

Some Problems of the Nutrition of the Pre-School African Child*

BY

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MALNUTRITION AS A PUBLIC HEALTH PROBLEM

The nutrition of the pre-school child in Africa is a subject that has been distorted by the emphasis placed on obvious nutritional disease. Perhaps the best example is provided by *kwashiorkor*. Although there is a great deal still to be learnt about this disease, some of its mystery has now been lost and there is general agreement that one of the most important of the responsible factors is the lack of protein in diets of children at a time in their lives when protein is especially necessary. It is largely because of the effects of the World Health Organisation, which has encouraged surveys of the incidence of the disease, and research into its causes, that *kwashiorkor* has been brought to the status of a public health problem; we may hope that the time will soon come when the presence of the severe case in hospital will be recognised as the extreme example of the failure of preventative measures.

Kwashiorkor in its advanced and florid state, with changes in the hair and skin that may reach alopecia and the simulation of severe burns, with its oedema, its severe digestive upset, its remarkable alterations in the demeanour of the child, with its mortality that remains between 10 and 20 per cent. despite improvements in treatment, is one of the most serious of our nutritional diseases. We are apt to forget, however, that as with all nutritional diseases it is only the spectacular cases that are to be found in the hospital ward. Even among such cases there must be selection on the grounds of severity, especially in centres such as Johannesburg and Durban, where pressure on hospital beds is always great. Even if we add to the number of children admitted the much greater number who are seen at the out-patients' department and can, at best, only be given ambulatory treatment, the total will undoubtedly represent no more than a small

fraction of the whole child population at risk. Moreover, just as none of us knows the ultimate fate of the severe case that is apparently successfully treated, none of us knows anything about the effects of the mild condition on later growth and development. There may well be permanent damage that shortens life. Only one thing is certain: that the emphasis in our research on *kwashiorkor*, as on all other nutritional diseases, should be on prevention.

THE NEED FOR INFORMATION

Success in dealing with a public health problem nearly always depends upon an appreciation of its magnitude. It is quite obvious that we have little exact information about the extent of malnutrition in Africa. We are only at the beginning of the era of the collection of hospital statistics and therefore we are far from an understanding of the whole truth. The need for more extensive surveys is one of the first necessities. Unfortunately we are handicapped by the almost complete lack of local standards for healthy children and by the lack of objective means which may help to define the incipient state of undernutrition. The M.R.C. Group in Kampala is working upon the provision of such standards—realising, of course, that they may have only a limited validity—and is also trying to find biochemical methods for the definition. The latter work is in an early stage, but it seems already possible that the early failure of certain enzyme systems may provide the clue needed.

The Group is also trying to acquire information about the effect of certain stresses upon the child who is living on a diet that is really inadequate, although it provides for some sort of continued existence. Very often the African child, when he no longer has an adequate supply of breast milk, finds himself poised precariously. The speed of his growth slows down as he tries to adjust himself to the part of the adult diet that custom allows him, and if he then becomes heavily parasitised or infected, or merely loses his appetite because he is unhappy, the effects may be quite different from the effects on a child to whom an excellent diet has always been available. Observations of children in the M.R.C. ward who have become infected have suggested that the underlying state of nutrition may determine to a large degree the course of the infective illness. The observations are necessarily limited and require to be supplemented by studies made in the children's homes. It is, however, difficult to see how such studies can be made until there are African medical

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men prepared to undertake them. The future of medicine depends upon the elimination of the conditions which make medicines important, and we may hope that the anachronism of concentrating upon advanced disease will soon become evident to the teachers of African medical students.

Before embarking too enthusiastically on the improvement of the diet of the African child, which is probably the most urgent public health measure, it is necessary to realise that very little is known of the value of food supplements in African situations. Some success has recently been achieved in the Belgian Congo by supplementing the diet of lactating mothers and young children. The success was shown by improvement in weight gains, but it does not follow that similar success is inevitable in other circumstances. The Congo population which was the subject of this experiment is notoriously undernourished to a degree that may be unique even in Africa, and similar supplementation of the diet of lactating mothers in Uganda would probably not have a similar effect. The various ways of supplementation of diets should be the subject of research. It would be valuable, for instance, to compare the effects of putting the supplementary food into the hand of the mother at a child welfare clinic once a fortnight with the effects of ensuring by exact control that the same child ate the same food day by day. The effects would probably be very different, and the real value of an uncontrolled scheme might become apparent.

Each of us can extend this catalogue of needs in accordance with the techniques and special knowledge at our disposal. Some may believe that the education of the mother, especially in regard to the dietary requirements of the small children, is of paramount importance. In a continent where the education of women is only beginning the way is very hard and long. We should therefore welcome all the more warmly schemes such as that now being put into action at the Gayaza school, not far from Kampala, where a farm under European management, run in conjunction with intensive education in the preparation and value of food of all kinds, is being made an integral part of the school life.

THE RURAL AND URBAN SITUATIONS CONTRASTED

The problem of the prevention of malnutrition in African children can to some extent be divided into rural and urban aspects.

In rural districts the greatest hope seems to lie in the improvement of agricultural practices.

The cow has something of the appearance of a luxury if we consider the amount of good food that she needs before her yield of milk increases to a reasonable figure; although milk production must be encouraged, it is necessary to reckon the cost carefully and decide whether or not it is too great. Meat production, so long as the animal feeds only on grass, is less open to objection, but is also less favourable to the small child, and the encouragement of high-protein crops, that can be cooked in the home and introduced into the children's diets, seems to be more profitable for the immediate future. Unfortunately agricultural change is usually very slow, largely because it is difficult to improve upon a pattern determined empirically without cutting across prejudices or physical boundaries. Financial inducements may overcome some prejudices, but the idea of the communal tilling of a tract of land made from the properties of several owners is not one that arises spontaneously in primitive communities. Perhaps the limitation here is practical rather than psychological. The individual owner grows to the limit of his ability to store a particular crop, and that ability depends on natural hazards such as weather and insects; he cannot, for instance, conceive of a bean supply that would last the year round, because his own beans are useless after two months in the storehouse, quite apart from the consideration that if he grew enough beans for a year he could grow nothing else. Nevertheless, he could achieve more security if he and his neighbours could combine and if the products of their joint efforts were stored properly. As things are, the bean crops last only for a few weeks, and for a small child the acuteness of the seasons may have extremely serious results: the adult can survive the hungry months in which his diet is reduced to the bare staple, but the child may die. Except under some sort of collective action, a useful and permanent high-protein addition to the staple crops is difficult to find. Ideally, it should not be too exacting in its climatic requirements, it should thrive in poor soil, it should store well and it should be capable of easy addition to the children's diets. Sunflower, which has become popular in parts of western Uganda, is one of the few plants with these qualities.

In some country districts of Southern Rhodesia the modern practice is to take unground maize to the local shop and to receive in exchange ready-ground meal of the same grain. The practice is likely to extend, provided that a reasonable proportionality is maintained on the exchange; it would seem to be worth en-

couragement, not only because it relieves the women of one of their most arduous jobs—their calorie expenditure on pounding and grinding must often approach their calorie gain from the food—but because it offers opportunities for adding to the diet some ingredient of value. The enrichment of a staple flour, by the addition of dried skimmed milk, is one way in which improvement has been found possible; it proved acceptable in a recent Tanganyika famine and is undoubtedly capable of repetition in less desperate situations. In rural areas it often happens that distances are so great that no woman can be expected to attend regularly any health or feeding centre. In those areas there is no solution except to take the centre to the woman. The use of the mobile “centre,” a van making an extensive regular round of food distribution, surely deserves every encouragement.

In modern Africa, however, it may be necessary to concentrate on the urban areas. The drift to the towns has often involved a major nutritional catastrophe, and if a scale of urgency in relief is to be drawn up, the towns must head it. One of the most important results of the drift has been that by cutting themselves off from their sources of food supply the town dwellers have found themselves in a situation that is completely new and alien: they must buy their food and must pay for it with the money they had intended to use for bicycles, sewing machines or some European geegaw. Food purchases are reduced to the minimum and the child, who needs more than the minimum, inevitably suffers. It is perhaps wrong to want to impose any scale of values on the African; it is, however, not unusual to see a badly-nourished child brought to hospital by a mother whose dress must have been bought at the expense of the child's health. The inexperienced doctor, making the usual enquiries into the feeding of the child and his recent appetite and general health, may then be surprised to find that the mother is poorly informed. In Kampala the reason may be that the mother has sent her child, in accordance with a local custom, to live with a grandmother or some other respected relative, and has only been summoned when the child was ill. In Johannesburg the reason is more likely to be that the mother goes out to work and leaves the child to be minded by anyone who can be made to take the responsibility. She probably curtailed her lactation so that she could return to work as soon as possible after the birth of the child and because she believed that an adequate substitute for her breast milk could easily be found.

The substitute she used was probably a well-advertised patent food that can be made up to resemble milk. It was not one of the excellent foods that Europeans use, because their price is far too high; it was a much cheaper article and it was given in homeopathic doses. We were invited a few months ago to one hospital to see cases of a disease that had recently appeared as the result of the availability of such a food; they were cases of kwashiorkor, and they were nearly all fatal.

It does not seem to be sufficiently recognised that the introduction into a community of any substitute for breast milk nearly always brings about a fall in lactation. If the community is so wealthy that the best foods can be bought, and used generously, the harm is limited to the usual hazards of artificial feeding; if the community is poor, the harm must be infinitely greater. The chief danger lies in the almost infinite dilution of the baby food, and it is difficult to see how that can be avoided. It might be possible to include in the food some indicator substance that discoloured the feed if it was over-diluted, or to arrange that a recognisably attractive colour was only reached if the right amount of fresh milk, or even dried skimmed milk, was added. Any such device would, however, result in the food being less popular than another more conventional.

Perhaps in the urban situation, and especially when the mother works away from home, or when her work, like that of the Durban shebeen-keepers, tends to distract her from the proper care of her child, the only way of ensuring the good nutrition of the child is to take it into a creche or a nursery school. There is, of course, the danger that either will be regarded by the bad mother as a convenient dumping ground for a child unwanted during working hours, but the child should benefit despite that. The good nursery school, in particular, functions as an extension of the home and not as a substitute for it, and the better mother is quick to realise its advantages and willing to co-operate with the teachers. The nursery school is an odd concept in African society, but it seems very unlikely that the African mother will ever be persuaded to return to her home so long as she has opportunities of earning a living away from it. The introduction of the creche and nursery school may come to be accepted as an inevitable consequence of the employment of female labour. Possibly some of the women and young girls at present minding children at home could be used to staff the institutions.

The large towns that now have big African populations dependent on white employers should be regarded as an example and a warning; they represent the future for much of the African continent. They have little to recommend them, but they do offer the nutrition worker one advantage over a rural district: there may be, as in the many townships outside Johannesburg, or in the Medina at Dakar, many thousands of families living within a small and concentrated area. There is a corresponding ease in distribution, in the provision of medical and educational facilities, and in making the kind of contact that may ultimately benefit the child. Even the shifting nature of the population of such towns may be an advantage if in some way nutrition and education can be made sufficiently extensive; women leaving for rural districts might take with them something valuable learnt about the way in which to bring up their children.

The huge Native townships, in which a great deal of remedial work is being done, are examples of situations that should never have arisen. The work is a desperate necessity, and much of it is improvised; it has had to be done on an *ad hoc* basis because the townships grew large before there were any adequate clinical facilities for them. In the new towns, whether or not African and white people are rigorously separated, it should surely be possible to provide the facilities *in advance* of the arriving population. If it could be established as a voluntary act or an obligation, or even (if that were necessary) as a requirement of residence, that every child under the age of a year or two years had to be presented at a nutrition centre within a short time of the arrival of the family, it seems likely that some of the major nutritional evils might be averted.

If the Kikuyu who have been forced to live for the first time in villages by the recent emergency, continue (as seems likely) to be content with village life, their children should certainly benefit from the possibility of better nutritional supervision.

THE IMPROVEMENT OF STAPLE DIETS

In the absence of cheap and plentiful fresh cow's milk, it is necessary to use other foods to improve the diets of children. Dried skimmed milk, which has already been mentioned, is a useful stop-gap, but the African production is small and no long-term scheme can afford to rely for an indefinite time on importations. The foods that are likely to find most easy

acceptance are dried "flours" made from materials habitually used: beans, peas and groundnuts are the obvious choice, and a groundnut flour is already being made in Nigeria and in Senegal. At Dakar a mixture of the flour with millet, and sometimes with a little dried skimmed milk as well, is being distributed at child welfare clinics. The addition of dried milk to vegetable powders may be almost as valuable for its mineral as for its protein. Foods which have not been extensively used in human dietaries, such as cottonseed flour and fish-meal, should be regarded for the time being as interesting possibilities for the future; they require much careful experiment before being introduced into diets.

A development of the greatest interest, full of potential value, is the production of "tempeh," a food made by the action of unicellular organisms on soya. The process is used in the home in the Far East, where the natural conditions of humidity and temperature are favourable; the conditions can also be made artificially, and that is being done by a commercial catering firm in Salisbury, Southern Rhodesia. A dry powder is obtained, good in flavour and rich in protein; it can be incorporated into foods of many kinds and, provided that the cost is not too high, certainly deserves a trial in child feeding schemes.

There are many other foods that might be used for supplementation, varying according to the high-protein materials locally available. It is of course important that demand should not outrun supply, and preliminary work on methods of preparation, on keeping qualities, on acceptability, on nutritive values and on the continuity of supplies should be well advanced before any scheme is launched. To start distribution, and then to have to stop because of a failure in production, might cause a serious setback.

The prevention of malnutrition is, however, more than a matter of producing extra food: it is more than a matter of education in the use of food, or in the most economic but satisfactory buying of food. It involves the study of customs and social habits and a sympathetic appreciation of taboos and prohibitions; it is as much a problem for the anthropologist as for the health worker, and even more a problem for the ecologist. Somehow the desire for change must be evolved within the African consciousness, because until that evolution occurs any change is likely to be regarded as no more than another foreign imposition.