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HEALTH STRATEGIES FOR THE CONTROL OF  
CHILDHOOD MALNUTRITION

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ABSTRACT

Malnutrition is the most important cause of morbidity and mortality of young children in non-industrialized poor countries. The control of protein - energy malnutrition is more complex than the prevention of most other common killing diseases of children. It requires a multi-disciplinary approach including involvement of departments and staff responsible for agriculture, social services, education, economic development, health and possibly others. The aetiology of the problem is complex and is closely related to poverty, deprivation, ignorance and prevalent infectious diseases. Intervention programmes should be considered a legitimate part of national and local development plans.

This paper, while briefly discussing the planning of nutrition programmes, deals primarily with those interventions in which health personnel play a leading role. The need for base-line data, for continuing surveillance and for planned evaluation of programmes is discussed. The major part of the paper consists of a critical examination of the three levels of treatment and prevention now commonly favoured: the hospital, the nutrition rehabilitation centre and the health clinic.

In many parts of the world malnutrition is the most important cause of morbidity and mortality in young children. Most forms of malnutrition are closely related to poverty and deprivation. In all countries nutrition problems of young children exist and applied programmes are needed both to deal with existing malnutrition, and, more importantly, to prevent children from becoming malnourished. The overall objective of these programmes should be to ensure that the largest possible number of children achieve their full potential for optimum growth and healthy development.

#### NATURE OF MALNUTRITION

Protein-energy malnutrition of young children is clearly the most important form of malnutrition in the world. Xerophthalmia due to vitamin A deficiency is the leading cause of childhood blindness in many countries; rickets is still seen both in the urban areas of industrialized countries and also under certain circumstances in the sunny tropics; iodine deficiency in pregnant women may lead to cretinism, deaf mutism and mental retardation in infants; nutritional anaemias are common in the young child; and many other diseases have a nutritional aetiology, or are in some way related to diet. The important relationship between nutrition and infection (19) also needs to be kept in mind when applied nutrition programmes are being considered. It would be illogical to plan for improved diets for poor children without at the same time paying attention to (a) control of infectious diseases through improved sanitation and water supplies; (b) immunization and control of parasitic diseases; (c) provision of good health care for the poor and (d) other similar measures. Public health and nutritional activities should where possible be combined.

Protein-energy malnutrition and other deficiency diseases may appear to have a clear aetiology, namely a low intake of one or more essential nutrients. This however is a simplistic view because there are many underlying reasons for example why a child with nutritional marasmus is getting too little food or why a child with xerophthalmia has a dietary deficiency of vitamin A and carotene. The cause of malnutrition is frequently complex; there are often many interrelated causative factors; and these relate both to the human host and his environment.

The control of malnutrition often requires an epidemiological approach which may allow a diagnosis of the complex web of ecological and other factors involved in its aetiology. Intervention

will be aimed at one or more, often several, of these underlying causative factors. In few instances is prevention of malnutrition simply a matter of the provision of the deficient nutrient to children by health personnel. Whereas, for example, the control of a disease like smallpox often involves simply the vaccination by health personnel of those at risk, the control of protein-energy malnutrition usually requires a variety of intervention activities conducted by health workers and many others from disciplines such as agriculture, education, social or community development.

#### PLANNING INTERVENTION PROGRAMMES

This is a complex procedure requiring a co-ordinated approach between professionals from several disciplines and between different branches of government both at the national and local levels. In all countries, funds and personnel available for nutrition and health activities are limited. Therefore careful planning is necessary to determine priorities and where possible to provide estimates of the relative cost effectiveness of various programmes. That is not to say that health and nutrition planners need to show that a programme will result in a benefit to the nation or community which can be measured in economic or money terms. Even economists are now beginning to agree that improved health and quality of life are felt needs of most people, and improvements in them are by themselves evidence of development (15). In view of limited resources, however, an estimate should be made of relative costs: for example, can more blindness be prevented at less cost with a fortification programme or by developing a delivery system that will provide massive doses of vitamin A to children at regular intervals?

There is need for collection of base-line data, for surveillance of programmes and for evaluation. The health or nutrition worker should be able to tell the planners what benefits are expected to result from a given programme undertaken at different levels of intensity. One of the problems that has existed is that physicians can with some degree of precision inform economists what the chances of cure are for disease A treated with drug X, but public health workers are much less able to predict the relative effectiveness of prevention measure Y on disease B. Thus, too seldom have the benefits of, for example, sanitation programmes or improved water supplies been measured in terms of their effect on morbidity; and there is uncertainty about the effect of supplementary feeding or expensive nutrition education programmes on nutritional status.

Health workers need to recognize that important preventive measures (i.e. activities designed to prevent or reduce malnutrition), are being undertaken by agricultural, social, educational and other

workers. Thus, activities to increase and improve production of certain foods; to spread horticultural activities to small backyard gardens; or to provide home economics extension to poor families, may be important in controlling childhood malnutrition. Activities carried out by other disciplines and departments may be as vital as health measures in ensuring a good and balanced diet for young children.

In this paper some interventions in which health personnel play a leading role will be discussed. These will include the need to obtain base-line health information for programme planning, for continuing surveillance and for evaluation; and a description of three levels of treatment, each combined with preventive measures, namely (a) hospital, (b) nutritional rehabilitation centre, and (c) health clinic.

Much has recently been written about nutrition surveys (4), the continuing surveillance of populations, the need for evaluation of the effectiveness of nutrition programmes, and the desirability of attempting to determine the relative costs and benefits of alternate strategies for the control of malnutrition. Interested readers should consult the practical manuals and other publications on these subjects many of which provide further references. (8, 9)

Surveys provide a picture of the nutritional situation in a country or community. Without some basic information, logical planning and design of appropriate programmes are not possible. Too much effort and money have often been expended on surveys and too little on programmes aimed at controlling the main forms of malnutrition found. Surveys therefore need to be as simple as possible and aimed at problems which are likely to exist and which lend themselves to control.

Surveillance is a means of monitoring a situation to determine whether diseases or particular conditions are stable or are changing in prevalence. The level of sophistication of data collected must be tailored to the resources available and must be appropriate to the needs of the country or community.

Some authors have recommended the use of indirect indicators such as, for example, food prices in relation to incomes, hospital morbidity or toddler mortality rates (6), while other nutritionists stress the use of more direct methods such as food production and consumption data, anthropometric measurements, biochemical determinations and clinical findings.

Evaluation of nutrition programmes is important as all countries, rich and poor, have limited resources. Britain has recently cut back on the use of free or subsidized milk for children. If finances and the time of trained professionals are to be optimally utilized, some assessment of the effectiveness of programmes in achieving their objectives needs to be obtained.

Evaluation studies may also be used to determine the relative cost effectiveness of two or more alternative intervention strategies each designed to achieve the same objective. For example, is it more effective, and cheaper, in a particular country or community to control iron deficiency anaemia by fortification of a food or by regular dosing with iron of those most at risk?

Much has been written about evaluation of nutrition programmes. Latham (13) has pointed out that evaluation should be a continuous process built into the programme activities. It should be regarded as a constructive process helpful for the professionals working in the programme, for the government and other agencies sponsoring the programme, and for the public who as potential beneficiaries may like to learn the results of the programme.

#### THREE LEVELS OF TREATMENT AND PREVENTION

The ultimate objective of most comprehensive nutrition programmes should be to reach a stage where no children require treatment for malnutrition in hospitals, in other centres or as outpatients. No country has reached that goal, and so treatment must remain a part of control. Treatment of malnutrition can be viewed as taking place at three levels and, in each of these, prevention should be a component of the services offered. Not all countries have an organized system providing all three kinds, or levels, of treatment. The three are:

1. Hospital. In general it is agreed that severe cases of malnutrition where the life of the child is threatened are best treated in hospital.

2. Nutrition Rehabilitation Centre. These centres, sometimes called Mothercraft Centres, which usually function on a day care basis, are useful in treating: (a) severely malnourished children after discharge from hospital during recuperation; (b) moderately malnourished children (or in some

countries, e.g. Haiti, severely malnourished cases also) who are not admitted to hospital, and (c) mild or moderate cases of malnutrition that are not progressing well after prolonged treatment in a clinic or out-patient setting.

3. Health Clinic. This level includes well-baby clinics, maternal and child health clinics, under-fives clinics, and even out-patients. They provide facilities for treatment and prevention of mild or moderate cases of malnutrition, as well as general preventive services.

#### Hospital

It is generally agreed that admission to hospital is necessary for conditions such as: a severely ill child whose life is in danger because of kwashiorkor or marasmus (11); a pyrexial toddler with a cornea near to perforation as a result of xerophthalmia; or an infant almost moribund from dehydration.

Certain thoughtful nutritionists have painted a bleak picture of hospitalization and its results (5). They suggest that hospitals may contribute more to mortality than to cure of malnutrition. Their suggestions are validated by data available. In many countries high case fatality rates occur in children hospitalized for severe PEM. The length of hospital stay is often long, and discharged patients frequently die at home in the weeks following discharge, or return with a relapse of their condition. There has, however, been no controlled study in which cases of severe malnutrition were randomly assigned alternately to hospital and to out-patient treatment.

Poor results should not lead to a universal condemnation of hospital treatment for the very sick child. Rather the criticisms should be used by paediatricians to determine what can be done to improve conditions and to reduce case fatality rates. There are too many paediatric wards where conditions exist which offer little hope for cure of the severely malnourished child. Rare is the hospital which provides the ideal treatment and environment for care and future prevention.

Case fatality rates for malnutrition range widely from hospital to hospital. These rates reflect not only the quality of the health care but also the severity of the cases admitted. Some parents only bring their children to hospital when they are almost moribund. Sometimes there is so much pressure on hospital beds and such a heavy out-patient load, that only extreme cases can be admitted to the wards. Hospitals

with equally good staff and treatment regimes have different fatality rates if one that admits moderate cases of PEM is compared with another that admits only very severe cases.

Many hospitals report case fatality rates from severe PEM of around 25 per cent. Some are as high as 40 per cent (7) and some as low as 10 per cent. In most hospitals the majority of deaths from PEM occur within 48 or 72 hours of admission. Attention needs to be given to control of diarrhoea, careful rehydration, prevention of hypothermia, recognition of hypoglycaemia and treatment of infections. Staff at all levels need to be well-trained in the practical management of cases. Good nursing care is essential but a large part of this, especially feeding, can be provided by well-trained auxiliaries.

During the recovery phase the treatment of the child needs to include an educational component. The mother should be admitted to hospital with the child and participate in the treatment given, especially the dietary treatment. As the child recovers he is placed on solid or semi-solid foods which should be locally available, cheap and acceptable.

Few paediatric wards are designed, staffed or have a policy to provide nutrition and health education for patients or parents. This is an integral part of therapy that may prevent relapse in PEM, xerophthalmia, nutritional anaemias, and in many other forms of malnutrition. Where possible, learning by doing should be a part of the instruction.

Every attempt should be made to reduce to a minimum the length of stay of the child in hospital. A shorter stay will reduce the cost of treatment which has to be borne by the state or the family, and it will minimize the time that the mother, entering hospital with the child, has to spend away from home where other child health problems may exist or be aggravated by her absence. Many hospitals keep malnourished children for months rather than weeks, increasing the risk of cross infection. It is appreciated that recovery from marasmus is often very slow, usually much slower than from kwashiorkor. Even so, it is seldom essential for children to stay longer than a few weeks. This is especially so if the child can be discharged from the hospital to an NRC or to a good health clinic.

Perhaps the main reason for the slow recovery of hospitalized children is a failure to provide an adequate total intake of energy. Ashworth (1) has pointed out that children can benefit from very high

intakes of energy and to a less extent protein until they reach near normal weight for length. A reliable staff is necessary to ensure that feeding is properly carried out at regular intervals.

Many relapses will be prevented and physicians will be more willing to consider early discharge, if good follow-up services are available. In the absence of an NRC, hospital staff should try to provide: (a) clinics at the hospital or in the community where food supplements are supplied free (or at highly subsidized prices) for the child and sometimes for the whole family, and (b) a system of home visiting, using auxiliary workers with suitable training.

#### Nutrition Rehabilitation Centre (NRC)

Nutrition Rehabilitation Centres, sometimes called Mothercraft Centres, have been established in many countries in the last 10 to 15 years. The concept of these centres was originally propounded by Bengoa (3). He described the NCR as "a centre organized either with sleeping accommodation for children or similar to day nurseries or kindergartens where malnourished children either attend for a few hours each day or are kept overnight, the objective of which is to educate the mothers through the nutritional rehabilitation of their children". The centres established in countries in Asia, Africa, Latin America and the Caribbean often differ quite markedly in the manner in which they function, but most of them have a common thread of objectives. NRC differs from a Day Care Centre in several important respects:-

a) The selection of children attending the centre is based mainly on nutritional criteria, whereas Day Care Centres use social, educational, economic or other criteria for selecting their children.

b) The duration of attendance is usually based on the length of time necessary to rehabilitate the child, and is therefore limited.

c) Nutrition education of the mother is an important feature of the centre.

An NRC forms the second or intermediate level of treatment: the most severely malnourished are at first admitted to hospital and the less malnourished attend health clinics. The NRC takes severely malnourished children after discharge from hospital during their important period of recuperation; moderately malnourished cases from the community; and less severely malnourished cases which are failing to make adequate

progress following treatment as out-patients or at clinics. In this graded system of treatment, children discharged from an NRC continue to attend some out-patient facility or clinic. In certain cases the NRC provides such a service at the centre.

The NRC has always been envisaged as providing important nutrition education. Another desirable feature is that it should be economical to run, and provide services at a fraction of the cost of hospitalization. Bengoa (3) suggested that a centre should be an ordinary village house, staffed with one or two intelligent village women who have received some practical training in nutrition and child feeding. A centre would accommodate about 30 children who would receive three or more good meals a day, and who would attend 5 to 6 days per week, 8 to 10 hours per day, for a period of 3 to 5 months. Mothers of children attending the centre would be required to provide one day of work per week to assist with the running of the centre. The participation of mothers would not only reduce the necessary staff but would be especially important in providing an active learning experience. The NRC would be used as such to teach improved child feeding practices using local foods, and to instruct the mothers in other aspects of health and hygiene.

Many countries that have established NRCs have done so with the above principles in mind. In most places there has been some modification and local adaptation. For example, in Haiti most of the centres take children with severe malnutrition including those with oedema (10) and the centres are independent of any other local health facilities which are few in number. In Uganda and in some other countries residential NRCs have been established.

As with other health and nutrition services, there have been few systematic attempts to evaluate their effectiveness. Reports from Uganda, Peru, Haiti and Guatemala indicate that children attending centres for several months show improved growth. Nutritional recuperation is apparently achieved in an impressive percentage of children attending such centres. A major objective concerns education but until recently no comprehensive evaluation of this aspect of their work had been undertaken.

Beaudry-Darismé and Latham (2) recently reported on the results of a study of seven centres in Haiti and nine in Guatemala. For the first time, a comparison was made of centre children with control

children. In both countries recuperation took place as judged by improved weight gain. In Haiti over three times, and in Guatemala over nine times, as many control as centre children died. The number of deaths in both groups was, however, small. What was disappointing was the finding that children who had attended the centres, when seen one year later, had failed in most cases to maintain good progress. Although they had not regressed, their weight gain during this period was not significantly better than that of the controls. Therefore, the nutrition education provided by centres in these countries was not very effective. The reasons for this were believed to be: (a) centre staff devoted much more attention to feeding and caring for children than to education of their mothers; (b) the nutrition and health education provided was often unrealistic in terms of what was feasible in the homes (for example, too much stress was placed on animal protein sources rather than legumes) and (c) a significant proportion of families using the centres were too poor to make the necessary improvement in the diets of their children.

An NRC can play an important role in improving nutrition. However, the average centre taking 30 children each for 3 months will provide services for only about 120 children per year. Very few countries can provide enough centres for all children with moderate malnutrition. If they are to have a real impact on nutritional problems in a country, they must be effective in nutrition education and also as demonstration and teaching centres. NRC treatment is relatively economic compared with hospitalization. For example, in Haiti the total cost is about 37 US cents per day for a child to attend an NRC and about \$12 per day to stay in hospital. In Guatemala these figures are 87 cents and \$7.31 respectively.

#### Health Clinic

Health clinics have been in existence in various countries for many years, and some have played an important role in reducing the incidence of certain deficiency diseases. In industrialized countries rickets was very prevalent and a major cause of child mortality a few decades ago; the establishment of child clinics where cod-liver oil was dispensed and where attention to child health was provided, was one of several factors responsible for its control (14). The term 'under-fives clinics' is a relatively new one introduced by Morley in 1957.

Healthy children and sick children, in wealthy and in poor families, benefit from regular visits to child health clinics. In many industrialized countries well-baby clinics provide this kind of

valuable service. For poor families and in developing countries generally there may be no great advantage in separating attendance of well babies from those of sick babies.

Health clinics are meant to draw together the curative and preventive components of child health care. They also benefit from separating these important activities aimed at children from the often overloaded out-patient services of many hospitals.

Curative Function:

There is no universal rule to indicate what services a clinic should provide but, if at all possible, it should be linked with some more sophisticated health unit, often a hospital. This relationship might be close, as for example when a clinic is run as part of a general or children's hospital; or it may be remote and simply involve occasional supervision from a hospital in the region or district. If remote, a well organized referral system and a means of transporting patients to hospital should be features of the clinic. The professional staff in charge of these clinics range from well trained paediatricians to auxiliaries with a little special training in child health and nutrition.

The clinics should provide curative services at least for minor illnesses such as certain skin conditions, respiratory infections, parasitic diseases, diarrhoea including mild dehydration, and other common diseases.

Preventive Function:

Preventive medicine at the clinics should include at least two major components, namely immunizations and nutrition services.

Immunizations should be available, preferably free, and parents should be encouraged to use this service for their children. In most countries the young child would receive vaccination against smallpox; triple antigen (DPT) against diphtheria, pertussis (whooping cough) and tetanus; and immunization against tuberculosis using BCG, against poliomyelitis using oral vaccine and against measles using live attenuated virus vaccine. In certain areas vaccination against other diseases such as cholera may be warranted. Some clinics may provide prophylaxis against malaria.

Nutrition activities are basically of two kinds; availability of dietary supplements for malnourished children, and attention to growth and development of the child.

Supplements are designed to complement and add to the foods available at home for the young malnourished child from poor families. The most widely used supplements have been protein-rich foods. Up to a few years ago these were mainly based on dried skimmed milk.

There is now a world shortage of powdered milk, and therefore a wide variety of protein rich foods, many of them based on defatted soyabean or on other legumes, are used. UNICEF and some other agencies are providing CMS (a corn soy milk mixture) for use in child feeding programmes.

Recently there has come a realization that growth deficits in children, and mild or moderate malnutrition, are almost always due to a poor total food intake and an energy deficiency, and are not often due to pure protein deficiencies (20). Therefore a supplement which provides a concentrated source of calories balanced with other nutrients including protein, will be most frequently needed.

As well as food supplements, clinics may also make available certain nutrient supplements. In those areas of the world where xerophthalmia is endemic, children may be given a 'massive dose' of vitamin A every six months. This will usually protect the child, because the vitamin A is stored in the liver and slowly utilized (18). Large scale trials are under way in India, Bangladesh, Indonesia and elsewhere. The vitamin A is usually provided in capsules each containing 200000 iu of vitamin A palintare with 20 iu vitamin E added. If the child is unable to swallow the capsule, the end may be snipped off with scissors and the tasteless contents are then squeezed onto the tongue. In other areas specific vitamins or minerals such as iodine to prevent goitre or iron to prevent iron deficiency anaemia may be given.

The second, and perhaps more important nutrition activity of health clinics is specific attention to good growth and health development. On each visit every child should be weighed and measured. Accurate balance scales and good simple equipment for measuring length or height are essential.

Recording the weight (and height) of children may serve three important purposes. It may help to detect children at high risk of developing PEM; it may be an important tool in assessing the effects of treatment; and most importantly, it can be used to trace the growth of the individual child.

Experience has shown that the clinical syndromes of kwashiorkor and marasmus are usually preceded by months and sometimes years of failure to gain weight. The common exception to this is when a child develops kwashiorkor suddenly after an illness such as measles, whooping cough, or diarrhoea.

'Maintaining an adequate rate of growth' has replaced 'prevention of malnutrition' as the goal towards which clinics should direct their work - a possible objective for both the staff and the mothers. A child who has failed to gain weight for several months is given special attention. In these clinics the mother is provided with a temporary supply of a food supplement, with instructions on improving the child's diet. The nurse uses the trend in the weight curve to assess the effectiveness of food supplements and of education in nutrition. When in spite of such measures failure to gain weight is persistent, the child is referred to a physician who examines him and where necessary undertakes laboratory and other procedures.

Many countries in Africa and elsewhere are using the growth chart of Morley (16). It has several unusual features in its design and use which help to make it more acceptable than previous charts. These include the use of a calendar to record the child's age, a graphic and easily understood record of the child's recent and past medical history and state of nutrition, and of the inoculations received, the fact that the mother rather than the clinic keeps the chart and that home visits are made to evaluate the work of the clinic; the appearance on the chart of certain factors which would put the child in a high risk category; and the indication on the chart of channels of growth which are based on weight standards.

The advantages of the calendar over many other methods of age charting are multiple. The most common charts in use around the world record the age of the child in months. After one year of age, this becomes increasingly difficult with the necessity of a calculation at each visit. This may lead to errors and be a deterrent to graphing weight, especially in a busy clinic. With Morley's chart a simple calendar is constructed on each chart when the child is first seen. Against this curve, entries are made of important incidents such as cessation of breast feeding, birth of a sibling or major diseases. With the help of this chart the worker can absorb the important facts of a child's medical history in a matter of seconds.

The chart should be colourful and durable and supplied to the mother in a tough open-ended plastic envelope. It is considered to be her property and not that of the clinic. Experience in several centres has shown that few get lost, probably fewer than the number of records mislaid in the average small hospital's card filing system.

Indications for special care are written in a prominent position on the card. Morley, Bicknell and Woodland (17) have suggested nine factors of common occurrence in the case histories of low weight children. These nine 'high risk factors' are: (1) a maternal weight below 43.5 kg; (2) birth order greater than seven; (3) death of either parent or a broken marriage; (4) deaths of more than four siblings, especially these occurring between one and 12 months of age; (5) birthweight below 2.4 kg; (6) multiple births; (7) failure to gain 0.5 kg a month during the first three months of life or 0.25 kg a month during the second three months; (8) breast infections in the mother and difficulties in breast feeding, particularly those secondary to psychiatric illness in the mother and (9) an episode of measles, whooping cough, or severe or repeated diarrhoea in the early months of life.

There is much difference of opinion as to what weight standards should be used in developing countries. On Morley's chart an upper line is produced to represent a satisfactory weight for a healthy, well-fed child at each age. A lower line indicates the tenth centile or some other arbitrary 'standard' to indicate to the staff and mother that the child should be above it. The standard used is probably relatively unimportant. Of more significance than the position of the child's weight curve in relation to the 'standards' is the relation of each weighing to the previous weighings of that particular child. The important point for the medical worker to watch is whether the particular child is following a path approximately parallel to the channel.

Research is being conducted on a number of biochemical tests and physical parameters which may help to determine the child who is in danger of developing PEM. It must be realized, however, that for many years to come most children at clinics in developing countries will have to be seen by auxiliary personnel and not physicians, and their nutritional status will have to be determined by simple anthropometric means and not by biochemical tests.

Educational Function:

The staff should spend as much time as possible either in groups or with individuals providing nutrition and health information. Much has been written about the means of communicating nutrition and health facts to those with little education. Important aspects of nutrition teaching by clinic staff would be to stress the value of breast feeding, to emphasize the control of family size and spacing of children, and to pay attention to nutritional and health problems specific to the particular area.

The importance of operating a health clinic in conjunction with other health services cannot be overstressed. The clinic itself or its facilities might also be used for antenatal clinics, which always need to be available for mothers attending with their children and for family planning activities. Clinics themselves should in general be an important and integral part of maternal and child health services of the area.

APPLIED NUTRITION PROGRAMME (ANP)

As was pointed out in the introduction, malnutrition has a complex causation and in order for control measures to be effective a broad approach is usually required. It is with this in mind that the United Nations Agencies, notably WHO, FAO and UNICEF, have provided considerable support for co-ordinated activities which they have termed Applied Nutrition Programmes. ANPs are undertaken by governments often with the assistance of outside agencies including the UN agencies mentioned. An educational component is a feature of all these programmes.

Applied Nutrition Programmes were defined in 1967 by the Joint WHO/UNICEF and FAO/UNICEF Policy Committees as "co-ordinated educational activities between agriculture, health, and educational authorities, and other interested agencies with the aim of raising the levels of nutrition of local populations, particularly mothers and children in rural areas". The UN agencies have in these programmes concentrated, perhaps too much, on rural areas to the exclusion of serious problems in the slums of cities. (12)

Applied Nutrition Programmes differ from many other practical nutrition activities in certain specific ways:-

They are co-ordinated at all levels.

They are essentially educational activities developed through different channels to reach a stated objective.

They involve several disciplines, including health, agriculture, education and community development.

They use the self-help approach -- always involving community participation.

They use the positive method of learning by doing.

They are directed to the family, and reach members of the family not only in the home but in schools, health centres, clubs and organizations and through the mass media.

They cover all levels -- so linking national food and nutrition policy with field activities at regional, community and family levels.

Their ultimate objective is to raise the levels of nutrition of the population. This will involve both food production and food consumption.

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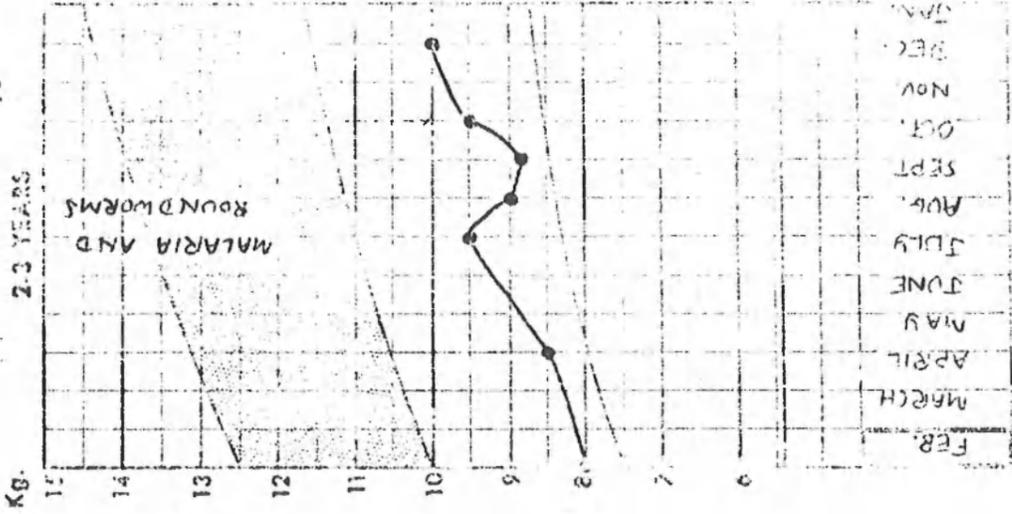
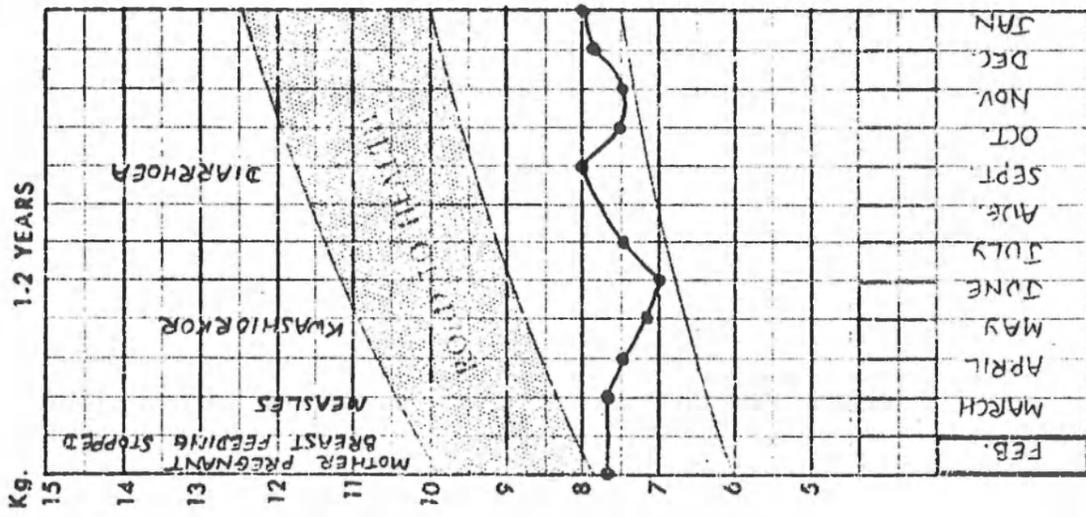
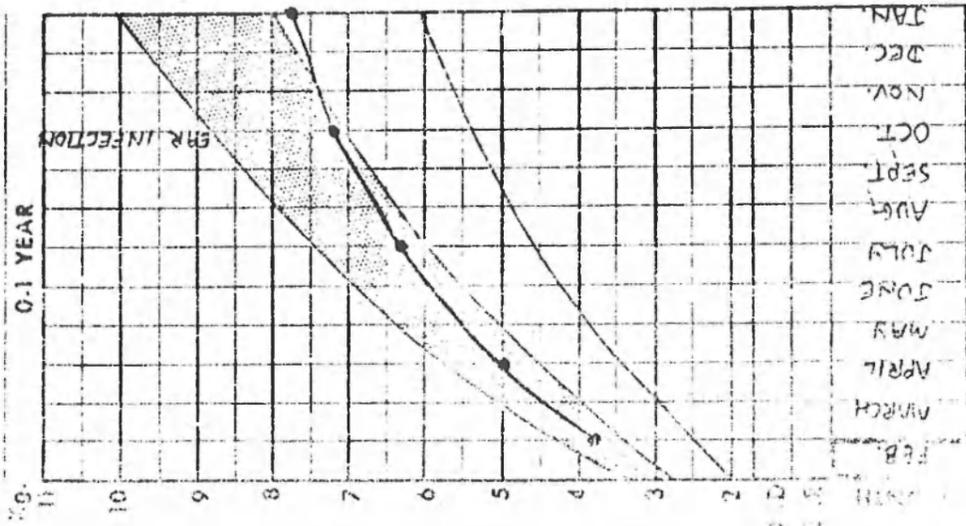
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**REASONS FOR POOR CARE**

Eighth Child  
 Husband not at home

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MAZIWA MAAKACWE MAYAI NYAMA SAMAKI NJUGU

AT EVERY VISIT  
 Weigh the body in Kg. Put a dot on the graph and in the proper column. Connect the dots with a line.  
 Note the months that the baby was sick in. Shaded areas show the months that the baby was sick in. Put a dot in the proper column. Connect the dots with a line.  
 AT EVERY VISIT