soup Mixes: This is soup?") and found it to be extremely pertinent. We sent the reference to the manufacturers of the soups and seasoning salts described in our article, asking for comments in respect of the ingredients which their products contain. We also wrote Consumer Reports for permission to publish the highly informative section on additives which we wanted to share with our readers.

During my Course at the Guyana School of Agriculture, I discovered your Journal and it was of invaluable help to me in the Food Science and Nutrition Department. Besides, *Cajanus* also covers Agricultural Development and Research in the Caribbean Region.

Presently, I am an Agricultural Technician and I am very interested in subscribing to your Journal. Your review section has some good books advertised and I wish to know with whom I should place an order.

Please inform me about your subscription rates and those of any other Agricultural Journal you may publish.

Thank you in advance.

Mario A. Chavarria
Belmopan, Belize

Editor's Note: Mr. Chavarria now receives Cajanus regularly and was told how to get in touch with the publishers of books reviewed in Cajanus.

Erratum: Cajanus, Vol. 11, No. 2, 1978, p. 64 and 70

As an ardent reader of your scientific and informative periodical, I wish to point out to you that there seems to be some discrepancy in the answers as they appear on p. 70. "Answers to quiz on page 64". As it appears, answer 3 does not fit question 3; in fact (3) MANGOSTEEN (Garcinia mangostana L.) Family: Guttiferae, suits (5) "Claimed to be the world's best tasting fruit, growing in the humid tropics of South-East Asia." As a farmer and agricultural officer myself, I hope you will strive to correct the mistake lest the wrong impression be gained by all readers.

Thank you.

Fazal Hosein, B.Sc. Dip. Agric.
Trinidad and Tobago

Editor's Note: We thanked our reader for responding to the filler in question. We explained that the error, however, was related to the positioning of the insert which was inadvertently placed the right way up on the manuscript copy when it should have been placed upside-down, which is the way we wanted the answers read. Readers should have therefore read from the bottom up rather than the top down - in other words, the last should have been first and the first last!

We have now printed the answers the right way round to correct the discrepancy and apologise for any misunderstanding our error might have caused. Here are the corrected answers:

(1) ARRACHACHA - Peruvian parsnip, which looks like celery and is often grown in the Andes instead of potatoes.

(2) CHAYA - A shrub with nutritious, spinach-like green leaves known only in Central America.

(3) MANGOSTEEN - Claimed to be the world's best-tasting fruit, growing in the humid tropics of south-east Asia.

(4) UVILLA - A grape-like fruit almost unheard of outside of the western part of the Amazon basin; it can be eaten raw or used to make a kind of wine.

(5) TAMARUGO - A leguminous tree native to the Atacama Desert in Chile and capable of growing through a metre-thick layer of salt. Pods and leaves are excellent forage.

(6) GUAR - Contains high-protein seeds resembling the soyabean and containing a gum that is in increasing demand by industry.

(7) RAMIE - A tall perennial bush with a fibre of superior quality (strong and free from stretch and shrinkage), native to East India. ▲

CAJANAQUOTE

"The only similarities between breast milk and cow's milk are that they both contain water and lactose."

- D.B. Jelliffe
At IUNS Congress,
Rio de Janeiro,
August 1978

TOPICS AND COMMENTS

WORLD FOOD AND NUTRITION SITUATION*

"The improvement in world food supplies that began in 1975 has continued during the past year, and in many respects the situation has begun to recover to that which prevailed before 1972. With generally better weather, strong price incentives, and an improved supply of fertilizer and other inputs, many developing countries have enjoyed two successive years of good harvests. With the major exception of Africa, food production per head of the population in the developing regions has regained earlier peak levels, and in most countries food consumption and nutrition are likely to have recovered from the sharp deteriorations that occurred earlier in the decade. However, although they are difficult to measure, the long-term problems of poverty and hunger and malnutrition remain as before. One indication is that during the period 1970-1974 in 58 countries with a total population of 1,300 million people national average supplies of dietary energy were less than nutritional requirements. This may be an overestimation of the degree of hunger and malnutrition to the extent that some people in these countries are adequately nourished, but at the same time there are many malnourished people in countries where average supplies exceeded requirements. Higher consumer prices for food bear heavily on the poorest population groups.

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*From Institutional Arrangements Relating to Nutrition. Supplementary statement by the Administrative Committee on Co-ordination of the United Nations. Reprinted from PAG Bulletin, Vol. VII, Nos. 3-4, September - December 1977, p. 17-18.

Moreover, few countries have services for the prevention and treatment of malnourishment that can reach the large number of children in these groups. Although, with the replenishment of cereal stocks made possible by the recent good harvests, there has been a marked improvement in world food security, little progress has been made towards the establishment of an internationally co-ordinated system for the holding and management of the enlarged stocks. Food aid, which can play a major role in improving the nutritional levels of the poorest countries and population groups, has not yet reached the minimum target of 10 million tons of cereals a year recommended by the World Food Conference. Hence the necessity to encourage all sources of expertise, financial support and policy advice." ▲

UNUSED RESOURCE

The economic value of breast milk for India was estimated at Rs 7,400 million a year, more than four times the entire health budget of the Government in 1977 (Rs 1,732 million). The estimate was made by Dr. Gopalan, Director General of the Indian Council of Medical Research, based on 22 million nursing mothers who produce about 3.7 million tons of milk annually. In Chile in 1970 an estimated 78,600 tons of human breast milk was unrealized (literally enough to float the largest battleship ever built). In Kenya the annual loss of breast milk is estimated to cost M$11.5 million (equivalent to one-fifth of the economic aid given to the nation) and in the Philippines M$30 million is spent annually on artificial feed milks.

- Development Forum
March 1979

FOOD AID: PROS AND CONS*

Food aid has become an issue of controversy among those who seek the common goal of an end to hunger. Nearly all agree that something should be done. But should food aid be reformed or abolished? Some argue that programmes like the U.S. Food for Peace Programme (under Public Law 480) should be phased out. They claim that such aid has often been harmful to poor countries. Others, however, contend that these Programmes can be a useful resource for development and would like to see food aid reformed and expanded.

Some of the pros and cons of food assistance programmes are set out here:-

ERRORS TO AVOID - from experience	WHAT FOOD AID CAN DO - and has done
1. Diverting attention from underlying causes of hunger and efforts to find more permanent solutions.	1. Sustain victims of natural and man-made disasters and crop shortfalls, which cut off normal food supplies.
2. Sending unneeded or inappropriate foods after disasters occur and prolonging such "aid" despite negative effects on the recipient community.	2. Preserve health of nutritionally-vulnerable low-income children and mothers.
3. Channelling aid to programmes which create dependency.	3. Reduce mental retardation due to child malnutrition, which makes people permanently less productive.
4. Developing preferences for imported foods or using such food as "bait" for sectarian religious or political recruitment.	4. Attract participants into educational programmes (e.g. literacy, job skills, mothercraft, nutrition).
5. Maintaining local leaders who offer to their community little else than an ability to obtain aid from donors.	5. Provide incentive for communities to organize in order to achieve common goals.
6. Letting food distribution become more important than community self-help efforts and local food production.	6. Improve rural roads, water reservoirs, irrigation ditches, and food storage facilities through food-for-work projects geared to benefit the entire community.
7. Lowering small-farmer income where free (or cheap) imported foods reduce demand for local foods.	7. Enable new agricultural settlements to survive while settlers prepare for their first harvest.
8. Relieving pressure on governments and business to revitalize rural areas and provide more employment opportunities for the poor.	8. Employ urban families to build small public projects such as schools, community centres and sewage ditches.

*This information is reprinted with permission from Background Paper No. 30 published by Bread for the World, a Christian citizens' movement in the USA.

UPDATE ON CHILD NUTRITION: AN IYC SPECIAL SECTION

In 1979 each issue of *Cajanus* will commemorate the International Year of the Child 1979. *Cajanus* Vol. 12, No. 1 was the first of these special issues. In this issue we are starting a new section on infant and young child nutrition, which will run throughout 1979. "Update on Child Nutrition" represents *Cajanus'* contribution to the information and education activities of International Year of the Child and is designed to be a forum for ideas and opinions, reports of new developments and advances which relate directly to children's well-being, cartoons, quotations, newsclippings and short fillers illustrating different aspects of nutrition as it affects the lives of children.

YEAR OF THE CHILD: MAKE IT THE START OF BETTER NUTRITION FOR YOUR CHILDREN

by

*Joan Peters**

FEEDING YOUR YOUNG CHILD TO KEEP HIM HEALTHY

Even after the weaning age of two to three years, your child still depends on you for the food he or she gets. You will want to be very sure that the foods your child eats are the best foods for his health. Because your child is growing rapidly, he needs plenty of food. Did you know that a five-year old needs to eat about half as much food as his father to remain well-nourished? Some mothers make sure that their young children get enough to eat by giving at least four meals a day, and giving them as much food as they want at each of these meals. If there is not much food for the family on a certain day, some food like oil, margarine or sugar should be added to each meal to meet the child's energy needs.

If your child seems to be tired all the time, is very thin, losing weight, and is often ill, he may not be getting enough to eat. A child needs food to help him grow; to give him energy and to protect him from infections which will make him sick.

Babies and young children who are not well-fed are more likely to get diseases than those who are well-fed. A young child can become sick because of not getting proper nourishment. A poorly nourished child's body cannot fight the common diseases such

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*Mrs. Peters is Nutrition Educator at CFNI.

Editor's Note: These articles present nutrition information in a very simple form designed for an audience at the community level. Cajanus readers involved in nutrition education efforts may wish to reproduce and use this information as the basis of simple fact-sheets or handouts for mothers, school children, backyard nurseries and day care centers, community groups, literacy programmes etc.

as diarrhoea, coughs and colds, measles, tuberculosis, whooping cough and diphtheria. If a child gets any of these diseases, he is more likely to suffer from the effects of poor nourishment.

To prevent these infections or make them less serious, you must feed your child well. Good feeding during and following illness often prevents the illness from becoming worse, and helps the child to become well faster.

Be sure your baby or child receives the special injections of medicines he needs regularly to prevent some of these diseases. This is called immunization. Go to your health Centre or Clinic to find out more about immunizing your child. Make sure that diarrhoea and other illnesses are treated early before they become serious.

You should also make sure that hands are washed before touching food and after going to the toilet. Feeding dishes, food and water should always be clean.

FEEDING YOUR YOUNG CHILD WHEN HE IS ILL

When your child is ill or has an infection, you should give him more food than usual. This food should also be more nourishing than usual because the body needs more and better food to fight illness. You should not stop giving certain foods during illness.

Milk is a good food for sick children, and breast milk is certainly the best food for sick babies. When your baby is sick, never stop breastfeeding. If your baby refuses to suck, squeeze the breast milk out into a clean cup or other container and feed it to baby with a spoon. If the baby is not sucking and the milk is not squeezed out in this way, your supply of breast milk will decrease or even stop which will lead to much greater harm for your baby.

When an older child is sick, he may refuse to eat. His appetite will be poor and his interest in and desire for food will be less. Make special efforts to feed him. If he does not like the usual food, give him foods which are easier to swallow, like porridge or bread soaked in milk. Also try to give some yellow and orange vegetables and fruit like mangoes and pawpaw, or soft-cooked dark green leafy vegetables like callalu.

Sick children need plenty of food including eggs, fish, meat and other foods from animals. Foods from animals are helpful to a child when he is ill. Be sure to feed him milk too. Milk should not be diluted even when your child is ill.

You must encourage your children to eat when they have infections. This will help cure the infection and prevent malnutrition. Remember malnutrition makes infection worse, and infection makes malnutrition worse. Make sure your sick child takes about 3/4 of a glass of liquid at least six times a day. A little liquid at a time and often is the best rule. ▲

CAJANAQUOTE

"Children are the most fragile, defenseless, innocent and wretched victims of our collective neglect and indifference. Their survival in conditions of physical or emotional deprivation is no less than a miracle - a testimony to the strength of human endurance and resilience. Yet this phenomenon cannot absolve us of our shared responsibility for the shocking numbers of children who needlessly succumb to starvation, malnutrition and disease before age five."

- *Estefania Aldaba-Lim*
Special Representative for the International Year of the Child 1979

SHOULD STORED BREAST MILK BE PASTEURIZED?

by

J.M. Gurney *

Some sick or premature newborn babies cannot suckle but do need breast milk (which is generally agreed to be the food choice). These babies are sometimes given breast milk that has been collected from various women and stored. Doctors in Northampton, England, have been concerned as to whether such milk should or should not be pasteurized** before being given to babies. In their view, while pasteurization might destroy harmful bacteria, it might also damage substances occuring naturally in the milk which themselves prevent bacterial infections.

Harmful bacteria (E. Coli and Staph. aureus) were added to samples of human milk, some of which were pasteurized and some of which were not. The doctors found that these bacteria multiplied much more readily in the pasteurized milk than in the untreated milk. The doctors concluded that it is better not to pasteurize human milk being stored for babies but that great care must be taken to collect the milk in a very hygienic way.

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*Dr. J.M. Gurney is Director, CFNI.

**Pasteurization is heat treatment at a prescribed temperature for a prescribed time in properly designed and operated equipment. The temperature may be between 63°C and 80°C (i.e. never to boiling). The lower the temperature, the longer the milk must remain at that temperature. For example it should remain at 63°C for at least 30 minutes, but needs only 15 seconds at 80°C. (Source: Joint FAO/WHO Expert Committee on Milk Hygiene: WHO Tech. Rep. Ser. No. 453, 1970).

We think this study of interest to many *Cajanus* readers. The reference for those who would like to read the original article is:

Roberts, S.A. and Severn, M. "Bacterial growth in raw and pasteurized human milk". *Brit. med. J.*, 28 October 1978, p. 1196.

If any reader would like a photocopy of the original article or of the description of pasteurization mentioned in the footnote, please write to The Editor, *Cajanus*. ▲

COST OF FOOD HIGHER FOR THE POOR THAN FOR THE RICH

Because of their low purchasing power, the residents of deprived urban settlements find themselves caught in a no-win situation when it comes to shopping.

Access to central markets is rare: in a Latin American city, for example, a study revealed that 64% of slum dwellers and 97% of shanty-town dwellers cannot reach a shopping area without using public transport - an investment often too high in relation to the little they have to spend. They are thus at the mercy of small shop owners and street vendors, offering a limited range and quality of food at high prices.

Purchases are made in minute quantities: the day's earnings, because they are low, are soon gone on that day's expenses, and usually there is only enough to buy the smallest quantities of food. Even when exceptionally a larger amount of money is made, lack of storage space makes purchases in regular quantities, and at normal prices, impossible.

The price the urban poor thus end up paying for foods is much higher than that paid by middle-class shoppers at central shopping centres. They get less for their money than do other socioeconomic groups.

- *Dossier. Peri-urban malnutrition, a neglected problem.*
In "Assignment children", Geneva, UNICEF, 43:28 (1978).

EDUCATING THE EDUCATORS*

BREASTFEEDING

The decline in breast feeding that has now become noticeable in most countries of the world, first took place in a climate of almost total indifference particularly on the part of health workers. This decline appeared, and still appears to some, to be a phenomenon of civilization, an inevitable and unalterable consequence of technological progress and changes in attitudes.

TRENDS

Declining breast feeding and the substitution of dilute contaminated bottle feeding in poorer circumstances, especially in the developing countries, has led to increasingly serious public health problems in the form of diarrhoea and infant malnutrition, and in decreased spacing between births with increased population growth. Very recent scientific research has shown mounting evidence of the unique value of human milk and breast feeding for babies in industrialized countries, as well as developing areas of the world. These advantages include nutrition (as a source of concentrated calories, as well as of protein and other nutrients), the prevention of infections and allergies, cost, child spacing, etc. They have brought a revived awareness of the significance of breast feeding to infant health and nutrition and as a biological method of child spacing.

In addition in very recent decades, new technical forms of contraception have been developed with greater opportunities for women to space births, but, in the case of hormonal contraceptives, with interference with ability to breast feed.

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*This article was produced by the Singapore Breast-feeding Mothers' in a recent issue of the newsletter of the Consumers Association of Singapore.

CONFLICTS

As women have moved increasingly to more emancipated positions in modern society, conflicts have arisen between their biological family reproductive role and their wider role as salaried workers outside the home.

From the point of view of physical activities, the woman may thus be expected to undertake a double burden of work. Economically, the money-earning role may conflict with the needs of the young child for close maternal care and attention, including breast feeding. The working woman who is not able to breast feed her baby because of lack of facilities has diminished biological child spacing with increased risk of pregnancy and hence a greater need for contraceptives.

EDUCATION AND INFORMATION

Education is of crucial importance for protection of those communities in which breast feeding is already the general practice, and for a reversal of the decline in communities where such decline has already taken place. These education activities must be conducted in such a way as to permeate the whole fabric of society.

EDUCATION OF HEALTH WORKERS

Education in the mechanisms and techniques and value of breast feeding must be given to all cadres of health personnel, and its significance stressed in the prevention of malnutrition and infections, and in child spacing. This will include:-

(a) The importance of preparing the mother to breast feed in the antenatal period;

(b) Changing common practices in the maternity ward which are deleterious to the initiation of breast feeding, e.g. separation of mother/child dyad,

prelacteal feeds, complementary bottle feeds, the use of drugs to inhibit lactation;

(c) Demanding that breast feeding should become a regular practice in hospitals. This will not only enhance prolactin production, but also promote socialization of the infant;

(d) Minimisation of stress during the mother's stay in the maternity ward, with encouragement of a warm, friendly atmosphere, which facilitates breast feeding;

(e) Facilities for breast feeding sick young infants in Paediatric Wards, for the use of human milk, particularly colostrum, for premature babies.

Emphasis must initially be placed on the training of trainers of health and education personnel.

EDUCATION OF POLICY MAKERS AND THE GENERAL PUBLIC

A concerted effort should be made to educate politicians and senior public administrators on the value to health as well as the economic benefits to be derived, from breast feeding and adequate birth spacing. Such educational activities must be based on well-documented scientific facts. Education of employers, trade union leaders, heads of industrial and commercial concerns, must also be undertaken. The general public needs to be made aware of the value and importance of breast feeding, and conversely of the hazards and difficulties inherent in its decline. All approaches, including curricula changes as needed, should be mobilized for the education of university students, and school children of both sexes in this field. The general public needs information and this might be given through family planning associations; groups encouraging breast feeding e.g. the Singapore Breastfeeding Mothers' Group; and

governmental and non-governmental agencies working in the fields of health, education, nutrition and related subjects.

Consumer information as part of youth activities and special antenatal activities are needed. For such a massive effort there is a need to identify with the communities themselves and the available human support that can be mobilized from within. ▲

"My Mummy has the capacity to store up to a year's supply. Saves time and effort, that way."

CAJANAQUOTE

"One of the main gratifications about fishing is that you sit on the river bank at the top of the food chain, not the bottom."

- *Fisherman, heard on Television Programme, "The Coral Jungle"*

HELPING MOTHERS TO LOVE THEIR BABIES*

Mothers who put their baby to the breast early are more likely to succeed in prolonged breast feeding
[*Photo © API*]

Only 15 years ago a student could qualify as a doctor without having given much thought to the idea that parents might harm their own children. Today all who work with children, and most of those who do not, are fully familiar with the concept of "battered babies" or "non-accidental injury". Dealing with such injuries is now part of the routine of a paediatrician's life and an informed guess at the incidence of chronic neurological handicap in children from this cause in the United Kingdom has produced a figure of about 400 new cases each year. Although some non-accidental injuries may have been missed in the past, it seems unlikely that increased awareness of the problem wholly accounts for the rapid increase in apparent incidence. What has gone wrong? Why do parents harm their own children? Can we suggest any possible ways of promoting better parental caring behaviour?

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*Reprinted with permission from the British Medical Journal, 3 September 1977, p. 595-6.

References will be supplied on request.

Klaus and Kennell have recently summarized what we know of the factors which may be important in forming bonds between infants and parents, and their review has important implications for anyone working with newborn babies and their mothers. Most studies on this subject have concerned mother and baby, but we must not forget the importance of father to baby attachment.

Babies who have been separated from their mothers after birth because of prematurity or illness are more often the subjects of later physical abuse or failure to thrive without organic cause than those who have not been separated. Observations in animals have shown that rejection of the young by the mother is common when mother and baby are separated soon after birth. In the goat, for instance, the first ten minutes after birth is critical to the mother's acceptance of the kid. In primates the critical period appears to be longer - one or two days.

Studies with human mothers and babies have also shown that intimate contact in the early days after birth is supremely important in determining the future relationship between mother and child. In Cleveland, Ohio, two groups of mothers were studied. The first group had brief contact with their babies soon after birth and again at about six hours and then bottle fed them every four hours with no contact between feed times. The second group were given their babies for an hour soon after birth and had five hours of extra contact on each of the first three days. The mothers and babies were observed at one month, one year, and two years and on each occasion the mothers in the second group showed evidence of closer attachment to their babies. At one month they spent more time during feeds fondling their babies and looking at them face to face, and were less inclined to go out leaving the baby with someone else. They appeared to take more interest when the baby was being examined by the doctor. Similar differences persisted at one year, and at two years there was a significant difference in speech patterns between the two groups of mothers

when talking to their children. The mothers who had had extended contact with their newborn babies used more varied and complex speech patterns, asked more questions of their children, and issued fewer commands.

The same workers have also studied the behaviour of mothers on first contact with their babies, looking for evidence of species-specific behavioural patterns which it may be necessary to encourage to promote normal mother to baby attachment. Mothers in hospital presented with their naked babies soon after birth will usually begin by touching the baby's limbs with their fingers and later progress to holding the trunk with their palms. This sequence of events is delayed if the baby is clothed. In addition to this touching and holding of the baby, direct eye to eye contact appears to be important.

The newborn infant can fix his eyes on a face very soon after birth, and many mothers find this response extremely rewarding and important in enabling them to relate to the baby as a person. Observations at home deliveries have shown maternal behaviour to be different from that in hospital. At home, the mother is much more in charge: immediately after delivery she often seems to be elated, and some mothers have described sensations similar to orgasm then. She is more likely to hold her baby in her arms and to explore his face with her fingertips. She may put the baby to the breast soon after birth, when he will lick and mouth at the nipple - imbibing mother love, not milk*.

Clearly we need to review our present practices in many newborn nurseries. In some, pressures of work and the limitations of present accommodation make it difficult to adhere to an ideal policy. Nevertheless, the fall in birth rate should give midwives more time to devote to these matters. Thus the baby should be

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*Editor's Note: Milk may not be imbibed but some colostrum is likely to be taken in and the ejection reflex stimulated.

shown briefly to the mother immediately after birth. She should then be allowed to rest while the placenta is delivered and any necessary stitching done. After that, if they wish, both parents should be allowed to be alone with their baby in private for between 30 and 45 minutes (the father having witnessed the birth). During this time, the mother should be allowed to hold her naked baby to her under a heat shield and may put the baby to the breast if she wishes. (Mothers who put the baby to the breast early are more likely to succeed in prolonged breast feeding.) On the post-natal wards the mothers should have their babies with them for as long as they wish and should have ready access to them at all times. For immature and sick babies this sequence of events will have to be amended, but both parents should be allowed as much access to the baby as possible. Provided he is kept warm, there is no reason why an otherwise healthy premature baby must be rushed away to the special care unit immediately after birth. Time spent with the mother at this time may be of enormous benefit.

Over the last two decades major advances have been made in the care of sick newborn babies and there are still good reasons for advising hospital delivery. Nevertheless, mother and baby should be allowed to grow together as a unit and doctors should do all they can to preserve the functional integrity of that unit. There can be few more poignant tragedies than that of the baby whose life and future potential are saved by excellent technical neonatal care but whose potential is never realised because our failure to promote parental attachment has resulted in neglect or abuse. ▲

CAJANAQUOTE

"Strange to see how a good dinner and feasting reconciles everybody."

- Samuel Pepys
Diary, 9 November 1665

PROGRAMMES TO CONTROL OR STABILIZE STAPLE FOOD PRICES IN JAMAICA*

by

Vernon Allen

BACKGROUND

At the end of 1976 slightly more than 2 million people inhabited Jamaica's 4,411 square miles. According to the country's 1970 population census, over 41% of the population lived in towns due to the rural-urban population drift which has probably led to an increase in the percentage of the urban population. More than 830,000 persons, or 46% of the population, was under fourteen years of age.

Only 1.2 million acres (486,000 hectares) of the total land surface are recognized as cultivable yet 31% of the labour force of 890,000 persons is employed in agriculture, forestry and fishing. With the per capita available cultivable land just over half an acre, each member of the labour force has less than five acres on which to work. Of the 200,000 farms recorded in the 1970 Agricultural Census, 145,000 were under five acres in size with only 300 farms of 500 acres and above. The former then represented 78% of the total number of farms but only 15% of the farmland area, while the latter, farms of 500 acres and above, occupied 45% of the farmland area but represented only 0.16% of the total farm numbers.

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*Adapted from a paper presented at a workshop on "Impact of Food Price Policies on Nutrition" sponsored by the United Nations University/WHP/CEESTEM in Mexico City in March 1978. Mr. Vernon Allen is Public Officer of the Ministry of Industry and Commerce, Jamaica.

In Jamaica, as in most countries with similar historical background, the large farms are export-oriented while the small farms grow most of the food for domestic consumption.

At the end of 1976, per capita National Disposable Income was J$1,223.00 (US$906.00) of which J$932.00 represented personal consumption expenditure. This was based on the rate of exchange of US$1.00 = J$1.35.* Income distribution, like land distribution, is skewed, with a very high concentration of most of the National Disposable Income in comparatively few pockets.

PROBLEMS RELATING TO FOOD PRICES

In Jamaica, generally, problems of food prices derive mainly from the following conditions:

1. The openness of the Jamaican economy.
2. Traditional dependence on imported foods.
3. Adoption of advanced but inappropriate technology.
4. Disharmony of processing techniques with local agricultural production.
5. Maldistribution of incomes.
6. High levels of unemployment.
7. Inappropriate and inefficient marketing and distribution structures.
8. Dietary habits which favour imported food items to the disadvantage of agricultural production.
9. Lack of data suitable for the development of economic studies for the formulation of appropriate food policies.

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*Editor's Note: The current rate of exchange is US$1.00 = J$1.76 (May 1979).

This paper concentrates on empirical rather than theoretical considerations. It will, therefore, view some of these problems within the framework of institutions which have been established to solve them.

The Government's efforts to control or stabilize staple food prices are expressed in four institutions:

(i) The Jamaica Nutrition Holdings (JNH)
(ii) The Prices Commission
(iii) The Agricultural Marketing Corporation (AMC)
(iv) The Food Intelligence Division, Ministry of Marketing and Commerce.

This discussion will consider these agencies within the context of attempts to solve the problems of undesirable fluctuations in the prices of staple foodstuffs.

SOURCES OF FOOD SUPPLIES

The most important sources of food supplies are imports, local processing and agricultural production.

Imports

Prior to 1974, foodstuffs were imported entirely by private firms. The only exceptions were a few agricultural items such as onions and red peas which were imported only by the government-established Agricultural Marketing Corporation. Importing firms had well-established contracts in the United Kingdom, Canada, the United States, New Zealand and a few other countries. In some cases the importing firms were subsidiaries of exporting firms. There was little, if any, exploration of other supply sources because of long-established links. The pattern of trade and trading policies were fashioned by and for the benefit of importers and exporters. Only minimal consideration was given to the effects

of these policies on the nutrition or level of living of the population as a whole.

(i) The Jamaica Nutrition Holdings (JNH)

In 1974, the Jamaica Nutrition Holdings Limited was incorporated by the Government of Jamaica with the following objectives:

(a) to engage in bulk purchases of grains and other nutrition related raw materials;

(b) to operate a stabilization fund related to these bulk purchases;

(c) to deal in commodity futures markets, in order to protect the national economy from rapidly fluctuating commodity prices;

(d) to research sources of cheaper basic foods for the Trade;

(e) to assist in the development of a National Nutrition Programme; and

(f) to establish and manage facilities including:
  (i) a soyabean processing plant,
  (ii) a milk processing plant,
  (iii) a cassava processing plant,
  (iv) a banana processing plant.

The following table indicates the results of trading by the Jamaica Nutrition Holdings in containing the prices at which imports have been obtained.

Table 1: Imports of selected staple food items 1973-76

Commodity	1976			1975			1974			1973		
	Quan. (lb)m	Value ($)m	UP*	Quan. (lb)m	Value ($)m	UP*	Quan. (lb)m	Value ($)m	UP*	Quan. (lb)m	Value ($)m	UP*
Rice	101.0	18.887	19¢	108.591	25.639	24¢	86.995	22.313	26¢	69.715	10.792	16¢
Flour	110.499	11.491	10¢	117.598	13.053	11¢	108.847	12.717	12¢	117.810	7.678	7¢
Skimmed Milk	24.197	6.364	27¢	12.848	4.412	35¢	26.238	10.876	42¢	13.850	3.821	28¢
Codfish	6.635	4.668	70¢	5.810	4.314	75¢	6.206	4.915	80¢	9.473	5.012	53¢
Chicken Parts	41.301	6.497	16¢	34.403	4.828	14¢	22.348	3.518	16¢	17.502	2.373	14¢
Sardines*	3.031	1.852	61¢	6.204	4.329	70¢	2.873	1.651	58¢	8.071	3.070	38¢
Mackerel	15.640	5.517	35¢	10.639	3.164	30¢	6.928	1.847	27¢	6.714	1.297	20¢
Salted Beef	3.186	1.592	50¢	2.596	1.137	44¢	1.672	0.811	49¢	0.798	0.455	57¢
Corned Beef	8.459	6.572	78¢	8.822	7.587	86¢	5.991	5.530	93¢	4.059	2.504	62¢
Herring	1.637	0.693	42¢	2.669	1.270	48¢	2.604	1.286	50¢	2.001	0.443	23¢

Note: UP* = Unit Price

From its incorporation to the end of 1977, the JNH shared the business of importing food items with private traders. Since the beginning of 1978, only this public sector company is authorized to import basic food items into the country. Comparison between import prices paid for skimmed milk by private traders and JNH in 1976 showed a significant difference of approximately 7¢ per lb, with JNH paying the lower price.

In 1975 J$118.1 million was spent on imported food out of a total import expenditure of J$212.6 million for all consumer goods. This indicates the level of reliance on imported foods.

World inflation and other perils have severely affected foreign exchange availability, and foreign exchange budgeting has had to be introduced. Imports of food have been reduced drastically to just under J$60 million in 1977.

Internal prices are not automatically reduced by the JNH when there is a reduction in import prices. However, the prices of these items have been stabilized since 1974:

(1) Wheat
(2) Maize
(3) Skimmed Milk Powder
(4) Butter Oil
(5) Butter Milk Powder

In addition, during 1977 J$3.33 million from the revenue of the Company was used to subsidize the prices of flour, condensed milk, edible oils, some poultry meat, and the wharfage fees on imported staples.

During 1978 subsidies amounted to some J$48 million, and involved the prices of soya products, animal feeds, fish products, milk products, edible oils, flour, baby foods, corn and some other staples.

Distribution of Imported Foods. Internal distribution is almost exclusively done by private firms. Figure 1 illustrates the structure of the distribution system. The distributive chain is a long one and its structure has developed over a long period.

The *distributors*, of which there are about twenty in the country, are large enterprises with licences to import. They place an order with the Jamaica Nutrition Holdings and take possession of goods when they arrive at the port. They then sell in bulk to wholesalers, large retailers and institutions.

The *wholesalers*, of which there are about one hundred, buy from distributors and break bulk to sell to retailers, chiefly small, and institutions. Distributors are concentrated in the city of Kingston, while wholesalers are scattered all over the country, usually in the larger towns.

Retailers range from very small rural establishments, selling less than J$1,000 per year to very large supermarkets with over $1 million sales per annum. There are about five hundred large retailers and thirteen thousand small retailers of varying sizes.

Thousands of itinerant and occasional vendors called *"higglers"* purchase from wherever they can and sell in the streets and in the local markets. These vendors often do a flourishing business in times of scarcities, when their prices are often multiples of the controlled prices.

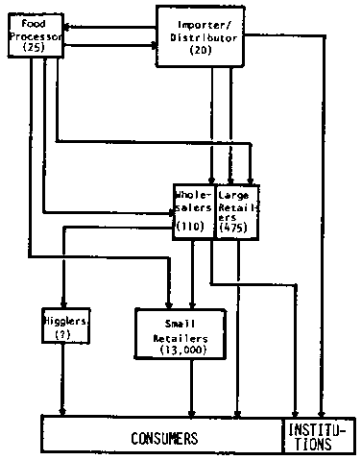

Figure 1: Flow of imported and processed foods to consumers

(ii) The Prices Commission

Towards the end of World War II, the Government of Jamaica set up a Food Control Distribution Department. In 1971 this was converted to the Prices Commission with expanded responsibilities and functions. There are now some sixty-seven (67) items under specific price control. Approximately fifty of these items are imported or locally manufactured or processed foods. The Prices Commission must investigate all requests for price increases and must satisfy itself that such price increases are unavoidable and ultimately in the public interest.

Policing the system is very difficult and costly and when essential goods are in short supply, it is also somewhat ineffective.

The Prices Commission and the Jamaica Nutrition Holdings are not expected to interfere directly in the internal distribution of food items. Instead they seek to solve problems of high prices, types of foods imported, and the control of internal prices through the distributive systems.

To alleviate pressure of high and rising prices on the lower income groups, an attempt has been made to channel supplies of staple foods to low income areas at subsidized prices through "special" shops and mobile units operated by the Agricultural Marketing Corporation. This has met with limited success and the system is now to be reviewed.

A more comprehensive method of dealing with the problem is now being devised in the form of the Food Intelligence Division in the Ministry of Industry and Commerce. This system will be outlined and discussed in part (iv) of this paper.

Local Processing

There are about twenty-five fairly large establishments engaged in the processing of staple food items. These firms import (chiefly from the U.S.) their machinery, technology and most of their raw materials, the latter usually in a semi-processed form.

Movements in the prices of imported raw materials are immediately reflected in consumer prices. There is little that the Prices Commission can do to hold down prices in the face of a critical unemployment situation.

Because production systems and schedules are not harmonized with local agricultural output, the very desirable boost which the agro-industrial sector should provide for agriculture is all but lost.

There is also little recognition of the nutritional requirements of the population. In effect, this sector of the economy is largely an enclave of non-indigenous capital, technology and inputs geared to meet the consumption patterns of a large sector of the population which prefers and seeks to obtain imported food items.

Food processors are the leaders in marketing foodstuffs. The extent to which expenditure is diverted from locally produced items is yet to be determined.

Outlets for processed foods are the same as for imported foods.

Agricultural Production

(iii) The Agricultural Marketing Corporation (AMC)

There has been no direct attempt to control or stabilize the prices of locally grown agricultural products. The objectives of the Government-established Agricultural Marketing Corporation are:

(1) the stimulation of local production of agricultural products by: providing an assured market for farmers' crops; providing guaranteed minimum prices for a number of specified crops, which meet required standards; and encouraging the consumption of locally produced food crops;

(2) ensuring an even distribution of agricultural products throughout the country by providing food where demand exists;

(3) protecting the interests of consumers generally, by attempting to stabilize prices and by being the sole importer of specified staple crops;

(4) easing the burden of the rising cost of living among low-income groups throughout the country;

(5) contributing to the campaign against malnutrition by making available to vulnerable groups cheap basic foods important for their nutritional content; and

(6) ensuring viability in its operations.

The AMC has not been able to achieve these objectives. It has functioned largely as a "buyer of last resort". Over the years, it has not controlled a sufficiently large portion of the market to influence prices significantly. Estimates place the AMC's purchases at between twelve and eighteen percent of the marketed portion of agricultural output.

There has been greater emphasis on the guarantee of reasonable prices to farmers than on holding down prices to consumers. While the offer of guaranteed prices is of indisputable benefit to the agricultural sector, it may have caused consumers to pay even higher prices. Most traders pay farmers a little above the AMC prices, obtain the best products and then add margins to maintain their profit levels.

Distribution of Locally Grown Foods. Figure 2 shows the very complex system of distribution of agricultural products. This is a substantially simplified model of the real system, in which there are over fourteen thousand "higglers" and over thirty-two channels along which products travel.

It is extremely difficult to make reliable estimates of production because of the scattered nature of production on nearly 200,000 farms and the pattern of on-farm production in which many different crops are interspersed on a small plot. Competing with a vast number of other agencies who have established personal contacts and offered services to farmers, and without reliable estimates of production, the AMC finds it very difficult to fulfill its mandate.

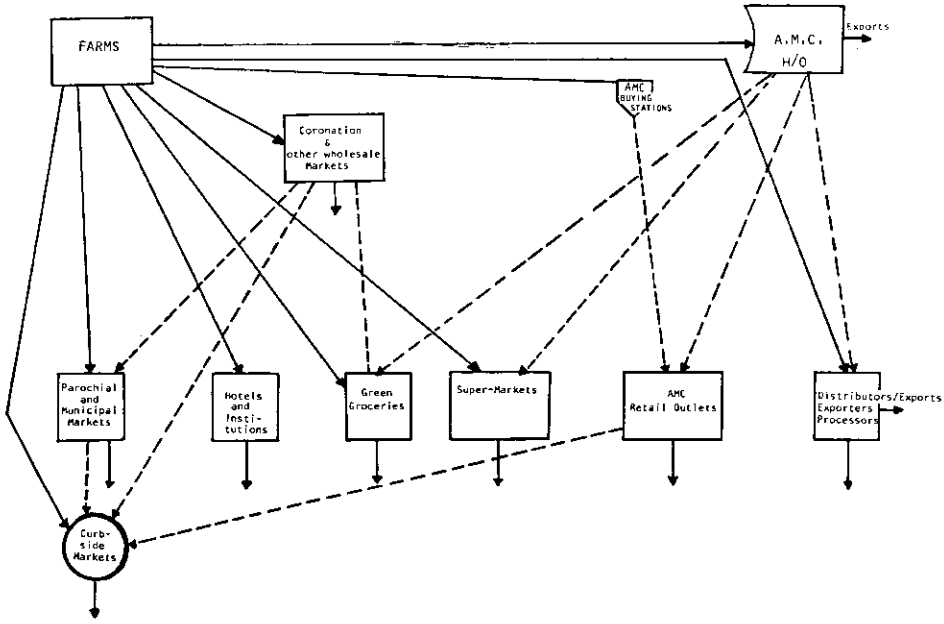

Figure 2: Flows of locally grown agricultural products

(iv) The Food Intelligence Division, Ministry of Industry, Marketing and Commerce

The objectives of the system which is now being developed are:

(1) to monitor supply levels and prices and provide warning signals of impending shortages, and to create mechanisms to deal with localized or country-wide food supply problems;

(2) to develop knowledge concerning food distribution systems so as to influence their operation and cause changes in the pattern of distribution whenever necessary in the national interest;

(3) to conduct studies in the demand and supply of food, particularly in relation to income distribution and effects of price movements for the development of a general Food Policy; and

(4) on the basis of analysis of information, to advise Government on short-term policies, in such areas as foreign exchange allocation for food imports, the determination of farm-gate and market prices, and inter-governmental dealings in food.

Why monitor supplies and prices? What benefits is the country or society likely to gain from this activity? Jamaica carries inadequate stocks of foodstuffs and depends to a large extent on imports. With the critical nature of worldwide food supplies, this exposes the country to the risk of shortages which at the least could be very inconvenient to the society.

On the other hand there is the growing concern for social justice and the more equitable distribution of resources of all kind. The traditional market structure frequently proves inadequate to the task of meeting the requirements of a changing society, and must be modified to achieve the new purposes and objectives.

A properly devised monitoring system can substantially help in the more efficient allocation of food resources. It can be the instrument for harmonizing agricultural production strategies with import policies and the allocation of scarce foreign exchange.

Informed by nutritional considerations, it can be an instrument for raising the nutritional status of the population and for achieving the change in dietary habits so necessary to the enhancement of agricultural and agro-industrial development.

It is estimated that between seventy and eighty percent of the business of general wholesale and retail shops is in food items. The systems of distribution are surprisingly complex. They lead to very high prices and a good deal of waste which the country can ill afford.

One of the objectives of a monitoring system should be the development of knowledge of the structure of distribution so as to correct these inefficiencies for the benefit of the society. Too often, gluts in one area of the country exist while there are severe shortages not many miles away.

Overall shortages occur which could have been prevented if the mechanism for projecting supplies and requirements had been operating. These shortages seriously affect price structure.

One of the basic objectives of monitoring and projecting supply and demand requirements is the attainment of some measure of control over price movements. It is hoped that in time, this will lead to the structuring of supplies and prices to the overall advantage of the society.

Monitoring Supply Movements. Problems of monitoring the movements in available supplies vary with the time horizon. Table 2 attempts to identify these problems and to look at the usefulness of the data which may be collected for various time spans.

Effective monitoring requires that minimum levels of supplies be established. In order to do this a "basket" of basic items from all three sources, imports, processing and agricultural production will be compiled. In setting minimum levels, population, income and occupational structure are relevant considerations particularly if the levels are required to reflect not merely the established consumption pattern, but nutritional and social equity considerations.

Table 2: Monitoring of availability

Time	Data Source	Accuracy	Usefulness
Now (1)	Stocks held by retailers of all types.	Theoretically can be very accurate, but the collection of data would have to be from a large number of sources. Hence sampling presents practical difficulties.	Not high in terms of policy decisions. Main value is in assessing the quality of the predictive data sources.
A few days from now (2)	Stocks held by wholesalers, and in A.M.C. Estimates of dates of output of manufacturing and processing plants. Estimates of rates of harvesting and slaughtering, mature produce.	Still can be reasonably accurate, subject only to major 'disasters'. Fewer sources of data but still very numerous.	Value would be in making decisions about releasing emergency stocks, if such exist, or accelerating clearance of already imported items.
A few weeks (3)	Longer term estimates of output of manufacturing and processing of materials to hand. Crops and livestock nearing maturity. Imported goods already landed or unloaded - not yet cleared port of entry.	Unexpected weather could cause inaccuracy and labour activity could cause delay and possible spoilage. Mainly the same data source as just above.	Same as above, and also possibility of emergency importation to avoid or reduce duration of shortage.
Months (4)	Manufacturers estimates based on anticipated supplies of raw materials. Farm projections based on already living animals, crops. Imports, licensed *and ordered*. Orders in various states of processing/fulfilment.	Now subject to all sorts of inaccuracies. Shipping delays, weather, strikes, etc. However, data sources are fewer and easily tapped - Trade Administrator's Department, licences, Ministry of Agriculture Data Bank, food processors.	The time-frame now enables policy makers to consider activities to correct shortages or gluts. However, there is already some risk of sound decisions going wrong because of inaccuracy.
Several months and longer (5)	Manufacturers' long-term projections. Applications to import. Farmers' intention to farm and breed.	Accuracy in magnitude and timing becomes much less precise.	Timing is appropriate for less direct intervention.
Years (6)	Intended setting up or expansion of industries. Bringing new land into agricultural use. Improvement of water, power, etc., supplies and distribution.	Beginning to be vague and subject to very considerable change.	Valuable for broad policy making and intervention of wide context.

Initially then, supplies monitoring would recognize:

(a) overall population size and the age structure of the population;

(b) employment and occupational pattern of the population;

(c) income levels and income distribution;

(d) tastes/traditional eating habits;

(e) economic factors -
  (i) agricultural development strategy,
  (ii) employment effects of import substitution,
  (iii) foreign exchange availability,

(f) social and political factors -
  (i) level of State involvement in production and distribution,
  (ii) social equity considerations.

The mechanism for monitoring will be a function of prevailing conditions. In Jamaica there is now only one importer of basic foodstuffs, the Jamaica Nutrition Holdings Limited, some twenty distributors, about one hundred wholesalers, just under five hundred supermarkets and an estimated thirteen thousand retail shopkeepers. There are about twenty-five food processors and probably one hundred and fifty thousand farmers who sell to an estimated fourteen thousand "higglers" and in over one hundred parochial markets.

Figure 3 illustrates the overall system for all three types of food sources.

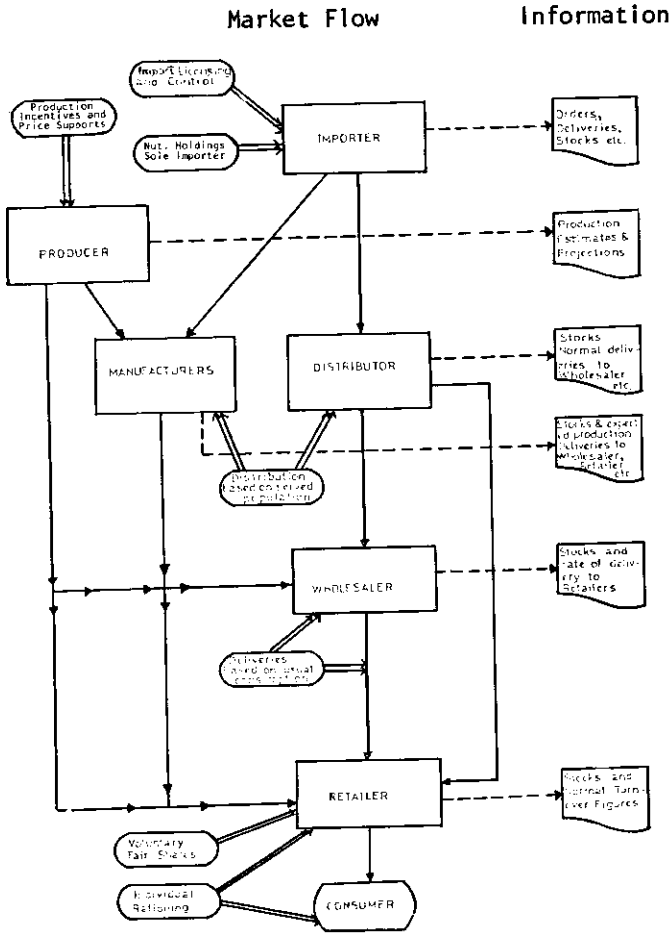

Figure 3: Food supplies and prices monitoring system

Information will be obtained by field officers from all distributors, wholesalers and large supermarkets, concerning stocks and movements of foods inwards and outwards. Some twenty-two basic articles are involved. At the head office accounts will be kept for each of these items on the basis of defined geographical areas. Other accounts will be kept for individual distributors and wholesalers in order to reconcile flows from and to these establishments.

In addition to information from large retail shops, a sample of small shops will be surveyed on a rotating sample basis. The purpose is to reconcile flows from wholesalers to retailers with what small retailers report as their receivals and sales.

Economists and statisticians from the Food Intelligence Division will establish minimum levels of supplies for the country as a whole, and for geographical areas served by wholesalers. This will be done on the basis of population concentration and structure, desired nutritional standards, levels of income and the ability of the agricultural sector to produce either items now imported or suitable substitutes.

Based on information received, a three-month projection will be made monthly of supply availability and corrective action recommended when these projections indicate impending problems. Annually, recommendations will be made on the volume of items to be imported.

The system for obtaining data on supplies of locally produced agricultural food items, has not yet been devised, but a team of systems analysts from the Government's Central Data Processing Unit has been assigned to this task. This is the most challenging area of the system, and involves close collaboration with a number of agencies, chief among which is the Ministry of Agriculture.

In the interim, data collected from the Agricultural Marketing Corporation on the volume and value of purchases, sales, importation and export of over fifty food items on a monthly basis for the five-year period 1973-1977, is now being computerized for initial studies.

Demand Supply Studies. There have been a few studies on food demand. These have been done chiefly by economists attached to the University of the West Indies. Due to lack of data of sufficient detail, all these studies have had to be based on highly aggregated data. In addition the writers have tended to

explore the possibilities of using techniques developed in more advanced economics on an experimental basis. This places quite severe limits on their application for policy formulation.

CONCLUSION

The critical supply situation of food in the Commonwealth Caribbean, and indeed in the world, and the fundamental importance of food and nutrition in the development of Third World countries, places a grave responsibility on authorities to fashion effective delivery systems to meet the needs of their emerging nations.

Creating monitoring systems as "early warning" devices and as a means of solving some of the problems which are inherent in the traditional distribution systems, is one of the strategies which may be used to complement others already in operation.

Monitoring of food supplies and prices should be seen not as a passive observation of movements in quantities and prices, but rather as a positively directed activity with clear objectives, the chief of which is the formulation of policy to attain stated social, economic, nutritional and political goals. ▲

CAJANAQUOTE

"The trend towards the use of an increasing number of products from the sea makes it particularly important for us to study the various toxic organisms, particularly those which might contaminate and poison our food."

- Dr. Henry Lowe
College of Arts, Science and Technology, Jamaica

FOOD AND NUTRITION IN NATIONAL DEVELOPMENT PLANNING*

by

Curtis McIntosh

Food shortages, famines and persistent under-nutrition continue to plague mankind even in the fourth quarter of the twentieth century in spite of the phenomenal technical advances in food production, food distribution, communication, health and environmental control. The situation gives rise to grave concern on the part of all those involved in improving the food and nutrition status of communities.

While the Caribbean Region has been spared the abysmal conditions under which a large proportion of the world's peoples live, it is certainly not immune and the appropriate steps need to be taken to forestall such occurrences.

FOOD AND NUTRITION IN NATIONAL DEVELOPMENT PLANNING

Commenting on "The Will to Economise", Professor Sir Arthur Lewis in his internationally-famed book "The Theory of Economic Growth" wrote:

> *"Nature is not particularly kind to man; left to herself she will overwhelm with weeds, with floods, with epidemics and with other disasters which man wards off by taking thought and action. It is by accepting the varied challenges presented by his environment that man is able, in innumerable ways, to wrest from nature more product for less effort."*

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*This paper was presented at the National Seminar on Food and Nutrition Planning, Antigua, 1-2 June 1978. Dr. McIntosh is Agricultural Economist (Programmes and Training) at CFNI, based at the Trinidad Centre.

This quotation supports the view that development planning is concerned with the systematic elimination of the various obstacles which militate against the right of all segments of the population to a full and enjoyable life. Development planning requires *thought* and *action*. Indeed, it is not confined to Government Ministries but pervades the whole community. Development planning is concerned with opportunities for gainful employment, satisfactory income levels equitably distributed, relatively stable prices, nutrition and health status, suitable habitat, adequate transportation facilities, favourable balance of payments, education and recreation, and such other amenities necessary for social and cultural well-being.

The elements included in the social welfare function are all closely interrelated. The interrelationships among these are so strong that it is often felt that policies and programmes directed to selected areas are sufficient to achieve the overall goals. For example, policies aimed at increasing incomes and ensuring equitable distribution among the population or those aimed at maintaining relatively stable prices are pertinent to the improvement of the nutrition and health status as is a policy of supplementary feeding. Experience has shown, however, that approaches such as these do not always guarantee success. Many studies have revealed the existence of persistent under-nutrition among large segments of the population of countries which had experienced rapid rates of economic growth. In the light of this, food and nutrition ought to be given due consideration in development planning. This is even more important when it is realized that good nutrition, while being a desirable end in itself, has important contributions to make in terms of health and productivity. The economics of food and nutrition should not be ignored in any development strategy. A food and nutrition policy must be incorporated into the overall development plan.

WHY A FOOD AND NUTRITION POLICY?

The need for the formulation and implementation of measures designed to provide all segments of the population, within a specified time, with the means essential for satisfactory nutrition and dietary well-being derives from the current unsatisfactory state of food and nutrition in practically all Caribbean countries. The major nutritional problems include:

1. *Energy-Protein Malnutrition:* This is due mainly to inadequate food consumption, predominantly energy and to a lesser extent protein insufficiency in the diet. Those affected are children under five years, the school-children, pregnant and lactating women and working males.

2. *Anaemia:* Iron deficiency anaemia is common and affects mainly children under-5 and adult women. Because nearly one-half of pregnant women are anaemic, this may result in complications for mother and child at childbirth and afterwards. Those affected are children 1-4 years, females over 16 years and pregnant and lactating women. Reasons for anaemic are: inadequate iron and food consumption due to low income, dietary practices, some iron malabsorption due to illness and inability of children to cover their own needs and those of gut parasites with iron.

3. *Obesity:* It may seem somewhat paradoxical in the light of the above statement that obesity should be a problem in the Region. Although the extent of the problem is ill-defined, it is clear that it is largely an affliction of the middle-aged Caribbean woman which bears a significant relationship to the high prevalence of diabetes mellitus in the Region.

The description of the nutrition problems in the Region points to the dual problem of energy-protein malnutrition on the one hand and obesity on the other. This situation highlights the crucial problem in the food sector - a distribution problem. Available data indicate that the total energy supplies of all Caribbean

countries vary from being about equal to the needs of the population to as much as a 30% "over-supply". Protein supplies are always well above requirements.

It is, therefore, the inequity in the distribution of the available nutrients that poses a problem. A high proportion of households, often well over 60%, does not get adequate supplies of food energy. A somewhat smaller proportion of households (a subset of the preceding group) does not meet their protein needs. A deeper diagnosis of the distribution problem reveals that one of the basic causal factors is the maldistribution of income among the population.

Finally, the foodstuffs making the greatest contribution to total nutrients consumed in the Region are imported. The cost of this dependence could be quite high.

FORMULATION AND IMPLEMENTATION OF A POLICY

The basic steps in the formulation of a policy includes: (a) problem identification and description, (b) statement of objectives, goals and targets, (c) identification of alternative projects, (d) selection of projects and programme development and (e) coordination of programmes with other sectoral programmes. Having formulated the policy, implementation must take place followed by evaluation and revision as appropriate. Particular attention, however, should be paid to the question of implementation since this is the very essence of the planning process.

There are certain necessary conditions that must be satisfied for effective implementation of a policy. The request and support by the Government for the formulation of a food and nutrition policy suggest a political commitment to deal with the problems of food and nutrition. There is the possibility that the strategies prescribed by the planners may run counter to political intentions. In such a situation it is hardly likely that the policy will be

implemented without modification. Development planners must bear in mind that the policy should be acceptable to the Government in power. It must be politically feasible.

Another important condition to be satisfied is the financing of the projects. Projects to improve the nutritional status by their very nature are not usually attractive investment opportunities since the pay-offs are often non-monetary and are extended over the long-term. Compare, for example, a national school-feeding programme with a meat processing plant. The latter stands a better chance of being financed by the State and other financial institutions. Unless special provisions are made for allocating to food and nutrition projects an appropriate part of the budget, the work of the planners would have been futile.

Very often budgets are approved for development projects but long gestation periods are experienced before initiation of the projects. A major constraint here is administrative lethargy. Administrative performance has not always been satisfactory even where projects are within individual ministries or departments. Food and nutritiсn projects with their interministerial dependence are apt to present greater administrative problems. In this connection food and nutrition projects might be expedited by the employment of a Food and Nutrition Projects Administrator supported by a secretariat with the authority to eliminate administrative 'red tape'.

Another constraint in the implementation of food and nutrition projects is the availability of manpower resources at all levels - technical, managerial and skilled workers. Educational deprivation has led to serious imbalances in the supply and demand relationships for particular personnel.

Also important for effective implementation of the policy is the availability of appropriate technology. Many food and nutrition projects require the development and/or adoption of technology

not already known and practised in the society. Technology developments are time-consuming and the urgency with which food and nutrition problems should be dealt makes the availability of technology a prime concern in implementation.

Implementation could hardly be considered effective if it failed to satisfy those to whom the policy is directed. It is important therefore that those to be affected by the policy are well informed of the effects of such a policy and the ways in which they could cooperate for its successful implementation. Indeed, they should be consulted during the development stages of the policy.

The first major condition to be fulfilled for effective implementation of the policy relates to the resolution of conflicts which inevitably arise in the course of implementation. Two important sources of conflict exist. Food and nutrition projects often run counter to the profit interests of private agencies. Consider, for example, the outcry of these sectors to a consumer education programme resulting in reduced sales of their product. The result could be the lay-off of workers whose nutritional status is heavily dependent on that source of employment. Then there is the labour-management conflict which tends to increase costs and make for delays in the completion of projects. Food and nutrition goals and targets might not be realized because of labour-management conflicts. Effective implementation requires mechanisms for resolution of these types of conflicts.

Given political acceptability, adequate finances, administrative support, manpower resources, appropriate technology, good communication and mechanisms for conflict resolution, food and nutrition projects should find implementation pathways straight, smooth and short. ▲

NEWSPAPER CLIPPINGS

CORNWALL'S HEALTH PROGRAMME ACCELERATED

From The Jamaica Daily News, 30 November 1978

The model health care programme for the county of Cornwall (Jamaica) moves into higher gear by the end of January when 24 recently completed health centres will be commissioned into service.

There are the first of 57 new centres to be built under the Cornwall programme which is one component of a national health programme funded with the assistance of the World Bank. In addition to the 57 health centres which are to be built, 28 existing ones are to be remodelled taking the total number in that county to 128.

A network of health centres is expected to form the nucleus around which the Cornwall Health Programme will revolve. The programme will focus on delivery of primary health care services with priority on maternal and child health (MCH); family planning, and nutrition services. These services will largely depend on the work of community health aides (CHAs) and district midwives, operating at the community level essentially through home visits. They will be supported and supervised from the system of health centres which will also operate on a referral basis.

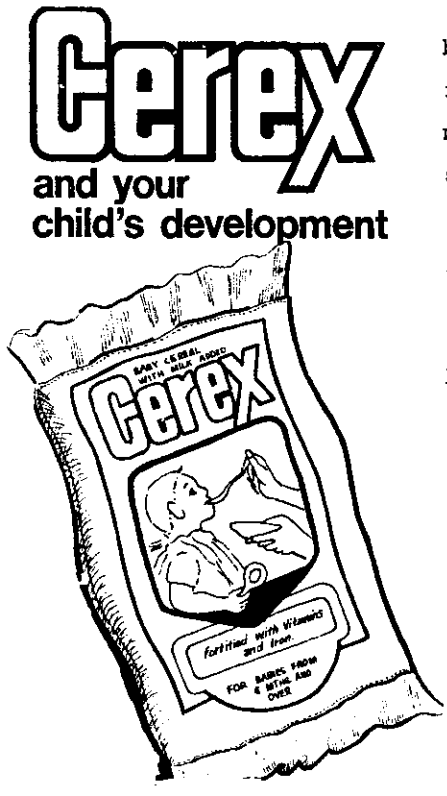
In keeping with this increase of health centres, some 687 members of the health staff have been trained over the past six months in the delivery of primary care services. The training programme took the form of intensive two-day workshop sessions with the overall objective of providing participants with broad-based training. Specialized training has also been provided to those staff members with a higher level of competence. These include the public health nurses who have received some training in psychiatry.

The training programme also deals with the formation of community health committees. It is proposed that each centre will have a health committee which will increase the level of community involvement.

BABY FOOD ON GUYANESE MARKET

From the Jamaica Daily News, 30 November 1978

The Guyana Pharmaceutical Corporation (GPC) will shortly be putting a new weaning food for babies on the local market.



The product "Cerex" which will be tested on the local market, in the first instance, is a weaning food made from corn, rice, soyabean and skimmed milk powder.

"Cerex" has been developed by the Corporation's Nutrition Unit.

The product has already been placed in a few shops throughout the various regions of the country by the Corporation's Market Research Division and a further 20,000 packages will be put on the market between the current week and April next year. Over the next few months the Corporation hopes to make a sound assessment of the public's response to factors such as quality, price, packages and directions for use.

Meanwhile, another product manufactured by the GPC is expected to go on sale on the local market shortly. "Serota" a cherry concentrate with added vitamin C is expected to be a substitute for a tonic wine which has become popular with Guyanese.

Editor's Note: Guyana and other Caribbean countries have many fresh fruits that naturally contain vitamin C. Therefore, there is no nutritional need for "tonics" with vitamin C added. ▲

'6 WEEKS' LEAVE NOT ENOUGH

The Jamaica Daily News, 25 January 1979

The Junior Doctors Association of Jamaica (JDA) has said it welcomes Government's move to grant maternity leave to all working mothers but believes the six weeks' leave being considered is inadequate.

The Association said *any period less than three months after delivery ran counter to the vital need for mothers to fully breast feed their babies in order to ensure proper nutrition and to guard against gastroenteritis and other infectious diseases.*

The doctors pointed to the Health Ministry's campaign that mothers breast feed for four months before adding other foods and called for Government to grant at least three months maternity leave with pay to all working women. ▲

CAJANAQUOTE

"Maybe we should give formula to mothers and breast milk to infants."

- Dr. Naomi Baumslag

NEWS BRIEFS

DR. HECTOR R. ACUÑA RE-ELECTED PAHO DIRECTOR

Dr. Hector R. Acuña has been re-elected Director of the Pan American Health Organization for a second four-year term. The election took place during the third day of sessions of the XX Pan American Sanitary Conference which met in Grenada in September to review the policy, programmes, and budget of PAHO.

Dr. Acuña was born in Mexico in 1921. He received his medical degree in 1947 and a master's degree in public health at Yale University in 1951. He joined PAHO in 1954, and for the following eight years served in the Dominican Republic, El Salvador and Guatemala. In 1962 he joined WHO's Regional Office for the Eastern Mediterranean, and was WHO Representative and Chief Medical Adviser in Pakistan. In 1971 he was appointed Director of International Affairs in Mexico's Ministry of Health and Welfare, a post he held up until his election as PAHO Director in 1974. ▲

ANTIGUA WORKSHOP: COMMITMENT TO FIGHT AGAINST MALNUTRITION

How does a nutrition worker get nutrition messages across to community groups? Can a food supplementation programme be used to reinforce good nutrition habits, or will it create a taste for imported foods? How can a country evaluate its nutrition programmes, both applied and educational?

Answers to these and other questions were explored by participants, organizers and resource persons at a three-day nutrition education workshop held in St. John's, Antigua from 10-12 January 1979. CFNI and the Antigua Ministry of Health and Information cooperated in organizing the training session which

brought together personnel from home economics, education, public health, agricultural extension, social work, community development, hospitals, media, public and private nursing and family life organizations.

Participants worked step-by-step through the development of a nutrition education plan, from the collecting of information on current nutrition needs, food habits and attitudes, through the establishment of objectives, formulation of messages and choice of methods and media to the evaluation strategies. ▲

CFNI COURSE ON PROGRAMME IMPLEMENTATION

CFNI is conducting an intensive three-month course on the implementation of food and nutrition programmes for participants from those Caribbean countries which are in the process of implementing or actively pursuing the formulation and establishment of food and nutrition policies. Special consideration will be given to the LDC's where a lack of manpower resources constrains the development process. The course, which includes eight participants, is designed to increase the capabilities of middle-level personnel in government service who are responsible for the implementation of specific food and nutrition projects. On completion of their training it is expected that participants will return to their former positions. As a result, the preliminary course outline is being altered and restructured to meet the needs of individual participants. The course, which began on Wednesday, 14 March, includes participants from Antigua, Barbados, Belize, Dominica, Guyana, St. Kitts-Nevis-Anguilla and St. Lucia. ▲

DIET MANUAL FOR CARIBBEAN IN FINAL STAGES

Physicians and dietitians from the Bahamas, Barbados, Guyana, Jamaica and Trinidad and Tobago met from 3-8 December 1978 in Trinidad and Tobago to review, discuss and finalize the series of diets prepared and presented in the draft document "A Diet Manual for the Caribbean". The diet manual, a joint project of CFNI and the Caribbean Association of Nutritionists and Dietitians includes standard diets as well as those modified in terms of nutrient composition to provide for the specific needs of patients suffering from certain nutritionally-related diseases.

Publication will take place during 1979. ▲

TECHNICAL GROUP MEETING: "TECHNIQUES TO PROMOTE BREAST FEEDING"

In 1978 a Technical Group Meeting on "Feeding the Weaning Age Group" resulted in the establishment of guidelines which included a strong emphasis on home preparation of weaning foods from the family pot, and included a statement on the importance of breast feeding preferably for the first year of life. It was recommended that a Technical Group Meeting should be held early in 1979 to establish guidelines to promote breast feeding in the Region, not only to support the follow-up activities of this previous meeting, but because participants at that meeting indicated that in many of their countries breast feeding, if done at all, is stopped after as short a period as one month, or is supplemented from a very early age.

The Technical Group Meeting on "Techniques to Promote Successful Breast feeding" is scheduled to be held at the end of May 1979 in Barbados as part of our IYC activities.

It is being convened by CFNI in collaboration with the Geneva headquarters of WHO who have held previous seminars on the subject in other parts of the World. The Caribbean Technical Group Meeting is somewhat unusual in its emphasis on promotion.

The objectives of the meeting are: To assess the epidemiology of breast feeding in the Caribbean; identify factors responsible for the low prevalence of unsupplemented breast feeding; assess how Caribbean countries are trying to combat the problem, and draw up guidelines to promote breast feeding.

It is estimated that about 25 participants would be invited, plus staff from PAHO/CFNI, WHO and UNICEF. The participants will be at a high technical level in their respective countries. Professor D.B. Jelliffe and Mrs. Jelliffe, and Dr. L. Mata from Costa Rica will be three of the consultants. Many readers will recall Professor and Mrs. Jelliffe from their days at CFNI (Dr. Jelliffe was Director from 1967 to 1972) and some will recall an earlier period when Dr. Jelliffe was Professor of Paediatrics at UWI. ▲

CHILD HEALTH AND FEEDING MANUALS PUBLISHED IN BARBADOS

The National Nutrition Centre of Barbados has recently published two useful handbooks for teachers and other personnel involved in child health. "A manual for health personnel" provides technical information for the professional on all aspects of the health of children within the family and beyond, including nutrition, prenatal care of the mother, the growth and development of the child, management of common illnesses of childhood and school health services. It also gives details of the location of health centres, family planning services and child health clinics in

Barbados, and includes a chapter on the components, scope and function of the country's public health services. A section has been devoted to descriptions of some traditional beliefs and superstitions surrounding pregnancy, labour, childbirth, breast feeding and child rearing which will help the health worker to recognize these myths in order to provide appropriate counter-information. Material on child feeding, which does not constitute a part of this manual, is contained in the accompanying "Feeding manual". Covering infancy to adolescence, it deals with nutrition in pregnancy, nutrition of the newborn and infant, breast feeding and the characteristics of growth, development, feeding and play for the years 0-15. Both manuals are copiously illustrated with photographs and other visuals. ▲

CAJANAQUOTE

"Nutrition educators often fail to perceive the learner's values when promoting the benefits of a different type of diet. For example weight loss is not always ipso facto a good thing especially if it means a life of reduced pleasure for the individual; yet a moralistic tone accompanies much teaching on this problem. While spending food money on soft drinks or candy may seem irresponsible to the educator the low income mother may perceive this as the only way she can provide material pleasure for her children."

- I. Rosenstock
In "Nutrition Behaviour and Change" by Helan H. Gifft

BOOK REVIEW

GARDENING FOR BETTER NUTRITION

Pacey, Arthur, comp. London, England, Oxfam and Intermediate Technology Publications, 1978. 64 p. illus., £1.60 net (£2.16 airmail).

This is an unusual book as it both gives practical advice on establishing a home garden and also discusses the organization of programmes for promoting home gardening in communities.

It points out that 'agricultural development is often planned primarily as part of economic development, with extension and back-up services designed mainly to help the community to earn a larger money income, and to direct more agricultural produce into the national market economy'. An important topic is the rôle of home food production in enhancing the nutritional status of family members and helping the family budget.

Encouragement to home food production has rarely come from Ministries of Agriculture but has often developed through the health services. This health oriented approach to gardening has developed rationally from health education and from nutrition rehabilitation centres. The voluntary agencies have been in the forefront of these developments and this book draws heavily on the experience of OXFAM in different parts of the world.

Community participation in gardening projects and also, most importantly, the rôle of women is also discussed. The typically important part that women play in food production in much of Africa is contrasted with the less influential rôle of women in this respect in Asia. The implications of this difference to planning gardening projects in different cultures is described.

The final section deals realistically with the basics of running a home food garden. This reviewer, who is currently attempting this without conspicious success, found this section very useful and practical.

A useful feature of the book is an annotated bibliography for further reading on the subject, including three books which are particularly relevant to the Caribbean:

(1) *Vegetable Gardening in the Caribbean Area.* U.S. Department of Agriculture Handbook no. 323. Washington, D.C., 1967.

(2) *A Notebook of Tropical Agriculture* by R.C. Wood. Trinidad, College of Tropical Agriculture, 1957.

(3) *Succession (Rotation) in Vegetable Growing* by T.W.A. Carr (Farmer's Bulletin). Trinidad & Tobago, Ministry of Agriculture, Lands & Fisheries, 1968.

This book is strongly recommended to all those concerned with, or interested in, the theory of gardening for better nutrition, and in organizing programmes for promoting home gardens with the aim of improving health, gaining agricultural self-sufficiency or enhancing women's rôle and status.

It is, however, imperfectly bound and fell to pieces on the first reading, which suggests that more adequate binding is necessary especially if the book will be heavily used.

J. Michael Gurney

CAJANAQUOTE

"Overeating is the most worthy of sins. It neither breaks up marriages nor causes road accidents, nor pollutes the environment nor even makes much noise."

- *Richard Gordon*
In "No thanks, I'm on a diet"
Highlife (British Airways)
October 1977

FROM THE EDITOR

HIDDEN DANGERS IN FOOD

The modern consumer rarely, if ever, questions the safety or nutritional value of foods bought at the market place. The unspoken assumption is that they will keep him from hunger and provide the means whereby everday tasks may be pursued and illness kept at bay.

But modern methods of processing and refining may be potentially harmful to food because of fertilizers, pesticides and additives used in agriculture or food preservation.

Local commonly-grown plants such as the ackee, can also be potentially hazardous if eaten improperly, as described on page 156. Many of the indigenous herbs and plants which are widely used in different parts of the world for food and medicinal purposes, can pose a significant risk to health and well-being. Some are edible and can make a useful contribution to the diet, as we read on page 150 , but some have never been tested to discover whether they contain toxic substances, and their effects on the body are either not fully understood by or unknown to the casual user.

Our "Newsbriefs" make mention of a PAHO/WHO Fellowship which facilitated the study of new and emerging techniques in the analysis of herbs and plants and related food items.

This Fellowship, awarded by CFNI, is an example of the current trend towards the in-depth study of traditional plants which takes into account the factors which influence their use, the attitudes and beliefs surrounding them and their place in the total socio-cultural pattern, as well as toxicological analysis and an assessment of their value in the pharmaceutical and medical fields.

It illustrates a basic premise which should underlie efforts at monitoring food supply and ensuring a basic diet for a country's population. Whether a food be a commercially manufactured item, an agricultural product or a plant used as therapeutic agent or general tonic beverage, if its use threatens nutritional status or the health and well-being of consumers, strict controls are necessary.

Food standards protecting the quality of foods must be rigidly enforced, far-reaching nutrition education programmes developed and an efficient reporting system for herbs and plants established. This would ensure the easy identification and treatment of illnesses seemingly related to the use of plants, and give information as to their proper use.

The development of more appropriate methodologies for the evaluation of local foods and indigenous herbs which are widely used throughout the Region will be a valuable means of promoting improved nutrition and health.

THE EDITOR ▲

CHINA PREPARED TO MASS-PRODUCE FAST FOOD

Factory-made dried noodles, ready-to-serve meats and sausage, dehydrated soups and bean curd, and plastic-wrapped processed food will replace the traditional Chinese cuisine, according to the New China News Agency. The goal: "freeing the working people and scientific and technical personnel from household chores."

- INTERCOM
August 1978

FROM OUR READERS

THE EDITOR, CAJANUS

Dear Sir/Madam:

I just recently received a copy of *Cajanus*, Volume 11, No. 2 (1978). My attention was caught by the short announcement about the anemia study being conducted at CFNI. We are presently engaged in the study of the comparative effectiveness of iron and iron/folic acid supplementation but unlike CFNI our subjects are female industrial workers and our interest is to relate iron nutriture with work output.

I would be keenly interested in exchanging notes about the anemia studies. Perhaps, in the future some kind of a cross-cultural study on the functional significance of varying blood levels of iron can be conducted.

Thank you for keeping me on the mailing list for *Cajanus*.

Cecilia A. Florencio, Ph.D.
Professor of Nutrition
University of the Philippines
Quezon City
Department of Food Science and Nutrition

Editor's Note: Dr. Florencio was referred to the graduate student from Cornell University who conducted the study in collaboration with the Government of Jamaica and CFNI.

I have found your *Cajanus* to be a valuable resource material during my years in the Department of Health and Welfare of Canada. In particular it was helpful to demonstrate similarities in basic principles of nutrition programs in spite of the marked geographic,

climatic and cultural differences. On this basis I consider that *Cajanus* should be a useful resource for my classes at Washington State University.

J.E. Monagle, M.D.
Associate Professor
Associate Home Economist
Washington State University
Pullman, Washington
U.S.A.

Upon my return from a series of rather extended visits away from Washington, I had the opportunity to review an accumulated number of issues of *Cajanus*. Once again I was impressed with the increasing quality of the material included in *Cajanus* and was struck by its applicability not only to problems in the Caribbean but to situations elsewhere in the world.

You and the staff of CFNI are to be complimented on the diversity, originality, and quality of the maturing *Cajanus* publication.

Dr. Merrill S. Read
Nutrition Research Unit
Pan American Health Organization
Washington D.C.
U.S.A.

UPDATE ON CHILD NUTRITION: AN IYC SPECIAL SECTION

YEAR OF THE CHILD: MAKE IT THE START OF BETTER NUTRITION FOR YOUR CHILDREN

by

Joan Peters

WHAT TO DO WHEN YOUR YOUNG CHILD HAS DIARRHOEA

Often a baby or young child will develop diarrhoea. Breast-feeding in early infancy and up to at least one year can reduce the frequency of such attacks. It's also important to keep the baby's cup and spoon very clean and to use clean boiled water for him to drink. A clean house and yard will also help prevent the infections which cause diarrhoea.

Feeding

Feeding a young child with diarrhoea takes a little special care. The child needs good nourishing food. Early treatment of diarrhoea by giving extra liquid by mouth is most important. During an attach of diarrhoea, the body loses a lot of liquid. The water and salts lost from the body must be put back. If a child's body becomes very dry from the loss of water during diarrhoea, he may die. So you must pay special attention to the amount your child drinks.

A Special Drink for Diarrhoea

CFNI suggests you give your young child at least four glasses a day of a special drink for diarrhoea. If the child is passing very frequent and watery stools, give him even more. Start the drink as soon as possible. Do not stop giving it even if the child is vomiting. Some of the liquid will be retained and quite soon the vomiting will stop.

Here are the directions for the drink:

- ½ litre (about 1 pint) of clean water, boiled and cooled if possible.
- A pinch (using thumb and *two* fingers) of salt.
- A scoop (glucose is best - using *three* fingers) of sugar.
- A pinch (using thumb and *one* finger) of baking soda.
- Add lime juice if liked by the patient.
- Add coconut water if available.

Don't forget...start this drink just as soon as the child develops diarrhoea. *Early* treatment is very important.

The Ministries of Health in some countries are packaging this special drink for diarrhoea to make it easier to mix and give to the child. Just follow the instructions on the packet carefully.

Danger Signs

If your baby or young child runs a fever, has a dry tongue or seems weak; if he passes little or no urine, has sunken eyes and no tears, or blood in the stools, take him for medical attention *at once*. These are danger signs. Ignoring them could mean death from dehydration.

Start Feedings Soon

Just as soon as your child can take food again, start to feed him. The foods you give should be soft and smooth and must not contain any fibre or matter that is hard to digest, such as tomato skins and seeds or skins of beans. Feed mixes of foods without added spice or pepper. Use some foods from animals.

Continue feeding even if it appears to increase the number and amount of stools. Your child is retaining some nourishment from the food and this will help him recover from the diarrhoea. The benefit from this extra nourishment is much greater than the

harm that may seem to be done by the possible increase in number and amount of stools. Remember: it is most important that you feed your child throughout an attach of diarrhoea.

YOUR SCHOOL CHILD NEEDS NOURISHING MEALS

The early years of childhood, especially those from six months to about three years, are years of great nutritional need. The weaning age child is especially vulnerable to malnutrition and infections at this time. Many nutrition programmes are developed to help children who are considered to be "at risk" of malnutrition.

After a child has passed these years and has started to go to school, there may be a tendency for the mother, even the most loving and concerned one, to breathe a sigh of relief and concentrate her nutrition concern on the younger baby or babies in her care. It is true that the child of four, five or more years no longer needs as many nutrients proportionally to his size as he did when younger. He does, however, still need nutrients: to grow; to provide energy for sports and study; to keep him healthy, intelectually alert and interested in learning. Children who are not well-nourished do not do well in their schoolwork, are often tired and dull, and generally do not enjoy their school years.

Breakfast is Important

Many school teachers say that they have students who come to class day after day with no breakfast. After more than 8 hours without food the body needs replenishment. A thick porridge with milk and dark brown sugar, a piece of fruit and a drink will help your child start the day with energy to spare. If the child is to be away from home at lunch time, be sure he takes along some foods that are nutritionally good for him to eat. Fresh fruits and vegetables, with a piece of bread or a roll, a hard-cooked egg or perhaps a cheese sandwich are all nourishing foods. If the school has a feeding programme, find out what foods are served. If milk

is given, encourage your child to drink it. A nourishing hot meal or a well-planned lunch from home is much better for your child than the soft drinks, sweets and icicles which are often sold by vendors and stalls near or at the school. If your child spends money on these things, he will not be as likely to eat a nutritious lunch or snack. These sweets provide energy but none of the other important nutrients which your child must have.

Dinner is the Family Meal

When your child comes home from school he should have a nourishing meal. A mixed diet is important for healthy minds and bodies. The meal cooked for the family (the family pot) usually contains a mixture of foods but they are not always chosen from different food groups. CFNI teaches the Multimix Principle of eating and cooking. Multimixes show us how to improve family meals. Here's how to make sure that the meals you cook for your family are nourishing. Choose one food from *each* of two or more of the following groups:

(a) STAPLE FOODS:

1. Cereal grains, e.g. rice, cornmeal and oats.
2. Roots and fruits, e.g., yam, Irish potato, sweet potato, cassava, green banana, breadfruit.

(b) LEGUMES:

Red peas, gungo peas, black-eye peas, cow peas and broad beans.

(c) DARK GREEN LEAFY OR YELLOW VEGETABLES:

Pumpkin, carrot, callaloo, dasheen, pear, bush cabbage, kale, pak choi and spinach.

(d) ANIMAL FOODS:

Eggs, fish, poultry, milk, cheese and meat.

Many of the meals we eat in the Caribbean include mixtures of these foods. An example is peas soup with pigs tail and flour dumplings, a favourite family meal. It contains food from groups

(a), (b) and (d). The addition of pumpkin to the peas soup improves the flavour and enables us to have group (c) included. The result is a more nutritious meal.

The meals which will give your school child and every member of the family the most nutrition are those in which each of the four groups, (a), (b), (c) and (d) are used. If you can use only two groups, choose (a-1) and (b). Or (a) and (d); (b) and (d); (b) and (c); or (c) and (d). *Do not* use only the two groups (a) and (c) as this mixture does not give enough growth foods.

FEEDING YOUR TEENAGER

The teenage years are important ones in the life of your child. Rapid growth, bodily changes and emotional ups and downs make this a time of stress. The need for nourishing food is greater than at any time since those first formative months and years when he was doubling and tripling his birth weight.

Nutrition and Athletics

Teenage boys and girls may be very interested in sports and games. Advertisements on the radio and in the newspapers may encourage you to buy special tonics and drinks to make your youngster a champion. CFNI nutritionists remind you that it's not necessary to buy special foods or drinks to make your youngster a better athlete. What is needed is a good mixed diet of foods with some extra amounts to provide for the energy demands of activity. Use the Multimix Principle of preparing meals. Choose one food from each of two or more of the following food groups: *STAPLES* such as cereals, rice, cornmeal, yam, sweet potato, green banana and breadfruit; *LEGUMES* such as peas and beans; *DARK GREEN LEAFY OR YELLOW VEGETABLES* such as pumpkin, callaloo, dasheen, kale, pak choi and spinach; and *ANIMAL FOODS* such as eggs, fish, chicken, milk or meat.

It's best to use foods from all four groups whenever possible. A teenage boy will need to eat as much food as his father because his growth demands are great. When teenagers eat away from home, they often choose soft drinks, sweets and snack foods that provide nothing but calories. Learning about nutrition should begin in the early years of childhood so that a child becomes accustomed to choosing food that is nourishing. You may find it helpful to encourage a child to examine the way he or she eats in the light of the needs for growth and athletic activity. Fresh fruits for snacks and fresh fruit drinks prepared at home provide the vitamins and minerals essential for good health. A teenager can experiment with home preparation of nutritious snack foods for himself and his friends.

Nutrition and the Teenage Girl

Teenage girls also have special needs for nourishing food. One nutrient which they often do not get enough of is iron. Iron is necessary to build the blood and prevent them from becoming anaemic. Iron tonics are not necessary if the girl eats dark green leafy vegetables such as kale or callaloo; peas and beans, molasses or dark brown sugar and meats especially kidney, heart and liver.

If a teenage girl is well-nourished during these years she will have a much better chance of having a healthy baby in the future. It is not wise for a teenage girl who is still rapidly growing herself to have a baby. Her baby might be born healthy, but her own nutrition needs will suffer. Spacing babies is important too. A mother's body will have a better chance of recovering between pregnancies if the time is not too short. Then the next baby will be born healthy, and her health will not be impaired.

Good nutrition is vital for both boys and girls during the teenage years. ▲

ORAL REHYDRATION IN DIARRHOEL DISEASES: A SIMPLE SOLUTION TO A COMPLEX PROBLEM

by

*Dinesh P. Sinha**

DIARRHOEAL DISEASES - A COMPLEX PROBLEM

Diarrhoeal diseases are one of the major problems affecting particularly young children in the developing countries. Millions of infants and young children lose their lives each year due to this disease alone. It has been estimated that in 1975 there were about 500 million episodes of diarrhoea in children below five years of age in Asia, Africa and Latin America, resulting in 5-18 million deaths[1]. In widely differing cultures, wherever the disease has been investigated the highest prevalence has been found to be in children below two years of age (Figs. 1,2,3,4). Among the common childhood illnesses diarrhoeal diseases have been found to have most detrimental effect on the nutritional status of children[6,7].

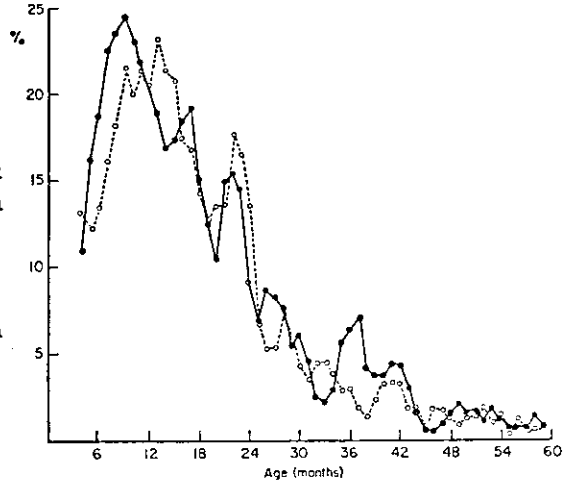


Fig. 1 Percentage of Children having at least One episode of diarrhoea per month, by age (3-month moving average) ● males; ○ females; Lawrence Tavern, Jamaica 1964-1967[2].

*Dr. Sinha, Medical Officer of the Caribbean Food and Nutrition Institute, joined the staff in September of 1978.

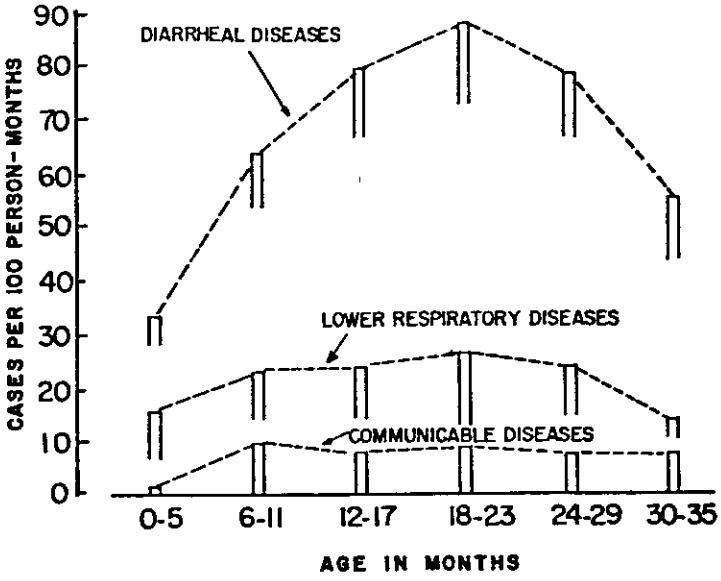


Fig. 2 Infectious diseases per 100 person-months among 45 cohort children observed from birth to age 3 years. Reapparance of symptoms after 24 hours of termination of an illness identified a new case. Santa María Cauqué, Guatemala, 1964-1969[3].

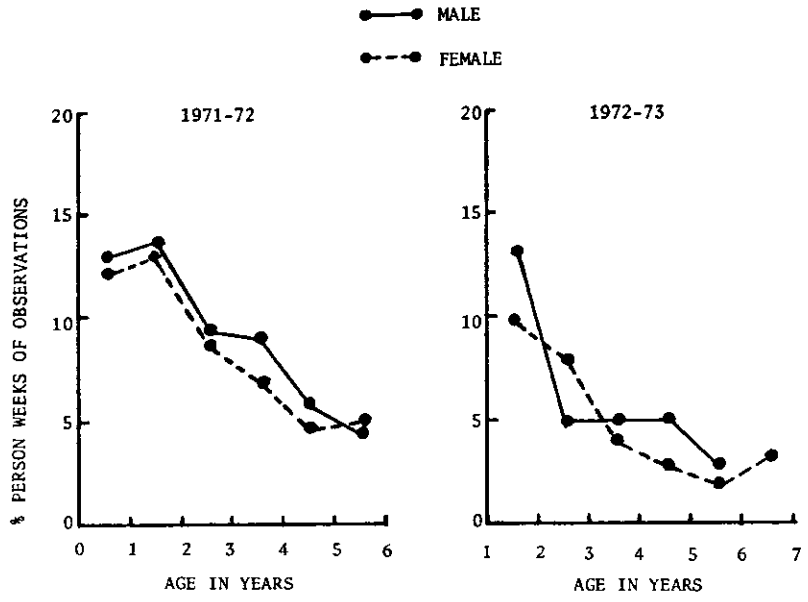


Fig. 3 PREVALENCE OF DIARRHOEAL DISEASE BY AGE AND SEX, ICHAG, INDIA[4]

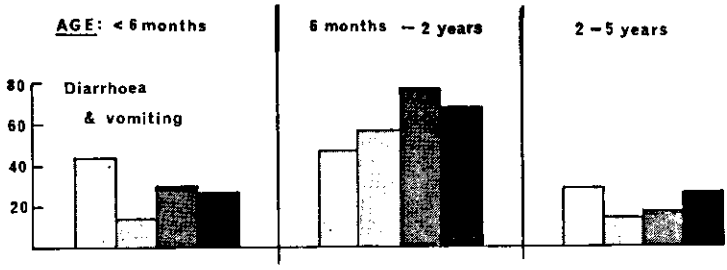


Fig. 4 Prevalence per 3 months of diarrhoeal diseases by age and season in Keneba, The Gambia, 1962-63[5]

The disease is also a major problem in the Caribbean[8,9,10] as shown in Tables 1, 2 and 3. In this part of the world it is commonly known as "running belly". The other terms used quite commonly by professionals as well as laymen are "Gastro" or "Gastroenteritis". The term "gastroenteritis" is apt to be used as a more defined disease entity as such diarrhoeal diseases is a more preferred term which includes well defined entities as well as the one of unknown aetiology. It should be recognised that no universally accepted definition of this complex syndrome of multiple aetiologies have been established. For all practical purposes the definition given in Hippocratic writings, "an abnormal frequency and liquidity of fecal discharges" is as good today as it was then.

Although the disease has always been thought mostly of infectious origin, until recently causative organisms have not been isolated in more than 25% of cases[1]. In these 25%, the causative organisms isolated have been one or more bacteria. Several stool parasites have also been found to cause or be associated with the disease. Viruses have been suspected all along but conventional virologic techniques have generally failed to implicate them as causative agents. Recently, using electrone microscopic techniques *Rotavirus* has emerged as a major causative agent of the disease. *Adenoviruses, astroviruses, caliciviruses* and *coronaviruses* have also been suggested as agents of diarrhoeal diseases[12]. These and

other candidate aetiologic agent viruses now "stand in the wings" awaiting additional evidence as to their role in the pathogenesis of the disease.

Table 1 Reported Cases of Gastro-enteritis 1976-78 in some Caribbean countries[8]

COUNTRY	CASES REPORTED			RATE PER 1,000 CHILDREN		
(In order of population size)	1976	1977	1978(a)	1976	1977	1978(a)
Anguilla	12	3	-	10	2	-
Turks & Caicos	220	116	100	169	89	77
British Virgin Is.	30	11	10	20	7	7
Montserrat	*	*	35	*	*	23
Cayman Is.	75	...	170	47	...	106
Bermuda	7	92	20	1	18	4
St. Kitts-Nevis	360	1070	470	43	127	56
Antigua	260	270	300	27	28	30
Dominica	360	250	350	27	19	26
Grenada	1170	1420	1610	79	93	104
St. Vincent	780	...	440	46	...	28
St. Lucia	780	420	1420	38	20	69
Belize	790	620	660	33	25	26
Bahamas	1040	1130	2100	38	41	77
Barbados	105	178	105	4	7	4
Guyana	730	1480	1250	6	12	10
Trinidad & Tobago	6500	8700	9000	51	69	71
Jamaica	...	...	19000	...	...	65

... = Insufficient Information - = No Cases * = Not reported to CAREC

(a) Provisional estimates based on data received at CAREC by 10 January 1979

Table 2 Diarrhoeal Disease as Percentage of Paediatric Admissions to the Hospitals in some Caribbean countries[9]

Countries	Diarrhoeal Disease	Diarrhoeal Diseases & Malnutrition
Antigua (1974-75)	9.3*	4.6*
Dominica (1976)	16.3*	1.7*
Dominica (1976)	(32.8)**	(4.0)**
Grenada (1974-75)	13.6*	0.6*
St. Kitts-Nevis (1975)	16.3***	1.2***
St. Lucia (1975)	8.6*	1.2*
St. Vincent (1976)	22.9***	-

* % of Total Admission of Children between 0-11 years

** % of Total Admission of Children between 0-23 months

*** % of Total Admission of Children between 0-59 months

Table 3 Death rates from Enteritis and other Diarrhoeal Diseases in the Caribbean, Canada and the United States of America, 1971-76[10]

Countries		Under 1 yr.	1-4 years	Under 5 yrs.	All ages
		Per 100,000 live births	Per 100,000 Population		
Antigua	1976	-	-	-	8.5
Bahamas	1972	469.0	-	76.9	14.7
Barbados	1975	14.9	3.8	29.7	5.3
Belize	1975	1076.7	65.1	274.2	62.1
British Virgin Islands	1973	-	-	-	25.8
Dominica	1975	1087.4*	-	-	18.7
Grenada	1975	-	-	-	13.3
Jamaica	1972	-	-	192.5	36.3
Montserrat	1972	-	-	-	25.0
St. Kitts-Nevis	1975	-	-	-	18.5
St. Lucia	1975	557.6	-	-	46.3
St. Vincent	1974	1156.2	-	-	69.3
Trinidad & Tobago	1974	803.4	43.2	217.9	31.1
Turks & Caicos Islands	1973	-	-	-	66.7
Canada		18.4	1.1	4.5	1.1
U.S.A.		22.7	0.7	5.0	0.9

- Figures not available

* Figure for 1971

It is evident, therefore, that the disease is caused by a variety of infectious agents. Poverty and ignorance and the consequent malnutrition, overcrowding, unhygienic living conditions and poor personal hygiene all favour the spread of these agents. The fundamental solution to the problem, therefore, would require multifaceted action including clean water supply, preferably in the house; sanitation, particularly adequate sewage disposal; good personal hygiene, specially improved and hygienic child care practices; adequate infant feeding, at least breastfeeding and appropriate weaning; and education. These goals are also part and parcel of a country's overall development strategy. However, the rate of general growth in the lesser developed countries is such that the achievement of these goals cannot be seen as an immediate reality. While these measures should always remain the long term goal, what is now urgently needed are measures to save the lives of our children. One such simple short-term measure now exists in the form of oral rehydration.

ORAL REHYDRATION - THE SIMPLE SOLUTION

It is known that most of the deaths in cases of diarrhoeal diseases are actually due to dehydration or loss of body water and salts in the stool. Replacing the lost water and salts (rehydration), it has been shown, can save many of the lives that are unnecessarily lost. Figure 5, which has been taken from a WHO booklet on the subject[12], explains the phenomenon schematically. The disease itself in most cases, is self-limiting and is controlled by the host's defences. Antibiotics may be needed in some cases to shorten the duration of illness.

Step 1. DEHYDRATION
The person with diarrhoea is like a pot of salt water with a hole in its bottom. A dead patient is like an empty pot. It is most important to keep the pot full.

Step 2. REHYDRATION OF THE PATIENT with salt and water is like filling the pot. *It must be done quickly, within six hours or less.*

Step 3. SUSTENANCE OF THE PATIENT is like keeping the pot full with salt water while the leak continues, and at the same time making the patient stronger by feeding him with the proper food.

Step 4. CURE OF THE PATIENT is when the leak stops and the pot is full.

Step 5. PREVENTION is trying to stop the beginning of further leaks by keeping people strong and healthy; but if a leak starts again, prevention is by giving salt water and food before the "pot starts to empty" (i.e., before the patient dehydrates).

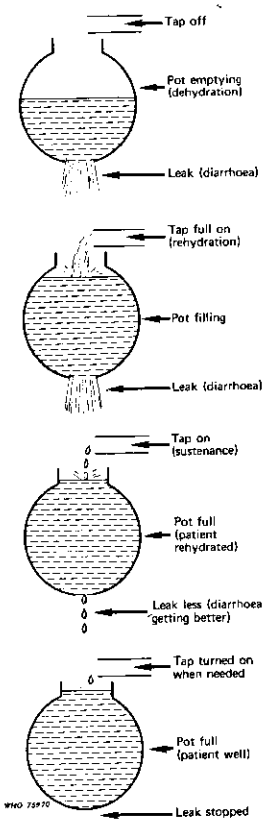


Fig. 5 The Five Steps of Diarrhoea and its Management[12]

Different agents may produce dehydration by different mechanisms but the loss of fluid is almost entirely from extracellular compartment leading to progressive diminution of blood volume. When this loss is less than 5% of the body weight, thirst is the only sign of dehydration (apart from the diarrhoea). When the deficit exceeds 5% of the body weight, the following signs and symptoms develop rapidly: weak pulse, decreased skin elasticity, irritability, decreased and ultimately complete stoppage of urine, severe thirst, low blood pressure, stupor or coma. Shock occurs when the deficit equals 10% of the body weight; greater losses cause death. It is important to note that half of this lethal deficit can develop before these usually recognized signs of dehydration[13].

In the past, the cases of dehydration have been treated highly effectively by the replacement of fluid and salts (electrolytes) intravenously. However, this form of treatment is very expensive, needs a well equipped hospital and can be given only under the direct supervision of an experienced physician. All these three requirements are major "bottlenecks" in the developing countries. Research carried out over the past 10-15 years in many parts of the world and in diarrhoeal disease due to different aetiological agents[15,16,17] amply have shown that the fluid and electrolyte losses due to diarrhoeal diseases can be replaced equally effectively by mouth and can significantly reduce mortality due to this disease. The World Health Organization is promoting a programme of diarrhoeal disease control as an integral part of Primary Health Care (and in particular Maternal and Child Health), with the immediate objective of reducing diarrhoea-related mortality through the wide use of oral rehydration therapy, combined with improved breastfeeding practices[17].

Oral solutions of different compositions have been used in the past but the following formula recommended by WHO[12] has been tested in hospitals as well as in the field and found to be satisfactory for all diarrhoeas and for patients of all ages:

Sodium	3.5 gms.
Sodium bicarbonate	2.5 gms.
Potassium chloride	1.5 gms.
Glucose	20.0 gms.
Water	1 litre

These ingredients need not be chemically pure grade and may be dissolved in clean drinking water.

Physicians in the Caribbean and in other parts of the world have questioned that the amount of Sodium in this solution is high. A recent study carried out in Kingston, Jamaica in the Department of Paediatrics of the University Hospital of the West Indies and the Bustamante Children's Hospital, in collaboration with the Pan American Health Organization (PAHO) has shown that a solution with lower amount of Sodium is not equally effective as the recommended solution in correcting electrolyte imbalance.

One of the advantages of this mixture is that in emergencies it can be made from ingredients commonly available in the kitchen. Common salt (Sodium chloride), baking soda (Sodium bicarbonate), and sugar (as a replacement for glucose) can be used with no significant disadvantage. The only ingredient which may be difficult to get is Potassium chloride. However, the amount of potassium needed is very small and in the Caribbean can be supplied in the form of coconut water. Although more work is needed to confirm this fact, it appears that under these circumstances two feeds of the solution without potassium chloride alternating with one feed consisting of an equal volume of coconut water alone would be the best possible alternative[18].

Two important facts about oral rehydration need to be remembered. First, it is necessary to measure the ingredients accurately because the low levels of salts may not be effective, while high levels may be dangerous to children. Glucose which is essential for the absorption of the salts, also needs to be measured equally carefully. Secondly, if the dilution is too weak or too strong the accurately measured ingredients will be ineffective.

The successful application of oral rehydration at the community level has been plagued by the problem of accurate measurement of the salts. Measurements by pinches (using thumb and first or second finger) to specially designed plastic spoons in different colours have been suggested. Pre-measured packets remain the most controlled way of accurately mixing these small quantities of salts, especially in areas where the concept of grammes and ounces is lacking and utensils or measuring pans are not available in every household. Packets also have the advantages of being regarded as medicines and are therefore easily acceptable in areas where diarrhoea is commonly treated by withholding water and food.

The World Health Organization in association with UNICEF produces and distributes packets measured to be dissolved in a litre of water. At US$0.12 each plus US$0.02 - $0.10 for surface mail the packets can be expensive and many countries are preparing their own packets locally. In the community, the packets can be distributed by health workers who can show mothers how to mix the solution using commonly available bottles in the homes, e.g. a soft drink bottle or a beer bottle. Feeding the solution through baby feeding bottles should be discouraged as this increases the risk of infection and may discourage breastfeeding which is an integral part of control of diarrhoeal diseases.

Some studies indicate that many countries have gone even further and are conducting applied research to find the ways in which to make the packets available to mothers and train them in the use of the method. Very encouraging results are emerging from these studies[17].

ASSOCIATION OF DIARRHOEA WITH MALNUTRITION

In milder but repeated cases of diarrhoeal diseases or in those acute cases which manage to survive, particularly young children, the long-term effect of the disease is mostly malnutrition. This results from the protein loss due to infection and fasting in diarrhoeal diseases causing a negative nitrogen balance. In the Caribbean, as in many parts of the world, withholding food and water during diarrhoea is quite common. In a population in which food intake is marginally deficient, the protein lost through recurrent episodes of diarrhoea is very slowly replaced, leading to failure of growth and malnutrition. Studies carried out in the Philippines[19] reveal that the administration of an oral glucose - electrolyte solution to children with diarrhoea was associated with a greater average weight gain both during an attach of diarrhoea and over a 7-month period, when compared to the control group. A need for similar research to confirm these findings is clearly indicated.

Whether the pre-measured glucose salts mixture is administered by health workers or mothers, vigourous education programmes are necessary to teach the community about diarrhoea, dehydration, the importance of appropriate early oral rehydration and proper feeding of children. Without appropriate education forming an integral part of a rehydration programme, its success will be limited.

SUMMARY

Oral rehydration is a cheap, simple and effective solution for the complex problem of diarrhoeal disease. It has great potential for controlling the morbidity and mortality due to diarrhoea-dehydration and malnutrition in children, and every attempt should be made to give priority to programmes to implement oral rehydration.

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Editor's Note: Cajanus readers may also be interested to know of a WHO Report of an Advisory Group which met in Geneva 2-5 May 1978 on the "Development of a Programme for Diarrhoeal Disease Control (WHO/DDC/78.1). ▲

ENERGY AND MAJOR NUTRIENTS IN SOME OF GUYANA'S LESS KNOWN EDIBLE PLANTS

by

*Omawale**

ABSTRACT

Samples of some less known edible plants of Guyana were subjected to chemical analyses. The species analysed indicate kuru to be a possibly good source of edible oil. Sijan leaves may contribute important quantities of protein to the diet of some coastal people while bura bura and wild cocoa seeds may be significant in children's energy intake.

INTRODUCTION

There are to be found in most diets one or two foods which make the major contribution to energy and protein intake. Food and Nutrition Policy considerations therefore, usually centre on matters concerning these staples. In Guyana where protein-energy malnutrition is the major nutritional problem, this would seem to be especially appropriate. Nevertheless, there are a number of less well known dietary items which, though not of major importance, should be examined for a true evaluation of their nutritional contribution and potential for development. One contribution to this end began a few years ago with the collection, classification, description and listing of known distribution, origin and uses of a range of Guyana's edible plants by Omawale (1973). The further study of some more uncommon species was then embarked upon and is in part the subject of this report.

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*Omawale is Honorary Research Fellow at the Institute of Social and Economic Research, University of the West Indies, Jamaica and an FAO Consultant. He has written a book entitled "Guyana's Edible Plants" (University of Guyana 1973) which is in the CFNI library.

METHODS AND MATERIALS

The plant materials used were collected in the field and first separated into edible portions as listed below:

1. August flower *(Agati grandiflora)* - the entire flowers.
2. Bura Bura *(Solanum stramonifolium)* - the fruits with seeds removed.
3. Kuru *(Astrocaryum tucuma)* - skin of fruit, flesh of fruit and kernel removed from seed, each treated separately.
4. Whytee *(Inga sp.)* - pulp of fruit removed from seed.
5. Batwa *(Benincasa hispida)* - flesh of fruit with seeds removed.
6. Ghingie *(Luffa acutangula)* - flesh of fruit with seeds removed.
7. Sijan *(Moringa oleifera)* - leaves and immature fruit, treated separately.
8. Hog Bhajee *(Portulaca oleracea)* - entire young shoot.
9. Pepperwort *(Marsilea polycarpa)* - entire shoot.
10. Water Calaloo *(Ipomea aquatica)* - entire young shoot.
11. Water Fern *(Ceratopteris thalictroides)* - entire young shoot.
12. Wild Cocoa *(Bombax aquaticum)* - pulp of fruit and seeds treated separately.

After being weighed in the fresh state the samples were homogenized then oven dried at 95°. Finally the dry material was thoroughly ground into a homogeneous powder and stored in a dessicator before assay. Each sample was tested in triplicate for nitrogen, fat, ash and energy content. 1 g samples were used except for fat assay when 5 g were used. Nitrogen was determined by Kjeldahl digestion and Markham distillation of ammonia which was then trapped in boric acid and titrated. Protein was estimated as 6.25 (N%). Fat was assayed by weighing after soxlet extraction with petroleum ether. Ash was determined by heating to constant weight in a muffle furnace and energy values were obtained by

ballistic bomb calorimetry. The difference between total dry weight and combined weights of ash, protein and fat was taken as total carbohydrate. The methods for nitrogen, fat and ash were those of the AOAC (1960).

RESULTS

The values for triplicate assays were averaged and are represented in Table 1. Loss of Kuru and Batwa samples prevented ash (and therefore carbohydrate) determinations of these species.

Table 1. Energy and Major Nutrients in some of Guyana's Edible Plants

COMMON NAME	NUTRIENTS IN 100 g. EDIBLE PORTION					
	Water	Protein	Fat	Ash	Carbohydrate by difference	Metabolisable Energy
	g.	g.	g.	g.	g.	KJ
August Flower	93	1.2	0.04	0.5	5.2	112
Bura Bura	75	3.1	2.0	1.7	18.2	450
Kuru (skin)	15	5.8	24.0	-	-	1785
Kuru (fruit)	27	5.8	45.0	-	-	2044
Kuru (kernel)	40	3.5	25.2	-	-	1620
Whytee	83	0.8	0.04	0.4	15.7	282
Batwa	96	0.2	0.03	-	-	64
Ghingie	94	0.9	0.05	0.3	4.7	98
Sijan (fruit)	88	2.7	0.1	1.0	8.2	193
Sijan (leaves)	76	9.7	2.4	3.3	8.6	408
Hog Bhajee	88	3.1	0.6	2.3	6.1	176
Pepperwort	90	2.7	0.4	1.8	4.1	156
Water Calaloo	91	3.2	0.3	1.4	4.0	141
Water Fern	86	2.4	0.3	2.0	9.4	200
Wild Cocoa (seed)	86	1.8	5.9	0.7	5.6	328
Wild Cocoa (fruit)	76	2.2	0.3	1.2	20.3	386

DISCUSSION

August Flower is cooked and consumed in much the same way as cabbage. Its contents of energy and major nutrients are similarly modest.

Bura Bura, Whytee and *Wild Cocoa* as fruits could hardly be expected to have more than the small quantities of energy and major nutrients revealed by the analyses. However, whereas whytee appeared particularly protein poor, bura bura was comparatively rich in fat and energy. It might therefore be of interest to determine the quantities of the latter fruit, which grows in the wild, actually consumed by children.

Batwa and *Ghingie* which are very much like squash, are also revealed to be devoid of high concentrations of energy and the major nutrients.

Kuru and *Wild Cocoa Seeds* appear to have considerably large concentrations of fat and energy. The oil in Kuru is particularly concentrated below the skin of the fruit and in the kernel which is readily removed after the seed is broken. For this reason the plant deserves serious consideration as an available source of edible oil. The fruit is commonly consumed by those living in interior regions where the trees abound; the orange colour therefore suggest it might make some important contribution to vitamin A intake. Wild cocoa seeds are roasted and eaten. While the protein content is not impressive its possession of 42% fat on a dry weight basis is of some interest.

Sigan as a fruit-vegetable is not startling in terms of these analyses but the leaves have 40% protein on a dry weight basis. These appear commonly in curries and must therefore be considered somewhat important in the diet.

Hog Bhajee, pepperwort, water fern and *water calaloo* are to be considered wild green vegetables of the leafy type. Except for the last of these, which has considerable quantities of protein, they

are only remarkable for possession of high ash content. Further study to determine mineral composition is suggested by this data.

SUMMARY AND CONCLUSIONS

The species analysed indicate kuru to be a possibly good source of edible oil. Sijan leaves may contribute important quantities of protein to the diet of some coastal people while bura bura and wild cocoa seeds may be significant in children's energy intake. Further studies on mineral and vitamin content of these species are contemplated in order to fully evaluate their nutritional contributions in Guyana. The species studied are uncultivated and therefore represent nutrient supplies which presently cost nothing or very little when marketed after collection.

ACKNOWLEDGEMENTS

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SOME NON-INFECTIVE DISEASES ENDEMIC IN THE WEST INDIES*

by

*M.T. Ashcroft***

INTRODUCTION

The West Indies is one of the most diverse archipelagos in the world. Into the numerous islands, with varying features of geography and natural history, have poured Europeans, Africans, Indians and small numbers of other ethnic groups, almost completely displacing the original Amerindian inhabitants. They have brought with them characteristic cultures and customs which, although to some extent blended and modified have, however, retained their identity. Such diversity affords exceptional opportunities for studies of disease in relation to geography and to racial origins, studies which can throw light on many aetiological problems. Unfortunately a comprehensive account of the prevalence and distribution of disease in the West Indies is unavailable, partly because some of the islands are so small and so lacking in resources that reliable information is either absent or unrecorded and partly because there has been surprisingly little scientific communication between the islands. They have been dominated in the past from the outside, by Spanish, Dutch, British, French or American influences and much information has stayed within the spheres of interest of these nations. For these reasons there has been disappointingly little collaboration in the dissemination of medical knowledge of the West Indies as a whole. Many people from outside the area,

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and indeed within it, are unaware of some interesting features but understandably so, in view of the scattered published material.

Some time ago, I summarized the present and past distribution of helminth and protozoal infections in the West Indies[1]. In the present paper a number of non-infectious diseases of particular interest to medical geography are described either because they are characteristic of the West Indies or because their aetiology remains obscure and could be unravelled by more research on their geographical distributions. This account is by no means comprehensive of all such conditions and, because of personal experience, the main focus is on the English-speaking Caribbean.

VOMITING SICKNESS OF JAMAICA

Vomiting sickness was a term used for many years to describe a variety of illnesses in young usually poorly nourished Jamaican children. At the beginning of this century, however, the suspicion arose that there was a specific condition characterised by vomiting, convulsions, coma and frequently death, occurring in the absence of pyrexia or signs and symptoms of other recognized diseases. In 1905 the Chief Medical Officer, Dr. Kerr, circularized the medical departments of other islands in the West Indies to enquire if a similar syndrome was seen. The replies were negative and, with this geographical clue that the syndrome was restricted to Jamaica, research was initiated. In 1912 Captain Potter of the Royal Army Medical Corps was sent by the British Colonial Office to investigate. His report[2], suggesting that many of the cases were due to yellow fever, provoked a storm of protest, including a sharp contradictory letter from the Governor of Jamaica himself. Next on the scene came Dr. H. Siederlin[3] from the Liverpool School of Tropical Medicine. He carried out many necropsies but could reach no firm conclusions except that cerebrospinal meningitis, which had come under suspicion, was not the cause of many cases. In 1915 a severe epidemic near Montego Bay was

investigated by Scott[4] who attributed the typical cases to eating unripe ackees, while admitting that many other diseases were sometimes described by the medical profession as vomiting sickness. The ackee is a red, pear-shaped fruit which, when ripe, opens to expose three black seeds each with a large yellow fatty arillus. It is the arillus which is eaten after cooking and is used in the savoury national dish 'saltfish and ackee'. The principal ackee season, from December to March, coincides with the season in which vomiting sickness is most common. The tree was brought from West Africa in a slave ship and handed to the island botanist, Dr. Thomas Clarke, in 1778 but had not been given a scientific name when Captain Bligh took a specimen, among many other botanical species, to England in 1793 in the same ship, HMS Providence, in which he had brought the breadfruit from the Pacific to the West Indies[5].

The popular cinematic image of Bligh is one of a cruel Captain whose conduct led to the notorious mutiny in 1789 on HMS Bounty in his first attempt to bring breadfruit to the West Indies but he later became an Admiral of the Fleet and a Governor, albeit unpopular, of the Australian colony of New South Wales. Like the ackee, which was named Blighia sapida in 1806 after him, Bligh had both good and bad qualities.

Curiously the ackee is eaten only in Jamaica (and, to a lesser extent, in parts of West Africa) but not in other parts of the West Indies so that Scott's hypothesis fitted in with the geographical usage of the ackee. Nevertheless the belief that ackee was the cause was not completely accepted, one of the obstacles being the the widespread consumption of the fruit and the relative rarity of vomiting sickness. It was also difficult to obtain reliable histories of food consumption from Jamaican cultivators, many of whom became highly suspicious and obviously unreliable in their answers to questions, a characteristic which many retain to the present day.

In 1951, following a severe outbreak of vomiting sickness, Dr. Cicely Williams headed another team set up to investigate the problem in conjunction with the Medical Department and with the newly established University of the West Indies. In her report[6] she stressed the poor facilities for child care in Jamaica, leading to many ill-defined causes of vomiting sickness rather than there being any one aetiological factor. However in 1953 a break-through occurred; the blood-sugar of a patient admitted to the newly-opened University Hospital was so low as to be unrecordable. The symptoms of classical cases were thought to be due to profound hypoglycaemia[7]. Necropsies showed severe depletion of glycogen and fatty changes in the liver[8].

An unusual, water-soluble amino acid (aminomethylenecyclopropylpropionic acid or hypoglycin A) was identified from unripe ackees[9] which caused hypoglycaemia and similar liver changes in laboratory animals. Later investigations have shown that this and similar compounds inhibit long-chain fatty acid oxidation leading to defective hepatic gluconeogenesis. Although it is clear that, in small children, the clinical picture of vomiting, convulsions and coma can be caused by a wide range of conditions including Reye's syndrome which has a similar necropsy appearance[10] nevertheless, the geographical evidence convincingly incriminates ackee as a cause of the classical vomitimg sickness of Jamaica.

A symposium on ackee poisoning and on the biochemistry of hypoglycins was held in Jamaica in 1974[11]. Tanaka et al[12] have recently supplied additional biochemical confirmation by isolating methylenecyclopropylacetic acid, a known metabolite of hypoglycin, from the urine of two patients suffering from vomiting sickness.

Vomiting sickness in Jamaica is now less common, possibly due to improved nutrition and increased awareness of using unripe ackees that have been cooked. Visitors to Jamaica should not be deterred from sampling this unusual fruit.

VENO-OCCLUSIVE DISEASE OF JAMAICA

A condition known as 'swell-belly' has been known in Jamaica for many years. The clinical picture is one of rapid onset of ascites with hepatosplenomegaly in a child usually aged between 2 and 5 years. Malnutrition was at first suspected as a cause in Jamaica, infant malnutrition being often associated with a fatty liver which was believed to progress to cirrhosis. Later research showed that this progression does not occur. Bras et al[13] were the first to show that the characteristic pathological change was intimal thickening leading to occlusion of the centrolobular branches of the hepatic veins and that this obliterative endophlebitis finally results in diffuse hepatic fibrosis. The term, veno-occlusive disease (V.O.D.) was coined to describe the pathological changes[14]. The histological resemblance of the liver in V.O.D. with that of Senecio poisoning in cows led to the suggestion that the aetiological factor was the ingestion of a toxin.

Bush teas, herbal infusions prepared from many different plants, are widely used in Jamaica either as a drink or as a medication. Plants of the Senecio species were naturally suspected as causing V.O.D. but could not be incriminated despite carefully questioning of mothers. The problem was solved when three children were seen in Barbados with a similar clinical picture to V.O.D. and it transpired they had been imbibing bush teas made from Crotalaria species[15]. With this vital geographical clue, the use of the leguminous plant, Crotalaria fulva (locally known as 'whiteback') in bush teas was incriminated in Jamaica. The Crotalaria family are known to contain alkaloids which are chemically similar to those found in the Senecio family and later the offending pyrrolizidine alkaloid was extracted in pure form and called fulvine. Other similar alkaloids may also play a role in the aetiology of V.O.D.

In the Caribbean area V.O.D. has been described from Barbados[16], Columbia[17] and Venezuela[18]. A similar condition has been diagnosed in Africa[19] and India[20]. Several different toxins

may give rise to the same pathology. Recently extensive outbreaks have been reported from central India where seeds of Crotalaria spp. were incriminated[21] and in Afghanistan where consumption of bread made from wheat contaminated with seeds of Heliotropium plants was suspected as being a cause[22].

In this distressing condition in Jamaica, some patients die early, about half recover completely and others develop cirrhosis which usually leads to death after a period of some years[23]. A public health educational programme was initiated in Jamaica to emphasize the dangers of using Crotalaria species in bush teas and veno-occlusive disease, although it still occurs, is now far less common than formerly.

TROPICAL SPRUE OF PUERTO RICO

The geographical distribution of tropical sprue in the West Indies is of great significance but has been for the most part overlooked. Sprue is relatively common in Puerto Rico and Sheehy et al[24] reported an annual incidence of 8% in visiting North Americans. It is diagnosed occasionally in Haiti[25], the Dominican Republic[26] and in Cuba[27]. In contrast it appears to be completely absent from Jamaica and other English-speaking countries. Curiously it was in Barbados that the first clear description of tropical sprue was given by William Hillary[28] but at some unknown time it disappeared from that island.

The geographical difference in the incidence of sprue between Jamaica and Puerto Rico is most bewildering. Both islands have a similar climate and standard of living. The disease pattern is the same, except that the filariasis and schistosomiasis, neither of which are likely causes of sprue, occur in Puerto Rico. Sprue occurs in both black and white people in Puerto Rico. Wheat-flour products are consumed in both countries so that sensitivity to gluten cannot be invoked. Of the many theories put forward for

its aetiology, those involving climate, ethnic differences, nutritional deficiency and infection are all inadequate to explain the geographical difference.

One suggestion for the aetiology has been based on a notable dietary difference[29]. In Puerto Rico fat is widely used for deep frying, both in the home and in restaurants. Various tasty morsels which have been dipped for a short time in boiling fat, can be readily bought at street stalls, a custom which is absent from Jamaica. Prolonged exposure of warm temperatures and repeated reheating may lead to the production of compounds derived from the oxidation of unsaturated long-chain fatty acids which are present in pork fat. These may damage the mucosa or alter the bacterial flora of the small intestine and, in either case, sprue may result. This hypothesis involving the role of reheated fats is in accord with the views of French[30] and Frazer[31], based on observations in Singapore and Hong Kong. Klipstein and Corcino[32] observed an increased incidence of malabsorption in Puerto Rico after Christmas and suggested that this seasonable pattern might be related to an increase in the consumption of pork and of foodstuffs deepfried in pork fat at this time of the year.

It is now known that a large proportion of apparently healthy people in some parts of the tropics have a subclinical enteropathy, which may be a milder manifestation of sprue due to the same cause. In the Caribbean area, evidence of subclinical enteropathy has been found in persons who live or who have once lived in those countries (Puerto Rico, Cuba, Haiti and San Domingo) where tropical sprue occurs[33]. In contrast there is no published evidence of either sprue or subclinical enteropathy which could have been contracted in Jamaica or in other parts of the English-speaking Caribbean. Intestinal biopsy studies from 20 Jamaicans without gastrointestinal disease showed normal villour patterns of the jejunum[34]. Neither sprue nor subclinical enteropathy has been recorded either

in visitors to the English-speaking Caribbean or in emigrants from the area who have gone to live in the U.S.A. or to the U.K.

Negative findings are unfortunately rarely reported and it would be valuable to confirm that tropical sprue and subclinical enteropathy are, in fact, absent from all parts of the English-speaking Caribbean, as well as from Jamaica. It would also be interesting to know if the dietary custom of deep frying in pork fat is common in any part of the English-speaking Caribbean. If so, and if tropical sprue is absent from such a region, then the theory of the role of reheated pork fat in the aetiology would be unsupported.

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NEWSPAPER CLIPPINGS

BARE MORE OF BREAST, WEST INDIAN MOTHERS ADVISED

From The Jamaica Daily News, 4 June 1979

West Indian mothers are being asked to bare their breasts a bit more.

The suggestion comes, not from pornographic magazines, but from worried nutritionists.

During a just-concluded workshop here, concern was expressed about the large number of parents who turn to bottle-feeding their children at an early age and about malnutrition among children.

Delegates said that malnutrition was a common public health problem in many Caribbean territories. One of the main causes for this they said, was the decline in breastfeeding, with bottle-feeding as a substitute.

Promotion of bottle-feeding was said to have been precipitated mainly by health professionals unaware of the benefits of breast-feeding and by promotional practices of the commercial infant food industries.

Delegates also recommended that the provision of breast milk substitutes be made on the basis of prescriptions issued by health workers. They recommended a ban on the advertising of these substitutes and the technology associated with their use. Any information concerning their use should be provided to mothers, at the discretion of the health worker, through health services. Wherever Governments feel that the distribution of substitutes should be continued, national food and drug regulations should require the packaging of these products to include a clear warning about possible negative effects of their misuse, the delegates recommended.

Governments have also been urged to develop and enforce strict guidelines and codes of conduct for infant food manufacturers in cases where the Administration feels that the sale of the substitutes should be continued.

The delegates went so far as to call for a ban on all educational materials, including children's toys, that provide examples of bottle-feeding.

The conference supported the view that many mothers would wish to nurse their babies and continue nursing them, but for economic reasons must go out to work. Effective social legislation to assure sound childrearing practices, while permitting the integration of women into the large developmental process, was called for.

The provision, wherever possible, of maternity leave through national insurance or similar schemes was also recommended. It was agreed that all mothers should be entitled to economic support during this period.

To permit the continued contact of mothers and infants, crêches for children under two years of age should be established at or near the mother's work place, and there should be breastfeeding breaks to allow the children to be fed regularly. Flexible working hours were also suggested to permit mothers to develop a working routine conducive to continued breastfeeding, child care and sound family life. (CANA) ▲

BREASTFEED: 'MAKE CARIBBEAN MOTHERS MORE AWARE OF BENEFITS'

From The Jamaica Daily News, 30 May 1979

Barbados Health Minister called for a more determined effort to make Caribbean mothers more aware of the advantages of breastfeeding their children.

Delivering the opening address at a meeting to promote successful breastfeeding she said that such descriptions as clean, warm, nutritious, ready-for-use, no-mixing and easily digested should be hurled back at manufacturers of artificial milk by mothers.

The Health Minister also said that many young women were not aware that the emotional bond which develops during nursing is satisfying to both mother and child.

"The closeness and intimacy of breastfeeding cannot be simulated and is very beneficial in producing a happy, contented child and in the later development of that child's relationships with other people".

Noting that the decline in breastfeeding is a worldwide trend, she said that today's young mother is frequently isolated from the support of her relatives and having not seen a woman nursing a baby, she grows up with the attitude that breastfeeding is something to hide.

"On the other hand, many mothers would wish to nurse their babies and continue nursing them but for economic reasons must go out to work," she added.

She also described the media which promotes the breast as a sex symbol. This has reached the point where young mothers are expressing embarrassment and "a degree of revulsion at the idea of a baby sucking their nipple," she said.

Editor's Note: See page 176 for an account of CFNI's Technical Group Meeting on "Techniques to Promote Successful Breastfeeding".▲

YOUNGSTERS BEAT UNEMPLOYMENT WITH SELF-HELP FARMS IN CITY

From The Jamaica Daily News, 26 March 1979

The Strugglers Youth Club reap 12,000 lbs of callaloo weekly from two callaloo plots; they have 14 goats in a goat-rearing project and plan to start a chicken farm.

On West Bay Farm Road two acres of idle land have been put into production by five club members who have transformed what remains of a burnt-out building and the lands around into a flourishing callaloo and vegetable garden.

The site is called "Life Boat". According to the club leader the youths of the area had been growing some callaloo from early 1973 but in 1976 violence and curfews curtailed movement out of the area even to buy food. Out of necessity they started growing food on a larger scale.

"It not only provides us and the community with food, it provides employment. Most of us just can't get any work so we have to make work for ourselves", a member points out. "It is important that every community has its own garden. That way fewer people would be hungry."

At Carifta Avenue in Nanse Pen another plot is being prepared for cultivation by the Bay Farm Road group as an extension of "Life Boat". Next door to this plot is a burnt-out building which will be used as a chicken farm.

Another 3 acres is also under cultivation at Carifta Avenue. Here the emphasis is also on callaloo but lettuce, pak choi and onion are also grown. Here also a larger number of clubbites including men, boys and a woman are involved.

The goat-rearing project presently involves one man. From one goat in 1977, he now has 14 goats and is encouraging other people to join him in the venture. He sells other clubbites a few of his goats "for a start".

Strugglers say they have received some help from the Social Development Commission (SDC) who provided some tools. Some businessmen in the Nanse Pen area have also given them advice and fencing material.

The young farmers have problems getting tools and some planting materials. They also need cutlasses, sprinklers and spraying machines.

Marketing is also another problem and they are hoping they will be able to get assistance from the Agricultural Marketing Corporation.

Says SDC Regional Manager: "These young people are full of initiative. The whole self-help programme was their own idea. They should be given all the assistance they need."

A Community Officer has been working with the group and the Commission is trying to get other Government agencies to assist. ▲

BOOST FOR ST. VINCENT'S HEALTH SERVICE

From the Daily Gleaner, Jamaica, 21 January 1979

St. Vincent's health service is expected to get a big boost from the European Development Fund for the rebuilding of the main hospital in Kingstown.

The first stage which includes the rebuilding of the paediatric hospital will begin later this year, in keeping with the International Year of the Child. ▲

PROJECT TO INCREASE AGRICULTURAL PRODUCTIVITY TO BEGIN IN EASTERN CARIBBEAN

From The Daily Gleaner, Jamaica, 3 February 1979

Six East Caribbean countries will benefit from a small farms multiple cropping systems research project to be carried out by the Caribbean Agricultural Research and Development Institute (CARDI) and financed by the United States Agency for International Development (USAID).

The project is aimed at increasing the value of agricultural production by the improvement of small farms profitability, nutrition and the generating of employment. It will last for four years.

The overall exercise will cost $2.2 million (EC) and will also include a research programme designed to develop management and production skills among small farmers.

During the final year, the project will mainly be refining systems tested in previous years and the results of the programme will be made available to regional governments and institutions involved in agriculture. ▲

IN JAMAICA - MATERNITY LEAVE LEGISLATION BY JULY

API News Release, 12 March 1979

Legislation to cover the question of maternity leave is to be tabled in Parliament during the upcoming Budget Debate and a Maternity Leave Law will be in effect by July this year.

It has been agreed that the Law will include a number of features. Among these are:

(1) It shall apply to any female worker regardless of (child bearing) age, nationality and whether that worker is married or unmarried.

(2) Maternity Leave shall not be regarded as a break in the service of the worker.

(3) The worker shall not lose her job after pregnancy and the job shall be kept open for a period of six (6) months - this six (6) months includes the periods of paid and unpaid leave.

(4) She shall not lose seniority on return to work; she shall not be paid at a lower rate on her return to work.

(5) Maternity leave will be additional to Vacation Leave.

(6) The Law should ensure safety and health on the job during pregnancy. If necessary, the worker should be offered suitable alternative employment at no less favourable terms to those to which she was originally employed. Special cases may have to be looked at.

(7) The worker shall be entitled to apply for all her sick and Vacation Leave to which she may be entitled, provided she chooses to utilize such leave for maternity purposes.

(8) It shall be an offence to dismiss a woman wholly or primarily because she is pregnant.

A number of problems have to be considered, for example, women on personal contracts, like household helpers, women employed by small enterprises and the proportion of which should be paid as against unpaid. ▲

NEWS BRIEFS

MATERNITY BENEFITS IN GUYANA

The National Insurance and Social Security Scheme in Guyana is responsible for the payment of maternity benefit to insured female workers, at rates computed in accordance with the wage groups in which they paid contributions to the Scheme.

The Scheme was established in September 1969, and the payment of Maternity Benefit commenced on September 14, 1970. The benefit is payable to all employed women who suffered a loss of wages by reason of pregnancy and confinement, and is extended over a period of 13 weeks provided certain qualifying contribution conditions are satisfied.

Prior to March 15, 1977, a claimant of Maternity Benefit was required to confirm with the following contribution conditions. The insured person:

(a) must have paid not less than 50 contributions since her entry into insurance.

(b) has been engaged in insurable employment during at least 20 contribution weeks in the period of 30 contribution weeks, immediately preceeding the contribution week, which is six weeks before the week in which she is expected to be confined.

Payment of benefit commenced not earlier than six weeks before confinement, continuing until the expiration of six weeks after the week in which confinement occurred.

With effect from March 16, 1977, however, these regulations were amended, thus providing for payment of the said benefits under the following conditions.
The insured person:

(a) must have made 15 contributions since entry into

insurance.

(b) has been engaged in insurable employment at least seven weeks in the period of twenty-six weeks.

With effect from July 1, 1978, the original regulation which prescribed the period during which payment should be made was amended with the inclusion of the following:

> Provided that a woman shall not be precluded from receiving a maximum of 13 weeks benefit only because the period she ceases to be engaged in her employment due to pregnancy and confinement does not follow the pattern of six weeks of confinement and six weeks after confinement.

This amendment has therefore regularised the situation whereby a claimant would have been denied payment of benefits for any part of the period prior to her confinement as specified in the original regulations during which she continued in employment. ▲

CFNI CONDUCTS MIDDLE-LEVEL MANPOWER STUDY

Miss Eunice Warner of the Ministry of Education, Trinidad and Tobago and Dr. Saranya Reddy, a former CFNI staff member conducted from 10 January - 12 April 1979 a study of the existing manpower and training needs at the middle-level in nutrition in CFNI member countries. This study involved an assessment of the actual number of trained middle-level personnel working in the fields of nutrition, agriculture, health, education, economics, community development and other related fields, and an identification of their academic backgrounds and whether their responsibilities and functions were commensurate with the training received. It also attempted to determine the numbers of semi- and partially-trained persons employed in the above fields, their level of training and

functions. Types of programmes, particularly those community-based, were identified and the relationship between existing training facilities in the region and felt national/regional needs evaluated.

Based on this information, a training strategy will be defined and the most effective and feasible mechanism for its implementation devised. A formal report on this study will be produced by the consultants in consultation with CFNI staff. ▲

PAHO/WHO FELLOWSHIP IN FOOD PATHOLOGY/TOXICOLOGY QUOTED UNQUALIFIED SUCCESS

Dr. Henry Lowe, Vice Principal of the College of Arts, Science and Technology, Jamaica, and a medicinal chemist, was the recipient of the fourth PAHO/WHO Fellowship in Food and Nutrition Planning, awarded by CFNI.

The overall objective of the current fellowship was to facilitate the study of new and emerging techniques in the rapid and small-scale toxicological assay of herbal materials (which may also be used as medicinal agents) as well as other types of related food materials. It was also designed to enable alternative strategies in the management of nutritional pathology/toxicology to be examined, particularly with regard to their appropriateness to cultural dietary practices in the Caribbean. The fellowship was undertaken at the Jamaica Centre of CFNI, at the Massachusetts Institute of Technology and the U.S. National Institute of Health and Food and Drug Administration, (Bethesda, Maryland), and Howard University in Washington, D.C., U.S.A. ▲

"BREASTFEEDING YOUR BABY: A TEACHING PACKAGE FOR THE CARIBBEAN"

A Teaching Package "Breastfeeding Your Baby" has been developed by CFNI. Planned in response to a felt need for audio-visual materials to support the activities and programmes of health and nutrition fieldworkers in the Caribbean, its primary audiences are pregnant and lactating women who attend government clinics and health centres in the CFNI's seventeen member countries. It is also intended for use with community and youth groups, in family life education classes, and in training courses for teachers, nurses, midwives, doctors and para-professional health and nutrition personnel.

The Package highlights a number of key concepts related to breastfeeding and to a lesser extent, weaning. The concepts are expressed in each component of the Package, which are as follows:

1. A Sound/slide Presentation in three parts: *Part I* focusses on preparation for breastfeeding, *Part II* on the successful management of breastfeeding and *Part III* on the introduction to solid foods during the breastfeeding period.

2. A Teaching Guide which gives suggestions for using the presentation, outlines teaching objectives, gives background information on breastfeeding and lists discussion questions, learning activities and resources.

3. Take-home Hand-outs including fact-sheets which provide nutrition information for mothers and a booklet "Breastfeeding - before and after".

4. Commentary and Teaching Notes which give detailed information on the psycho-physiology of breast-feeding, its principles and techniques and its

nutritional, immunological, ecological, economical and convenience benefits.

The Package was launched at CFNI's Technical Group Meeting on "Techniques to Promote Successful Breastfeeding" held in Barbados May-June 1979. Individual copies of the presentation which was shown during the Meeting were presented to representatives from CFNI member countries.

Through the good will and generosity of UNICEF, the Package will be reproduced in quantity to meet requests from clinics, health centres and wherever pregnant and lactating women may be reached within the Caribbean. After a period of use, the Package will be field-tested in a selected CARICOM country. ▲

BREASTFEEDING GUIDELINES FORMULATED

As part of a worldwide WHO-coordinated programme aimed at re-instating breastfeeding as the preferred method of feeding for young infants, CFNI convened a Technical Group Meeting on "Techniques to Promote Successful Breastfeeding" in Bridgetown, Barbados from 28 May - 1 June.

The Meeting evolved in response to the concern expressed by CFNI member countries regarding the current unsatisfactory state of infant and young child feeding in the Caribbean.

Its objectives were to identify to what extent breastfeeding was being carried out in the Region and contemporary trends in feeding practices; to summarize the current state of knowledge about breastfeeding and those socio-economic, health, environmental, educational and legal factors affecting it; and to consider what activities could be undertaken by governments, the health

sector, the food industry and other interested bodies to promote breastfeeding.

Participants were mainly senior-level personnel able to influence policy-making decisions in their respective organizations and agencies. They addressed topics such as education, training and public information on breastfeeding, the promotion, marketing, distribution and use of commercial infant formulas and the legal and social status of women in relation to breastfeeding and work.

The Meeting culminated in the drafting of guidelines for developing strategies to promote successful breastfeeding. After approval by the participants, the guidelines will be finalized and submitted to Caribbean governments for endorsement and implementation. ▲

DOCUMENT HIGHLIGHTS CFNI FOOD AND NUTRITION POLICY PLANNING ACTIVITIES

The document "The Caribbean Food and Nutrition Institute: A Summary of Programme Activities in Food and Nutrition Policy and Planning, March 1974 - February 1979" encapsulates the important programme activities in food and nutrition policy and planning which have been undertaken by CFNI during the last five years. It presents a status report on the progress made by CFNI member countries in the formulation and implementation of food and nutrition plans; summarises documents produced; reviews national and regional meetings; lists participants of selected meetings and awardees of fellowships; advisors, short-term consultants, and CFNI's participation in international meetings related to food and nutrition policy and planning; and gives projections to 1981 of member-countries' status in the formulation and implementation of food and nutrition plans.

The document reveals that a total of 28 regional and country studies in food and nutrition planning have been undertaken; 13 national and regional workshops, seminars and meetings in food economics and food and nutrition policy and planning convened; 100 senior government policy advisors and technical personnel trained in food and nutrition planning through regional workshops and fellowships and 30 senior research associateships, research fellowships and consultancies made. The document also records that CFNI staff members have participated as consultants and resource persons in 9 international meetings concerned with food and nutrition policy and planning.

CFNI hopes that the document will provide useful background information for governments and facilitate a better understanding of the process of food and nutrition policy and planning in the different countries of the Caribbean. ▲

REVISED JAMAICA FOOD AND NUTRITION POLICY DOCUMENT PUBLISHED

The Jamaica Food and Nutrition Policy, formulated in 1974 by the Nutrition Advisory Council has been revised and updated in the light of the current thrust towards national self-reliance which has had far-reaching effects in all aspects of food and nutrition. This revision is an outgrowth of a meeting held in late 1977 to review the policy (see *Cajanus* Volume 11, No. 1, pages 56-57) and reflects recommendations made at this meeting.

The objectives of the present Plan (which has been incorporated into the country's overall 5-year Development Plan) include the elimination of malnutrition in vulnerable groups, in particular severe energy-protein malnutrition and anaemia and nutritional deficiencies in pregnant and lactating women. ▲

IN GUYANA: BREAKFAST CEREAL ON MARKET

The Guyana Pharmaceutical Corporation, manufacturers of the weaning food "Cerex" have produced a breakfast cereal "Family d'lite" which also doubles as a snack food. Packaged in the 341 gram size, the product is made from a corn-soya-rice blend and is fortified with iron. Would any of our readers in Guyana wish to comment on both or either of these developments? ▲

CARIBBEAN HOME ECONOMICS JOURNAL MAKES WELCOME APPEARANCE

"The Caribbean Home Economist", a magazine published by the Caribbean Association of Home Economists (CAHE), was recently launched at the 1979 bi-annual meeting of the group in Trinidad. Included are several articles on nutrition including feeding babies and young children; feeding the teenager; a few facts on fats and a quick course in carbohydrates. There are also several games and puzzles featuring nutrition information. CAHE was formed in July of 1972 at a seminar/workshop on nutrition education held in St. Lucia under the sponsorship of CFNI. Those interested in obtaining a copy of "The Caribbean Home Economist" should write to Mrs. Gwen Tonge, President, CAHE, Ministry of Education and Culture St. John's, Antigua. ▲

PAHO PROGRAMME CO-ORDINATOR APPOINTED COUNTRY REPRESENTATIVE BARBADOS

The Director of the Pan American Health Organization has announced the designation of Dr. Mervyn U. Henry as Country Representative in Bridgetown, Barbados. Dr. Henry will also

continue in his present capacity as Caribbean Programme Coordinator. ▲

ORBITUARY - DR. WALLACE AYKROYD

Dr. Wallace Aykroyd CBE, SCD, MD died on 7 February. He was 79.

Cajanus readers may remember Dr. Aykroyd as the author of 'Sweet Malefactor - Sugar Slavery and Human Society'[1], of the WHO study 'Conquest of Deficiency Diseases'[2] and of the two FAO books (in association with Joyce Doughty) 'Legumes in Human Nutrition'[3] and 'Wheat in Human Nutrition'[4]. Recently he wrote 'The Conquest of Famine'[5], a book which reflected his essentially forward-looking and optimistic view of the world's progress.

Dr. Aykroyd was involved in CFNI during the early years, as a member of the Technical Advisory Committee. In 1964 he visited a number of territories and reported[6] on nutritional problems in the Caribbean. This visit was influential in setting up CFNI and establishing its subsequent direction.

Dr. Aykroyd was a wise and broadminded man. Appointed in 1930 to the Health Section of the League of Nations, he became one of the first international nutrition workers. In 1943, as director of the Nutrition Research Laboratories that later grew into the Indian Institute of Nutrition, he was involved in efforts to mitigate the unbearably disastrous effects of the Bengal famine (Dr. Aykroyd estimated that it caused 1.5 million deaths).

He was appointed in 1946 as the first director of the Nutrition Division of FAO and on his retirement in 1960, joined the Department of Human Nutrition at the London School of Hygiene and

Tropical Medicine. Dr. Aykroyd started many people from many countries on their nutritional careers.

Twelve years ago I was a student of Dr. Aykroyd's. Subsequently he found me my first nutrition job. As a teacher he combined a wise humanity with a sense of history; he managed to involve his students in his concern for the tragic fate of Lavoisier who died 185 years ago as well as to give us the hope that something could be done in our own lifetime to improve the nutrition of our fellows. We shall miss him.

J. M. Gurney

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BOOK REVIEW

PRIMARY CHILD CARE: A MANUAL FOR HEALTH WORKERS
King, M. et al. Oxford University Press, 1978, 315 pages.
Price: £2.00.

This book, the result of a joint effort of the Government of Indonesia and WHO, was developed at the Centre for Research and Development (a WHO collaborating centre) in Surabaya, Indonesia. It is part of WHO's contribution to the International Year of the Child 1979, and is intended for adaptation and translation (in whole or in part). The book can form the basis of a nationally-planned system of appropriate technology for primary child care.

"Primary Child Care" contains a wealth of useful information, including practical guidelines on child care under conditions prevailing in many developing countries, particularly in tropical and subtropical areas. The authors say: "It is the outcome of an attempt to answer the question 'what could a health worker reasonably do for the children who come to him, be they well or sick?' Their emphasis is clinical rather than community-oriented but, they consider that competent clinical management is often the key to gaining community acceptance for public health measures. While the book deals with the basic features of child care and the prevention, diagnosis, treatment and management of the common childhood disorders, it is by no means an elementary book. However, the language used is mostly simple, even if some of the concepts introduced (e.g. the mechanisms of immunity) are complex.

There is much to commend in the book, but improvements could be made in future issues. For example, some of the illustrations need to be redrawn (e.g. harmful organisms are disproportionately magnified and can mislead a health worker), or are too complicated (e.g. pyogenic bacteria spreading in a child) or unnecessary (e.g. different sizes of tablet) and might be omitted.

This book goes far beyond the scope of "primary care" at village or community level for most of the developing world. It is essentially a manual for staff, working in or from a health centre (with at least the minimum of equipment and supplies described), and who have had a thorough training and work under some degree of supervision. It is an excellent book for experienced health staff and is valuable as a course for preparing teaching material for other health workers, when the content can be adjusted to their level of education, their duties and responsibilities.

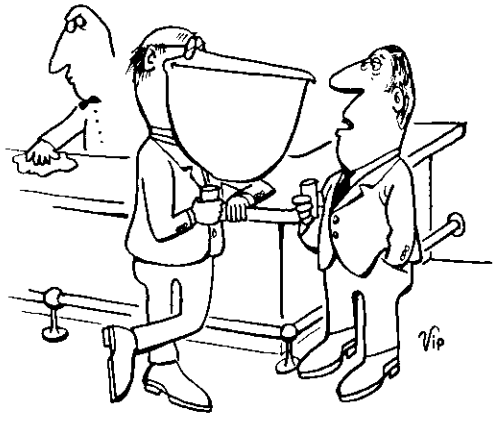
"Primary Child Care" is outstanding value and deserves the very wide circulation it will undoubtedly achieve. The authors are to be congratulated on making a very useful contribution to the improvement of child care in the developing world.

Reprinted from WHO Chronicle
Vol. 33, No. 4, April 1979,
p. 155-156.

CAJANAQUOTE

"Health is that state of moral, mental and physical well-being which enables a person to face any crisis in life with the utmost grace and facility."

- Pericles
5th Century B.C.



"You mean to say that's all you eat — fish?"

CAJANAQUOTE

"The irony is that while a developing country may grow tea, coffee, sugar or high-yield wheat for a lucrative export market at prices above the reach of the local population, the dietary standard of those who grow that food may actually decline."

- Dr. K.A. Hassall
University of Reading (England)

FROM THE EDITOR

We are pleased to devote this issue of *Cajanus* to papers presented at the seventh annual meeting of CANDI, the Caribbean Association of Nutritionists and Dietitians. A guest editorial by Mrs. Alison White, President of the Association follows.

This is also the final issue of *Cajanus* in 1979, the International Year of the Child. In every country of the Region special efforts have been made during the past twelve months to bring to the public's attention the need for a concern for the well-being of children. Many ambitious, meaningful and long-lasting child welfare schemes were started.

Commercial groups also got on the bandwagon. Food product manufacturers used IYC to promote cereals, tonics and beverages. Certainly in terms of media coverage and money spent, IYC was a success.

Whether or not this year-long focus on children will truly be a success in making life better for the thousands of youngsters in the Caribbean, only time will tell.

The important thing is that the commitment to providing a better life for all children everywhere must be a perennial not an annual one. Care, concern and consideration of children must become a part of our personal, community, national and global strategy for all time.

As the Director of CFNI, Dr. Michael Gurney recently wrote:

> "We are responsible for the children.
> Not only our children,
> Not only this year,
> But all children always."

Joan Peters

Seven years ago the Caribbean Association of Nutritionists and Dietitians (CANDI) was inaugurated at a meeting held in Trinidad about one and one-half years after the idea of a Caribbean Association had been conceived at a CFNI Technical Group Meeting in Barbados. The links forged with CFNI at that time continue to exist and are much valued by CANDI. In a 1972 issue of Cajanus devoted to this event, the Editor expressed the hope and expectation that CANDI would grow into a strong and useful member of our Caribbean society.

The overall goal of any group such as CANDI must be to help improve the nutritional status of the community it represents. This however is not just the job of nutritionists and dietitians but is the concern of anyone committed to promoting the health of a nation. One of CANDI's responsibilities is the provision of information relevant to the needs of the population bearing in mind the nutritional problems of the region. In this respect, a booklet "Meal Planning for Diabetics" has been published in collaboration with CFNI. Its use is being promoted through a series of workshops currently conducted by CFNI with the assistance of CANDI members. The idea of a Diet Manual for use in the Region was initiated by dietitians in Jamaica and followed by input from other dietitians in Trinidad and Tobago. Subsequently CFNI convened a workshop during which representatives from throughout the Caribbean were able to develop a truly regional publication available early in 1980. A third collaborative effort is "Job Descriptions for Nutrition and Dietetic Personnel" which has been compiled as a guide for health administrators in the Region. CANDI is currently collating papers which have been presented at CANDI annual meetings since 1972. Our aim is to make these available to persons in allied professions as well as to nutritionists and dietitians.

A significant contribution to CANDI's work has been made by Mrs. Loretta Lopez. A member of the steering committee appointed in 1970, she helped to make the Inaugural Meeting in 1972 a reality, and the following year became President. Since then she has worked on many CANDI committees and pursued graduate studies, thus bringing a wealth of experience to guide the Association once again as President during the past year 1978-1979.

The theme of the recently concluded 7th Annual Meeting held in Curacao from 9-12 July reflected 'International Year of the Child'. This meeting was attended by more than 40 nutritionists and dietitians, and representatives from the Canadian Dietetic Association, the Caribbean Association of Home Economists, Caribbean Food Service Supervisors Association and the Caribbean Agriculture Research and Development Institute. Speakers came from Holland, the United States and from the Caribbean area. Much of the credit for the successful meeting goes to Mrs. Cornelie Beaujon and her committee in Curacao who raised funds to bring these speakers from abroad and whose warm hospitality will never be forgotten by those who were there. Adding a new dimension to the meeting was a pre-conference workshop conducted by CFNI focussed on 'Nutrition and the Young Child'.

This issue of *Cajanus* contains a selection of papers presented in Curacao. CANDI welcomes this opportunity of sharing some of the highlights with the wider readership of *Cajanus* and we thank the Director of CFNI for inviting us to contribute to the International Year of the Child in this way.

Mrs. Alison White
President, CANDI

SECTION ON CANDI WORKSHOP

A TRIBUTE TO PROFESSOR DERRICK B. JELLIFFE

Editor's Note: Cajanus readers need no introduction to Professor Derrick B. Jelliffe and Mrs. Patrice Jelliffe. CANDI welcomed the Jelliffes back to the Caribbean on the occasion of the 7th Annual Meeting in Curacao and at the opening session paid tribute to Dr. Jelliffe for his lifetime of service to the field of nutrition and paediatrics. The tribute to Dr. Jelliffe given at the meeting by Mrs. Loretta Lopez, outgoing President of CANDI, follows.

1967 was an important year in the annals of Nutrition in the Caribbean. It was the year in which the Caribbean Food and Nutrition Institute (CFNI) was inaugurated, an event which was happily linked with the return of Professor Derrick Jelliffe and Mrs. Jelliffe to the Caribbean. The concept and founding of this institution, which serves this region, owes more to the imagination, intellect and initiative of Derrick - "Dick" - Jelliffe than to any other individual, and it was Professor Jelliffe, who, as its first Director, guided CFNI from its inception through those early and exciting years of its development.

It was not long before Professor Jelliffe's penchant for nurturing well-conceived ideas and innovations led to the sowing of the seed that was to germinate as CANDI (Caribbean Association of Nutritionists and Dietitians). In 1970 CFNI convened a Technical Group Meeting at which professional nutritionists and dietitians from the Commonwealth Caribbean were brought together for the very first time.

This was a turning point for dietetics in the Caribbean. Among the many decisions taken was the formation of this Association for nutritionists and dietitians. The emergence of CANDI seven years ago provided an opportunity for much-needed professional

fulfilment for many of our nutritionists and dietitians. Today, CANDI continues to serve this and other related purposes as it has grown in stature and relevance within the Caribbean Region and even further afield.

It is therefore very fitting that as CANDI seeks to honour those who have served well the cause of Nutrition in the Caribbean and espoused the development of professional unity and commitment in Nutrition, the name of Derrick Jelliffe should be pre-eminent in its claim to the first of such honours.

In paying this trubute to Professor Jelliffe, CANDI is thoroughly mindful of the global span of his distinguished career. Because of this, CANDI cherishes even more the privilege and good fortune of having enjoyed Dick Jelliffe's warmth, enthusiasm, high professional standards and deep concern for the welfare of their Association.

It is especially gratifying for CANDI, in paying this tribute to a man of distinction, to record its fond and sincere appreciation of the contribution of his wife in their unparalleled partnership - Jelliffe, Derrick B. and E.F. Patrice. A charming and inspiring partner, Pat Jelliffe has by her own expertise, refreshing research and intellectual enterprise earned for herself a unique place in the world of Nutrition.

Today CANDI proudly salutes Professor Derrick B. Jelliffe - physician, nutritionist, educator, administrator, writer par excellence, thinker and humanist. ▲

"BREAST IS BEST": MODERN MEANINGS

Editor's Note: In recognition of the long and successful partnership of Jelliffe, Derrick B. and E.F. Patrice, the following paper distributed at the opening session of the CANDI annual meeting has been selected for reprinting with permission.

Things are seldom what they seem,
Skim milk masquerades as cream.

- W.S. Gilbert (1878)

For decades, the slogan, "Breast is Best" has been in use as a pious medical incantation. It has been based on unassailable support for motherhood, and on the ritual regurgitation of a list of textbook advantages and out-of-date comparisons of the major constituents of human and cow's milk, memorized in medical school.

Translated into actual behaviour by health staff, the result became a cliche with self-defeating overtones: "Breast feeding is best, but not really of actual importance." It was therefore foolish to bother too much, especially since the greater risk was believed to be from the inducing of guilt feelings in the mothers concerned. The relative consequences of the two methods were considered to be of no real importance in modern urban society, and, in any case, the practitioner had learned nothing concerning the process in his training. In practice, therefore, until recently the endorsement of breast feeding was likely to have been lukewarn, ambivalent and ill informed about the properties of human milk and the mechanisms responsible for lactation. By contrast, the well funded formula industry had obligingly filled the vacuum, and assumed the role of Delphic oracle, saturating both the profession and the public with astutely presented information, propaganda, persuasion and motivation.

In the past five to ten years, the situation has changed dramatically as a flood of striking new scientific facts from a wide spectrum of disciplines has been jolting the torpor and complacency of the health professional and questioning the hubris of food technology.

BIOCHEMICAL/NUTRITIONAL CONSIDERATIONS

Until recently, it was in practice held that human milk and modern formulas based on cow's milk were really much the same, biochemically and nutritionally. Understandably, this view has been promulgated by the infant-food industry, although the "just like mother's milk" of earlier more freewheeling advertising days has, under criticism, moved to the semantically less specific, but similarly intentioned claims, using such Madison Avenue weasel words as "congruent" with mother's milk.

In fact, the constituents of human milk and cow's milk are dissimilar in almost all respects, with the exception of water and lactose. Recent investigations have emphasized their very different aminograms, with much higher taurine and cystine, lower tyrosine and phenylalanine in breast milk.[1,2] Analysis shows the detailed protein compositions to be dissimilar - beta-lactoglobulin is one of the main items in cow's milk protein, and is absent in human secretion. The converse is true of lactoferrin and lysozyme.[3] At a more specific level, the casein systems of the two milks are quite different. Human milk contains mostly beta casein, with some kappa casein and with alphasi casein.[1] A similar comparative listing could be given for lipids - notably, the cholesterol levels and fatty acid spectrums are profoundly influenced by species as well as maternal diet.[1]

Also, individual constituents cannot be compared. Each mammal milk is a complex biochemical system of large numbers of interdependent and interacting constituents. For example, zinc

concentrations are similar in the two milks, but absorption in the human variety is more effective because it is associated with a different zinc-binding factor from that in cow's milk.[4]

Technologic tinkering leading to modification has made cow's milk less metabolically inappropriate for the human baby - for example, in hyperosmolarity and hypernatremia. However, hindsight shows the story of formula production to be a procession of errors, particularly for the premature infant, such as those related to vitamin B_6, linoleic acid, and vitamin E, and overloads of protein, sodium and solute in general.[1] Each stumble is dealt with and heralded as yet another breakthrough, leading however, to further imbalances, leading to more modifications. The immediate future promises metabolic doubts and similar problems, plus or minus, with tyrosine, taurine, cholesterol and arachidonic acid; after that the possibilities are endless. In fact, although the modifications in modern low-solute formulas make them less metabolically inappropriate, the "humanization" designation of earlier formulas is literally a "nonstarter" and impossible of achievement.

Moreover, various added substances are needed in formulas as emulsifiers, thickening agents, pH adjusters and antioxidants. Approved by the Codex Alimentarius of the Food and Agricultural Organization of the United Nations are such items as carrageenan and hydroxpropyl starch. No ill effects are currently recognized, but they introduce further unknowns - certainly not found in the original product - for human infants.

Lastly, the distance that the ingredients of present-day cow's-milk-based formulas have moved from the parent cow's milk is inadequately recognized, as evidenced by recent specifications of one brand - electrodialyzed whey, nonfat milk, a mixture of vegetable and oleo oils, lactose, vitamins and minerals. The oils used in formulas include coconut, soy, corn and safflower.

PROTECTION AGAINST INFECTION

For decades, the protective effects of breast milk against a range of infections, particularly diarrheal disease, have been thought to be due to its cleanness and lack of opportunity for contamination. Although this theory is true and of particular importance with inadequate home sanitation, an increasing flow of investigations in the last few years has shown human milk to be rich in a wide range of humoral "host resistance factors," including secretory IgA, lactoferrin, lysozyme, and the bifidus factor, and as many white cells, notably macrophages and lymphocytes, as are present in the blood.[5,6,7]

As would be expected, protective effects are more clear-cut when environmental contamination increases risks of infections, as in developing countries.[8] These mechanisms are particularly directed against enteral infections, such as *Escherichia coli* diarrhoea,[9,10] and infections with an intestinal portal of entry, such as poliomyelitis. Interestingly enough, maternal alimentary-tract infection is rapidly reflected by a rise in antibodies in breast milk.

The anti-infective properties of human milk are life saving with poor home hygiene. However, recent work also shows important protective effects, even in well sanitated industrialized circumstances.[11,12] For example, the commonest neonatal pathogens, *Esch. coli* and klebsiella organisms, which may be etiologic in some cases of necrotizing enterocolitis, are very uncommon in the intestine of the breast fed, in whom the intestinal flora are predominantly *Lactobacillus bifidus*.[13,14]

ANTIALLERGIC EFFECTS

Cow's-milk protein, especially beta-lactoglobulin, is the commonest food allergen in infancy, and, with careful verification, about 1 per cent of bottle-fed babies can be found to be affected in industrialized countries.[15] The cause is simple: large doses of allergens when the intestinal wall is relatively "open" to the absorption of foreign protein macromolecules from cow's-milk-based formulas, as opposed to no allergen and the protective, antiabsorptive effect of the secretory IgA of human milk. Breast feeding (and the avoidance of the introduction of semisolids until four to six months of age) is the best prophylactic against food allergy in infancy.[16]

CHILD SPACING

All mammals have biologic mechanisms for spacing their offspring, usually by hormonally controlled periods of estrus. In many traditional societies, breast feeding has been recognized as having a birth-spacing effect, but, until recently, this theory has not been believed in scientific medicine. However, modern studies show that biologic breast feeding (with sucking throught the 24 hours and without other foods offered) produced effective child spacing through endocrinologic effects, largely mediated through the prolactin secreted from the anterior pituitary as a result of suckign the breast.[17] Estimates indicate that in the world at present, "lactation amenorrhea" has a larger statistical effect on couple-years protection than currently available technologic contraceptive programmes. Conversely, declining lactation performance, as is occurring in periurban areas in developing countries, has a community anticontraceptive effect, increasing the birth rate and, hence, the population pressure.[18]

By contrast, the usual pattern of breast feeding seen in Western cultures, such as the United States, has been termed "dosed" - that is, with a limited number of feedings, usually only

during the daytime. In this pattern prolactin secretion is much less and insufficient to produce noteworthy lactation amenorrhea. Also, Steroid oral contraceptives have been shown to interfere with the volume and composition of milk secreted.[19]

ECONOMICS

The method of feeding young babies has both macro- and micro-economic implications. In all communities, breast feeding conserves resources, not only in the ingredients that would be used in cow's milk-based formulas but also in the tinplate for canning and the energy consumed in both production and distribution. In resource-poor developing nations, the macroeconomics and agronomics of replacement of declining breast feeding is highly significant. For example, a decrease in lactation in the small country of Singapore over a recent 10-year period needed expenditure of the equivalent of $1.8 million United States dollars annually in foreign currency to pay for imported processed formulas from aborad.[20]

At the family level, the question of the cost of breast feeding vs. bottle feeding has been much discussed. Again, in developing countries, the matter is overwhelmingly obvious - to feed a baby with adequate quantities of formula would take 20 to 50 per cent or more of a family's income and is therefore impossible. In Europe and North America, comparisons depend on the foods used by the lactating mother to supply the extra nutrients that she needs and the type of formula advised. With the additional nutrients supplied by everyday foods and with use of ready-to-feed formula (as is common in Los Angeles), a recent analysis showed bottle feeding to be two to three times as expensive as breast feeding.

MOTHER-BABY INTERACTION

As a curious aberration, Western concepts of infant feeding have held bottle feeding and breast feeding to be interchangeable phenomena emotionally and psychophysiologically. Plainly, they are

not; the direct dyadic interactions are obviously different - for example, those of maternal hormone secretion and neonatal somatosensory olfactory and auditory stimulation.

Maternal neonate bonding - that is, the formation of intense attachment - has been shown to be related to contact leading to mutually reinforcing reflex behaviour, occurring most readily during a sensitive period in the first 24 hours of life, especially with biologic breast feeding. The probability of "disorders of mothering," including subsequent child abuse, may increase in women who do not experience this bonding experience, and the absence of close mother-baby interaction can be one factor in the later development of psychosocial maladjustment in the child.[21,22,23]

In current circumstances, closer contact is more likely to occur in the breast fed, largely because mothers wishing to nurse their offspring increasingly insist on it. In addition, as noted above, the quality of the interchange is different, with the breast fed baby in a much more direct and intimate biologic relation with the mother. The potential ill consequences of warped bonding produced by the curious taboos of the Western-style puerperal practices, such as separating mother and newborn and bottle feeding, are only beginning to become clearer, as one factor (among many others) related to the rising tide of psychosocial emotional abnormalities.

DISCUSSION

Apprehension with the widespread acceptance of bottle feeding as "normal" began some 15 years ago with two initially separate groups: tropical paediatric nutritionists worried by the increase in marasmus and diarrhoea; and women's groups in industrialised countries, such as La Leche League International in the United States, who wished to return to more natural mothering. More recently, as interest has quickened and research intensified, so newly identified, scientific support for breast feeding has emerged from a range of disciplines, including perinatologists

(in relation ot human milk banks, neonatal aminoacidemia and necrotizing enterocolitis), immunologists and allergists. Paralleling this rise in awareness has been a growing understanding of the public-health implications of breast feeding, both in developing and in industrialized countries. There is no need, therefore, to advocate two patterns of infant feeding - one for the rich and another for the poor. What has been termed "Biologic infant feeding" appears optimal in all circumstances - that is, feed the pregnant and lactating woman, breast feed alone for four to six months, and introduce semisolids, mainly based on low-cost, homemade "multimixes", from four to six months, with continuing lactation as a small but important supplement, especially of protein,[24] of particular consequence in developing countries.

In global perspective, this regimen is a prophylactic against both marasmus in disadvantaged communities and infantile obesity in more affluent circumstances.[25] At the same time as new information on the superiority and uniqueness of human milk, modern endocrinologic research endorsed the key roles of the maternal prolactin and let-down (milk-ejection) reflexes (Fig. 1A and B) and in success or failure of breast feeding. In fact, the "anxiety-nursing failure syndrome" (Fig. 2), the usual sequence leading to inadequate lactation, is attributable to the effect of uncertainty and doubt on the emotionally labile let-down reflex. Conversely, the practical information and individual and group support given mothers by self-help organizations such as the La Leche League are highly successful because they reinforce the maternal reflexes. On a community basis, major forces responsible for breast or bottle feeding are becoming apparent. They vary from one country to another, but always include the need for modern information (for mothers, school children and the general public), for revision of health services (in both training schools and maternity services), for the control of unbridled promotion by infant-formula companies and for consideration of facilities and legislation to permit working women to breast feed.

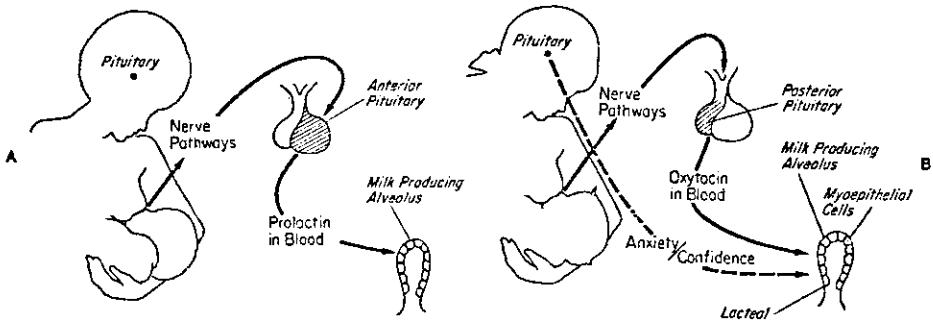


Figure 1. Key Reflexes in Lactation

A shows the prolactin reflex, a somatic response to sucking the breast, responsible for milk secretion (simplified).[3] B represents the "let-down" or "milk-ejection" reflex, a psychosomatic reflex, impaired by anxiety and enhanced by confidence, responsible for moving milk from alveoli to terminal lacteals (simplified).[3]

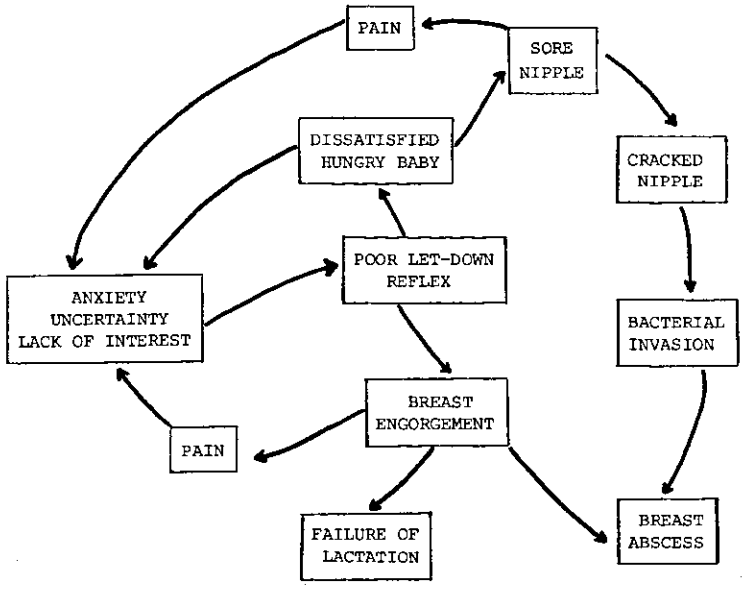


Figure 2. The "Anxiety-Nursing Failure Syndrome."[3]

It is often stated that campaigns and programs to promote breast feeding are unrealistic, "swimming against the tide", and anyway have never been successful. This opinion is not correct. Small-scale programs, often hospital based, can produce results speedily by simple, no-cost modifications of prenatal and puerperal care. Large-scale, multipronged programs, based on modern knowledge, have never been tried, but urgently need to be. In any part of the world, no single pediatric measure has such widespread and dramatic potential for child health as a return to breast feeding. Awareness of this fact seems gradually to be dawning.

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CAJANAQUOTE

"Never was a cliche more fatigued - or truer - than the one that bids: Tell me what you eat and I'll tell you what you are. Not only biography and genealogy, but the whole field of anthropology could, if one knew the code, be deduced from food. Food is a mirror that reflects a thousand phases of personal, national and international history. Geography is reflected in food; so is climate, the local flora and fauna, religion, superstiiton, and taboos; wars, victories, defeats, invasions. The food remembers where people travelled, who their grandmothers were, and from what part of the world their ancestors hailed."

- Poppy Cannon

PHYSIOLOGICAL AND IMMUNOLOGICAL ASPECTS OF BREAST FEEDING

by

*Dr. F.D. Muskiet**

An interesting aspect of human milk is the physiological variation in composition, which is not very surprising since similiar changes occur in other mammals as well. The composition may differ from mother to mother, from day to day, from feed to feed, and even from the beginning to the end. Due to this variation recommended dietary allowances for infants are not easy to make from estimates on human milk. Well-known examples are the fluctuations of fat content during the day and between fore-milk and hind-milk. Also the fall in protein content after the first days of lactation and increased levels of linoleic acid, which cause marked dietary changes. Recent studies have also shown varying levels of zinc, copper and iron in samples of milk obtained at different times from healthy women.

The needs of individuals for all nutrients vary and this is certainly the case with infants. This individual requirement may be reflected in the changing composition of breast milk. For instance greater sucking is a reflex stimulus leading to a greater milk secretion. It is also suggested that other stimuli from the nursing baby may affect the milk composition but as yet these under-appreciated mechanisms, such as alteration in the details of sucking, or even the weight of the baby, have not been adequately studied. In solely breast fed infants of well nourished mothers with established lactation and unimpaired let-down reflexes, growth is excellent in the first 4 to 6 months of life and there is no nutritional deficiency despite varying milk composition between mothers, and even in one and the same mother.

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Breast feeding does not consist of ingesting milk obtained at a single time, but over a continuing period of time. Human milk can therefore be considered as physiologically variable in composition, responding to various factors to supply the nutrients required for the infant, both as an individual, and at the particular stage of growth and development.

In the last twenty years there has been a progressive decline in the popularity of breast feeding. Fewer women are commencing it, and weaning is started earlier. This tendency has been particular dramatic in those countries in which the infant is less likely to receive adequate nutrition or sufficient protection from infection. Industrialisation gave a rise in family income so formula could be afforded. But in rural Chile there were three times as many deaths among babies given formula before the age of three months as among those who were totally breast fed. So, paradoxically, infant mortality rose with a higher living standard. Another example are the breast fed Guatemalian Indian neonates, in which Shigellosis (dysenteria) was rare in the first months of life despite poor hygienic conditions. The incidence of Shigellosis increased with the age of the infant, particularly after weaning was started.

In utero, the baby, assuming the mother is healthy, is usually well-protected against infections. After rupture of the membranes, the baby will soon be colonized by a lot of bacteria, among which are pathogens and non-pathogens. They swarm over the skin, parts of the respiratory tract and intestinal tract, and will stimulate the neonate to form antibodies also known as immunoglobulines, of which IgA, IgM and IgG are the most important ones.

The foetus is supplied during pregnancy with mother IgG by means of an active and selective transport over the placenta. In this way a passive immunity is offered for about three months against diseases like Measles, German Measles, Mumps, Chickenpox, Polio etc.

IgA and IgM are heavyweight molecular proteins and therefore cannot pass the placenta, so low serum IgA and IgM levels are found in healthy newborns. The low serum IgM level probably is the reason for the high susceptibility of the newborn to Gram negative organisms.

By means of breast feeding after birth there is a fast way to supply the baby with IgA. From this immunoglobulin, 80% is excreted in the breast milk as the so-called secretory IgA (s. IgA). Colostrum, the very first produced milk, contains specially large quantities of s. IgA, up to 50 mg/ml, rapidly declining to a 2 mg/ml steady level in two weeks. By then the higher milk production compensates for the lower IgA content/ml.

The s. IgA differs from the serum IgA. It consists of two molecules IgA bound by the "secretory component" and the "junction chain". It is stable at a low pH and resistant against proteolytic enzymes, so it still can function in the baby's intestine. Immunoglobulins are generally not absorbed from the intestinal tract of the infant. The local action of IgA is binding viruses and bacteria, preventing them from invading the mucosa.

Antibodies against Clostridium tetani, Corynebacterium diphteriae, Diplococcus pneumoniae, Escherichia Coli, Salmonella, Shigella and different types of ECHO and Coxackie viruses have been detected in breast milk.

Very important is the E. Coli IgA, as E. Coli infantile diarrhoea is a very common problem. The anti-viral antibodies may be even more important as we have as yet no effective anti-viral chemotherapy available. The large quantity of s.IgA in breast milk suggests that this is produced and stored locally in the mammary gland. Cells producing this IgA could be originating from the mother's intestine. Studies on the oral immunization of pregnant women with E. Coli and subsequent appearance of type specifics

s.IgA and IgM secreting cells in the colostrum led to the suggestion that selective transfer of sensitized lymphocytes from the gastro-intestinal tract occurs.

Other studies suggest that the milk macrophage, one of the leucocyte types found in human milk, may be an IgA transport agent, capable of delayed immunoglobulin release, possibly even in the infant gut. A factor in breast milk that in concert with IgA has a strong bacteriostatic effect is lactoferrine, an iron binding protein.

The anti-bacterial effect depends on the iron binding capacity, by which the bacteria are deprived of needed iron. Lactoferrine is not found in cow's milk. Lysozyme - an enzyme that cleaves the cell walls of Enterobactericae and Gram positive bacteria - is approximately 3000 times more abundant in human milk than in cow's milk. It has in vitro studies a synergistic effect with IgA on E. Coli lysis. The complement system consists of 9 separate proteins that react with antigen antibody complexes, or cells sensitized by an antibody. The C3 component, important for lysis of bacteria, has been demonstrated in colostrum. It seems likely that colostral IgA activates C3 in vivo.

The living leucocytes which are found in concentrations 2000-4000/mm^3 in colostrum are for 90 percent macrophages, motile cells which phagocytose fungi and bacteria and successively kill them. They probably synthesize the C3 component of the complement system, lysozyme and lactoferrine. About 10% of the colostrum leucocytes are lymphocytes which synthesize only IgA, in contrast to blood lymphocytes which produce IgG, IgA and IgM.

Besides humoral immunity, there seems to be evidence that cell-mediated immunity is conferred to the infant by consumption of breast milk, containing T-cells. There are small symphocytes, originating from the thymus with specific immunologie memory against certain antigens like viruses, fungi, mycobacteria, etc. This

transfer of T-lymphocytes may play an important role in the early induction of cellular immunity in the new-born period.

Acute necrotizing enterocolitis is a highly lethal disease, causing damage to greater parts of the intestine. It is specially seen in premature or low birth-weight infants, who have had severe perinatal stress. Experiments with newborn rats, exposed to daily hypoxia, show that all succumb to necrotizing enterocolitis in two to five days if fed artificial formula, but not if fed breast milk. Breast fed infants apparently do not develop necrotizing enterocolitis. For this reason very small premature infants have been fed fresh human milk successfully by tube until they were able to nurse.

Frozen breast milk does not protect against necrotizing enterocolitis because the macrophages are destroyed. When viable macrophages isolated from fresh maternal milk are added to formula or frozen breast milk, the protection is restored again, indicating the high value of macrophages in milk.

Some banked breast milk is autoclaved before use. This will destroy macrophages and immunoglobulins as well. Pasteurization (heating for 30 minutes at 62.5C) reduces IgA by 20% eliminates most of the lactoferrine, and totally destroys the small amount of IgM. Heating breastmilk to 70C for 15 minutes destroys 50% of IgA, 94% of the lactoferrine and 37% of lysozyme activity.

Even fresh breast milk requires special handling because macrophages stick to glass. Several other defence mechanisms in breast milk, not directly related to immunoglobulins, will be mentioned next.

Lactobacillus bifidus thrives in the colon of breast fed children due to the high lactose acid and acetic acid. This acid environment will discourage the growth of enteropathogenic bacteria. There is also a heat-stable anti- staphylococcal factor and a non-specific antiviral substance in breast milk.

An unsaturated vitamin B_{12} binding protein in breast milk may compete for vitamin B_{12} with bacteria such as E. Coli and Bacteroides which take up this vitamin in the intestine.

The absence of beta-lactoglobulin in human milk is an advantage over cow's milk because this protein is believed to be responsible for the milk allergy, causing eczema, diarrhoea and asthma.

In summary we could conclude that apart from nutritional and psychological considerations, the anti-bacterial and antiviral benefits from breast milk for the newborn with a slower inflammatory reaction than an older child, a less efficient phagocytosis by neutrophil leucocytes, low serum complement and serum IgA values, should be enough reason to stimulate breast feeding.

Mother nature has a special way to protect her babies. Higher living standards that promote the artificial formulae may be disastrous, as has already been shown in many developing countries. The passive immunity obtained through the breast milk at no extra cost, protects the infant until his own defence system has matured.

CAJANAQUOTE

"Just as economic strength is the true basis of national strength, adequate nutrition is essential for the individual personality to unfold. Without attention to nutrition, we shall be denying large sections of our people an opportunity to help themselves and to make their contribution to the country."

- Mrs. Indira Gandhi

THE PSYCHOLOGICAL ASPECTS OF BREAST FEEDING*

by

*Dr. H.N. Coffie***

Many people believe that the nursing experience of the infant, through breast feeding, is a central issue in the development of the later personality of the child.

Sigmund Freud popularized the theory that infantile experiences are of primary importance in later life. But his assumptions that personality development depends on whether the child is breast fed or bottle fed have not been confirmed in many studies.

Since Freud's theory cannot be used to emphasize the importance of breast feeding, let us look at the attachment theory. This simply states that for a healthy social development the child needs an attachment to another person. This other person is usually the mother.

Rheingold has demonstrated experimentally that eight weeks of intensive interactions with infants of about six months of age made them more responsive than control infants. Their love for the experimenter compared with a stranger, persisted for at least three weeks following the end of the experiment.

It is also argued that the healthy happy infant is rewarding to his mother. It is a two-way response. This relationship is learned, it is not instinctive. Each learns to love the other because of the rewards provided by the other.

Promoters of breast feeding, of course, state that breast feeding is very crucial in the forming of this intimate mother-infant bond. But there is another view of the mother-child bond

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*Slightly abridged version of paper presented.

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that makes much less of learning and more of instinct. In this view, held by Bowby, the importance of the feeding process is more clearly defined. The infant, besides crying and smiling has three other responses, which are also involved in attachment. They are sucking, clinging (physical contact) and 'following' (tracking the mother visually and auditorily) which keep the infant in the vicinity of the mother. Possibly, similar factors, warmth, softness and perhaps even smell are at work with human infants, although there are no hard data on this.

Sucking is triggered by hunger plus oral stimulation (stroking the cheek or the inserting of an object in the mouth). If it is the breast that is put into the mouth, the infant and mother are of course close together. Thus it can be argued that breast feeding plays a very important role in the development of an attachment between mother and child and consequent positive influences on the emotional and social development of the child.

The attachment theory led to many studies done to show maternal deprivation during the first year of life is likely to have long lasting detrimental effects.

It has also been suggested that breast feeding is an important factor in the emotional interchange between mother and infant, but little evidence has been found to support this. The zeal of some people in trying to foster breast feeding may derive from an over-simplified interretation of Freud's theory and/or a long held idyllic picture of mother-infant relationship.

We all know that sometimes children can have a strong attachment for their father, grandparents or older brother or sister who may never have participated in the nursing of the child. It is not necessarily true that the child needs only one fixed person, the mother, to take care of him, but he does need a fixed pattern of care. He has to live in a world in which he can predict what will happen, especially in relation to the person he meets daily. In

this sense, it is better to breast feed the child since this enhances the chance that the child will receive a fixed pattern of care.

The model used by Freud and the attachment theorist for describing the mother-child relationship is very static. We now know that the relationship is a dynamic one and that there exists 'two-way traffic'. From the time of birth there is a continuous interaction between mother and infant, in which both play an active role. The infant is not a chunk of clay which we can form. Formerly the newborn was thought of as a human being with no psychological identity. But recent research has shown that the behaviour of a baby from birth follows some orderly and fixed rules which have to be taken into account if the interaction between mother and baby is to be understood.

The spontaneity, periodicity and selectivity of the behaviour of the newborn play an important role in the interaction between the mother and her infant. If we analyse sucking, for example, we realize that sucking is a spontaneous innate reaction. The capacity to suck is present at birth but it has to be activated and the newborn has to adapt himself to the form of the breast. It is the first contact with the outside world. The sucking behaviour follows a suck-pause rhythm: 5 to 20 sucking movements with a pause of 4 to 15 seconds, i.e. periodicity. The sucking behaviour is influenced by external factors like the speed of the milk stream, the form and size of the nipple and the composition of the milk i.e. selectivity.

In the light of this new concept of the behaviour of the newborn we can perceive the interaction between the mother and the child as a conversation, a dialogue. And in this conversation the synchronisation of their reactions is very important.

Nature makes this possible because the newborn possesses the structural and functional capacities to accomplish the dialogue with his mother. For example, the mouth accomodates the nipple of

the breast and the newborn has organs of sight which are sensitive to stimuli from the mother. Thus the newborn and his mother fit together. But the mouth is also functional, because when it reaches the nipple it starts sucking in a sucking-pause rhythm which, in turn, allows the mother to interact with the newborn during the feeding process.

That is why I believe that breast feeding is the very first and most ideal opportunity which the mother has to interact - to dialogue with her child. I think that the interaction is far richer during breast feeding than in bottle feeding because the mother feels the rhythm of the sucking and can start the conversation at the right moment. Probably breast feeding gives more opportunity for visual communication also. It is this communication process which stimulated the development of the child. Its effectiveness depends on the contribution of both partners.

In this respect what Mary Ainsworth has called the 'sensitivity' of the mother is very important. This refers to the response of the mother to the signals and communications of the baby. The sensitive mother can see things through the eye of her baby; she is tuned in at the same wave-length. She interprets signals and reacts immediately to them in the right way. This is indispensable for the normal development of the child. Breast feeding is a unique opportunity to maximise the sensitivity thus stimulating the development of the child.

This assumption is justified by results of a study at Berkeley, California, but one must be careful not to oversimplify the findings by not considering the whole family atmosphere. Breast feeding is not efficacious per se. If a mother does not like the idea of breast feeding then perhaps we should not force her to do so, because the possible advantages of breast feeding might be undone by the consequence of forcing the behaviour of the mother.

I recommend that before starting a campaign for promotion of breast feeding, we investigate the reasons *why* mothers are not breast feeding and *what* is their attitude to breast feeding.

Reports have indicated that there has been a decline in breast feeding especially in mothers of lower-socio economic class, who from the economic and nutritional point need it more. At the same time, the emphasis in paediatric and child development publications on the psychological benefits of breast feeding has been influential in fostering positive attitudes towards breast feeding among middle class mothers.

If investigations show that the reasons why mothers do not breast feed their infants are due to esthetic feelings and because they are working outside the home, then we should motivate the employer to give his mother-employee the opportunity to breast feed her child for at least three months.

At the same time we must start an information programme on mothering at secondary school level and for mothers in the community in which we pinpoint the important aspects of the interaction between mother and child. Attention should be directed to the opportunity given through breast feeding for the mother to communicate with her baby thus creating a stimulating bond. The economic and nutritional advantages of breast feeding combined with this efficiency for stimulating a normal psychological development make its promotion a worthwhile endeavour.

THE BEHAVIOURAL MODIFICATION APPROACH TO OBESITY IN THE ADULT: OVEREATING IS MORE THAN SOMETHING YOU DO WITH A FORK

by

*William T. McReynolds**

Editor's Note: Another theme in the CANDI meeting was obesity and its treatment. The following papers introduce one of the new approaches to weight reduction.

WHAT IS THE BEHAVIOUR MODIFICATION APPROACH TO OBESITY?

The behavioural approach to obesity is one that takes as its inception the realization that obesity is not one but many phenomena. As you know, body weight is influenced by cultural, historical and social factors as well as purely dietary and physiological variables. One could say, then, that weight regulation is a dietary phenomenon, physiological phenomenon, cultural phenomenon, and so on. Within this view, obesity, whatever else it is, is also a behavioural phenomenon as the act of eating is a behaviour. Placing a morsel of food on a fork or spoon and putting it to the mouth is, in a very real sense, a behavioural act. The myriad actions we engage in each day that combine to equal our energy expenditure are also behaviours.

There is, I have said, a dual behavioural nature to obesity involving both food consumption and energy expenditure. Having identified obesity to be, in part, a behavioural phenomenon, we are now in a position to examine more closely its behavioural features and the causes of key behavioural events. In behavioural science - as in physical and biological science - we view causation to be a temporal chain of events. Viewed thusly, obesity is a behavioural phenomenon that results in part from a long line of

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behavioural events that begins, for all practical purposes, with the growth of a particular food or commodity, and ends with the ingestion of that food or spice or what have you. For our purposes the important events in the individual's eating chain are food buying, storing, preparing, serving, ingesting and disposal. These are, essentially, the behavioural steps involved in eating. You can see, then that eating (and overeating) is a great deal more than something you do with a fork. Clinical intervention should therefore involve changes in more than fork-habits. Within the behavioural approach, obesity treatment involves making changes at all links in the behavioural eating chain such that fewer calories are ingested. Although time does not permit, we could submit energy expenditure to a similar behavioural analysis and arrive at the position that increasing energy expenditure will involve making many changes in behaviour related to the use of machines, saving time and planned exercise. Exercise is, in other words, more than something that you do with your feet.

Summarizing, obesity is, in part, a behavioural phenomenon involving both temporal chains or sequences of behaviour that result in too many calories ingested and sequences of behaviour that result in too little energy expended. Obese people ingest too much food because they serve too much to themselves which they do because they prepare too much food which results from having too much food in the home and so on. Clinical intervention entails breaking the overeating chain. Actually, we cannot *break* the chain in any absolute sense; that is, we cannot fully prevent people from, say, buying more food at the market than they need for good nutrition. Instead, we try to *weaken* each behavioural link in the overeating chain or sequence. How we can go about weakening overbuying, overstoring, overserving, etc. within the behavioural perspective is the second question I posed in my remarks.

WHAT ARE SOME OF THE CLINICAL TECHNIQUES AND PROCEDURES ASSOCIATED WITH BEHAVIOUR MODIFICATION?

In emphasizing the behavioural aspects of obesity, we set the stage for treatment processes that reflect known behavioural laws of the acquisition, maintenance and change of human behaviour, especially eating behaviour. Accordingly, the laws of learning and the performance of learning behaviour are central to the behavioural treatment of obesity. In addition, as the clinical treatment of obesity is an active, *self-help* process, this treatment takes the form of the self-application of the laws of learning to the modification of one's own eating behaviour. Hence, I will speak of behavioural self-control techniques.

We have emphasized three basic behavioural self-control procedures in the treatment of obesity. The first is the food record. The food record is a diary of all items consumed for a given period of time on specially designed record sheets. The instruction for keeping the food record are, in abstract form, to write down everything that is to be eaten at any one time on a separate food record sheet before the item is consumed and to indicate the ingredients and approximate amount of the food eaten. Our patients keep food records for anywhere from two to six weeks. The completed food record sheets are examined weekly.

In addition to the nutritional information contained in the food record, this procedure has the following behavioural effects:

1. It provides information on eating time, place and frequency for specific intervention into the eating process. If we find, for instance, that a patient tends to eat late at night, that period becomes the focus of our effort to help the patient substitute other activities for eating.

2. Keeping a food record breaks up automatic or habitual eating by adding a new step to the eating chain.

3. It, thus, makes the patient more aware of the eating process such that self-restraint or moderation becomes more likely. Research has shown that overweight people eat less when they are made aware of how much they have eaten. The food record promotes such an awareness.

4. Keeping a food record also makes eating slightly less convenient and much more public.

5. It also directs the patient's attention to the finer aspects of eating and cutting back and makes them accountable for their behaviour. Our treatment focus is on reducing the consumption of all foods within a general appreciation of good nutrition. There is no special diet and no forbidden food. From a behaviour point of view, the most difficult problem in changing eating behaviour appears to be changing food choices; the least difficult problem may be changing the amount of food consumed within the patient's own, relatively stable, food choices. The overall goal of the behavioural Dos and Don'ts is to help the patient eat less of everything by buying less, keeping less food on hand, preparing small, predeterminated amounts, etc.

The availability of food and the ease with which it can be eaten are both of major concern in the Dos and Dont's. This reflects the finding that the eating behaviour of obese individuals tends to be triggered by food cues in the environment.

The third major treatment technique that we use in the behavioural treatment of obesity is the personal plate. The personal plate is an especially chosen luncheon-sized plate that is given to all of our patients. The 24 cm plate is chosen because we have found that it makes a set amount of food look to be greater in amount than a larger or flatter plate.

Our patients are given the personal plate and the instruction that for the subsequent 2-4 weeks they are to use that plate within three rules:

1. Everything that is eaten must be eaten off the personal plate. That is, all food must be served to the personal plate before it is eaten.

2. The food to be eaten at each and every eating episode must be placed on the personal plate at one time and its entirety before consumption commences. A decision must be made at the outset as to how much is to be eaten.

3. The third rule is that no seconds are allowed. Once the plate is empty, consumption ceases. If it didn't get put on the plate in the first place, it cannot be eaten.

The purpose of the personal plate, in summary form, is to break up the automatic, relatively reflexive eating process and place eating more under direct cortical control. This is a technical way of saying that we want our patients to pause and think about how much they want to eat any time they make the decision to eat something. The personal plate also builds in an effective "stop mechanism".

Once the plate is empty a strong cue to the cessation of consumption is present in the eating environment. Nothing stops eating like an empty plate, unless, of course, the person is fully bent upon eating more.

Notice again, in my brief description of the use of the personal plate, that there are no rules about eating special foods or avoiding problem foods. Our patients are told that they should strive to eat less of everything. Although they could pile high the food on the personal plate and not break a specific rule, they could

not do so and contend that they were trying to lose weight. The latter is entirely a matter of their own choosing.

"If we could remember ceremonially
(i.e., celebrate our history)
maybe we could understand the celebrations
of other communities,
and then the whole human running race
could finally sit down in a circle
and eat together,
and having shared food (bread)
could never be enemies."

—Corita Kent

BEHAVIOUR MODIFICATION IN THE TREATMENT OF OBESITY - THE ROLE OF THE DIETITIAN

by

*Cynthia J. Rennie**

Behaviour modification is based on eating less of everything instead of receiving and following a diet sheet, and is managed almost entirely by the subject with the guidance of the therapist.

The role of the dietitian in Behaviour Modification Therapy is to provide the subject with the necessary tools for the proper selection of foods, in order to ensure optimum nutrition from the daily diet. Selection of foods ought to come from as wide a variety of food as possible, so that the essential nutrients may be obtained in the amounts necessary to meet the recommended daily requirements. Thus, although one may be reducing the total calorie intake, one ought to be careful that the required calorie level is maintained to allow for the interaction and maximum utilization of the essential nutrients. The dietitian can, therefore, provide the basic nutrition information to enable the subject to choose his food wisely.

The eating process is regarded as a chain of six links: - buying - storing - preparation - serving - eating of food - and the disposal of left overs. In each of these links there is a behavioural aspect and nutrition information is important in each one of these links.

Food buying is the first important step to providing optimum nutrition. It begins with menu planning to include foods that are necessary in a balanced daily diet. It includes shopping according to that menu, in the amounts that are required and the exclusion of foods that are not required. Hence the use of a shopping list in

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the management of the external environment. Emphasis ought to be placed also on food quality and packaging in the purchasing of foods. This is to ensure that one makes the most economical buys in terms of amounts as well as nutritive value. (Read labels in prepackaged foods for nutritive value).

Food storage is important to the conservation of nutrients. Included in this is the refrigeration of food, especially in a tropical climate, to ensure that nutrients are not lost through food spoilage. The frequent cleaning of cupboards and the provision of cupboards which close tightly are necessary to avoid food spoilage through insect pests, and consequently the loss of nutrients.

In food preparation, the dietitian can advise on methods of food preparation which allow for preservation of nutrients, food palatability and the maximum use of low calorie foods. She can also advise on the preparation of adequate amounts to provide the nutrients necessary. The greater use of foods which require preparation (fresh vegetables and fruit), rather than prepared (canned foods), not only helps in the management of the external environment, but increases the use of lower calorie foods and adds more fibre to the diet.

Information regarding a daily balanced diet helps the subject not only in the choice of foods to include what is necessary, and in menu planning, but helps in the control of amounts to be served and eaten. It also helps in the distribution of eating throughout the day and the size of meals to be had. It allows for the planning of good, nutritious snacking if one has to snack; for example one could plan ot have fruit instead of a high empty-calorie snack, and also one could plan ot leave the dessert for snack time.

Nutrition knowledge enables the subject to understand why he/she is doing certain things and motivates him/her to continue. A knowledge of caloric values of foods enables the person to exchange

foods within the six (6) food groups so that he/she gets greater variety, and at the same time to maintain the lowered caloric level which he has set himself/herself. We need to remember that among middle-aged and older members of our community a lowered metabolic rate and decrease in physical activity indicate a decrease in caloric needs. The dietitian's advice is invaluable concerning the required caloric level depending on the age, physical build, and mode of activity of the individual. ▲

CAJANAQUOTE

"Once, man feared famine and fever. Now he is frightened to death of calories and cholesterol."

- Richard Gordon
In "No thanks! I'm on a Diet" High Life (British Airways) October 1977

CANDI BOARD OF DIRECTORS
1979 - 1980

Editor's Note: At the Annual General Meeting of CANDI in Curacao, new officers were installed. For 1979-1980, the Board of Directors, officers, standing committees and representatives are listed below. Readers of Cajanus may wish to contact these nutritionists and dietitians regarding the Association and its activities.

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Dr. Derrick Jelliffe, University of California, Los Angeles. ▲

TOPICS AND COMMENTS

A PRACTICAL METHOD FOR BEAN STORAGE

Through the Newsletter of the League for International Food Education comes information about a way to help protect beans from insects. Suitable for use either in the home or on the farm, the ancient Indian method is both simple and inexpensive.

Studies were made at CIAT (Centro Internacional de Agricultura Tropical, Cali, Colombia) handmixing five ml of oil with one kg of white beans (Phaseolus vulgaris). Beans were subsequently protected from insects for up to 75 days. Many adult insects were killed by the oil and those remaining laid fewer eggs which had a much lower hatching rate. Water absorption and thus cooking time of the beans was not affected, nor was germination. Preparation using crude oils were not only cheaper to make but also lasted longer because they contain more antioxidants, thus retarding rancidity.

Similar studies at IITA (International Institute of Tropical Agriculture, Ibadan, Nigeria) with groundnut oil and cowpeas again indicated that five ml of oil was enough to protect beans against weevils, this time for 180 days. As with oil treatment of navy beans, the treatment had no adverse effect on cooking time or taste of the cooked beans nor did it influence germination. The oil acted by entering the egg of the insect and stopping growth of the larvae within minutes.

Oil treatments are non-toxic, preserve seed germination, and are simple and inexpensive to apply. In the case of navy beans a five ml application represents only about 0.5% of the Colombian market price of the beans. With cowpeas the cost of treatment would be about 2% of the Nigerian market price. In both cases this is a low cost-benefit ratio for the treatment. The treatment would prevent loss of 30% of the cowpeas thus increasing their market value by nearly a third. Not only that, the farmer would be able to obtain a much higher price for his cowpeas by delaying their

entry to the market for four to six months.

For additional information on this simple dry bean preservation method, please contact:

Dr. Robert A. Luse
Centro Internacional de Agricultura Tropical
Apartado Areo 6713
Cali, Colombia

CAJANAQUOTE

"Bad houses do for the healthy what bad hospitals do for the sick - kill them off."

- Florence Nightingale
Notes on Nursing,
London, 1859

DEMONSTRATING THE BENEFITS OF IRON SUPPLEMENTATION*

One problem often encountered by nutritionists is their inability to show the effectiveness of a nutrition improvement program in terms that are meaningful to national planners. It is a relatively simple matter for agriculturalists to demonstrate that increased fertilization results in significant increases in crop yield which in turn can mean bigger profits for the farmer. But it is usually difficult for the nutritionist to discuss the benefits derived from feeding programmes in purely economic terms. However, one such effort has been successfully made by the Nutrition Research Institute, Sambaja Unit, in Boger, Indonesia. With the financial assistance of the World Bank, this group has convincingly shown that iron fortification can bring large financial returns.

This study was carried out on 300 workers on a rubber plantation in West Java. Infected with hookworm (known to result in anemia), those workers also consume a diet low in iron. More than 45% were found to be anemic (hemoglobin levels of less than 13g/100ml). Their hemoglobin levels were found to correlate with their ability to work as measured by both the Harvard Step Test (a simple test of work capacity) and the amount of rubber harvested. The number of days absent from the job due to illness also correlated to their anemic condition. When the men were given a supplement of 100 mg of iron daily for 60 days not only did their hemoglobin levels increase but also their work capacity and work output increased; also they had fewer sick days.

The correction of the anemia resulted in an increase of worker productivity of about 20%. This amounts to about US$132.00 more each year in rubber sales for each of the three-hectare units to which these men were assigned.

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*Adapted from "Iron deficiency anemia and the productivity of adult males in Indonesia", by Samir S. Basta, Soekirman, Darwin Karyadi and Nevin S. Scrimshaw, American Journal of Clinical Nutrition, Volume 32, Number 4, 1979.

The cost of the iron was US 50¢, thus the benefit/cost ratio was 264:1, meaning that this program produced a very high financial return for the small investment made in it. This ratio, 264:1, is far greater than those ratios usually quoted in connection with schemes to increase crop productivity.

Furthermore, this calculation only looks at management's benefits. For the worker there are benefits, too. Since workers are paid according to the amount of latex they harvest, they are able to earn more because they can work harder and longer (they are not absent as much because of diarrhoeal and respiratory diseases). Workers' families also benefit because increased income offers the possibility of increased food supply. Thus iron supplementation can be an effective way of contributing to the development of both the country and its poorest labourers.

Editor's Note: There are four major ways to combat iron deficiency anaemia:

- **the distribution of iron and/or iron and folic acid supplements to individuals*
- **the fortification of foods for populations*
- **changing food practises of families*
- **environmental sanitation*

The whole question of the functional significance (i.e. the effect on performance, wellbeing and health) of mild anaemia is somewhat controversial. Similarly knowledge of the right mix of preventive programmes is as yet incomplete.

CFNI is currently assessing the extent or the problem of anaemia in member countries with a view to developing a strategy for its control. ▲

UPDATE ON CHILD NUTRITION: AN IYC SPECIAL SECTION

FEEDING YOUR BABY BEFORE BIRTH*

by

Roslyn B. Alfin-Slater, Ph.d. & Derrick B. Jelliffe, M.D.

Pregnancy increases the nutrient requirements for women, not only to supply nutrients for the foetus but also for the production of the placenta and amniotic fluid. Calories are also required for the uterus and breasts and for caloric stores laid down for use later in lactation. The usual difficulties of estimating nutritional requirements at any age are increased in pregnancy because the needs of two beings must be assessed simultaneously. Also, the foetus is growing rapidly and is inaccessible for direct measurements. To complicate matters further, the placenta acts as a sort of "middleman", selectively passing on nutrients. The pregnant woman's body adapts to the new situation so that, for example, iron is absorbed more readily than normal.

Throughout the world, iron deficiency in women is common. During pregnancy, iron is needed for blood formation in the mother and foetus, and for muscle production (muscle contains large amounts of the iron-containing substance, myglobin) in the uterus and in the baby. Since many women start their pregnancies with low iron stores, the use of iron supplements is desirable especially in the second half of the pregnancy. Various compounds are available for use orally; ferrous sulfate tablets are inexpensive and are effective. By contrast, the possible increased need for protein is not clear-cut.

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*Reprinted with permission from the Los Angeles Times Home magazine, 25 February 1979.

Editor's Note: "Recommended Dietary Allowances for the Caribbean", 2nd printing 1979 provides a useful, although approximate, guide to the additional amounts of nutrients needed daily during pregnancy.

The question of correct calorie intake and preferred weight gain during pregnancy has been debated for years. Some traditional cultures purposely restrict the diet during childbearing in order to produce a small foetus and provide an easier delivery for the mother. In Western medicine, the idea of limiting food intake in pregnancy dates to the first part of the 19th century, possibly because a narrow pelvis was common at that time in poorly nourished urban slum women as a result of rickets and general malnutrition.

If the pregnant woman's diet is inadequate, especially regarding calories, the foetus is more affected than is the mother, since the placenta reduces the amount of glucose and amino acids passed through it. Maternal malnutrition is undoubtedly the main reason for the estimated 20 million low birth weight (less than 5½ pounds) babies born each year in developing countries, and for a considerable number born in industrialized countries.

The pendulum can swing from one extreme to another. After years of advising mothers to reduce maternal weight gain, there is the risk now of going in the opposite direction. The question of excessive calorie intake in pregnancy is beginning to be looked at more seriously, both in relation to high birth weight newborns (more than 10 pounds) and to subsequent maternal obesity. The ideal weight gain in pregnancy is often stated to range between 22 and 27 pounds, however, a nutritious diet, together with iron supplementation, is important.

GIVE YOUR CHILD A LIFETIME OF GOOD NUTRITION

by

*Joan Peters**

OVERWEIGHT BABIES FACE NUTRITIONAL RISKS

Have you ever attended a beautiful baby contest? Chances are the first prize winner was a chubby, cuddly child, obviously well-cared for and loved. Most spectators would automatically think "Isn't he or she healthy and well-fed!" But just as definitions of beautiful often change with the times, so it is with the definition of well-fed or well-nourished. Nutritionists like those at CFNI are beginning to believe that fat babies are not really well-fed at all... in fact they are actually malnourished.

Why? Because overfeeding a young child is just as bad as underfeeding. It's true the results of too much food early in life may not show up as clearly as undernutrition, but the fat baby may be destined to an overweight middle-age with all its accompanying physical problems. These problems, such as diabetes, heart disease and high blood pressure are common health concerns in the Caribbean and among the major causes of hospitalization and death.

Avoid Too Early Feeding of Semi-Solid Foods

How does a mother overfeed her baby? Usually it's by beginning to supplement breast milk with cow's milk formulas or infant feeds within the first three or four weeks after birth. She may also encourage baby to drink every drop in the nursing bottle. Then

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**Joan Peters is Nutrition Educator, CFNI*

Editor's Note: These articles present nutrition information in a a very simple form designed for an audience at the community level. Cajanus readers involved in nutrition education may wish to reproduce and use this information as the basis of simple factsheets or handouts for community leaders, mothers, school children, providers of child care etc.

because she's anxious to do what she thinks best to see that the baby grows quickly, she introduces soft semi-solid infant foods which are sold in jars or tins at the supermarket. This means that mother is controlling the amount of food energy and the number of calories that the child is getting rather than baby himself through his natural hunger response to the breast. From a calorie point of view, the baby is really receiving a form of double feeding.

Babies who are given solids too soon after birth face still another "nutritional risk" in addition to obesity. In recent years, it's been shown that the infant's intestine will absorb small amounts of undigested protein that are "foreign" to it. As a result, the child may develop certain types of food allergy, especially to the proteins of cow's milk, wheat and egg.

CFNI says "Breast feed Your Baby"

So remember, there's no advantage in introducing your baby to semi-solid foods at a very early age. In fact, there are real risks and disadvantages. But there are many advantages to fully breast feeding your baby until he's at least four to six months old. That means NO additional feeds, no bush teas, glucose or other liquids. Your breast fed baby will be getting the food that's naturally best for him along with protection against disease, lower chances of developing digestive upsets, and the benefits of a loving relationship with his mother which will improve his chances of growing into a happy well-adjusted person.

For more information on successful breast feeding, contact your local health clinic staff, your doctor, the nurse, midwife or community health aide.

FEEDING YOUR BABY WISELY

One of the wonders of having a new baby is watching him grow and develop. Good nutrition is basic to that growth and development. Not enough of the right kinds of food can result in slow mental and physical development. Too much food can lead your child to a life of overweight with its outcome of heart disease, high blood pressure and diabetes. It's most important then to feed your young child properly.

BREAST FEEDING ALONE IS BEST FOR THE FIRST FOUR MONTHS

Five or six feedings from the breast can satisfy and nourish an infant for the first four months. Breast milk is best suited to the baby's needs, not only for growth but because it is easily digested. Babies who are breast fed receive special substances from the mother that help fight disease and protect against infections. There's also important emotional satisfaction to both mother and child from breast feeding. And don't forget, it's convenient and cheaper than prepared formulas.

ADD SOME FOODS AT FOUR MONTHS

Continue to breast feed at least three times a day. A thick porridge should be given twice a day with a cup and spoon. Make the porridge from cornmeal, oats, banana or plantain adding milk and dark sugar to sweeten. Be sure it is thick so that it gives the child enough of the important nutrients he needs.

Fruit juice should be given once a day. Use any fruit in season - cherry, guava, soursop, etc. At four months the baby can have two big spoonsful. At six months he can have six big spoonsful. Use a cup and spoon for the juices. You can also mash fruit and give the pulp to the child. Ripe banana, pawpaw and pineapple are good and can be given after a meal. If you are preparing juices or pulp, use only cold boiled water in their preparation.

SLOWLY START WITH FAMILY FOODS AFTER SIX MONTHS

Along with breast milk, a six months old baby will need more foods. You may give mixtures of the following:

4 parts cereals, such as rice; wheat and wheat products; corn and corn products; oats; starchy fruits, roots and tubers like banana, breadfruit, yam and dasheen.

2 parts peas and beans, like pigeon (gungo) peas, red peas, broad beans, black-eye peas, also nuts.

1 part vegetables.

1 part food from animal sources.

For the six months old baby, use a small spoon for the measurements. When the baby is older you can use a big spoon to measure the food. With the four types of foods above, you can make many different mixtures. Nutritionists often call these, Multimixes from the Family Pot.

One type of multimix is called a double or 2-mix. Some examples are:

4 spoonsful rice with 2 spoonsful peas.
4 spoonsful of yam with 1 spoonful of cheese.
4 spoonsful of cornmeal with 2 spoonsful of peas.
4 spoonsful rice with 1 spoonful fish.
4 spoonsful sweet potato with 1 spoonful codfish.

A triple of 3-mix contains three types of food, using the proportions from the basic food groupings, for example, 4 spoonsful rice with 2 spoonsful peas and 1 spoonful callaloo. Other triple mixes might be made from yam with callaloo and fish, and cornmeal with pumpkin and cheese.

A quadri or 4-mix might contain rice with peas, carrot and chicken; cornmeal with peas, callaloo and fish; and rice with stew peas, pumpkin and salt beef. Use proportions as above.

If you would like help with using the multimixes for your baby's meals, get in touch with the health clinic near you. The nurses and aides there can give you information and easy-to-follow directions about feeding your baby.

PREPARING THE MULTIMIXES

Be sure the foods are well-cooked. Take the baby's food out of the pot before you add any hot pepper, salt or other spices. Use a clean sieve and a spoon to mash the food to a pulp. You can add a little margarine or butter along with pot water, gravy or soup to make it smooth. Just be sure there's no pepper in the soup or gravy. Feed the multimix dinner from a clean cup or small plate with a spoon. Don't keep the mixture for another meal. Multimix meals must be fresh so feed the baby when the family eats. ▲

CAJANAQUOTE

"An abundance of food does not necessarily result in good nutrition."

- Dinesh Sinha

GUYANA'S "METRIC BABY" PROGRAMME GIVES BOOST TO BREAST FEEDING

by

*P.A. Munroe, Lurlena Pieters & Aletha Isaacs**

Metric Baby No. 1 in good health at three months.

Guyana has set January 1982 as the date when the country intends to be fully converted to the metric system of measurement. The decision to go metric was made about a decade ago and since then our national programme has been evolving. One of our biggest tasks is keeping the public both up to date with the changes that are taking place, and aware of their expected involvement in the programme. But even more than metric measurements and signs, we felt we needed a live symbol to grow along with our National Metrication Programme. Our choice was the Baby.

Metric Baby No. 1 arrived at exactly one minute past midnight - a healthy 3.5 kg baby boy. When we paid him his first quarterly visit, he was 7 kg and had already received his BCG, DPT and Oral Polio vaccines.

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*P.A. Munroe is the Secretary General of the National Science Research Council, Guyana.

Lurlena Peters and Aletha Isaccs are staff members of the Guyana Metrification Board, 44 Pere Street, Kitty, Greater Georgetown, Guyana.

At the beginning of this year ten newborn infants were chosen as our "metric babies". In so doing, a decision was made to extend our commitment to these ten infants beyond the time period designated "International Year of the Child". For the next fifteen years we will follow the development of these babies, paying particular attention to their health needs. We will educate the mothers as to the necessity of ensuring that their babies are vaccinated against childhood diseases such as measles, whooping cough and smallpox, and will point out to them the likely pitfalls if they do not. As we continue our quarterly progress reports in the mass media, other mothers will also benefit from the experiences of these ten mothers.

In each community Health Visitors hold monthly Clinic sessions at which newborn babies receive their vaccinations and check-up and mothers receive tips on infant care.

When we made our first round of quarterly visits in March 1979, we found that several mothers were breast feeding their babies - a trend which we thought was particularly heartening in these days of

patented baby foods. For example, there is little Wray Anderson of Kuru Kururu on the Linden Highway - approximately 40 km outside of Georgetown. He is being breast fed and that could be one reason why he's one of our more progressive "metric babies". At birth he was 48 cm in length and 3.8 kg in weight. But over the past three months Wray has grown so rapidly that his Health Visitor and his mother can hardly keep up with him. He is already 10 cm longer and nearly twice as heavy as he was at birth. Even our Metrication Officers who paid him his first quarterly visit were surprised when they checked him in at 59 cm and 6 kg. And he really does look intelligent!

A lively, breast fed baby being held by his mother.

As his nurse remarked: "I tell you, when he came in for his six-week check, I expected to see a baby but the expression on his face was so much like that of a big man, I was really surprised!"

Echoing similar sentiments, his mother said: "I can't believe it, although he has a cold, he's still behaving like a big man."

This trend of rapid development seemed to be particularly common among our "metric babies" who are being breast fed.

Another baby who was 46 cm and 3.5 kg at birth had advanced to a grand 9 kg and 61 cm by the time he received his metric visit the other day. Up until this time, he has received no other type of feed but his mother's milk.

This 34 year old mother from Coomaca, Guyana, is breast feeding her seventeenth child while her 18 year old daughter (left), holds her own first-born.

A Nutritional Survey of pre-school children in Guyana carried out recently, quotes statistics which bear out the rapid growth trend of our "metric babies". According to the Report:

> "Guyanese mothers tend to introduce other milks to their babies from an early age, either to supplement breast milk where they feel it is inadequate ... or else to replace breast feeding totally."

But in those cases where breast milk was totally replaced, a high incidence of malnutrition resulted, whereas a better state of health was discovered among children who had been given alternate types of feed as a supplement rather than as a total replacement of breast milk. ▲

HOW "FAST" IS YOUR BABY GROWING?

by

*Dinesh P. Sinha**

How "fast" is your baby growing? One quite often hears mothers telling proudly, "He was 9lbs when he was born, and you know, he doubled his birthweight by three months and tripled by 9 months". Gone are the days when "the chubbier the baby, the healthier he is" was the thinking. Although not proved beyond doubt, fat infants are more likely to become obese adults than lean ones[1,2,3,4]. Infantile obesity is a health hazard even in early childhood[5].

Normally a baby with birth-weight 3.4 kg (50th percantile of Harvard standard) will gain 68% of his birth-weight in the first three months, will become 2.25 times his birth-weight at six months and nearly triple by one year. However, it is important to remember that babies born with different weights normally have different rates of weight gain. Lower weight babies gain at a faster rate than the heavier ones. For example, a baby born 2.63 kg (3rd percentile) would gain 83% of his birth-weight by 3 months, will become 2.4 times his birth-weight by 6 months and 3.2 times by one year; whereas a baby with birth-weight 4.58 kg (97th percentile) would gain only 62% of his birth-weight by three months, will double by six months and 2.7 times his birth-weight by one year. Table 1 which has been adopted from the Harvard Standard[6] gives the rates of growth of babies born with different weights. Doubling of weight of a baby born 3.5 kg by three months would certainly classify him towards overweight.

Obesity in infancy in the Caribbean is certainly beginning to be recognized with increasing frequency[7]. Although clinic staff

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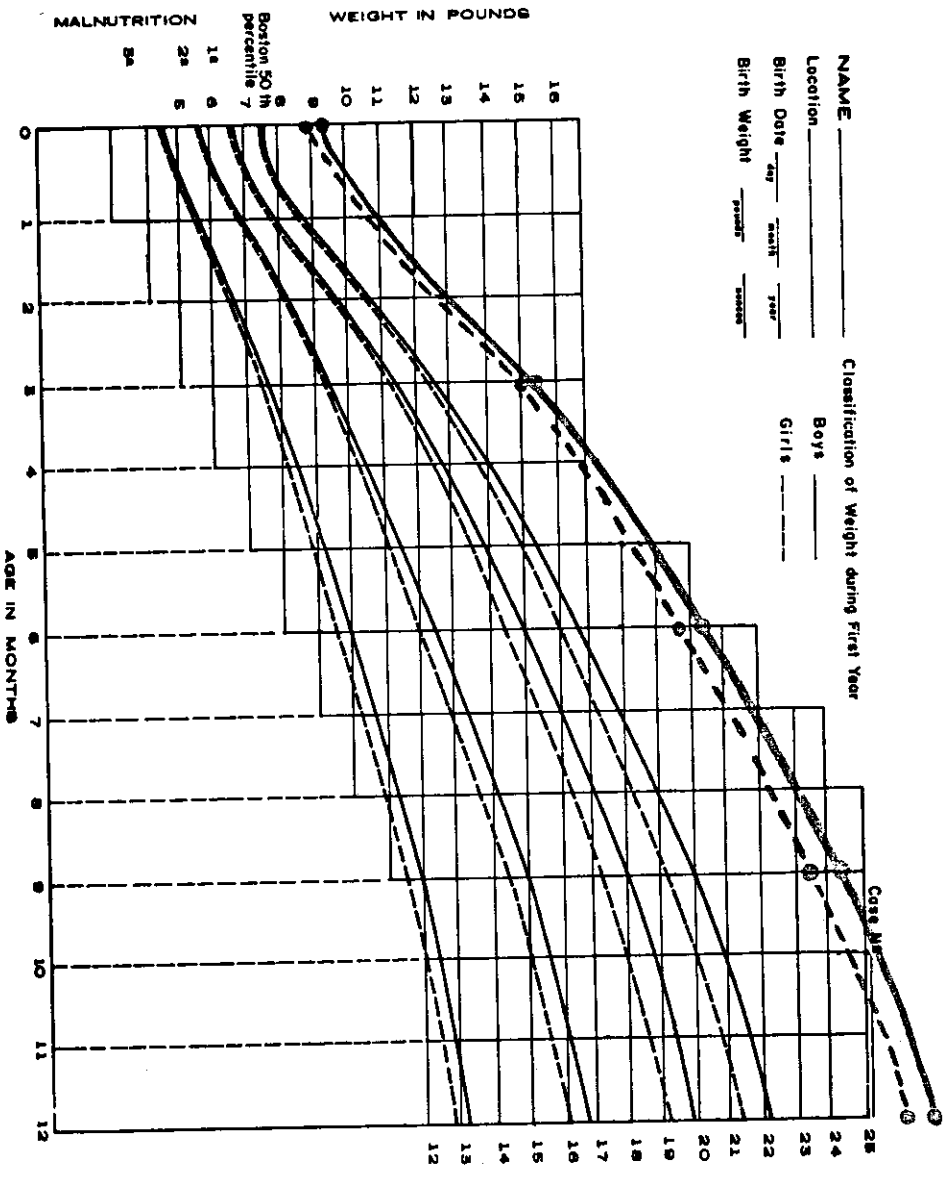
are aware of the occurrences of disease, they do not regularly record it. The growth charts used in most of the Caribbean countries (Fig. 1) shows Gomez I, II and III and Boston 50th percentile line but shows no upper limit. There is a need for drawing the upper limit (red line in Fig. 1) on these charts to make the identification of these children simple in clinic practice.

Although complex in etiology, infantile obesity is much more common in bottle fed babies than breast fed babies. In one study in Sheffield, England[8], 59.6% of artificially fed babies were overweight by six weeks of age, compared with only 19% of the breast fed. In another study in Los Angeles, California, doubling of birth-weight occurred much earlier in the bottle fed than in breast fed infants[9]. According to Jelliffe and Jelliffe, it is the combination of cow's milk formula feeding and the very early introduction of semi-solids which cumulatively increases the likelihood of infantile obesity[5]. In the Caribbean the same semi-liquid nutritionally inadequate feeding pattern which is responsible for the undernutrition in the weaning age group when started earlier than six months may be responsible for infantile obesity especially when excess of solid is added to the liquid food. Feeding pattern during early infancy needs to be looked into carefully to control both the faces of malnutrition. However, promoting total breast feeding up to six months could control infantile obesity to a great extent.

Birth-weight in different percentiles		Weight as % of birth-weight at different ages		
Percentiles	Birth-weights in kg	3 months	6 months	1 year
3	2.63	182.9	241.4	319.0
10	2.86	175.8	234.6	310.8
25	3.31	170.9	226.2	302.8
50	3.40	168.0	223.0	296.1
75	3.76	164.1	217.0	287.1
90	4.13	159.3	210.9	278.9
97	4.58	162.4	205.9	270.0

Adapted from Growth tables in Textbook of Pediatrics (eds), Nelson, W.E.[6]


NAME
Location
Birth Date
Birth Weight
Classification of Weight during First Year
Boys
Girls
MALNUTRITION
WEIGHT IN POUNDS
Boston 50 th percentile
AGE IN MONTHS
Case No.

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YOUR NUTRITION QUESTIONS ANSWERED BY THE CARIBBEAN FOOD AND NUTRITION INSTITUTE

Q. *Someone told me that fish makes children very intelligent because it is a brain food. Is that true?*

A. Fish is a good nutritious food. But all foods lose their identity in the gut or digestive system. Although they provide nutrients needed by parts of the body, no one food serves a special purpose or is needed for a special tissue in the body. The reason this belief sprang up may be that nerve tissue, which is a part of the brain, is rich in phosphorus and fish provides phosphorus-containing compounds. However meat, chicken, eggs, milk, nuts and legumes also provide phosphorus. Fish however is a valuable item in the diet. It is a good source of high quality protein, and when used in a "multimix" with foods from other groups, it makes a significant contribution to the daily diet in terms of several valuable nutrients.

Q. *My baby was recently weighed and measured as part of a national nutrition survey. Why is the upper arm measurement used to tell is a child is malnourished or not?*

A. The arm circumference can be used to give a rough estimate of the body's calorie and protein reserves because the main tissues in the arm are fat under the skin (calorie stores) and muscle (protein stores). In adults, especially those who work at hard physical tasks, the arm circumference may also be used, but only by taking into account that there is often increased muscle size from exercise not necessarily from protein deposits.

Q. *Does malnutrition in childhood really cause brain damage?*

A. This is a hard question to answer exactly. There are many things which can slow down or impair mental development, for example, infections, poor social stimulation, and birth defects. There is evidence however

that if severe malnutrition occurs during the last three months of pregnancy and during the first six months of a child's life, there is a special danger of infantile brain damage which is not reversed by later good nutrition.

My youngster, who is eleven, is active in school athletics. Should I give him extra chicken, meat, cheese and animal protein foods? Should I buy a special tonic beverage for him to drink?

It's certainly desirable to encourage youngsters to take part in healthful exercise, whether of the organized or the informal variety. Many parents and coaches think that sports require special diets that are high in protein. Certainly some food manufacturers encourage the idea that eating or drinking their product can make your child a star athlete. One American ready-to-eat cereal has built its entire promotional campaign around the theme "Eat the breakfast of champions". In this Region, a tonic beverage promises to "make your child a champion".

Recent studies indicate that strenous involvement in athletics requires not more protein, but more calories to take care of the extra energy used in the activity. Spending money on additional expensive protein foods is unnecessary. Give your child a good well-balanced family diet. Be sure he eats a good breakfast before leaving for School. Include nourishing snacks between regular meals. These snacks could be fresh fruits or vegetables, or milk or fresh fruit juice as a drink rather than a bottled soft drink. Mix reconstituted powdered milk, chilled, with mashed ripe banana, mashed avocado pear, molasses, a little brown sugar or honey as a treat. Far cheaper than processed powdered tonic drinks!

Another mistaken idea is that extra vitamins and minerals, taken as pills or tonics, will increase athletic ability. Some people operate on the assumption that more of what is good for you is always better. Doubling the amount of vitamins or minerals needed

by your child will not make him more healthy, and in some cases could be even harmful.

The meals you feed your young athlete should provide his or her Recommended Dietary Allowances as set out in the CFNI publication of that name. The only extra needs will be energy foods.

Q. *Are vegetarian diets safe for children?*

A. Vegetarian diets can be nutritious and healthful for both children and adults, especially if milk and/or eggs are included. A totally vegetarian diet, that is one that contains no dairy products or eggs, does pose special problems in terms of providing enough iron, zinc, and B vitamins. As long as the diet contains the proper mixtures of plant proteins, it usually provides adequate protein for growth and development, even of children.