A Diet Survey in Kalene Hill Area

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This survey of local diet was undertaken in two chiefdoms near Kalene Hill hospital during September, 1968. The inquiry was undertaken as a corollary to, and at the same time as, clinical studies of nutritional state in the same areas. Special emphasis was given to blood sugar testing in view of an earlier geographical suggestion that a high incidence of diabetes mellitus...
The natural vegetation of the area is brachystegia woodlands but much of it has been cleared at some time for cassava gardens. Game animals formerly numerous are now reduced to a few small buck such as duiker and reedbuck and some bush pig. The streams and rivers have some fish which are caught in an ingenious variety of traps, scoops and baskets. In minor streams poison is also used to stun fish.

Commercial communication with the world—which seems very remote when one is at Kalene 580 miles from Lusaka—is by dirt road by Mwinilunga and Solwezi to the main tarmac at Chingola. The three chieftoms are served by a Post Office at Chief Ikelenge's village and a three a times a week bus service to the Copperbelt towns. All trade goods carry a heavy surcharge on account of the long distances and poor roads.

**Method of Survey**

Two villages for survey were selected arbitrarily by agreement with the chiefs. One was Chief Ikelenge's village which is the commercial hub of the area with three shops, a post office, a school and a permanent dispenser. This was expected to provide typical of better living conditions, whilst still being truly rural. Secondly, Kabuya's group of villages, three miles west of Chief Mwininyilamba's court, was selected as typical of the more remote rural parts.

In each village seventy consecutive houses were given numbers and ten were then chosen by random number table from those already numbered. In Kabuya's, one house proved to be uninhabited and another was substituted. Also in Kabuya's one household (Number Eight) consisted of two wives of one man feeding their families separately so that, effectively, eleven families were surveyed.

Short questionnaires on socio-economic factors and on physique and education were used but the main effort was upon the weighing of all items of diet within each family for a period of five consecutive days. In each village an expatriate recorder was assisted by a local lady-interpreter.

**Housing and Possessions**

In both villages standards of housing proved to be similar. The typical dwelling was a well-constructed mud-brick house with wooden door and window frames. The house might, on occasion, be partly or completely subdivided internally by walls or reed matting screens. Windows, when they existed, were shuttered not glassed. The normal floor was beaten earth and the walls were neatly plastered inside and out. Roofs were well thatched with fine grass. Re-roofing in preparation for the rains was much in evidence in late September. Separate kitchens were normal (six out of ten in each sample) and were, in general, more ramshackle and smaller versions of the main houses. In particular headrooms in these kitchens was limited by overhead racks carrying spare utensils and stores of food. Those families without kitchens cook in the open air in dry weather. Under half the households (3 out of 10 in Ikelenge's and 4 out of 10 in Kabuya's have pit latrines. The rest use 'the bush'.

All of Kabuya's people obtain water for all purposes from a clear stream about half a mile from the village. In Ikelenge's group one household uses a well 200 yards from the house, one uses his brother's tap water supply and the rest go about a mile to the Luanga stream.

In Ikelenge's village sample three household heads had at least part-time employment; in Kabuya's sample not one had. Cash income is therefore extremely limited although some families very occasionally receive irregular remittances from relatives employed elsewhere.

The sale of cassava, which fetches 2n per lb, weight of unsieved flour in the villages, is the main source of income. Expenditure is upon clothing, school fees and indigenous-type medical care. In both villages, but especially Kabuya's, long-standing debts to the store and to the Headman were admitted.

Ikelenge's sample possessed three bicycles and a radio and Kabuya's two bicycles amongst, in each case ten households. No household surveyed had a sewing machine, plough or gun. In each group only a minority of children attended school and many only attended for two to four years; in each sample seven years schooling was the maximum. Kabuya's villages' children seem to average more school-years than Ikelenge's possibly because competition for places is less fierce.

**Agriculture**

Cassava mound gardens are predominant and surround all the villages in this area. Indeed little else is grown (as appears from the diet) other than some sweet potatoes, green vegetables, and (in Ikelenge's only) tomatoes. Cassava, whilst easy and labour-saving to grow is extremely tedious to prepare for eating.3

There are no cattle in either village although dairy and beef cattle have been successfully reared by Europeans at Hillwood Farm a few miles to the east. In the villages a very few sheep, goats and pigs wander at will and a few chickens are kept. All these are alleged to be for meat, but there seems to be antipathy to anything so final as slaughter.

**Age and Sex Distribution**

The groups from Kabuya's and Ikelenge villages were comparable. Thus in the former there were 19 males and 26 females and in the latter 20 males and 20 females. Below the age of 14 there were 7 Kabuya males, 12 Ikelenge males, 11 Kabuya females and 7 Ikelenge females. In Kabuya's village there were 3 females pregnant, lactating or both, and 2 such in Ikelenge's village.

No record was made of deaths in each household nor of family members temporarily or permanently absent.

**Diet**

In each village the interviewers went around at irregular times once in the morning and once in the late afternoon to weigh and record all foodstuffs consumed in each household. This task was perhaps easier in Kabuya's where diversions were fewer and these interviews assumed some amusement value. In fact the present writer acquired the nicknames, "Kukabakana kwawantu", "Tuwanenu nkwapisho" or "Kukwasha mukwenu" all of which mean, more or less, "he who helps us in our troubles". In Ikelenge's people were busier and also more often absent from home.

The method used was to weigh dry all food before preparation. In a few cases prepared food was weighed...
A simple case

Severe eczema of eight years' duration in a 70-year-old patient.

For your detailed reading
Betnovate, Betnovate-C and Betnovate-N

Presentation
Betnovate (0.1% betamethasone as 17-valerate)
Cream: 5 and 15 gram tubes
Ointment: 5 and 15 gram tubes
Lotion: 20 ml squeeze bottle
Scalp Application: 30 gram plastic squeeze bottle

Betnovate-C (Betnovate + 3% clioquinol)
Cream: 5 and 15 gram tubes
Ointment: 5 and 15 gram tubes

Betnovate-N (Betnovate + 0.5% neomycin sulphate)
Cream: 5 and 15 gram tubes
Ointment: 5 and 15 gram tubes
Lotion: 20 ml squeeze bottle
Tulle: tin of 10 pieces (4 in x 4 in)

Indications
All steroid-responsive dermatoses including psoriasis. Betnovate-N preparations should be used if bacterial infection is present or suspected. As an alternative or when there is fungal infection, Betnovate-C preparations may be used.

Dosage
Ointment, Cream, Lotion and Scalp Application
Apply a small quantity once or twice daily.

Tulle
Apply direct to the lesion and cover with an absorbent dressing if necessary.

Adverse reactions
Betnovate preparations are usually tolerated well but if signs of hypersensitivity appear, application should be stopped immediately. When used with occlusive dressings on extensive areas, or for prolonged periods, as with all topical steroids, there is a possibility of systemic absorption. When using Betnovate-C preparations, cover lesions with a dressing to protect clothing.

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and converted back to dry equivalent. Two meals were
general although one was often missed. Hours of visits
were adjusted to be present early in preparation. Snacks
are thought to be negligible.

The tables show the enormous variation in amounts
eaten between households. As marked is the variation
in cassava meal eaten each day. For instance one elderly
couple ate 280gm. of dry sifted cassava flour on one day
and only 42 gm. a few days later. Nor is there any pattern
of a heavily fed day alternating with a lightly fed day.
The dearth of protein and of the fat-containing foods in

<table>
<thead>
<tr>
<th>Foodstuffs in Grams per day</th>
<th>Household Consumption Groups</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Cassava, fresh</td>
<td>2270</td>
</tr>
<tr>
<td>Cassava, flour</td>
<td>285</td>
</tr>
<tr>
<td>Potato, sweet</td>
<td>35</td>
</tr>
<tr>
<td>Kidney, bean</td>
<td>17</td>
</tr>
<tr>
<td>Leaves, high carotene</td>
<td>42</td>
</tr>
<tr>
<td>Leaves, medium carotene</td>
<td>102</td>
</tr>
<tr>
<td>Onions, spring</td>
<td>238</td>
</tr>
<tr>
<td>Tomato</td>
<td>34</td>
</tr>
<tr>
<td>Pineapple</td>
<td>181</td>
</tr>
</tbody>
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Between meals were very rare although children especi-
ally sometimes found and ate some wild fruits. Although
some beer is recorded it is possible that some was missed
by the survey.

Bas upwards might arise from people vying with
each other: more often probably food was concealed.
In Kabuya’s at least recording errors from this source
TABLE I.
Kabuya’s Village

TABLE II.
IKELENGE’S VILLAGE
In Tables III and IV the amounts of each foodstuff have been calculated to give four columns of actual consumption under headings; calories, grams of protein, fats and carbohydrates. The nutrients required by each household group have been calculated from the F.A.O. tables of recommended dietary allowances in East and Central Africa. The calculation allows for the age and weight of every individual in each household consumption group and then makes allowance pro rata for weight above or below 60 kg. for men and 55 kg. for women.

The average daily temperature maxima and minima during the survey were 35±°C (96°F) and |7°C (63°F) so that a deduction of 2½°/o of the calory requirements was made to allow for an average temperature in excess of 21½°C.

The remaining two columns of the table show the actual consumption of calories and proteins expressed as a percentage of what is recommended for that particular household group.

Considering, firstly, Kabuya’s villages Table III shows an average calorie consumption as a percentage of need of 112%. The range is extremely wide; 71% to 265% with seven of the eleven families receiving more calories than are needed. The protein requirements are less adequately met. The average figure of 43% of protein need is made up of a range from 15% to 50%. One household is clearly anomalous. It is that of a fisherman and his wife who together eat much of his catch.

Table IV gives similar calculations for Ikelenge’s sample. At once it is apparent that these people are considerably worse off nutritionally. The average intake of calories is only 69% of need with a range from 40% to 195%. The protein figures also compare unfavourably with Kabuya’s. The average is a mere 19% of need with individual families ranging from 10% to 38%.

The original impression that Ikelenge’s people would be better fed than Kabuya’s is thus shown to be badly in error. In fact the totals (Tables I and II) show that Kabuya’s people eat almost twice as much in quantity as Ikelenge’s; 775 gin. per head per day as against 417 gin. Kabuya’s sample eats a smaller variety of food; this reflects less available cash and greater distance from food shops.

Taking the two samples together as typical of the area, protein and fat are shown to be seriously deficient. Carbohydrate intake is high and calorie requirements are usually adequately, often more than adequately, met. Possibly there is an unconscious urge to make up the deficiency of protein by eating great weights of, in particular, cassava. With the protein intake so extremely low, a general deficiency of vitamin B is probable.

Since poultry and both beef and dairy cattle are kept nearby and a few groundnuts are already grown it would appear that an increase of production of each of these lines could without innovation radically improve
at least 3%. After analysing the results of 51 of 64 such cases he concluded that section rather than trial of labour was the ideal management. This approach would have reduced fetal mortality in this series; unfortunately many patients arrived in advanced labour with no antenatal care whatsoever.

In a recent paper Merkel (1968) discussed the mode of delivery in 319 breech presentations; 76.5% were delivered by Bracht’s manoeuvre, 10.7% by partial extraction, 6.9% by complete extraction, 0.3% with a vacuum extractor, and 5.6% by Caesarean section. The gross perinatal mortality was 7.2%.

SUMMARY AND CONCLUSIONS.

The perinatal mortality of 13.2% is high. It is considered that this may be reduced by the following factors:

1. During Pregnancy.
   (a) Improved ante-natal services throughout the country with special attention to the general state of health, nutrition and the prevention and treatment of anaemia.
   (b) Routine external cephalic version after the 32nd week, under general anaesthesia if necessary provided there are no contraindications.
   (c) Clinical and, where indicated radiological pelvimetry. Careful selection of patients for vaginal delivery.

2. In Labour.
   (a) All breech presentations must be delivered in hospital.
   (b) The use of the most skilled operators available.
   (c) Recognition of the fact that more perinatal deaths occur in multiparous patients, consequently closer observation and care during delivery of these patients.
   (d) More extensive use of episiotomy.
   (e) Elimination of breech extraction in uncomplicated cases.
   (f) Presence of anaesthetist during second stage.
   (g) Routine use of forceps to the after coming head.
   (h) Caesarean section in cases of pelvic contraction, elderly primigravida, poor obstetric history, toxoaemia, previous section.

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REFERENCES.