THE ROLE OF NUTRITION IN PRIMARY HEALTH CARE. PRACTICAL CONSIDERATIONS FOR THE VACCINATION PROGRAMME IN KAYA, BURKINA FASO

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Abstract. A programme of intervention in problems of nutrition is presented as part of a vaccination programme such as the one carried out in Kaya, Burkina Faso. In this region the most widespread type of malnutrition is essentially 'energy-malnutrition' more than 'protein-malnutrition'; other more specific deficiencies are observed: it concerns iron, folates and vitamin A.

As a consequence the first aim of intervention is to eradicate the protein-energy-malnutrition. To achieve this a specialized health worker will have to trace first the undernourished children (either by measuring their arm circumference or with the aid of a thinness diagram). Then he/she will propose a programme of nutritional rehabilitation using locally available products, which will be completed with a demonstration of oral rehydration.

The promotion of adequate nutrition and of vaccination against major infectious diseases are two of the indispensable activities as parts of primary health care. Starting from the nutritional situation prevailing in Burkina Faso we propose concrete interventions which will be applied among others in the vaccination programme in Kaya province.

Key words: malnutrition; avitaminosis A; nutritional anaemia; Burkina Fasso

The nutritional situation in Burkina Faso

A limited number of enquiries has been organized in Burkina Faso between 1974 and 1980 by CDC, Atlanta [1], by INSERM [2] and by ORANA [3, 4]. They unanimously lay the emphasis as regards signs of undernourishment more on calory (energy) malnutrition than on protein malnutrition. In a rural environment no cases of kwashiorkor are observed, but cases of marasmus are not rare in children. The enquiry of the ORANA in 1978 which was carried out at the periphery of the Kaya zone showed that nearly half of the children from 0 to 5 years suffer or has suffered from malnutrition. Using the classification proposed by Waterlow [5] who combines the 'weight for height' ratio with the 'height for age', evaluated on the basis of the NCHS standards [6], we find that the critical period is before the age of two years (21% of the children emaciated, 'wasting'); this observation is confirmed by the high proportion (40%) in the group of children from 3 to 5 years ('stunting') which points to a previous period of deficiency (*Table 1*). On the biochemical plan the values of the so-called 'nutritional' proteins are acceptable, especially in the target group from 0 to 5 years, which confirms that there are no important protein deficiencies (*Table 2*).

Our enquiry also showed other forms of malnutrition, especially nutritional anemias: about 31% of the subjects has a hemoglobin value which is below the norms proposed by WHO [7] and in the group from 0 to 5 years 40% of children have to be considered anemic. These anemias are often hypochromic (38% of cases) and in 80% of these cases the saturation coefficient of transferrin is below 25%, which is proof that

Table 1. Nutritional condition of children from 0 to 9 years (in percentages), raising Waterlow's classification [1972], expressed as a percentage

Nutritional type			*0-2 years (n = 94)*	*3-5 years (n = 98)*	*6-9 years (n = 392)*
W/H < 80% (weight for height)	H/A < 90% (height for age)	wasting and stunting	7.4	6.1	0.2
W/H < 80%	H/A > 90%	wasting	21.3	4.0	3.3
W/H > 80%	H/A < 90%	stunting	11.7	9.9	17.3
W/H > 80%	H/A > 90%	"normal"	59.6	0.0	79.1

Table 2. Values for nutritional proteins in children at the age of 0-5 years

	Total protein g/l	*Albumin g/l*	*Prealbumin mg/100 ml*	*Transferring mg/100 ml*
Mean values	75.2 ± 4.9	39.5 ± 4.9	11.3 ± 4.8	326.7 ± 39.2

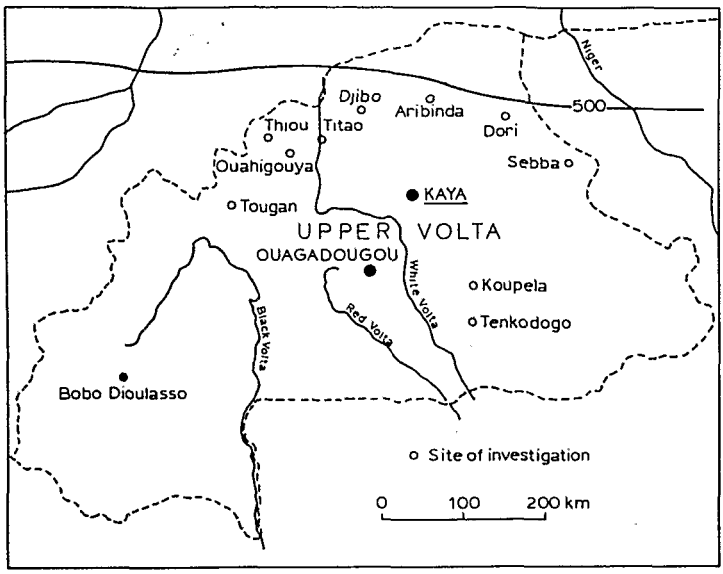
the iron deficiency, real or relative by insufficient absorption, is implicated in the etiology of these anemias. This serious deficiency is in some cases combined with folic acid deficiency; the limited number of plasma folate tests, which we have performed, showed low values (below 3 ng/ml) in 15% of the children.

Also clinically few cases of hypovitaminosis-A have been diagnosed (2 cases of xerophthalmia and 1 case of corneal ulcer among 193 children), plasma retinol showed low values (below 20 μg/100 ml) in 50% of children and real deficiencies (below 10 μg/100 ml) in 7%. Several enquiries about food consumption [2-10] have shown, that the need of vitamin A is only 30-45% in the dry season. Although there will not be many cases of blindness caused by xerophthalmia, the risk of hypovitaminosis-A is real.

Summarizing it can be said that the most worrying form of malnutrition in Burkina Faso is closely connected with energy deficiency. There is no endemic protein deficiency. Anemias are frequent, probably caused by problems in the utilization of iron, associated or not with folate deficiency. The risk of hypovitaminosis-A is real but does not reach such a serious level that clinical signs can be observed.

Proposals for intervention

The following recommendations are presented within the framework of a vaccination



Legend: Map of Burkina-Faso, previously Upper-Volta.

campaign with primary health care as its basis. Vaccination campaigns often leave little time for special activities. Nevertheless they offer a unique occasion to see nearly all the children of the villages; thus the first thing to be done will be to trace cases of malnutrition; then solutions will have to be proposed for children at risk. For this work the vaccination team must be accompanied by one or more health assistants, trained for this purpose who can devote their time to the nutritional problems.

Tracing undernourished children

Two techniques are possible: the easiest, but also the crudest is to measure the arm circumference. If the arm circumference is less than 14 cm, the child is considered to be marginally undernourished; if it is less than 12.5 cm, the malnutrition is considered to be serious. The use of a thinness diagram as described by Nabarro and McNab [9] is a more refined technique: the weight of the child is evaluated as a function of its height and not of its age. The child can be classified in three groups: normal, at risk or malnourished. Before the age of one year these two methods cannot be used: the only thing which can be done is weighing. All the data obtained, have to be noted on a document to be kept by the mother, which will serve as a reference during the follow-up of the child's growth.

If this tracing has been done, it is preferable that the assistant does not reassemble all the participants, but that he/she brings only the mothers of the undernourished children together in order to start a dialogue with them. It is important to find out first the mistakes in the feeding of the children by their mothers (use of a feeding bottle, no complementary food, unsuitable composition of the fluid etc.). Then, starting from locally available products, simple and appropriate diets for the rehabilitation will have to be proposed. In the situation described above for Burkina Faso the food has to be primarily energy-rich. Thus, when milk is available we propose the following prepara-

tion which is well accepted by the child: a bowl of curdled skimmed milk, 2 coffee spoons of oil and 3 lumps of sugar; this mixture furnishes about 100 kcal/100 ml.

Further, one will have to choose from traditional dishes of the region a recommendable cereal-leguminous combination, e.g. millet, niébé or peanut. Knowing that malnourished children often have diarrhoea, it is indispensable to complete the session with a demonstration of the preparation of an oral rehydration fluid starting from locally available products, a sugar-salt mixture being usually the easiest to make. The publication 'Diarrhée-Dialogue' which we advise to all health workers, gives detailed information on this subject [10]. The association diarrhoea-malnutrition is so important, that it seems essential to transmit this double message: on the one side rehydration by the oral route and on the other side rehabilitation by suitable nutrition.

As regards the specific deficiencies which we described above (iron, folates, vitamin A) we think that this will have to be the subject of other health activities than those of a vaccination campaign.

To conclude we think that a vaccination programme as carried out now in Burkina Faso, with two visits of the team per year, can serve as a 'starter', although it will not solve the big problem of malnutrition. With the tracing and the follow-up of children at risk it may attract the attention of mothers as well as health workers. It is possible to improve the nutritional status of the children with simple and locally available means. The battle against malnutrition is not a matter of drugs!

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