

FOOD, FAMINE AND HEALTH

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THE Faculty of Medicine was one of the few faculties started at the inception of this university just over twenty-five years ago. In this relatively short space of twenty-five years the faculty has made a name for itself for the high standard of its products, the good quality of its research and for the development of a body of teachers who are highly respected all over the world for their contribution to the advancement of medicine. In the past ten years the faculty has rightly shifted its emphasis—both in teaching and research—from just clinical eminence within the marble wards of the hospital, to the total care and health of the community at large. This involvement of the faculty in the wider aspect of the health of the people has shown itself in the greater emphasis now being given to Preventive and Social Medicine, the Ibarapa Project and such units as the Institute of Child Health and the Applied Nutrition Unit. Last year, the faculty took the initiative in running a seminar on Priorities in National Health Planning—the seminar afforded Medical administrators, doctors, planners and those responsible for health in the country, the opportunity of reviewing the health achievements of the last five-year development plan, the present state of the health services in the country and to work out priorities for the next development plan. A few days ago, one of the units of this university, with the full support of the Faculty of Medicine, ran a one-day seminar on Nutrition as a National Priority in this country. The faculty has also deemed it fit to entrust its 1974 Inaugural lecture to a Medical Nutritionist. This, I hope, is in recognition of the important part that nutrition plays in the health of our community. It was with deep humility that I accepted to give this lecture realizing the poor nutritional plight of our people and the great amount of work—medical, agricultural and educational—that must needs be done to improve the nutritional lot of the populace.

Man cannot exist without food. It must be true, therefore, that food must be as old as—if not older—than man. There are, however, foods and foods; what is food in one community may not be accepted as food in another. One of the definitions of the word 'food' shows this very clearly—"Food is a material recognised by an individual or group as being fit to fulfil the needs of maintenance, growth, work and tissue repair, and is usually consumed to these ends or sometimes for social and other reasons". This is a scientifically beautiful definition—it has however hidden the main aim of people in eating in the phrase 'other reasons'. People eat because they are hungry—not for growth, work or tissue repair. Very few people associate food with health and those that do, do so only in a very vague way. The following quotation from Fagunwa which has had to be translated from the original Yoruba and has lost some of its beauty is pertinent; I hope that it still conveys the emotion and sense of the original.

YORUBA FOOD CREED (after Fagunwa)

I believe in food; it nourishes the body.

Good food makes the skin smooth, bones strong and ensures good circulation.

Bad food leads ultimately to illness.

Indiscriminate eating makes one age prematurely—the cheeks become flat, eyes sunken, nose prominent, legs and arm thin, forehead protrudes, buttocks flat and the expression dull.

I believe that among foods the pounded yam takes pride of place, yam flour is second, rice third, agidi (steamed maize pudding) though humble is not much behind. Stews and soups are the guides of morsels into the stomach.

Pounded yam and okro soup make a good pair, yam flour and ewedu soup go together, vegetable soups go with all types of foods; moinmoin and hot pap are inseparables; Fried plantain and fried yam are firm favourites in rural areas. Pawpaws and bananas are good supporters.

To enjoy gari at its best, fish, meat, shrimps, okro or ewedu must be in attendance.

Gluttony is however a sin—enough should be enough. Peppers should be treated with great respect, onions are a delicacy, so also are tomatoes, melon seeds and spices. The crux of the matter is this—good food, potable water and fresh air make for good health.

This quotation, apart from the nostalgic recall of good food and feeding that it engenders, highlights a fact that Nigerians have about food, a fact that bedevilled nutrition in developing countries for a long time and was never understood by expatriate nutritionists—food is what fills the stomach. Gari, pounded yam, yam flour, pap, agidi, tuwo, beans are foods—but vegetables, soups, stews, fruits and such things are not. If you were to ask any Yoruba man, educated or not, what foods he had yesterday, he would most probably answer—Pap for breakfast, Gari for lunch and agidi for supper; the recollection of the average University student of what foods he had yesterday would be bread for breakfast, rice for lunch and dodo for supper. No mention is made of the vegetables, soup, meat, fish or other accessories. On the other hand, the average European or American asked to recall yesterday's diet, would state—Bacon and eggs for breakfast, roast beef and vegetable for lunch and for supper, soup and fish. Notice that no mention is made of the potatoes—the monotonous accompaniment of most meals—boiled, fried, chipped or mashed. The African places the greatest emphasis on the staple or carbohydrate part of his diet because they supply the bulk and fill his stomach and thinks very little of the soups, stews or condiments which supply the protein, vitamins and minerals needed. This is the basis and main reason for the protein malnutrition that is so widespread in the country. Change this attitude to food by laying stress on soups, stews, vegetables and their ingredients and the country's main nutritional problem will be solved.

In spite of the apparent uniformity in foods, studies have shown very wide variations. Apart from the seasonal changes in each locality due to availability there are much wider ranges between the different communities and tribes. The following table (Table 1) shows some of these differences in diet.

TABLE 1

*Average Daily Intake of some Foods from the Dietary of Nigerians**[Grams per Head per Day]*

| | <i>Yoruba Igun</i> | <i>Group Oba</i> | <i>North Zaria</i> | <i>Midwest Eguare</i> | <i>Top Ibbi</i> |
|-----------------------------|------------------------|----------------------|------------------------|---------------------------|---------------------|
| CEREALS | 362 | 90 | 960 | 76 | 43 |
| Maize | 259 | 45 | — | 63 | 8 |
| Rice | 95 | 42 | 19 | 12 | 32 |
| Wheat | 2 | 3 | 1 | — | 3 |
| Sorghum and Millet | — | — | 940 | — | — |
| ROOTS AND TUBERS | 413 | 132 | 1 | 272 | 695 |
| Yam | 146 | 11 | — | 172 | 138 |
| Cassava | 145 | 116 | 1 | 90 | 378 |
| Cocoyam | 52 | 11 | — | — | 115 |
| Plantain | 70 | 8 | — | 10 | 39 |
| Breadfruit | — | — | — | — | 25 |
| FISH | 9 | 12 | — | 12 | 28 |
| Dry Fish | 4 | 7 | — | 7 | 14 |
| Fresh Fish | 5 | 5 | — | 2 | 2 |
| Stockfish | — | — | — | — | 9 |
| Shrimps | — | — | — | — | 3 |
| VEGETABLES | 13 | 1 | 5 | 6 | 273 |
| Palm Oil | 21 | 24 | 15 | 28 | 45 |
| Palm wine and Local Beer | 48 | — | — | 2 | 243 |
| Beans | 100 | 42 | 4 | 19 | 38 |

These figures are averages of intake over one year and in the case of Igun—over a five-year period. The differences between the tribal groups are apparent and obvious. Two towns have been shown in the Yoruba group to again show the differences that do occur within each group.

It is therefore impossible to talk about the Nigerian diet, or the diet of Nigerians—as one talks of the British or American diet. This is because the foods eaten by the average Nigerian are still dictated by his/her cultural upbringing and origin. Changes are taking place amongst the elite group in Nigeria and even at the present time, one can present a diet acceptable to the elite Nigerians from whichever tribe. For the average Nigerian, however, a uniform diet is still a long way away, not only due to culture and availability of foods but also due to economic factors.

A lot has been said about the traditional conservatism of people about diet, forgetting the great changes that have taken place and still take place in our choice of foods. A look at the lists of foods in Table I and their origins is very illustrative. Of the foods in the cereal group, three out of four are of fairly recent introduction into the country.

MAIZE was introduced into West Africa by the Portuguese within the last 500 years from America as Indian Corn. It has become an important part of our traditional diet, and has been so taken over that its mode of preparation as Ogi (Gruel) or Agidi (steamed pudding) is unique. This is a good example of a total assimilation of a foreign food into another culture. The production of maize in the country is now over one million tons per year—and the cereal is still in short supply.

A form of rice (*Oryza glaberrima*) was native to the Western parts of West Africa—the 'rice culture' limited on the east by the Bandama River (which runs north-south bisecting the Ivory Coast). A new variety was introduced into the Western part of West Africa from Asia by the Portuguese (*Oryza Sativa*). Rice cultivation in Nigeria was however much more recent. Its introduction was bound up with the missionary schism that occurred in the country early this century and resulted in the creation of the African Church Organization. The Nigerian leaders of this church started the cultivation of rice at OFADA and because of their zeal brought down farmers and boys from the hinterland of the country and trained them in rice cultivation. The spread of Ofada rice all over the country was due to their religious favour and belief in the dignity of labour translated into hard work. Aderupoko Coker of Iju and people of his ilk are sorely needed

in the New Nigeria. Before this time, rice, though known in the country by the last century, was only known as food for missionaries and returned slaves and had to be imported. Cultivation of rice in Nigeria was a Nigerian affair—a fact of which we can be proud. Total production is now around the 500,000-ton mark per year in the country and rice is still imported.

Wheat is still not grown on a large scale in the country, its importance as an item of food has however grown enormously within the past one hundred years. Aylward 1961 stated that observers agreed that wheaten bread was comparatively unknown outside European settlements in Africa until quite recently. Before the 1939–45 World War, about 3,000 tons a year of wheat was imported into Nigeria. By 1957, this amount had gone up to 45,000 tons. By 1970, wheat had become the largest single food import into the country and Nigeria spent £7,979,000 (₦15,958,000) on this item of food—evidence is that the bill will become larger still. A second flour mill is under construction and the world price of wheat is also increasing.

An attempt has been started for the cultivation of wheat in the country. When the Sokoto Dam becomes operational by next year, large scale cultivation will be possible. However, it is time for the government of the country to take a decision about the large drain of foreign exchange for wheat importation. The whole world is short of wheat; the price is bound to go on increasing with the increasing demand for it from all parts of the world. Each government decides on its own legal definition of what is a loaf of bread. During the 1939–45 World War, the 'legal' loaf in Britain was decided by the government from the available ingredients—Brown Bread (low extraction flour) and everybody in Britain ate that type of bread. It was the only type allowed to be baked by the bakeries. Nigeria can reduce its foreign exchange spending on wheat by legislating that all flour made in the country should contain a local cereal or that it should be low extraction. There is need for legislation to ensure that the flour mills use local wheat and other cereals. It is a fact that bread with 10 per cent cassava can be baked!!

Cassava (Manioc), as we all know, is another introduction into the country. The crop was introduced into the Congo Basin by the Portuguese and slowly spread up and down the continent, reaching Nigeria within this century. During a nutrition survey twelve years ago, an old man in a village near Ilesha stated that he had never tasted cassava and hoped never to eat it as it was a poor man's food!! Its mode of preparation by soaking and fermentation still follows the South American pattern.

The changes in foods habits that have taken place and are still taking place also include the spread of a food eaten in one part of the country to another part. A very good item of food that has spread from the southern part of the country to the northern part is PALM OIL Table 1 shows the widespread use of this food item all over the country - in Zaria 15 grams per head per day is consumed. This spread of Palm oil to the north is good not only for the health and nutrition of the people but also for the economy of the country. It is better for us to export groundnut oil than the Vitamin A rich Palm oil especially as there is suspicion of vitamin A deficiency in parts of the country.

Famine

Nutritionally, the differences between STARVATION and FAMINE are very small. Starvation is defined as "the result of complete deprivation of food or of drastic reduction in food intake over a period of time, leading to severe physiological, functional, behavioural and finally morphological disturbances." FAMINE, on the other hand, is defined as a catastrophic food shortage affecting large numbers of people. It is often due to drought, floods, earthquakes, war and civil disturbances. It has strong emotional significance and evokes painful historical memories. Starvation may be chronic, may affect large numbers of people, may also result in illness and deaths but rarely does it evoke strong emotional response in people. From nutrition studies carried out all over the country millions of Nigerians, at the best of times, suffer from starvation. The following table (Table 2) shows the average intake in calories in different parts of the country.

TABLE 2

Average intake of Calories in different parts of Nigeria (Pre-1967)

Areas Calories per head per day

| | |
|---------------|------|
| North | 1778 |
| West | 1612 |
| Mid-West | 1545 |
| East-Central | 2470 |
| South-Eastern | 2111 |

The calorie needs of the average Nigerian, based on weight, occupation, temperature, etc., is around 2000 calories per day. The figures given in the table are averages of intakes over the year. The table shows that people in the Mid-Western and Western States normally get less than 60 per cent of their calorie needs, whilst people in the North in normal times have to exist on 65 per cent of their needs. The normal hunger season—from about February or March to June (depending on the part of the country) results in a much lower intake at a time when the farmer needs to prepare the land and plant. This annual hunger season, with its low food intake and its high expectation of agricultural energy, is known all over West Africa. That the farmers and people in the rural areas are able to continue producing the amount of foods they produce every year is an annual miracle to nutritionists! Studies have shown that because of the need to work hard at this time that food is short, good farmers invariably lose a lot of weight during the planting season.

It is against the background of this chronic starvation of 65 per cent of calorie needs that the effects of the drought that has now gone on for four years in the Northern States should be viewed. The result, naturally, has been catastrophic. It has taken so long to recognize the situation for what it is, because the 'NORMAL' which everyone was used to was only slightly better. Deaths from starvation and malnutrition were and are 'normal' all over the country. One has only to open any of the reports of the medical departments from the states to learn of the large numbers of people who annually and in normal times die of

malnutrition. In a recent study carried out in a village in the Western State, it was found that one out of every seven children that died between birth and four years died of malnutrition. Malnutrition was also a contributory cause of death in 50 per cent of the remaining deaths.

The present famine, because it is superimposed on long standing starvation, cannot be controlled by the sudden injection of money or food into the area as is now taking place. What is urgently needed is a scientific appraisal of the situation; number of people affected and at risk, sex, age, their needs—medical and nutritional, agricultural—followed by a coordinated planned relief of the present situation and a sustained follow-up and long term planning (nutrition rehabilitation). What is now happening can only lead to nutritional 'suicide' in the country. Food is being bought with government and donated money from areas where food supplies are already marginal, the foods are sent to the drought areas where storage, distribution and registration can at best be called poor and rudimentary. No one can tell the exact number of people at risk and what each person is getting. The resultant effect is the high prices of food now being felt by all groups all over the country. The normal flow of food from one part of the country to another has been affected by the drought. Urgent steps must be taken to correct this. A country like Nigeria, which during the recent civil war carried out a brilliant and successful nutrition relief and rehabilitation should be able to do better than this. The Nigerian Red Cross had a lot of experience and showed itself capable of carrying out a good job of nutrition relief and rehabilitation. The format, devised by a department of this University, for the calculation of foods needed for relief and for the distribution of food to the needy during the Nigerian Civil War, has now been adopted and is being used by United Nations Agencies for relief work all over the world. The knowledge, expertise and personnel to evaluate the present situation, plan and carry out relief and rehabilitation with little or no upset of the remaining population are already available in this country. One hopes that these services will be utilized soon, before the country-wide high food prices and food shortages lead to indiscriminate requests for increases in salaries and industrial unrest.

Health

Whilst it is impossible to state exactly the contribution that nutrition makes to good health, there is general agreement that in developing countries, good nutrition and food are highly necessary for the people to withstand the effects of bad housing, poor environment, unclean water and the ever present infections and parasites. Collis, Dema and Omololu in their studies around Ilesha in 1960, showed the high rate of some systemic and intestinal parasites in our rural communities.

Of the people examined—Children and adults—(about 200) 51 per cent of the population had *Ascaris ova*, 24 per cent of the population had Hookworm and 37 per cent of the population had *Loa loa*.

Of the children up to fourteen years whose blood films were examined for malaria parasites, 52 per cent were positive. The effects of infection and malnutrition were reflected on the growth of these rural children. By the age of four years, they were 15 cm (6 ins.) shorter and 4.5 kgs (10 lbs.) lighter than the children of the well-to-do in Ibadan!

Malnutrition in childhood does not always result in death—some children recover.

Present studies all over the world have shown that the children who survive and get over their childhood malnutrition may never attain their mental and intellectual potential. This does not mean that these children become mentally deficient. What it means is more subtle and worse. It means that a child who could have worked for and got a Ph.D. cannot now go beyond the School Certificate, or that if his mental potential at birth were School Certificate, he may find it difficult to go beyond Primary Six. Childhood malnutrition, which is found all over the country, may create for us a two-tier society and make nonsense of the government plan for an egalitarian society.

Large sums of money are being spent on primary education and other forms of education, children who have been malnourished just cannot avail themselves of these opportunities. In one of our states, where primary education is free, 30 per cent of the students drop out during the first two years of schooling in certain areas. Some of these five to six-year olds walk three

miles to school without breakfast and are then expected to sit and learn from 8.00 a.m. till 11.30 a.m. before there is a break. A Yoruba proverb states—"When hunger is in, words and thoughts cannot get in"—how can we expect these children to learn? If a small percentage of the huge amounts of money now being spent on primary education is used to give a morning meal to these children at school, there is no doubt in my mind that the dropout rate will fall and the number of passes increase.

Malnutrition in adults is very rarely present alone. It is a very common complication of many medical, surgical and obstetrical conditions. ANAEMIA is very common in women—it is also seen in men. Late in 1972, some Nigerian athletes and sportsmen who were to take part in the 2nd All African Games were camped in Ibadan. The opportunity was taken to study these athletes who were going to represent the country. It was found that about one in three of these 'Nigerian super sportsmen and women' were border-line cases of anaemia! These were our 'fit' youngsters, in the prime of their youth and fitness, of whom much was expected. The typical Nigerian worker—whether in industry or agriculture—is much worse off than these sportsmen, nutritionally. Anaemia, worms, poor diet, bad water and environment, and the omnipresent malaria and other infections make him always weak and lazy. "General weakness and debility" is a term that is thrown at doctors everyday in our hospitals by myriads of patients. Farmers find it impossible to work and plant large acres of land because of undernutrition and so, they tend to restrict themselves to small areas.

Food production cannot be increased to meet the average increase in population of 2.8% per year and the food needs of the increasing affluence of the population. Industries all over the country report low manpower productivity rate, high absenteeism and illness rates. Malnutrition plays a large part in these problems.

The country cannot attain a high rate of growth of the G.N.P. without special attention being paid to nutrition and food. In spite of the high prices of food and the drought in the country, 30 per cent (nearly one-third) of the foods produced on our farms never reach the table—they are destroyed by insects and

pests or becomes spoiled due to harvesting, poor storage and transportation. In the case of tomatoes and fruits, the wastage is nearly 80 per cent of production.

It is unfortunate that most planners and senior government officials have been trained to believe that Nutrition and Health are social services. This may be true of developed countries. In developing countries, Nutrition and Health are *not* social services. They are important ingredients to the growth of the national productivity, to the reduction of foreign exchange spending; to the development of a stable economy and a virile and healthy population. We can build new factories, better roads and provide more incentives for workers; without good food and health, the productivity of the average worker cannot be increased. His working capacity may be stimulated by better tools and new buildings, but he can only give his best when he is not hungry and his health is good.

I will like to expatiate by discussing the loss to the nation of a child of two years that dies of malnutrition.

During pregnancy

Nausea, vomiting and illness of mother leading to lack of efficiency and low productivity;

Visits to Antenatal Clinics or native doctors—time lost from work and fees;

In last three months, marked lack of efficiency due to the extra weight—if in rural area, the mother would have stopped carrying heavy loads, walking long distances and her contribution to the family's work and income would have been much reduced. If a worker, either in industry or government, she would have been put on 'light duties' and obtained Maternity leave—six weeks before and after her delivery.

Delivery

Cost of delivery in rural health centres and by native doctors/midwives may be as low as ₦2 or ₦3 but in private or teaching hospitals, it may be as high as ₦50 to ₦100.

Festivities after birth

The birth of the child heralds a round of festivities—eating, drinking and dancing culminating in the naming ceremony or baptism. The father has got to find money for all these as well as money for looking after his wife and child, the mother or mothers-in-law, the relatives who may decide to come and settle down to help with the new born baby and a host of well wishers.

Monthly upkeep of mother and child

We can roughly cost the monthly upkeep of the growing child and mother at about ₦10 per month— if the baby is fed artificially, the cost will be higher; if breast fed the inconveniences to the mother and low output and efficiency will cost at least this. Added to this must be the many sleepless nights due to the child's illness when the mother and father will be awake most nights with resultant poor productivity at the next day's work; the many hours of work lost due to visits to hospitals or the cost of doctor's fees.

The cost to the national economy will vary depending upon the status, income and place of residence of the family. But even in the most rural areas and with the meanest job, a two-year old child must have cost ₦50; in towns in a working family, with good position and money the cost will be about ₦500. At least 60,000 children die of malnutrition every year in this country—thus, at the lower estimate of ₦50 this costs the country ₦3,000,000 and at the higher estimate, ₦30,000,000. The correct amount must be somewhere between these two figures. These are the figures for just one of the many nutritional problems of the country. Anaemias needing hospitalization, blood transfusion or mild cases leading to weakness, absenteeism and low productivity; diabetes; keratomalaria and measles leading to blindness; the costs of all these must be staggering.

The low production of foodstuffs due to the inability of malnourished farmers to increase production to meet the needs of the rising population of the country must also be mentioned.

There is no reason why the country should not be self-sufficient in food. There is no reason why the people should be malnourished and starved. All that is needed is a definite National Food and Nutrition Policy, the realization that NUTRITION is not agriculture and the proper utilization of available personnel, research units, extension services and marketing channels. Encouragement should be given to the production, harvesting and marketing of necessary foods—by monetary and other incentives and proper organization.

An old teacher and friend who worked with the United Nations Food and Agricultural Organization for many years used to teach that Nutrition was the proper marriage of Agriculture and Health. I will like to suggest that in developing countries, where polygamy is the rule rather than the exception, Nutrition is the proper marriage of Agriculture, Health, Education and Sociology. If we can make this marriage work—and our environment, culture and ways of life are conducive to the success of this form of marriage—then the proper nutrition of our people will soon be a reality.

Mr Vice-Chancellor, colleagues, ladies and gentlemen, my tale is told; I have tried in the short time available, to show some aspects of the nutritional problems that affect the country and its people; I have tried to show that nutrition does not consist of food production or agriculture alone. I hope I have shown that good nutrition and health are inseparable and that at the present stage of our development, Nutrition is not a social service but a necessary prerequisite to our economic development.

I only cut on the timber
I only carve on the stone
After me cometh the builder
Tell him, I too have known.

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Dr W. R. F. Collis, one time Senior Lecturer and head of Paediatrics, University of Ibadan and first Director of the Institute of Child Health, University of Ibadan—whose enthusiasm and concern for the nutrition of Nigerian Children infected me and resulted in my interest in Child nutrition.

The late Professor B. S. Platt, Human Nutrition Unit and London School of Hygiene and Tropical Medicine, who taught me a lot about people and nutrition.

The present and past staff of the Food Science and Applied Nutrition Unit, University of Ibadan, without whose cooperation and hard work, most of the studies referred to in this lecture would not have taken place.

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