CAN WE ERADICATE MALNUTRITION IN SOUTH AFRICA?

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If the question asked in the title of this paper is viewed from a philosophical angle, the answer must obviously be 'no'. We do not yet know enough about nutrition, and probably never will know enough, to be able to say with certainty exactly what amount and variety of food is best suited to the needs of any particular individual. If we had this knowledge we would have no way of imparting it, except through individual counselling—a method which obviously cannot be applied to whole populations. But even if we had the necessary knowledge and the means of imparting it, and even if everybody had unlimited access to all the foods we might prescribe, we should still have no means of ensuring that our advice was followed. As long as human beings are free to eat what they like there will be those whose appetites will lead them astray, who will eat too much or too little, or those who will deprive themselves of one type of nutrient in order to overindulge in another. The human appetite, even in young children, is a most unreliable guide to the body's needs, for it can all too easily be influenced and perverted by factors quite unrelated to actual nutritional requirements; and it must be acknowledged that next to food availability appetite is the major controlling factor in human food consumption. In comparison with the compulsive influence of appetite the influence of common sense and nutrition education is often very weak indeed. Even the knowledge that sudden death may result from unrestrained eating is often insufficient to induce a human being to change his eating habits.

With these factors in mind it can be seen that there is no prospect whatsoever of completely eradicating malnutrition in South Africa or anywhere else, for many of the factors which lead to malnutrition are inherent in our human condition. However, although there is probably a great deal of malnutrition in this country that is not amenable to correction, there is undoubtedly a very high incidence of malnutrition owing to factors that can, in theory at any rate, be corrected or eradicated. It is this preventable malnutrition as it occurs in the country as a whole and the prospects of its eradication that I wish in particular to consider in this paper.

Before proceeding with a consideration of the factors involved in the malnutrition problem, I should like to de-

fine the limits within which I intend to confine myself. We have a rapidly expanding population, and the increase in numbers is greatest among those whose access to food is most restricted and who are least able to help themselves. For this reason alone the malnutrition problem must assuredly increase, as must the scope of the measures needed to deal with it. A consideration of the problem of eradicating malnutrition in this country can therefore not be confined to the conditions which obtain today. However, my present purpose will not be much furthered by speculating about future conditions and attempts to assess the efficacy of our future resources. I propose rather to consider the malnutrition problem as it exists today and briefly examine the possibility of eliminating it now or in the future. Passing reference will be made to possible future conditions where indicated, but I do not want to lay any emphasis on future needs. I believe that if we look squarely at the present problem we will receive a very good indication of our chances of coping with malnutrition in the future.

Defining Malnutrition

Let us commence with a consideration of what should properly be included under the term 'malnutrition' in a discussion of this nature. Our aim is to make a realistic appraisal of the extent of nutritional deficiency and disorder in our country, and for the purpose of this paper I intend to regard as malnutrition all types and degrees of defective nutrition. This means that we will take into account not only the named nutritional diseases such as kwashiorkor and pellagra, but also the disorders that may be present in ambulant persons and the various degrees and manifestations of undernutrition.

We come now to the essential question of the probable extent of defective nutrition in our country, and immediately we are in difficulties. To begin with, we have no absolute standards by which we can measure nutritional status. Unless we know what is optimal nutrition for an individual or for a population group, we cannot recognize what is sub-optimal, and we know very little about optimal nutrition. We would in fact be hard put even to define it satisfactorily. Nor do we have the knowledge of the inherent growth potential of the various racial groups in our country that would enable us to detect the existence of undernutrition from stunting of growth. Except, therefore, where actual clinical signs attributable to malnutrition are present, we cannot draw any definite conclusions from physical status alone. We have in any case very little information available about the physical condition of our population as a whole. Isolated surveys have been done on ambulant population groups, but nothing on a national scale has yet been attempted. Our knowledge of the incidence of overt nutritional disease is limited to those cases seen by doctors, and of most of these we have no records unless they are admitted to hospital. Even in the case of kwashiorkor, which has been made a notifiable disease, it cannot be assumed that all cases seen by doctors are notified, for it is obvious that when there is extreme pressure of work, certain duties will have to be neglected in favour of others which are more urgent. Therefore, although we have figures available for notified cases of kwashiorkor and for patients admitted to hospital with various nutritional diseases, we are completely ignorant of the actual incidence of these diseases in the country as a whole.

With all these factors in mind, it can be seen that we will necessarily have to base our evaluation of the extent to which malnutrition occurs on general assumptions made from the different facts known to us which have a bearing on the problem. It will obviously be impossible to arrive at any numerical estimate of the incidence of malnutrition.

THE NUTRITION SITUATION IN SOUTH AFRICA

White Population

We have in our country a White population consisting mainly of town-dwellers in whom are found all the ills characteristic of affluent societies. These ills include, among others, degenerative arterial disease, diabetes, obesity and tooth decay, all of which are partly or wholly due to dietary causes and can therefore be included under the term malnutrition. The incidence of these conditions is extremely high if minor degrees are included.

Our White population is therefore characterized by a great deal of imperfect nutrition resulting from the indiscriminate use of certain foods. An interesting confirmation of the lavish provisions enjoyed by the affluent is the fact which emerged from our primary school survey that White primary school children from the upper socio-economic strata are taller and heavier than those from the lower strata. Even in our affluent White society, therefore, the less privileged children fail to realize their full growth potential and, according to this standard, can be considered undernourished. Added to this we have the evidence, also obtained in our surveys, that the clinical signs attributed to various vitamin deficiencies are present in some degree in a large proportion of White children. On the other hand, the reported incidence of kwashiorkor among Whites is very low, so that when this disease does occur in White children the circumstances must obviously be exceptional. This is confirmed by the fact that the weights of White infants seldom give cause for concern, indicating that as a group they are not characterized by restricted access to high-class protein. Other named deficiency diseases are rare, and it is doubtful whether pellagra of primary nutritional origin occurs at all.

There is thus in our White population much evidence of nutritional disorder arising from overindulgence and faulty food selection, little evidence of any protein malnutrition in infancy, some evidence of undernutrition in the less privileged groups, and a very low incidence of named deficiency diseases. While this picture has its reassuring features, we have no reason to be greatly satisfied with the state of nutrition of our White population.

Urban non-Whites

In our urban non-White populations, whether they be Bantu, Coloured or Indian, we have population groups which in many cases greatly outnumber the Whites and which, with certain exceptions, exist on a socio-economic level vastly inferior to that of the Whites. In view of the fact that inferior socio-economic status is associated with growth retardation even in our White population, it is a

foregone conclusion that there must be a failure on the part of our indigent non-White populations to realize their full growth potential. This must be so whether the retarded growth in less affluent Whites is due to poverty, ignorance or improvidence, for all these factors are present to an alarming degree in our indigent non-White populations, although some are less evident in certain groups than in others. We can thus assume that there is growth retardation among these populations, although we cannot measure its extent because we have no knowledge of the inherent growth potential of the different races.

Bantu primary school children were found in our surveys to be two years behind White children in height and weight. We do not know whether this is a retardation that persists into adult life, but in view of the short stature of the average adult Bantu it seems probable that it does. This is no more than we would expect from what we know of the urban Bantu diet. Nearly 80% of the Bantu children investigated in our survey came from homes where the family income was too low to permit the purchase of adequate food supplies. We know that mealie-meal porridge is the dietary standby of these people, and in relation to its bulk this food is a poor source of both protein and calories. In a study of the weight gain during pregnancy of urban Bantu women,[1] I found that their average weight gain was substantially lower than that typical of well-fed White women. The average birth-weight of urban Bantu infants is also lower than that of White infants.

These facts all point to the existence of chronic undernutrition, although the degree of undernutrition seen in our urban Bantu populations is much less marked than that which exists, for instance, in parts of India.[2] I have mentioned specific facts pointing to undernutrition only in the case of the Bantu, but what is true of urban Bantu must undoubtedly be true to a greater or lesser extent of our other indigent urban populations, notably the Coloured people of the Cape and the Indians of Natal.

The indigent non-White populations of our towns have a sufficiently high incidence of kwashiorkor to point to a widespread deficiency of protein among infants and toddlers, a conclusion which is borne out by the fact that according to hospital records low body weights are common in young children from these racial groups suffering from non-nutritional diseases as well as those suffering from actual nutritional disease.[3] In addition we know that among older children and adults there is considerable evidence of vitamin deficiency. In our Pretoria surveys we found biochemical evidence of a lower protein, nicotinic acid and riboflavin status among Bantu than among White children. We also know that the clinical signs attributed to vitamin deficiency are extremely common in Bantu women who attend our municipal antenatal clinics, where vitamins are handed out in large quantities.[1] It should perhaps be mentioned that anaemia does not appear to be a feature of our urban Bantu populations, but was found to be present in a small proportion of the Indian children investigated in our Pretoria survey.

We further find among our urban non-White populations numerous cases of frank deficiency disease which are seldom seen among our Whites. We have already mentioned kwashiorkor, the incidence of which is particularly high in Bantu. There is also a considerable incidence in urban non-Whites of nutritional marasmus and of pellagra in older children and adults. The latter condition occurs mainly among Bantu, but I have seen mild pellagrous skin lesions in young Coloured children in Pretoria. It should further be borne in mind that there is a high incidence among our urban non-White populations of those diseases in which malnutrition may be a contributing factor, notably gastroenteritis, bronchopneumonia and tuberculosis. Finally, it should be mentioned that degenerative arterial disease, diabetes and obesity also occur among urban non-Whites, but usually to a relatively minor extent. Tooth decay, on the other hand, is very common among them.

The state of nutrition of our urban non-White populations thus gives cause for much concern. It cannot be doubted that there is widespread chronic undernutrition among them, a deficient intake of certain vitamins, an increased susceptibility to disease and a probable reduction in work capacity. There is also evidence of a serious degree of protein deprivation in infants and young children, and we do not know what toll such deprivation may take in later life. There is no prospect in the immediate future of that rise in socio-economic status, which alone could bring about the spontaneous elimination of undernutrition and other types of nutritional deficiency in these population groups, and no improvement can be expected unless we set about securing it.

Rural Bantu

When we turn to our rural Bantu, including those of the homelands and Reserve areas, we are dealing with a very substantial proportion of the population of this country, and the part about which the least information is available. However, we are here also in a position to draw reasonable inferences from the circumstances that are known to us.

In the first place, we are here dealing with people who are living entirely, or almost entirely, off the land. In the White areas there are Bantu farm employees who benefit from their employers' farming activities by way of provision with wholesome and varied food. We know, however, that some farmers prefer to make available to their employees a piece of land on which they are expected to produce their own food, and the position of such employees is in many respects similar to that of the Bantu in the Reserves.

The general condition of the rural Bantu is one of extreme poverty with a consequent lack of communal resources. It is one of widespread ignorance of the benefits of Western civilization, of superstition, prejudice and binding traditions, and of dependence on a land which is limited in extent and often extremely unproductive because of low soil fertility and low rainfall. Droughts are common and prolonged in many areas, for example the Northern Transvaal. When droughts occur in these areas the Government has to step in with emergency aid to prevent mass starvation, for these people are not in a position to make provision against lean years. Indeed, they are apparently unable even in normal times to make provision during the fat months of the year for the lean months that must follow, for the evidences of malnutrition

tend to be particularly common at certain times of the year. Farming methods are primitive in the extreme, and there would be no home capital available for the introduction of modern methods even if the knowledge were available and the prejudice against their application could be overcome. Farm animals are relatively few and of very poor quality. They are in any case traditionally looked upon as currency and not as food. Milk and egg yields are very low, and these commodities are often reserved for sale rather than for home consumption, this being a contributory source of the meagre cash earnings of these people. Cash is also sent home in small amounts by the men who are working in the towns, but the latter make up only a small proportion of the men actually in search of work. For most of them there is no chance of lucrative employment.

Like the urban Bantu, their dietary staple is mealie-meal porridge, and with this they may eat various wild greens and fruits, but little in the way of meat, dairy products and home-grown vegetables. There are, of course, areas in which conditions are better, and even very fertile areas like the Transkei, but, on the other hand, there are parts of the country in which even the mealie-meal runs out during certain months of the year or during times of drought, when widespread famine may supervene. A member of our staff recently visited a Reserve in a drought-stricken area of the Northern Transvaal to ascertain what opportunities there were for studying tribal food habits and taboos. He found a people so bankrupt of food resources that they were largely dependent on Government bounty, and were even reduced here and there to eating boiled cow dung and hay. The bondage of tribal customs nevertheless still largely prevented, especially among women and children, the consumption of what little animal protein was available.

We have very little idea of the actual incidence of malnutrition in the rural Bantu, but it is a foregone conclusion from our knowledge of their resources that there must be widespread chronic undernutrition, probably with periods of semi-starvation for many of them during certain times of the year. There must be a great deal of protein deficiency, especially among toddlers and pregnant and lactating women, and of vitamin deficiency among all age groups. I wish to refer specifically to the extremely high incidence of pellagra or nicotinic-acid-deficiency syndrome. Maize is very deficient both in free nicotinic acid and in the essential amino acid, tryptophan, which can act as a precursor of nicotinic acid; hence the high incidence of pellagra in our maize-eating communities. When I deputized for a missionary doctor in the Hammanskraal area in October/November 1963, I was particularly struck by the fact that of the patients who visited the country clinics held for the benefit of those who lived far from the hospital, approximately 50% were suffering from pellagra. I have since been informed that the incidence is also very high in Sekhukhuniland, particularly during the summer months. The incidence of kwashiorkor and prekwashiorkor is also very high among clinic patients in Hammanskraal and in Sekhukhuniland.[4] We know from the reports of district surgeons and country practitioners who cooperated with the CSIR and the Department of Health in two questionnaire surveys[5,6] that such conditions are by no means exceptional. To complete the picture we must bear in mind that large numbers of rural Bantu are quite out of reach of medical or other aid, and in view of the poverty of their resources, can be assumed to be at least as much affected in health as those who come under medical supervision.

The general picture that emerges for the rural Bantu is one indicative of more serious undernutrition than that which exists among the urban Bantu, more severe protein deficiency among young children, and more widespread vitamin deficiency. Dietary resources are generally very meagre, with little prospect of betterment and in many areas every prospect of periodic drastic reduction. At the same time, these people continue to increase rapidly in numbers. In view of their already insufficient agricultural resources this rapid population expansion is a truly disquieting feature of the situation.

WHAT CAN BE DONE ABOUT MALNUTRITION IN SOUTH AFRICA?

We come now to the question of what would have to be done to eradicate the malnutrition that is so prevalent among all our population groups, and here I would like to state that I do not intend to analyse our agricultural and other food resources and potentialities. This has already been done by various experts and conclusions have been on the whole optimistic (see e.g. Hulme,[7] McMartin,[8] Hirzel[9]). It is believed that we can expand our agricultural and other activities to meet the needs of the growing population. Who is going to pay for the expansion if the people who need to benefit cannot afford to buy the food that is produced for them is, however, a question that has yet to be answered. The other question I do not intend to dwell on is that of introducing birth control methods among our most rapidly expanding populations. The desirability of curbing population growth to prevent future starvation must be obvious to everybody, but I personally see little prospect of anything more than a limited application of whatever methods we might be in a position to introduce. The reasons for my lack of optimism are the prohibitive cost of nation-wide measures, the lack of personnel for putting them into practice and the prejudice that would be encountered among those most in need of such assistance. I propose to assume, therefore, for the remainder of this discussion, that the potential food resources for meeting our population's nutritional needs are available to us now and will continue to be available in the future, and that we will not be able to effect any substantial reduction in population growth.

The remedy for malnutrition is everywhere the same, namely that the population affected must in some way be induced, with assistance in the form of food distribution if necessary, to subsist on an adequate and balanced diet. It is relatively simple to calculate the total food requirements of a population from our knowledge of man's average nutrient needs, but it is another matter to judge the individual's requirements. This is one of the factors that will prevent us from ever being able to guarantee the nutritional health of every individual in our population. The other factor is man's liability to be led astray by his own ideas and his appetite. For these reasons we will always have among us individuals who are in some way malnourished, even when access to food is unrestricted.

In the White population of our country we have such a group with on the whole free access to food and yet among whom many nutritional disorders are prevalent. We have contact with this population group through schools, universities, newspapers, radio and other channels, and we thus have many opportunities for improving their state of nutrition through nutrition education. Much has already been done in the way of nutrition education among Whites, and there is not among them the ignorance of nutritional principles that faces us among our non-White populations. However, in spite of all the publicity given to the dangers of indiscriminate eating, we have not been able to stem the tide of deaths from coronary thrombosis; nor do our warnings against the consumption of sweets and cool drinks appear to have more than a minimal effect, even among the most enlightened sections of our population. It does not seem to me, therefore, that we have much hope of remedying this situation. We could probably improve it by exerting greater pressure of advertising and offering more nutrition education through the various channels at our disposal, but in the last resort the remedy will lie with the individual members of the population. If, as suggested by Dr. Quass,[10] metabolic clinics were established throughout the country, we would possibly make significant advances in the early detection and reversal of disease due to wrong eating in those who could afford to follow our advice and were willing to cooperate. I do not see, however, where we are going to get the expert personnel to man such clinics, since there is already such a serious shortage of highly-trained personnel in this country. Nor do I think that it will be easy to obtain the necessary funds. We have moreover a very pressing problem of malnutrition owing to food deprivation in this country, which, if only through the sheer weight of human misery involved, seems to me to have a prior claim on public funds.

The problem that faces us in the case of our underprivileged populations, including our indigent Whites, is not merely one of producing enough food in this country for all its inhabitants but of getting this food into the hands of people who, through poverty, ignorance, prejudice or apathy, are unable or unwilling to avail themselves of it.

Poverty

The poverty factor seems to me already far beyond the means of our greatly-outnumbered White population to cope with. Only at the cost of great personal sacrifice on the part of every individual in our White population could we hope to raise enough money to improve substantially the food intake of an entire population that outnumbers us 4 to 1. I do not think we will ever be able to do more than apply palliative remedies of limited efficacy, such as the milk-powder distribution scheme and other relief measures, including medical aid, already in operation. We will find it possible to make more extensive aid available by spending more money, or more effective aid by availing ourselves of the benefits of research such as that relating to the production of cheap food mixtures.[11] But when one pauses to consider the vast numbers in need who live far beyond reach of the sort of contact we have in our urban areas, we see that sheer lack of trained personnel will already prevent us from putting into operation in the rural areas any extensive scheme for the distribution of aid. We also lack the necessary medical personnel and facilities for diagnosis in those areas, which are supplied almost entirely by the greatly overburdened missionary hospitals and district surgeoncies. The situation in rural areas is liable to become worse, because the populations are increasing, the land is becoming more worked out and there does not appear to be any conspicuous desire on the part of doctors or other workers to leave the towns for a life of dedicated service in primitive rural areas. The provision of adequate irrigation to the dry areas to make the alternative possibility of self-support a reality would be so costly as to rule it out at our present level of economy.

Ignorance

The factor of ignorance—a mass ignorance among millions—is one that will be even harder to combat. We know that even among our urban Bantu, where we do have means of contacting the people, although more limited than among Whites, the ignorance of nutritional principles that prevails is appalling, and the number of health educators available for combating this ignorance a mere drop in the ocean. Where then are we going to begin to find the means of reaching the rural populations and the personnel to put these means into operation?

Prejudice and Apathy

To turn to prejudice and apathy: these are qualities which may be imposed by circumstances, but they are also inherent in human nature, and it is often extremely difficult to make any inroads against them. We see how, among our enlightened White population, individual prejudice and apathy again and again prevent people from believing and acting upon sound nutritional advice. What then when we are faced with mass prejudice based on suspicion and generations of tribal beliefs and with an apathy born of chronic ill-health and undernutrition? This is the complex vicious circle we are up against.

It seems to me that the magnitude of the malnutrition problem in this country has been very much understressed, and a lot of ill-judged statements have gone forth about the extent to which it is already under control and the likelihood of its being brought completely under control in the future. I do not share this optimism. To me it seems that, like the poor, we will have the malnourished always with us. By all means let us concentrate all the energies and all the resources at our disposal on the task of giving what assistance we can to the malnourished masses in our country, but let us be realistic and face the fact that undernutrition and malnutrition are problems that will not be eradicated from this country while human nature and our social structure remain what they are.

SUMMARY

Malnutrition owing to factors inherent in human nature has little chance of being eradicated in South Africa or anywhere else, but what of preventable malnutrition caused by restricted access to essential foods?

An appraisal is made of the probable incidence of malnutrition in South Africa and it is concluded that there must be widespread chronic undernutrition and malnutrition among both urban and rural non-Whites. Even in the case of the affluent White population there is evidence that children from the lower socio-economic strata fail to realize their full growth

potential.

It is considered by agronomists that South Africa is capable of producing enough food to meet the needs of her growing population, but the problem that faces us is not only one of food production. It is also one of promoting the socio-economic status of an indigent and largely primitive population majority to a level where it will be able and willing to avail itself of the food that may be produced, or, alternatively, of financing the production and large-scale distribution of enormous quantities of food for which there can be no adequate cash returns. Either approach would demand capital and manpower beyond the country's resources, and there is therefore little hope of eradicating malnutrition under our present social system. We can, however, increase our efforts to bring what relief we can to the vast numbers in our country whose esssential food requirements are never fully met.

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