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The Nutritional Requirements of the Nigerian Population*

E. O. IDUSOGIE

Department of Animal Science, University of Ibadan, Ibadan, Nigeria

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Summary. Data on age and sex distribution and average body weights of Nigerian population are given. Computation shows that 41·6% of the population is under 15 years of age and that the Nigerian population is now increasing at a very fast rate of about 3·0% per annum and that the population would be 72·2 million and 86·2 million in the periods 1973/74 and 1979/80 respectively.

Nutrient allowances for the population of Nigeria are given and the basis for the estimates is discussed. There is a projection of Nigerian nutritional needs for the periods 1973/74 and 1979/80 respectively. Short-term targets for food consumption in parts of Nigeria that would provide minimum nutritional requirements at low costand eliminate undernutrition in the population are stated quantitatively.

Résumé. L'étude contient des données concernant l'âge et la distribution selon le sexe aussi bien que le poids moyen individuel de la population nigériane. On estime que 41,6% de la population ont moins de quinze ans, que la population nigériane augmente rapidement à un taux d'à peu près 3% par an et qu'elle atteindra 72,2 millions et 86,2 millions dans les années 1973/74 et 1979/80 respectivement.

L'auteur indique la quantité de nourriture exigée par la population nigériane et il discute le fondement des prévisions. Il projette les besoins d'alimentation du Nigeria pour les années 1973/74 et 1979/80 respectivement. Les objectifs visés à court terme pour la consommation alimentaire dans certaines parties du Nigeria et qui répondraient aux besoins alimentaires minimums à bas prix tout en supprimant la sous-alimentation sont présentés quantitativement.

Consumer surveys of dietary patterns and intakes for certain parts of Nigeria have been reported by Nicol (1949, 1952, 1956a, b, 1959a, b), Martin (1956), Thomson (1956a, b), Galetti, Baldwin & Dina (1956), Collis, Dema & Omolulu (1962), Collis, Dema & Lesi (1962), Dema (1963a, b, 1964, 1965, 1966, 1967), Ekpo (1965), UNICEF Fellows (1964, 1966), Inter-departmental Committee on Nutrition for National Development (ICNND) (1967). These reports indicate that the food consumed is largely derived from

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Correspondence: Dr E. O. Idusogie, Department of Animal Science, University of Ibadan, Ibadan, Nigeria.

domestic peasant sources and that the diets are inadequate and ill-balanced with regard to protein, calories and certain other essential nutrients.

Also, the Food and Agriculture Organization (FAO) (1966) showed that in 1963/64, available crude protein per caput per day in the former Northern, Western (including Lagos and Mid-West) and Eastern Regions of Nigeria were 79·9, 39·6, and 32·2 g respectively; while the available calories per caput per day for Northern, Western (including Lagos and Mid-West) and Eastern Regions were 2719, 1909 and 1774 calories respectively. These data further show that inadequate protein and calorie intakes are widespread phenomena in the Southern Provinces of the country.

On the medical side, the evidence on the morbidity and mortality from protein–calorie malnutrition is strong in many areas of the country. The high mortality in infants and young children resulting from kwashiorkor and marasmus, the lack of suitable foods containing protein of high biological value with which to prevent these conditions and treat established cases, and the impaired health and growth rates which are associated, indicate the gravity of the problem of protein–calorie malnutrition in Nigerian communities.

Therefore, in order to define in more precise terms the current food shortages in the communities and to project long-term targets for adequate food supplies and consumption for 1973/74 and 1979/80 periods and the future, it would be necessary to define the national nutritional goal quantitatively.

AGE AND SEX DISTRIBUTION OF NIGERIAN POPULATION

Total population figures for the Federal Republic of Nigeria as for 1963 is 55,670,052 and is based on 1963 Census totals published by the Federal Office of Statistics (FOS), Lagos (1967).

Projected population figures for the Federation for the periods 1973/74 and 1979/80 are 72,200,000 and 86,200,000 respectively and these figures are based on data given by the FAO (1966).

Data on rural population by age and sex for the Federation have been computed using the percentage distribution figures published by the Federal Office of Statistics, Lagos (1966) and which are presented in Table 1. The age and sex distribution for urban areas are based on the census figures as for 1963.

As shown in Table 1, the percentage distribution of the population of Nigerian Regions varies, and each Region has been considered separately in this study. The overall results which are summarized in Table 2 express the extreme youthfulness of Nigerian population; 41·6% of the population is under the age of 15, as compared with 31·2% in the United States and about 25% in most European countries (King, 1969).

AVERAGE BODY WEIGHT OF THE NIGERIAN POPULATION

There are marked variations in average normal body weights among peoples of different races and socio-economic conditions. Observed average body weights of the population of Nigeria as compared with the standard average body weights of children and adults suggested by FAO (1957) are shown in Table 3.

TABLE 1. Rural population of Nigeria by sex and age as a percentage of total rural population 1963 (FOS, 1966)

Age group	Sex	Rural Nigeria	Region		
			Northern	Eastern	Western (including Mid-Western and Lagos)
0–5	M	9·3	9·0	10·8	7·8
	F	9·6	9·5	11·2	8·0
		18·9	18·5	22·0	15·8
6–9	M	7·0	6·4	8·2	7·3
	F	6·4	5·4	8·2	6·7
		13·4	11·8	16·4	14·0
10–14	M	6·0	5·1	6·6	8·0
	F	4·0	3·1	5·1	4·8
		10·0	8·2	11·7	12·8
15 and over	M	26·6	28·2	23·0	26·7
	F	31·1	33·3	26·9	30·7
		57·7	61·5	49·9	57·4
Total	M	48·9	48·7	48·6	49·8
	F	51·1	51·3	51·4	50·2
		100·0	100·0	100·0	100·0

TABLE 2. Age and sex distribution of the population of Nigeria as for 1963

Area	Total	Age group (years)			
		0–5	6–9	10–14	15 and over
Northern Nigeria					
(a) Rural population:					
Male	14,434,072	2,679,912	1,890,191	1,486,922	8,377,047
Female	15,224,677	2,830,861	1,590,064	904,371	9,899,381
(b) Urban population:					
Male	87,647	13,676	6233	5862	61,876
Female	62,263	14,053	6717	5240	36,253
Total (rural and urban)	29,808,659	5,538,502	3,493,205	2,402,395	18,374,557
Western Nigeria and Lagos Federal Territory					
(a) Rural population:					
Male	4,410,346	690,777	646,497	708,489	2,364,583
Female	4,445,769	708,489	593,360	425,093	2,718,827
(b) Urban population:					
Male	1,182,737	159,773	85,074	97,524	840,366
Female	892,240	157,698	89,224	95,449	549,869
Total (rural and urban)	10,931,092	1,716,737	1,414,155	1,326,555	6,473,645

TABLE 2. (*Continued*)

Area	Total	Age group (years) 0–5	6–9	10–14	15 and over
Eastern Nigeria					
(a) Rural population:					
Male	5,869,151	1,304,255	990,269	797,045	2,777,582
Female	6,207,291	1,352,561	990,266	615,899	3,248,565
(b) Urban population:					
Male	200,353	25,442	13,675	20,035	141,201
Female	117,667	25,442	17,173	17,809	57,244
Total (rural and urban)	12,394,462	2,707,700	2,011,383	1,450,788	6,224,592
Mid-Western Nigeria					
(a) Rural population:					
Male	1,262,847	197,796	185,114	202,867	677,070
Female	1,272,992	202,867	169,901	121,721	778,503
(b) Urban population:					
Male	—	—	—	—	—
Female	—	—	—	—	—
Total (rural and urban)	2,535,839	400,663	35,501	324,588	1,455,573
Federal Republic of Nigeria					
(a) Rural population:					
Male	25,976,416	4,872,740	3,712,071	3,195,323	14,196,282
Female	27,150,729	5,094,778	3,343,591	2,067,084	16,645,276
(b) Urban population:					
Male	1,470,737	198,891	104,892	123,421	1,043,443
Female	1,072,170	197,193	113,114	118,498	643,366
Total	55,670,052	10,363,602	7,273,758	5,504,326	32,528,367

Population under 15 years of age, 23,143,686; population under 15 years of age as percentage of total population, 41·6.

SCALE OF NUTRIENT ALLOWANCES

A summary of nutrient allowances for Nigeria is shown in Table 4. The basis for the estimates is discussed in the following paragraphs.

Requirements for calories

Calorie needs of the population are computed according to the FAO recommendations for calorie allowances (FAO, 1957).

The practice of computing calorie requirements in African communities on the basis of their current body weights seems untenable in view of the growing body of evidence to show that these people can attain the European optimum physique if provided with adequate nutrition and medical facilities. These calculations can therefore be more valid if based on the standard average body weights of children and adults suggested by FAO (1957) (Table 3) and corrected only for age, occupation and environmental temperature. In Nigeria, the mean annual temperature is 25°C. Computation shows that the Nigerian Reference Man

and Reference Woman would need 2960 and 2128 calories per day respectively; the figure 2128 has been approximated to 2130 to facilitate computation.

Preliminary computation trials showed that the mean values of nutrient allowances for the adolescent age groups of 15–19 years inclusive (for both sexes) were approximately the same as the mean values of nutrient allowances for the age groups of 20–59 years inclusive (for both sexes). Therefore, in the final computation shown in Table 4, the age groups 15–59 years inclusive are grouped together for both sexes. There are no specially reduced dietary

TABLE 3. Comparison of the average body weights of the population of Nigeria and the FAO standard average body weights

Age (years)	Average body weights (kg)	
	FAO*	Nigeria†
0–5 (both sexes)	14	13
6–9 (both sexes)	25	22
10–14		
Male	40	36
Female	40	32
15–19		
Male	60	57
Female	50	48
20 and over		
Male	65	63
Female	55	53

* FAO Nutrition Meetings Report Series, No. 37, Protein Requirements.

† Body weights as determined in Nigeria by the Rockefeller Nutrition Research Project, University of Ibadan.

allowances for the comparatively few number of people in the age groups of 60 years and above; because of the continuing hard work, their dietary allowances are as for those in the age groups 15–59 for both sexes respectively. The caloric requirements for the age groups 15 years and above are as for the Reference Man and Woman respectively.

The numbers of pregnant and lactating women in the population are estimated according to the procedure developed by the Joint FAO/WHO Expert Group (FAO, 1965) and it is assumed that in Nigerian communities, children are fed on the breast for 2 years (Martin, Morley & Woodland, 1964.).

Requirements for protein

Protein requirements are estimated by the procedure proposed by the Joint FAO/WHO Expert Group on protein requirements (FAO, 1965).

The protein requirements given in Table 4 are in terms of reference protein. Also, the requirements in terms of reference protein in grams per kilogram of body weight per day for the physiological age groups given in Table 4 contain 20% increase to ensure that the needs are properly met. The mean reference protein value for Nigeria (35·0 g) was obtained by

TABLE 4. Scale of nutrient allowances for Nigeria

Age or physiological group	Calories/day		Preference protein (g/kg/day)		Calcium (mg/day)		Iron (mg/day)		Vitamin A potency (IU/day)		Thiamine (mg/day)		Riboflavine (mg/day)		Niacin (mg/day)		Ascorbic acid (mg/day)	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
0–5	1290	1290	1·14	1·14	500	500	7	7	3000	3000	0·65	0·65	0·77	0·77	6·45	6·45	15	15
6–9	1885	1885	0·93	0·93	450	450	10	10	3000	3000	0·94	0·94	1·13	1·13	9·43	9·43	20	20
10–14	2510	2360	0·85	0·85	650	650	13	13	3000	3000	1·26	1·18	1·51	1·42	12·55	11·80	25	25
15 and over	2960	2130	0·73	0·73	500	500	15	15	5000	5000	1·48	1·07	1·78	1·29	14·80	10·65	30	30
Pregnancy (second and third trimester)	—	Plus 450	—	Plus 6 g	—	1000	—	20	—	6000	—	1·27	—	1·59	—	13·65	—	40
Lactation	—	Plus 1000	—	Plus 15 g	—	1000	—	20	—	8000	—	1·57	—	1·89	—	17·75	—	50

dividing the total daily reference protein allowances for the whole country by the population number of 55,760,052. The daily *per capita* reference protein and crude protein allowances for the different age and physiological groups are as shown in Table 5.

Requirements for vitamins and minerals

In estimating the daily *per capita* allowances for vitamins and minerals, the author has drawn where applicable upon the recommended dietary allowances proposed by the Joint FAO/WHO Expert Group (FAO, 1962, 1967), the British Medical Association Committee on Nutrition (1950) and the United States National Academy of Sciences, National Research Council (1964).

TABLE 5. Protein allowances at different ages and sex groups in Nigeria

Age (years)	FAO body weight (kg)	Reference protein g/head/day	NPU of diet	Crude protein g/head/day
0–5 (both sexes)	14	16.0	65	24.6
6–9 (both sexes)	25	23·3	65	35·8
10–14 (male)	40	34·0	65	52·3
10–14 (female)	40	34·0	65	52·3
15 and over (male)	65	47·5	65	73·1
15 and over (female)	55	40·2	65	61·8
Pregnant woman (second and third trimester)	—	46·2	65	71·1
Lactating woman	—	55·2	65	84·9

The scale of allowances for calcium, iron and ascorbic acid are shown in Table 4.

The dietary needs for the three vitamins, namely: thiamine, riboflavine, and niacin are related to calorie intake.

The intake of thiamine is at 0·5 mg/1000 calories/day. For pregnancy (second and third trimester), the daily *per capita* intake of thiamine is increased by 0·2 mg. For lactation, the daily *per capita* intake of the vitamin is increased by 0·5 mg.

The allowance for riboflavine is calculated at 0·6 mg/1000 calories. Additional 0·3 mg/day is required during pregnancy (second and third trimester). For lactation, the allowance is 0·6 mg/caput/day above that of a non-pregnant or lactating woman.

For niacin, the allowance is 5·0 mg/1000 calories. For pregnancy, the daily *per capita* intake of niacin is increased by 3·0 mg. For lactation, the daily *per capita* intake of niacin is increased by 7·0 mg (Table 4).

The recommended intake of vitamin A for adults, adolescents and children of both sexes, for pregnancy and lactation are given in Table 4. Vitamin A values are given in International Units (IU) of vitamin A activity. The IU values can be converted to micrograms by applying the following factors:

1 IU of vitamin A = 0·3 μg retinol
= 0·6 μg B-carotene
= 1·2 μg other total mixed carotenoides with vitamin A activity (FAO, 1967).

Requirements for fats and carbohydrates

No allowances are made for fats and carbohydrates.

The British Medical Association Committee on Nutrition (1950) noted that there was no evidence of a minimum daily intake of fat required to maintain the health and well-being of the human body. The Committee found ample support for the opinion that fat ('visible and invisible') should provide at least 25% of the caloric value of the diet in order to maintain the general character of the food habits of the people of the United Kingdom. The Committee suggested that where demands of the body rise with increasing physical effort, the above proportion of calories contributed by dietary fat should be increased to about 35%. That is, if the diet is lacking in fat, it will tend to become very bulky, since fat is the most compact and concentrated of all sources of calories; and fat is also of great value in making a diet more varied. Passmore (1962) said the following about the requirement of fat in human nutrition: 'As a guide for those responsible for planning agricultural policies, it may be said that if the foods which they produce do not provide 20% of the calories in the form of fat, then the people may be expected to complain—and rightly so. If the food provides more than 30% of the calories in the form of fat, then luxuries are being supplied. Luxuries are good, but indulgence is best tempered with discretion.'

The daily nutrient allowances for the population of Nigeria as for 1963 are presented in Table 6. Data in Table 6 are computed from the population number, age and sex groups as presented in Table 2, the FAO standard average body weights shown in Table 3 and from the scale of allowances presented in Table 4.

The minimum daily *per capita* nutrient allowances for the country is shown in Table 7. Data in Table 7 are obtained by dividing the total daily national requirements for each nutrient in Table 6 (with the exception of the essential amino acids) by the total population number of 55,760,052. Minimum requirements for the essential amino acids lysine, threonine, tryptophan and the sulphur-containing amino acids (methionine and cystine) are based on the milligram amino acids that must be contained in the total nitrogen in grams of crude protein and using the milligram of amino acid per gram of total nitrogen in whole hen's egg as standard (FAO, 1965). Only four of the essential amino acids are considered here because experience shows that these are likely to be the most limiting amino acids in Nigerian diets.

The minimum daily requirements for selected nutrients for the people in the different Regions of Nigeria for the periods 1973/74 and 1979/80 respectively have been computed from the national minimum daily *per capita* nutrient allowances and the results are shown in Table 8. In computing the nutrient allowances for the 1973/74 and 1979/80 periods respectively, it is assumed that the distribution of population according to age and sex characteristics would, for practical purposes, be about the same as for 1963.

Food shortages in Nigerian communities

Comparison of average *per capita* daily nutrient intakes in Nigerian farming communities (Dema, 1963, 1965; Dema & Osamo, 1966; UNICEF Fellows, 1964, 1966; FAO, 1966; ICNND, 1967) and the minimum *per capita* daily nutrient allowances given in Table 7 show clearly the gross deficiencies of protein, calories and certain other essential nutrients in the Nigerian dietaries even though the data presented in Table 7 have not been adjusted in order to take account of physical activities among large number of farming or labouring

TABLE 6. Nutrient allowances per day at different ages and sex groups, Nigeria as for 1963

Age group (years)	Number in group	Calories (kcals)	Reference protein (kg)	Calcium (g)	Iron (g)	Vitamin A potency (IU)	Thiamine (g)	Riboflavine (g)	Niacin (g)	Ascorbic acid (g)
0–5 (M and F) (less breast-fed children)	5,690,171	7,340,320,590	91,042·7	2,845,085·5	39,831·2	17,070,513,000	3698·6	4381·4	36,701·6	85,352·6
6–9 (M and F)	7,273,758	13,711,033,830	169,478·6	3,273,191·1	72,737·6	21,821,274,000	6837·3	8219·3	68,591·5	145,475·2
10–14:										
M	3,318,744	8,330,047,440	112,837·3	2,157,183·6	43,143·7	9,956,232,000	4181·6	5011·3	41,650·2	82,968·6
F	2,185,582	5,157,973,520	74,309·8	1,420,628·3	28,412·6	6,556,746,000	2579·0	3103·5	25,789·9	54,639·6
15 and over:										
M	15,239,725	45,109,586,000	723,886·9	7,619,862·5	228,595·9	76,198,625,000	22,554·8	27,126·7	225,547·9	457,191·8
F	17,288,642	36,824,807,460	695,003·4	8,644,321·0	259,329·6	86,443,210,000	18,498·8	22,302·3	184,124·0	518,659·3
Pregnant women	1,926,358	866,861,100	11,558·1	963,179·0	9631·8	1,926,358,000	385·3	577·9	5779·1	19,263·6
Lactating women	4,673,431	4,673,431,000	70,101·5	2,336,715·5	23,367·2	14,020,293,000	2336·7	2804·1	32,714·0	93,468·6
Total		122,014,060,940	1,948,218·3	29,260,166·5	705,049·6	233,993,251,000	61,072·1	73,526·5	620,898·2	1,457,019·3

population. Data by Platt (1946) and Fox (1953) show that the average daily energy expenditure of African male and female fully engaged in farming activities are 3438 and 2825 kilocalories respectively.

Nutrition aside, work efficiency is largely a matter of training, incentive and tools. It would seem from the Ethiopian experiments (Areskog, Selinus & Vahlquist, 1969) that moderate undernutrition does not impair work capacity as measured by bicycle ergometry and dynamometry. However, data from Gambia by Platt (1953) and from starvation experiments performed in the United States of America (Keys *et al.*, 1950) indicate that emaciation and loss of muscle strength and endurance were evidenced. Thus emphasizing the need to provide adequate and balanced diets consistent with the maintenance of good health, and for increasing the efficiency, productivity and the economy of the people and the nation as a whole.

TABLE 7. Minimum daily *per capita* nutrient allowances for Nigeria as for 1963

Calorie	(kcals)	2192·0
Reference protein	(g)	35·0
Crude protein	(g)	53·8
Calcium	(mg)	529·6
Iron	(mg)	12·7
Vitamin A	(IU)	4203·0
Thiamine	(mg)	1·10
Riboflavine	(mg)	1·32
Niacin	(mg)	11·15
Ascorbic acid	(mg)	26·17
Lysine	(mg)	3466·0
Methionine and cystine	(mg)	2976·0
Threonine	(mg)	2726·0
Tryptophan	(mg)	860·0

SHORT-TERM TARGETS FOR FOOD CONSUMPTION IN PARTS OF NIGERIA

In addition to the long-term targets that would cover the nutritional needs of the population, it is necessary also to set short-term targets of what seem feasible in the light of consumers' preferences and purchasing power.

Short-term targets for food consumption in Western (including Lagos), Eastern and Mid-Western Nigeria are shown in Table 9. In computing the *per capita* daily food consumption targets shown in Table 9, emphasis has been placed on both physiological needs and social preference, i.e. the known dietary patterns of the communities in the respective regions. The diets need to be reasonably palatable. The dietary patterns contain reasonable amounts of yams and cassava or cassava products for which there are strong preferences even though the nutritive value with respect to protein contributed by these staples is negligible. Each of the dietary patterns or recipes is estimated to cost about 8 pence per person per day. It is important to mention, however, that these dietary patterns are intended to provide minimum nutritional requirements at a low cost for the average Nigerians and the objective is a

TABLE 8. Projection of daily nutrient needs for the Regions of Nigeria for 1973/74 and 1979/80 periods

Nutrient	Northern Nigeria		Western Nigeria and Lagos		Eastern Nigeria		Mid-Western Nigeria	
	1973/74 population: 38,700,000	1979/80 population: 46,200,000	1973/74 population: 13,300,000	1979/80 population: 15,900,000	1973/74 population: 16,100,000	1979/80 population: 19,200,000	1973/74 population: 3,300,000	1979/80 population: 3,900,000
Calorie (kcal) (million)	84,830·4	101,270·4	29,153·6	34,852·8	35,291·2	42,086·4	7233·6	8548·8
Crude protein (metric tons)	2082·1	2485·6	715·5	855·4	866·2	1,032·9	177·5	209·8
Calcium (kg)	20,495·5	24,467·5	7043·7	8420·6	8526·6	10,168·3	1747·7	2065·4
Iron (kg)	491·5	586·7	168·9	201·9	204·5	243·8	41·9	49·5
Vitamin A (IU) (million)	162,656·1	194,178·6	55,899·9	66,827·7	67,668·3	80,697·6	13,869·9	16,391·7
Thiamine (kg)	42·6	50·8	14·6	17·5	17·7	21·1	3·6	4·3
Riboflavine (kg)	51·1	61·0	17·6	21·0	21·3	25·3	4·4	5·1
Niacin (kg)	431·5	515·1	148·3	177·3	179·5	214·1	36·8	43·5
Ascorbic acid (kg)	1012·8	1209·1	348·1	416·1	421·3	502·5	86·4	102·1
Lysine (kg)	134,134·2	160,129·2	46,097·8	55,109·4	55,802·6	66,547·2	11,437·8	13,517·4
Methionine and cystine (kg)	115,171·2	137,491·2	39,580·8	47,318·4	47,913·6	57,139·2	9,820·8	11,606·4
Threonine (kg)	105,496·2	125,941·2	36,255·8	43,343·4	43,888·6	52,339·2	8,995·8	10,631·4
Tryptophan (kg)	33,282·0	39,732·0	11,438·0	13,674·0	13,846·0	16,512·0	2,838·0	3,354·0

TABLE 9. Short-term targets for food consumption in parts of Nigeria

Foodstuff	Western Nigeria (including Lagos)			Eastern Nigeria			Mid-Western Nigeria		
	g/head/day	Calories	Crude protein (g)	g/head/day	Calories	Crude protein (g)	g/head/day	Calories	Crude protein (g)
Cereals									
Maize (meal)	80	290	7·6	80	290	7·6	80	290	7·6
Rice	25	89	2·0	25	89	2·0	25	89	2·0
Starchy roots and fruits									
Yam (fresh)	300	312	6·0	300	312	6·0	250	260	5·0
Cassava (roots)	300	459	2·1	300	459	2·1	300	459	2·1
Plantain	100	128	1·0	10	13	0·1	100	128	1·0
Cocoyan (fresh)	100	113	2·0	150	170	3·0	100	113	2·0
Pulses and other seeds									
Cow peas	45	153	9·9	40	136	8·8	40	136	8·8
Melon seeds	10	58	2·5	15	87	3·8	20	116	5·0
Groundnut (dry)	10	58	2·7	10	58	2·7	10	58	2·7
Fruits and vegetables									
Green vegetables	60	29	3·0	80	38	4·0	60	29	3·0
Fruits	20	11	0·2	18	10	0·1	15	8	0·1
Onions	30	11	0·5	25	9	0·5	25	9	0·5
Fresh pepper	16	6	0·3	12	4	0·2	12	4	0·2
Animal products									
Meat (fresh)	25	51	4·8	20	40	3·8	25	51	4·8
Egg (fresh)	25	40	3·3	25	40	3·3	25	40	3·3
Fish (dried)	10	31	6·3	10	31	6·3	10	31	6·3
Fat									
Red palm oil	35	315	—	40	360	—	40	360	—
Others									
Sugar	5	20	—	5	20	—	5	20	—
Salt	5	—	—	5	—	—	5	—	—
Total	1201	2174	54·2	1170	2166	54·3	1147	2201	54·4

reasonable improvement in the nutritional quality of the diets and elimination of undernutrition in the population; they do not provide the types and varieties of foods desired by more prosperous residents of the country.

It is important to mention here that the short-term targets for food consumption in the respective regions can only be attained by achieving substantial increases in agricultural food production and *per capita* income and by better storage, marketing and distribution facilities. The agricultural, food and economic policy relating to increased food production and consumption for better nutrition in Nigeria are, however, outside the scope of this paper.

DEMAND FOR SPECIFIC FOOD ITEMS

Data given in Table 9 would enable the minimum amounts of the different classes of foods currently required in the respective Regions to be estimated.

There are no short-term targets for the Northern population whose current average caloric and quantitative protein intakes are above the national minimum requirements shown in Table 7. However, the protein quality of the Northern diet is low and this could be increased by increasing the consumption of animal products especially meat, eggs and fish. There is need also to raise the level of vitamin A in the Northern diet by increasing the consumption of carrots, sweet potatoes, green vegetables and by cooking with the red palm oil instead of the groundnut oil. Also, increased consumption of green vegetables, fruits and Irish potatoes (which are now being grown in areas of Northern Nigeria) would raise the current low level of ascorbic acid in the Northern diet.

In all areas of the country, increased protein intakes should be followed simultaneously by increased caloric intakes to allow much of the dietary protein to be utilized for anabolic purposes.

Also, with rising income and a rapid increase in the numbers of urban dwellers, it would be necessary to take account of the extent to which consumers' preferences might be modified towards desirable nutritional goal.

There is a great need to educate the people in all the regions of Nigeria and Africa on the paramount importance of adequate and balanced diets in the nutrition and physical well-being of growing children, pregnant and lactating women.

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