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CONFERENCE ON MALNUTRITION AND FOOD HABITS

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MALNUTRITION AS A PUBLIC HEALTH PROBLEM:
WITH SPECIAL REFERENCE TO PROTEIN MALNUTRITION IN YOUNG CHILDREN

Background Paper Prepared by the Nutrition Unit, World Health Organization

Introduction

This paper has been prepared as a guide to those participants in the Cuernavaca conference who are not directly concerned with the relief of malnutrition. It describes the nature and extent of the public health nutrition problem as seen by WHO, the type of action which this Organization can and does undertake, and some of the current problems on which it is hoped the Cuernavaca conference will throw light.

WHO is concerned with all aspects of health and, therefore, with nutrition as it affects the levels of health of the population of a country. Increased control over certain of the communicable diseases has revealed more clearly the significance of malnutrition as a public health menace, and stimulated renewed interest in the search for understanding of the nature, cause, and means of prevention of this continuing affliction.

In many countries, the development of public health services and of increasingly reliable methods of collecting vital statistics has focused attention on the high rates of mortality and sickness in the younger age groups, and especially in children in the 1-4 year age groups. In a country where the infant mortality is 8-10 times higher than for example in the United States of America, the death rate in the 1-4 age group may be 30-40 times greater than the corresponding rate in the latter.

Investigations have shown that in the less developed countries, a combination of disease and malnutrition exists- the one precipitating and perpetuating the

other - which is responsible for these high death rates. Furthermore, statistical analyses demonstrate that the mortality rate in this age group is more easily influenced by improvements in the environment such as better nutrition better housing or hygiene than the infantile mortality rate. Efforts to improve nutrition in the younger age groups are therefore a worth while part of any public health planning which has to use limited funds and personnel to the best advantage.

Deficiency Diseases

Various forms of malnutrition, known as deficiency diseases, are found throughout the world, as well as general under-nourishment. Some of these diseases are specifically related to the monotonous consumption of relatively large quantities of a certain cereal, such as maize or rice. Where maize forms the bulk of the diet, pellagra (due largely to lack of niacin) is found. In the rice-eating countries, beri-beri (due to lack of vitamin B1, lost in the polishing of the rice) is common, except where the rice is parboiled before being milled. Various forms of anaemia, especially those due to lack of iron, are also common throughout the less developed countries. Xerophthalmia, a disease of the eyes often resulting in blindness, caused by lack of vitamin A usually in association with other deficiencies, is prevalent in poverty stricken communities, particularly in parts of South East Asia and Central Africa. Endemic goitre, caused by lack of iodine, is also found fairly extensively in many countries.

It has been amply demonstrated, however, by surveys carried out sometimes by WHO and FAO, and sometimes by national teams, that the most serious and widespread deficiency disease found today is protein-calorie malnutrition in young children. For this reason, and for others that will become clear later, the conference will be mainly concerned with this particular form of malnutrition, though it is hoped that the discussions may throw light on related problems in the prevention and alleviation of the other conditions mentioned.

Protein-Calorie Malnutrition in Young Children

This condition, a state of ill-health found where diets are habitually poor in protein while the calorie intake may vary from gross inadequacy to excess, is known by different names in many parts of the world. The severe form is now generally referred to as "kwashiorkor", a West African word meaning the "sickness the child develops when another baby is born" (and the name given to the syndrome when it was first described by Dr Cicely Williams).

Kwashiorkor occurs in infants and children usually between the first and third years of life. It is essentially a disease of the child who is being, or has been, weaned from the breast, and given a diet composed almost entirely of starchy foods. These foods are often too coarse and bulky for the child's immature digestive system, and the child therefore suffers from a moderately deficient calorie intake and a grossly deficient protein intake. The onset of the acute disease may be precipitated by an infectious disease, an attack of diarrhoea, or some other stress such as sudden weaning accompanied by separation from the mother. It is only recently that kwashiorkor has been recognized as a disease syndrome due to protein deficiency. In the past, it was frequently thought to be pellagra, or was confused with "marasmus", the condition which occurs (usually in the first year of life) when the child suffers a gross lack of all the main nutrients.

Moderate protein-calorie malnutrition is by far the most important condition from the public health point of view. Growth failure is the most characteristic feature - nutritional dwarfing due to an inadequate, but relatively well balanced, diet. The child may not seem ill to the parents, but if an infectious disease such as measles develops, he may be precipitated into severe malnutrition. The malnourished child has little resistance to these infections, which therefore frequently end in death. This probably explains why the case mortality in certain infectious diseases in children may be between 100 and 200 times greater in those regions where malnutrition is prevalent than where it is rare.

The public health significance of protein-calorie malnutrition is therefore twofold - direct and indirect. For each child with frank kwashiorkor in a given area, there may be many others less obviously affected but whose growth and development and resistance to the intercurrent diseases of childhood have become impaired.

For various reasons the exact prevalence of this form of malnutrition is difficult to assess in different parts of the world. One experienced paediatrician has used the child's weight in the classification of undernourished children. In several areas studied in Latin America, it was estimated that less than half the children were within the standard weight range for healthy children, and not less than 20 per cent. were severely malnourished. Studies carried out elsewhere have shown that this is, to a greater or lesser degree, a common state of affairs in many countries.

Causative and Contributing Factors

Protein-calorie malnutrition in young children usually occurs as the result of a number of factors acting on the child directly or indirectly, and with different emphasis in different situations. One basic condition is always present - an inadequate diet. The diet is inadequate because of either a lack of suitable protein foods, or a failure to make use of the available resources.

Lack of suitable foodstuffs may be due to the low productivity of the land, to lack of the knowledge or facilities which enable people to produce, process and preserve suitable foods, lack of the means of distribution of food from an area of plenty to where it is needed, and lack of money to buy imported foods.

Poverty affects most severely those who cannot, for one reason or another, grow their own food. In some areas the cost of a litre of milk may be more than 25 per cent. of a day's earnings. Poverty may endanger the child's health from the start if there has not been enough food to ensure the mother's nutritional state during pregnancy and lactation. The male members of the rural family may be driven to seek work in the towns, with a subsequent deterioration in the amount and quality of the foods grown by the women. Or the mother may be forced to become a wage earner, working outside the home, weaning her child early and leaving it inadequately fed during the daylight hours. Though the older children "make do" on scraps until the mother returns to cook the evening meal, the very young child cannot eat enough at one meal to make up for the day's hunger.

Where part of the land is cultivated for cash crops, there may be periods when there is not enough money to buy the family food. Some correlation has been found in one country between infant malnutrition and the price of the principal export. In another, however, beri-beri became more prevalent when the price of the principal export there was high, and the home grown under-milled rice could be replaced by highly polished rice bought in shops.

Failure to use the available resources may be due to a lack of adequate knowledge of what children should and can eat, and especially of the fact that the growing child has a relatively greater need for the scarce protein items in the family diet than the wage earner or the respected elder for whom they are usually reserved. The distribution of food within the family is a potent factor in the nutritional deprivation of children, and the belief that only adults should eat meat

or other "rich" or "heavy" foods is not restricted to the poverty stricken or illiterate peasant family. It is also found in many educated communities anxious to do their best for the child, and with the means to do so. In many regions, the idea of buying or preparing food specially for the child is totally unfamiliar.

Traditional aversions to, or prohibitions on, or beliefs about the use of some foods (either separately or in combination with others) all limit the range of choice of foods which might be used to provide some protein for the child.

Where the traditional life is breaking down, new dangers threaten the child's nutritional health. Old practices which guaranteed the infant a prolonged period of breast feeding are being abandoned, but with no compensatory improvement in the methods of feeding the weanling. The belief that certain protein foods such as fish or eggs are harmful to young children probably did not matter much as long as the child was breast fed for two years. But when the mother begins to wean the child early so that she can go out to work, these beliefs can become dangerous. In many regions, the drift towards the towns of rural families deprives the family of the familiar mixture of home-grown foods, and ignorance and poverty prevent the purchase of possible replacements.

In some countries one of the great resources which is increasingly unexploited is the mother's own capacity to feed her child. Where breast feeding is still taken for granted as the normal procedure, the baby usually grows steadily for the first six months and, with luck, continues to do so (though with some retardation of growth and weight gain) for the first year or eighteen months. Even when the mother's diet appears to be inadequate the child apparently does well for at least the first six months of its life, and if breast feeding continues (with the addition of some food such as soft rice) the risk of protein-calorie malnutrition is reduced.

Where, however, there has been some contact with "Western" ideas, or with shops and a more sophisticated way of life, there is a decline in breast feeding and a growing tendency to wean the child early. The reasons given by the mother for this action are usually that her milk is "poor" or "insufficient" or "does not suit the child". Health workers have, on some occasions, attributed early weaning practices to the malnutrition of the mothers, but there are apparently other influential factors.

There seems to be a conviction among some mothers that bottle feeding is socially superior, and that breast feeding is a "vulgar peasant practice". Others believe that bought milk must be more nutritious, and will make considerable sacrifices to purchase milk for their children. Unfortunately, they can seldom afford to buy sufficient, and the child is fed on a highly dilute and often contaminated mixture. In some countries rice or cornflour is given to eke out the meagre supply of the expensive milk (which is usually sweetened) and the child's diet then consists mainly of carbohydrates - until the onset of malnutrition. In many countries, the sales of patent baby foods are increasing rapidly. These foods are always very expensive, and are often used in quite inadequate amounts.

The nutritional health of the child is also influenced by the environmental hazards. An attack of measles, malaria or diarrhoea, an extra heavy infestation with intestinal parasites - and the home treatment of this condition, which often includes purging and starvation - may exhaust the child's meagre reserves.

Unexpected financial stress, a bad harvest or fishing season, a prolonged illness of one of the parents, or the mortgaging of the family fortune for a pilgrimage, and the more permanent stresses that affect some cultures such as the instability of marriages, the irresponsibility of the male parent for the maintenance of the home and offspring, the custom of sending, lending or giving children away to live in other families, and the subordination of the young mother to the wishes and demands of the older parents or parents-in-law, may all affect adversely the nutritional health of the child.

Very little is known about the relative importance of many of these factors. The picture is further confused by the fact that though poverty and ignorance are nearly always present where malnutrition is found, some children are reasonably healthy under apparently unfavourable circumstances and others succumb to malnutrition where outwardly poverty, at least, is not severe.

The Role of the International Organizations in the Relief of Malnutrition

In an international effort to relieve malnutrition it is obvious that close co-operation is essential between an agency concerned with improving standards of public health, and one concerned with raising standards of living through the increase and improvement of food supplies. With the aid of a Joint Expert Committee established in 1948, WHO and FAO, materially supported by UNICEF, have worked closely together on various nutritional problems in different parts of the world.

They have used their unique international facilities to stimulate interest in the problem of protein malnutrition by carrying out various surveys to define the character and extent of the problem, by organizing refresher courses and seminars at which field workers and others from different countries could become familiar with the facts relating to the diagnosis, treatment and prevention of nutritional disease, and by organizing conferences at which authorities on different aspects of the problem and on related problems could come together and exchange their knowledge and experience.

The conference in Cuernavaca will be the third in a series (financially assisted by the Josiah Macy Jr Foundation) on protein malnutrition in children.¹ The first meeting, in 1953, dealt with kwashiorkor, the second, in 1955, with "Human Protein Requirements and their Fulfilment in Practice", and the time now seems ripe for consideration of the problems related to the changes in food habits which will have to take place if people are going to make better use of resources already available, or accept and use a new food.

There are two main approaches to the alleviation and prevention of protein malnutrition, and both involve changes in food habits.

The first - the encouragement of the proper use of a wider variety of foods within the family - may necessitate increased production of foodstuffs by the individual family, the community or the state, and changes in the economy of the people, as well as education on the better use of the resources already at hand. This approach is more indirect and perhaps more directly related to the activities of FAO than to those of WHO, though many of the educational elements are inseparable.

The second - the encouragement of procedures which will prevent the onset of protein malnutrition in the child, or facilitate its early recognition and treatment - has been very much the concern of WHO in recent years. Among these procedures are attention to the health of the pregnant and nursing woman; education of the future mother (beginning preferably in the later school years and continuing throughout the ante-natal period) regarding her own health and nutritional needs, and those of her child; the development, where necessary, of suitable resources whereby she can feed herself and her child adequately; the establishment of facilities for the early diagnosis and treatment of protein malnutrition, and the supervision and supplementary feeding of children at risk.

¹ This third meeting is supported, but not organized, by the international agencies.

One of the great difficulties in the improvement of standards of health in the less developed countries today is the lack of trained personnel. This is complicated, in the case of nutritional disease, by the fact that many of the doctors and public health nurses now working in these countries have had little opportunity to become familiar with the different nutritional disorders of children and particularly with the recently recognized syndrome of protein malnutrition. WHO has consistently tried to help countries to improve present paediatric, midwifery or public health training, so that future medical and health personnel at all levels will act from a sound knowledge of maternal and child health. With UNICEF assistance, paediatricians, paediatric and public health nursing instructors and health education specialists have been provided to numerous countries to train local graduates and students.

The organization and staffing (with matching personnel from the country concerned) of demonstration areas has also been a major activity. In these, a variety of public health personnel have worked together, for example, as a maternal and child health team, learning, as they carried out the work, how to provide the curative and preventive services required by a community. Health education is an indispensable part of these services, and education related to the nutritional aspects of child health one of the chief functions of MCH personnel.

In 1953, an effort was made to assess the amount and quality of the nutrition education carried out in national and WHO-sponsored maternal and child health centres in several countries. The results were disappointing. On the whole, the demand for curative and preventive services, and the mechanics of skim milk distribution left little time for more than hurried instructions to the individual mothers, though here and there group teaching and effective demonstrations (sometimes during home visits) were being carried out.

Later, an anthropologist, acting as a WHO consultant, studied the social factors associated with protein malnutrition in Indonesia, and found that a good deal of the nutrition education offered to the rural and semi-rural mothers was unsuitable in content and ineffectively presented.

Efforts have therefore been made to raise the standard of nutritional knowledge and educational practice among public health and allied personnel, in the belief that all medical and health workers, as well as teachers in schools and other educational

centres are potential health educators and should be used as such. The highly trained nutritionist or health education specialist functions most usefully, it is thought, at the administrative level in countries at present developing their public health services.

In these countries, the realities of life and the general trend to develop a unified curative and preventive service make the separation of nutrition education and health education impossible - especially at the village level.

These efforts have taken various forms. A monograph, "Nutrition in the Sub-tropics and Tropics" has been published. International seminars and refresher courses on nutrition, or health education, or both, have been organized in various regions, usually in co-operation with FAO. Along with UNESCO, the role of the school-teacher as a health educator is being studied, and several expert committees have met to consider different aspects of the problem of malnutrition and of health education of the public.

Aware of the difficulty and danger of trying to alter long-established food habits in isolation from other aspects of the culture, WHO has sought the help of the anthropologists in clarifying the role and importance of various factors in Indonesia, Guatemala and Peru.

These reports, along with others from various sources, have emphasized the complexity of the educational problem, but have also confirmed the value, as an educational measure, of the "real life" demonstration - the sick child cured, or the ailing child putting on weight.

But neither the sick child nor the child on the verge of malnutrition can be rescued, with some assurance of permanency, where no suitable protein food is available. In these circumstances, a cheap source of such a food must be found and this has been the main endeavour of research workers in several parts of the world during the past ten years. Financial support has been given to assist in the development of suitable foods for young children from materials not now used, or used only to a limited extent, in child feeding. Meetings and exchange of workers from leading research institutes in different parts of the world have been arranged and considerable progress has been made as a result of this co-ordinated effort. The suitability and safety of any food, especially for young children, is a highly specialized matter and was fully discussed at the second meeting in this series. Ultimately, a small protein advisory group was formed to give technical guidance and review progress in research from time to time.

Some of the experiences and problems encountered in developing new protein-rich foods and introducing them into the community will be discussed at Cuernavaca. The various possibilities in their use, and in the better use of already available resources, have not yet been fully explored. As well as the obvious channels - hospital, MCH centre and general distribution - WHO has suggested that rehabilitation centres, where the child on the verge of, or recovering from, malnutrition could be supervised and fed, should be set up. It is felt that these would act both as valuable educational centres (the mother would take part in the preparation of the food and care of the child) and as an effective prophylactic procedure.

Other measures for the relief and prevention of protein-calorie malnutrition, such as the raising of the general economic and productive capacity of the people, are outside the immediate interest of WHO, except at the policy planning level and as they affect the individual family in an area. The UNICEF Expanded Nutrition Programme aims at increasing food production at the family or community level and has technical guidance from WHO and the co-operation of the local health personnel at the community level.

The work of other sections of WHO in the field of environmental sanitation and communicable diseases, malaria or public health administration, etc., all contribute to the nutritional improvement of the family and the child. Without the full understanding and support of the public health administrators in any country, it is impossible to plan and carry out successfully any nutritional improvement programmes on a large scale.

Some Possible Questions for Discussion

But even with their full support, many problems remain. Among the foremost is that of training medical, health and other personnel to be effective educators about health, and particularly nutritional health. At present, both nutritional knowledge and educational skills are often lacking. Means must be evolved whereby all health workers and potential educators can acquire some knowledge of nutrition and of the principles and techniques of education, and an awareness of the complexities of social change, and be given some opportunity for practical experience in the field.

Another is the question of the relative importance to be given to "nutrition teaching" and to "educating by action". If it is true that people relinquish their beliefs slowly but change their actual practices more readily in the light of practical proof, how should maternal and child health workers best spend their time?

Should they devote more time to curative or rehabilitative procedures, and, for example, to demonstrating simple cooking procedures in the home, than to giving advice in the centre or hospital? And if so, how is the physician in hospital to be persuaded to allow "his" nurses to do home visiting?

Other problems arise through misunderstanding by the public health administrator, of the role and function of the social scientist - the anthropologist or the educationalist. The public health worker resents the anthropologist's reluctance to produce ready-made solutions to the difficulties arising from attempts to introduce changes into a given situation. The anthropologist or educationalist finds the public health worker impatient with the fact that people do not appreciate his efforts "for their good", or "change their ways" and "learn" from being taught with an enthusiasm equal to his own.

How can each understand better the other's contribution to the common problem? What questions can the health worker reasonably expect the social scientist to answer for him at different operative levels? And if it is not possible to benefit from the advice of a social scientist, what are the essential questions to which the health worker must find the answer before embarking on a nutrition improvement programme?

And if or when a new protein food is available and ready for general use, what are guiding principles which should influence the decision as to the best method of marketing or distributing the new food in a given area?

These are only a few of the problems which the public health nutrition worker has to face, and on which WHO hopes to find some guidance from the discussions during the conference.