

CHAPTER 12

NUTRITION EDUCATION IN THE UPPER REGION: A HELP OR A GAME?

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1. Introduction

I have been working with two nutrition programmes in the Upper Region for just over a year. The programmes are in the Bawku district in the Northeast, and the Wa district in the Northwest. The ultimate objective of both of these programmes is to improve the nutritional status of young children and one of the methods is to educate mothers in nutrition and health. The nutrition teaching is done by Middle School leavers trained in nutrition and health. These nutrition field workers are stationed in villages in areas served by Mobile Health Clinics and agricultural extension services. They are also attached to the Mobile Health Clinics. There is a 'Food and Health School' at the Bawku Hospital where mal-nourished children are rehabilitated and their mothers educated.

In our nutrition teaching we are very conscious of the economic difficulties facing the mothers and are careful to use only the cheapest locally available food, that is the legumes, dark green leaves, local yeast and dawadawa. We have developed and tested several visual aids, including puppets, flannelgraph, using real foods and demonstrations, which are enjoyed and understood by many mothers. Cooking demonstrations are done at the Clinic and in the compound, in the latter case, using foods supplied by the family. We gather large audiences in the villages and mothers appear to be interested and to enjoy the teaching.

Up to this point we feel encouraged to continue the programme but we are trying to change behaviour, in a way that entails more time, effort, money or food on the part of the mother. The environment in the Upper Region is harsh and dietary and childcare practices have evolved which are possible for an overworked and undernourished mother, and perhaps yield the best results in the present situation, with the resources available. Is it possible to motivate the mother sufficiently to increase the amount of time, effort and income she puts into caring for the child, when life is already so difficult and the results of the change are not immediately visible? Perhaps we are deceiving ourselves with our toys, visual aids and advice to mothers, that we can help to improve nutritional status without first changing those factors in the environment which have resulted in practices leading to malnutrition and disease. It may be that nutrition and health education should only enter the scene when a certain level of environmental development has been reached. The old adage of poverty and ignorance is complex; poverty is not only a lack of food in sufficient quantity and quality; it is also a lack of water, fuel, adequate housing medical care, time and energy. All these things have some effect on childcare and nutrition status.

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The people of the Upper Region are very articulate about their needs and difficulties. Their felt needs and priorities are likely to be the real ones and more sensible than the ideas that we are asking them to consider important. Water, injections, medicine and food during the hungry season are the most commonly expressed needs. A typical response from a Bawku mother is "Yes, I understand about feeding the child properly, and I try to do this, but he is always having diarrhoea and refuses to eat. That is why he is so lean."

In this paper I want to describe some of the different factors in family life influencing child care and feeding practices in villages in the Upper Region, and then to discuss each point in our nutrition teaching in terms of the scheme shown in Figure 1.

II. Factors Influencing Childcare Practices and Nutritional Status

Data used in this section were collected in Bawku from June to September 1969, for my M.Sc. thesis, entitled "An evaluation of the efficacy of nutrition education to pregnant and nursing women in six communities in the Upper Region of Ghana."

1. Income

The Bawku area has no minerals, timber or cocoa resources and its economy relies entirely on subsistence agriculture. Many farmers produce barely enough of the staple cereal, millet, to feed the family until the next harvest. This situation is precarious, because if the rains in May are late, the early millet harvest expected in mid-July will be delayed or the crop will fail. Hunger and sometimes famine are a perennial problem at this time. Marasmus in young children may reach epidemic proportions, growth rates are retarded, and adults lose weight. The food shortage comes at the time of highest energy expenditure on the farm.

Several factors are responsible for the inadequate food production:

- (a) High population densities and poor farming methods result in soil exhaustion and erosion.
- (b) The seasonal water shortage makes it impossible to predict sowing or harvest times.
- (c) Poor storage results in a considerable loss of grains and legumes.
- (d) Primitive farming implements limit the area of land that can be cultivated efficiently.
- (e) A loss of capital results from selling crops immediately after the harvest when prices are low, to pay outstanding debts. These foods then have to be purchased at high prices in the preharvest season. Feasting at funeral celebrations also precipitates the food shortage, but is necessary to replace the body weight lost during the hungry season.

There are three factors involved in the effect of income on nutritional status:

- (a) Seasonal variations in food supplies. Food intakes in a high income compound tend to remain stable throughout the year. Food supplies in a low income compound will be exhausted before the harvest, when the diet may be reduced to one meal of millet with leaf soup per day.
- (b) The total food intake, which depends on the quantity of food served at each meal, and the number of meals eaten each day. The mid day meal is often missed in a low income compound.
- (c) The quality of the diet, particularly in terms of foods rich in proteins and fat.

The financial position of a woman is related to that of her husband, but also depends on her own initiative and activities. Traditionally it is the responsibility of the man to provide the millet and the woman to provide soup ingredients and household necessities. There are variations in this system of household management. Some husbands give their wives money if necessary, and some wives make enough money to assist their husbands. I have seen husbands requesting hard-earned cedis from their wives to buy themselves pito and meat in the market. Women are beginning to utilize the credit unions in the Bawku area, which should improve their financial position.

Virtually the only source of cash income for women is trading. Women may sell rice or groundnuts from their own farms, bush produce, cooked foods or household commodities. In hard times a woman may be forced to sell some millet to buy essential soup ingredients, e.g. salt.

The nutritional status of children from high income compounds is significantly better than those from low income compounds. The good nutritional status of children of chiefs, one of the highest income groups, indicates that income is the deciding factor in growth rates rather than ethnic differences. The good nutritional status of pito brewers is also partly explained by the relatively high income enjoyed by women practising this trade (see Table 2).

2. The time and energy left to the mother for childcare after completing her housework and economic activities

The farming season lasts from May to December, during which time the majority of mothers are occupied on the farm. Trading is a time consuming and tiring business. The processing of bush products for sale, e.g. dawadawa and sheabutter, is also very hard work. To keep the house supplied with water and firewood alone may involve walking ten miles or more each day. The problem is particularly acute during the dry season which lasts from December to May when nearby water sources dry up. Income earning activities such as collecting bush produce and travelling to the market every three days, also entail a lot of walking.

The preparation of foods and cooking is laborious. Food is usually cooked once a day in the evening and the remainder kept for the following morning. Each wife may cook daily, or wives may cook in rotation, one wife cooking for the whole family for two or more days. Women are responsible for brewing pito for sale or social obligations.

When a mother is away from the compound, the youngest child may accompany her, or be left in the compound with the other young children.

A mother in a monogamous family will generally have more difficulty managing all her household tasks and will have less time and energy left for caring for the young children than mothers in a polygynous household who can share their work loads. A mother with older daughters to help in the house will find life easier than one with very young children or only sons.

3. Disease

The four diseases commonly precipitating clinical malnutrition and made more serious by poor nutritional status, are diarrhoea, malaria, measles and pneumonia. The decreased appetite and loss of body protein associated with diarrhoea and fever, coupled with the tendency of parents to substitute thin starchy gruels for protein rich foods at this time, quickly results in gross malnutrition.

Of the cases of protein-calorie malnutrition seen in the Bawku area, 71 per cent were associated with diarrhoea, particularly in the weaning stage, from seven to eleven months (see Table 1). Table 2 shows the effect of sickness during the previous three months on nutritional status.

4. Number and Spacing of Deliveries

It was found that children with a birth order of six or more are more likely to be malnourished than those with a birth order of five or less (see Table 2). A mother with six or more children will be relatively old. Her milk production will be lower than that of a younger woman and she may have less energy and enthusiasm for income earning activities and childcare. Mothers in the Upper Region generally deliver every two years. This spacing is achieved by a prohibition on sexual intercourse while the mother is lactating (one to one and a half years). Children of mothers who do not achieve this ideal and give birth before two years are likely to be malnourished.

5. Nutritional Knowledge

It was found that nutritional status was not related to the nutritional knowledge of the mother.

III. A Discussion of the Different Points in the Nutrition Education

1. *Supplementary Feeding*

Mothers in the Upper Region think that a child should be given supplementary foods with breast milk when he asks for it, by trying to grab some of his mother's food. The child knows best when he is hungry and this will vary between children. Of the mothers interviewed, 56 per cent said that they did not begin supplementary feeding until the child was nine months old or more. This practice results in growth retardation after the age of five or six months and anaemia, because the protein, calorie and iron content of milk is inadequate. The high incidence of protein-calorie malnutrition in children of seven to eleven months (Table 1) points to unsatisfactory or failed supplementary feeding. If we consider the difference between a European mother preparing her sterilized baby food with piped water and electric cooker, with leisure to teach her child to eat a wide variety of foods, and a Kusasi mother in a compound with dirt floors, a five-mile walk for muddy water and a severely limited choice of foods, we can understand the advantages to the Kusasi mother of waiting until the child is older before feeding him with supplementary foods. Firstly, an older child can eat the adult diet and so does not need a special diet involving time and effort. The child wants to eat and so time and patience are not needed for persuasion. It is easy for the mother to give the child breast-milk when she is out on the farm or in the market, whenever he is hungry. The hungry season must be taken into account. If a child becomes reliant on supplementary foods at an early age, with a resulting decrease in breast-milk, he will suffer more acutely in the hungry season. Children easily get diarrhoea at the start of supplementary feeding, and so many mothers feel that the diarrhoea is caused by the too early introduction of semi solid foods. It may be that with the unhygienic conditions and limited foods available, the early introduction of supplementary foods frequently produces such poor results that mothers have learnt from experience that it is wiser to wait until the child is older.

I lived in four compounds in three different seasons of the year for one week to observe and weigh all the foods eaten by the young children. In one compound the mother was relatively well off; she had cereals and legumes in the store, and had a good knowledge of nutrition. Her ten-month-old baby had a low weight for age and anaemia. What was going wrong? This was a monogynous family which meant that the mother had a heavy workload and was away from the compound most of the day. The child sometimes accompanied her and was given breast-milk, or she stayed at home and was given cold leftovers by her seven-year-old sister. The mother often returned home late and very tired and did not finish cooking before the child was asleep. The child frequently suffered from diarrhoea and fever and refused to eat. Her total food intake was grossly inadequate. The mothers in the two low income compounds gave their weanlings the adult diet in the evening and breast-milk during the day regardless of their nutritional knowledge. These mothers were out all day collecting millet stalks.

We advise mothers to begin supplementary feeding at five or six months with porridge taken from the adult pot during the preparation of millet dough, mixed with some of the family soup before the addition of pepper. We advise mothers to keep a supply of groundnut paste, bean-flour or fish powder and to add one spoonful to the child's porridge or soup and boil for a short time. We also advise the mother to give the child smooth soup to drink with a calabash or spoon. We do not advise mothers to give any foods, e.g. orange juice, before the age of five months because of the risk of contamination. We always stress the importance of hygiene in feeding young children.

The main factors influencing the success of the mother in following this advice are the time and energy available to the mother, the competence of the person caring for the child if the mother is away, the quantity of food available in the hungry season and the level of hygiene possible in a particular environment.

2. *Feeding Three Times a Day*

Child feeding tends to be a haphazard business in between the mother's chores rather than an orderly regimen considered essential for the child's health. The children described in the three compounds frequently missed meals for a variety of reasons. The mother was out all day or the children were sleeping when the meal was cooked or the mother left home too early or was too tired to cook on market or clinic days. Another common reason was that the children refused to eat, often because of sickness. Again this resulted in grossly inadequate food intakes in spite of available food and knowledge. The low income compounds in the hungry season did not have enough food available to feed three times a day. The mothers obviously felt that the children should be fed three times a day, and during the observation time purchased food from the market. The obvious delight of the children on my arrival, "now we shall eat well", made it clear that this was not an everyday occurrence. The family probably had to tighten their belts still further when I left. A visit to a compound at mid-day will often reveal a band of small children playing under the tree, their parents at the farm or market and no edible food in the house.

We advise mothers to feed the child three times a day, which means making time in the morning to cook food for breakfast and to keep for the mother or childminder to give the child at mid-day. He eats again in the evening and should be wakened if he is sleeping. We discuss the reasons why children refuse to eat with the mothers and try to find solutions.

This point in the teaching may be very difficult for a mother to follow, particularly in the hungry season. It entails extra work, fuel, water and food. If the child is anorexic an over-worked mother is likely to abandon her efforts to feed him too quickly. The competence of the childminder will determine whether the child is properly fed during the day.

3. Hygiene and the Prevention of Disease

(a) *Diarrhoea*

The high incidence of diarrhoea in association with malnutrition shows that this disease is of prime public health importance. Diarrhoea is potentially a preventable disease, but how preventable is it in a village in the Upper Region in the dry season? Water is scarce; a mother must walk miles for one pot of muddy water. It is difficult to keep your compound, utensils, person and child clean with this water supply, let alone to boil before drinking. Scarcity of water is as important in the etiology of diarrhoea as impurity. In the harmattan season, dust, certainly mixed with human and animal faeces, finds its way into every corner, pot and bowl of food. I cannot keep my European style house clean; how much less a tired housewife in an open compound with a mud floor and animals and fowls living in the yard. The child reaches the crawling stage and experiments with the touch and taste of everything, including dirt.

We explain the relationship between dirt and diarrhoea to mothers and describe the ablutions necessary to prevent diarrhoea. But when only 13 per cent of the population has a reasonable water supply, we cannot expect a reduction in the incidence of diarrhoea, and hence an improvement in nutritional status.

(b) *Malaria*

Mobile Health Clinics and Child Welfare Clinics are providing malaria prophylactics to approximately 10 per cent of the preschool population in the Upper Region. The work of the Bawku Mobile Health Service is at least partly successful in preventing anaemia during the rainy season. This is shown by the low incidence of anaemia (31 per cent) in children attending the clinic regularly, compared with 63 per cent of children who had not attended for three months in a village rendered inaccessible by heavy rains.

We stress the importance of attending the clinic regularly each month, but this will be difficult if the clinic is far from the house. Some mothers complain that their husbands refuse to give them money for the clinic, while others say that the clinic has been tabooed by the soothsayer or family.

(c) *Measles*

Measles vaccination is carried out at some of the clinics, and by the Medical Field Unit.

(d) *Pneumonia*

The prevention of pneumonia is difficult in the harmattan season, when the dry, cold, dusty nights result in 'many' cases of pneumonia and respiratory infections. Many families do not have sufficient clothes and blankets to cover their children.

4. An increased use of high protein and high calorie foods

The use of high protein and high calorie foods is limited by the availability of these foods and income. In the compounds that I studied it was also affected by nutritional knowledge.

It is difficult for a young child to get enough calories or protein from the typical Kusasi diet, because it is bulky, high in water content and low in fat. The millet dough is fed to the child by hand after dipping in the soup, which is often made from okro or leaves with dawadawa and a little fish. The soup is low in calories and the child eats very little of it because of the method of feeding.

The cheapest high calorie and protein foods are groundnuts, neri, kulikuli and beans. The addition of sheabutter will provide concentrated calories. In the Bawku district stores of these foods are often finished by May and they will not be replaced before November. The prices in the market will rise until the harvest and are prohibitive to many low income families. Legumes suffer severe storage losses. The Bawku area is on a main trade route to the South and North and many farmers sell a disproportionate amount of their legumes crop early in the year.

In a twenty-four hour recall taken in July, only one per cent of the children had eaten beans, 15 per cent groundnuts, 15 per cent neri. The mothers in the high income compound with nutrition education were using more plant protein rich foods than the average, and explained to me that these foods make the child grow. They were able to do this because of improved agriculture and storage. The polygynous family did particularly well because the mothers had time to cook different kinds of soup. The children ate with a spoon which increased their soup, and therefore, calorie and protein intake considerably. The mother in the low income compound with no nutrition education prepared a nutritious soup of leaves, dawadawa, yeast and fish, which would have been adequate if the children had drunk more of it. The mothers in the other low income compound were resentful and angry at being told by the clinic staff to use more protein foods, when they were unable to supply even millet in sufficient quantity.

We advise mothers to use groundnuts, beans, bambara beans, neri, kapok seeds or kulikule, with leaves, sheabutter and a little fish as frequently as possible. They should give the child plenty of soup to drink with his millet dough, either by using a calabash or spoon, or by making the soup thick enough to eat with the fingers.

We work as closely as possible with the agricultural station because higher production and better storage of protein rich foods is essential before many mothers can increase their use of these foods. The nutrition field workers stay in a village for two or three days with the agricultural extension worker. They talk to both men and women and try to motivate the men to reserve more of the legume crop or to help their wives to purchase legumes from the market. The response to this approach has been encouraging.

5. Poor appetite

Many mothers with malnourished children will complain that the child refuses to eat. With limited time and choice of foods, the mother is easily discouraged and stops feeding the child. We often find that a child reputed to be anorexic by its mother will eat ravenously when admitted to the rehabilitation centre. This may be due to the variety of dishes prepared in the centre. The monotony of a high starch diet, with little soup, which is often cold and dried-up leftovers, may result in anorexia.

We demonstrate a variety of cheap, simple dishes and advise mothers to vary the diet as much as possible. The cooking demonstrations and the tasting session are popular with mothers and children.

The prevention of sickness would ameliorate the problem of anorexia due to infection. The workload of the mother will determine the amount of time and patience she has to persuade the child to eat.

6. Family Planning

The increased incidence of malnutrition in children with a birth order of six or more suggests that it would be helpful to give family planning advice to all women with five or more deliveries. It is difficult to convince families that a space of three years instead of two between children would improve the health of mother and child. The high child mortality rate (20-25 per cent), the involvement of children in family responsibilities at an early age (five to six years) and the pleasure derived from children in the home, makes it difficult for people to appreciate any long term benefits from family planning. Many women seemed content to abstain from intercourse for a year or more, and felt that contraception was a distasteful idea and would lead to conflict between co-wives. A common attitude among men was that it would make the women too free. The most relevant case for family planning at this time would appear to be that of the older woman with five or more children.

IV. Conclusions

Several factors limit the opportunities of mothers in the Upper Region to improve their child-care practices. The most important of these appear to be the scarcity of water, the seasonal food shortage and limited availability of protein and calorie rich foods, the high incidence of infections in young children, and a heavy workload for women which severely limits the time and energy available for child-care.

It seems likely that below a certain level of income and amenities, it is impossible for a mother to improve her child-care practices. Above this level the extra time, effort and resources that a family will put into child-care depends on how effectively we can motivate the parents. This should get easier with increasing levels of food production and services. The demonstration of improved growth, health and appearance in a child who has been well fed and cared for is ultimately the only way to motivate change in the family. The rehabilitation centres serve this function, but it is clearly inefficient to wait until a child is severely malnourished before demonstrating the effects of good food. The Morley weight chart is used at the clinics to show the mother how well her child is growing. These charts also give the nutritionist a clear picture of the success of the programme for each child.

Solutions

1. Farmers are willing to dig deep wells but lack cement. Many are able to pay for part or all of the cement but are unable to procure it. The distribution of cement to farmers who have dug wells would ameliorate the water problem. Some villages have a storage tank and pump which is not operating because of financial disputes between the local council and the people. This situation is ridiculous and could surely be solved under the present government. An irrigation project sponsored by Canadian aid is expected to begin soon.

It is impracticable to expect women to boil drinking water, but a local filter pot made from layers of stones, sand and charcoal, might be acceptable.

2. An improved and extended agricultural extension service to farmers could do much to improve agricultural production, storage and planning. This would ensure a stable food supply throughout the year and adequate supplies of legumes. Simple and relatively inexpensive inputs, such as concrete silos, bullock ploughs, improved dwarf guinea-corn seeds, dry season gardens, insecticides and fertiliser have been shown to greatly improve the food situation and hence nutritional status (Garu). Food supplies should be sent from the south of Ghana during the hungry season to stabilize prices.

3. The extension of Mobile Health Services providing simple treatment, prophylactics, vaccination and education would help to prevent and lessen the severity of infections. A mass vaccination campaign against measles would reduce the incidence of protein calorie malnutrition and the mortality rate. I feel that Mobile Health Services are necessary in this region because of the large distances between localities.

4. A reduction in the workload of the mother would give her more time and energy to care for the child. Simple village machines, such as mills; a nearby water supply; easier methods of cooking and food processing; improved farming methods and the use of bicycles would all give the mother more time and energy. The use of local convenience foods such as kulikuli, sheafruits, dawadawa flour and groundnuts as snacks between meals will increase the calorie protein intake without extra work. There might be a possibility of sharing labour between compounds or families, by leaving young children in a compound where a woman or girl is at home all day and responsible for feeding the children, while the other women go out to work.

5. The fuel shortage in the Bawku area is particularly acute and limits the number of times a mother can cook each day. The use of solar ovens made from old tins might be a possibility.

6. The extension of the credit unions would aid families to invest in farm equipment which would improve their food production and income.

7. The improvement, development and extension of nutrition and health education to all sections of the community should gradually change attitudes to child-care and finally practices in more progressive families.

The demonstration of better health in these children may then motivate other families to change. Perhaps more attention should be given to the young girls and grandmothers who stay in the compound to mind the children. If these people can be motivated and given the means to feed the child in the day, food intakes would increase considerably and nutritional status improve.

8. Concentrate family planning efforts on women with five or more deliveries, and women who are not following the traditional spacing method, e.g. Christians who are monogamous and have abandoned traditional conjugal relationships.

FAMILY NUTRITION IN THE UPPER REGION

Figure 1

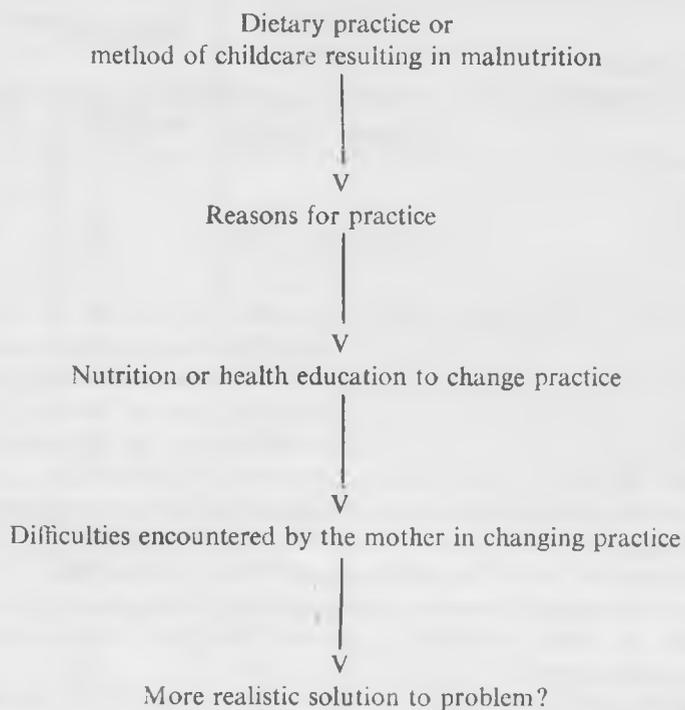


TABLE 1

INCIDENCE OF PROTEIN-CALORIE MALNUTRITION IN THE BAWKU DISTRICT

<i>Age in Months</i>	<i>Percentage of Children with P.C.M. (No. of Children = 494)</i>
0 - 6	7.6
7 - 11	21.9
12 - 23	15.0
24 - 35	6.2
36 - 47	2.7
48 - 59	3.6
60 ...	3.0

TABLE 2

RELATIONSHIP BETWEEN NUTRITIONAL STATUS AND VARIOUS FACTORS

Factor	No. of Children	Percentage with Weight for Age		
		Acceptable	Low	Very Low
High Income	319	43	41	16
Low Income	179	22	52	26
Healthy	139	47	38	15
Sick	355	22	54	24
Chief	31	71	26	3
Farmer	281	30	48	22
Cash Income Only	45	27	42	31
Birth Order six or More	96	24	52	24
Birth Order five or Less	398	38	43	19
Mother, pito brewer	36	50	44	6
Mother, farmer & Cash Income	154	32	49	19
Mother, farmer only	71	32	44	24
Mother, housewife	153	30	47	23
Mother, trader only	33	24	45	31



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