National Micronutrient Survey

Nigeria

First Call: Micronutrients

OMNI Opportunities for Micronutrient Interventions

USAID

Why micronutrients are important

- Vitamin A deficiency (VAD), as well as leading to blindness, is a major cause of increased deaths in childhood.
- Iodine deficiency disorders (IDD) impair physical, mental, and intellectual development.
- Severe iron deficiency is associated with one in five maternal deaths in Africa; iron deficiency anemia (IDA) also reduces learning ability and work capacity.

Sample Frame & Design

- Fieldwork in 1993: 3074 children and their mothers from 118 Enumeration Areas in the four health zones of Nigeria.
- Socio-demographic questionnaire. For children: eye examination, conjunctival impression cytology and anthropometry. Dietary evaluation of vitamin A intake using a modified International Vitamin A Consultative Group (IVACG) dietary methodology and a history of breast feeding.
- Determination of serum retinol and Modified Relative Dose Response (MRDR) for vitamin A status; serum ferritin and haemoglobin concentration for iron status; serum thyroid stimulating hormone for iodine status.

Worldwide, social and development policies increasingly emphasize adequate nutrition as a human right. Priority targets for interventions are micronutrient deficiencies which are preventable with simple technologies at low cost.

The goals of the 1990 World Summit for Children and the 1992 International Conference on Nutrition call for the virtual elimination of vitamin A and iodine deficiencies by the year 2000, as well as the reduction of iron deficiency anemia in women by one-third.

Yet in Africa, more than 400 million people remain at-risk of micronutrient deficiencies, often associated with protein-energy malnutrition. In Nigeria, with the largest population in the African continent, there have been few national data. The aim of this survey was to fill this gap.

HIGHLIGHTS

Vitamin A

Countrywide, vitamin A intake was found to be inadequate. Dietary vitamin A intake of preschool children was lower in the Northern part of the country than in the South.

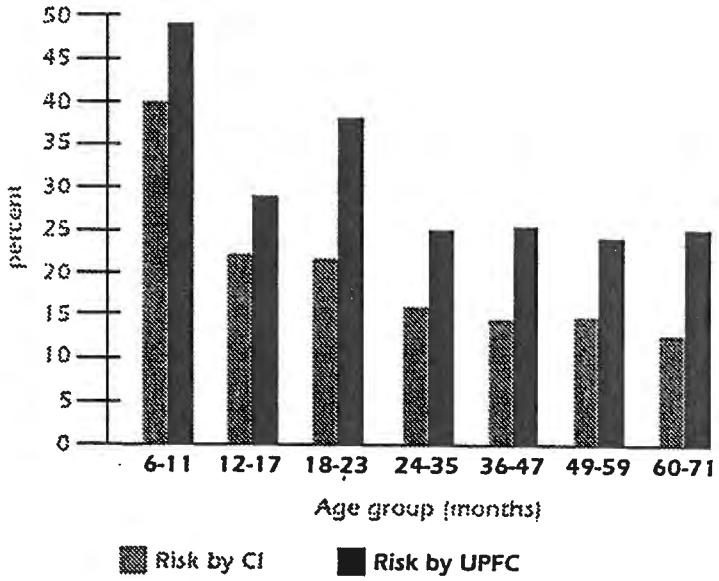
- Almost one in every three children were vitamin A deficient, based on serum retinol levels below 0.7 Êmol/L (20µg/dl). The highest prevalence of moderate and severe deficiency was observed in the North Eastern Zone.
- 1% of children aged 24-71 months were night blind - on the threshold of the WHO cut-off level for defining vitamin A deficiency in young children as a public health problem.

Other eye signs of vitamin A deficiency in children were below WHO cut off points.

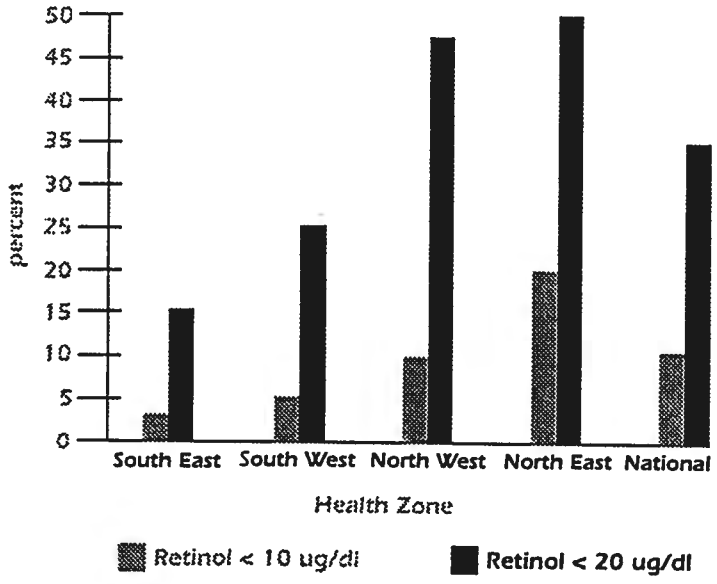
- 2.4% of pregnant women were night blind and 1.9% of all women. Fifty percent of mothers of children with night blindness themselves were night blind.
- Conjunctival impression cytology was abnormal in 20.5% of children, and in only 30% of night blind children.

Risk of Vitamin A Deficiency by Age-Group

Note consistently lower risk estimate for consumption index (CI) method, as compared with usual pattern of food consumption (UPFC) method



Vitamin A Deficiency Prevalence: based on Serum Retinol



Iodine Deficiency

Although included in the original survey objectives, methodological constraints meant that virtually no reliable information was obtained about IDD in Nigeria.

- Thyroid stimulating hormone (TSH) levels higher than 5 mU/l, were found in 1.5% of preschool age children. However, TSH levels are only meaningful in infants.

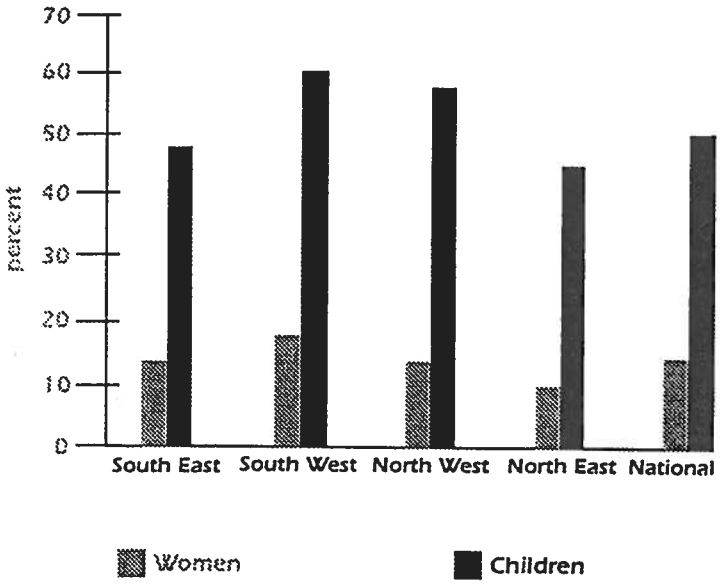
- Nevertheless, other localized data suggest IDD to be a significant public health problem in at least some parts of the country.

Anemia and Iron Deficiency Anemia

Using age and sex specific WHO critieria, the national prevalence of anemia among children was 75.6 % , i.e., 3 in every 4 children were anemic. Countrywide, 62.7 % women of reproductive age (15-45 years) were anemic, or almost 2 in every 3.

- Pregnancy was associated with a two-fold increased risk of anemia. In both children and mothers, anaemia was most prevalent in the South West Zone.
- Low serum ferritin was found in only 11.5% of children and 8.5% of mothers. But it is important to recognise that serum ferritin levels were probably raised by the high incidence of infections and so this probably underestimates the degree of iron deficiency.

Anemia in Women of Reproductive Age and in Children



Population at Risk

- 10 million children in Nigeria are estimated at-risk of vitamin A deficiency. Countrywide, 200,000 children have clinical signs of vitamin A deficiency.
- Up to 11 million children, and 6 million women of childbearing age, are at risk of iron deficiency anemia.
- Based on other studies, an estimated 6 million children could be at risk of iodine deficiency disorders.

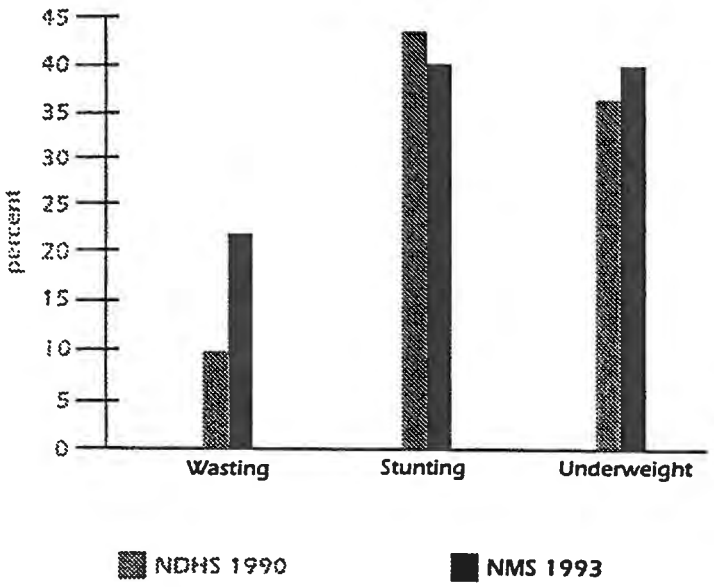
Health Zone	VAD	IDD	IDA
Risk level + = moderate ++ = moderate/severe +++ = severe			
South East	+	+++	++
South West	++	++	++
North West	+++	++	++
North East	+++	++	++
National Child Population at Risk	10 mill.	6 mill.	11 mill.

Nutritional Status in Childhood

There is a very serious, and deteriorating, problem of undernutrition in young children.

- Wasting prevalence, evidence of recent undernutrition, was twice as high in 1993 as in 1990. In 1993, 1 in 5 of 6-71 months children were moderately or severely wasted.
- Stunting and underweight affected almost 40% of children. The North West had the highest values for both stunting and underweight, 43.3% and 56.2% respectively. Nutritional status was best in the South East.
- Peak prevalence of wasting was 12-17 months. Children aged 24 months and above were more stunted and underweight.
- Breastfeeding rates were 88.4% at 6-11 months and 26.4% at 18-23 months.
- There were no significant sex differences in the prevalence of wasting. Male children had had a higher prevalence of stunting and underweight. Children in periurban areas were more malnourished than urban or rural children.

Prevalence of Wasting, Stunting and Underweight



POLICY IMPLICATIONS

Both protein-energy malnutrition and micronutrient deficiencies are devastating public health problems in Nigeria.

- Micronutrient deficiencies need to be specifically addressed through multiple measures including consumer education, social marketing, widespread distribution of supplements, fortification of staple foods, iodization of salt.

- Improving the health care system will reduce micronutrient deficiencies, provided at-risk populations are reached.

- Policy makers need to be motivated to respond to the challenge. Social mobilization programmes, to increase awareness of nutritional hazards within the target population, are also essential to change behaviour and increase demand for sustainable effective action.

NIGERIA 1993 Survey: Key Nutritional Findings children aged 6-71 months

NORTH WEST ZONE

Vitamin A:

Dietary Risk[1] VAD: +25%
Serum Risk[2] VAD: 48%
Nightblindness: 0.7%

Iron:

Haemoglobin[3]: 78%
Stunting: 51%
Wasting: 20%

NORTH EAST ZONE

Vitamin A:

Dietary Risk VAD: + 25%
Serum Risk VAD: 50%
Nightblindness: 1.5%

Iron:

Haemoglobin: 68%
Stunting: 50%
Wasting: 19%

SOUTH WEST ZONE

Vitamin A:

Dietary Risk VAD: 8%
Serum Risk VAD: 24 %
Nightblindness: 1.7%

Iron:

Haemoglobin: 81%
Stunting: 28%
Wasting: 19%

SOUTH EAST ZONE

Vitamin A:

Dietary Risk VAD: 16%
Serum Risk VAD: 15%
Nightblindness: 0%

Iron:

Haemoglobin: 73%
Stunting: 24%
Wasting: 22%

[1] From dietary consumption
[2] From serum retinol < 0.7 umol/l
[3] WHO < 11g/dl

- Micronutrient interventions should be inter-sectoral, involving the health, agriculture, education, information, media and planning sectors. The appropriate mix of short-term interventions to deal with urgent priorities, as well as longer term sustainable strategies, will need to be decided.

- External resources will be needed to cover start-up and early recurrent costs.

The Bottom Line

- Benefits of micronutrient interventions will far outweigh the costs.

- Costs will be repaid through control of childhood infections, improved child survival, improved women's health and national development.

- Dealing with micronutrient deficiencies is one of the most cost-effective health interventions. According to the World Bank, the cost of addressing micronutrient deficiency is only about one dollar per person per year, or less than half of one percent of GDP.

- In Nigeria, the cost of a comprehensive micronutrient strategy could range from $5 million a year, given a low-cost scenario, to an estimate as high as $40 million.

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Reproduction

For further information about the National Micronutrient Survey, Nigeria contact: Dr. Tola Atinmo,
Department of Human Nutrition, University of Ibadan, Nigeria,
or the OMNI Project Director, 1616 N Fort Myer Drive, 11th Floor, Arlington VA 22209, USA.
Tel: (703) 528-7474
Fax: (703) 528-7480

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