NIGERIAN TRADITIONAL FOOD SYSTEM AND NUTRITION SECURITY

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INTRODUCTION

- Traditional food systems– refer to the human managed biophysical systems that are involved in the production, distribution and consumption of food in a particular environment.

- Food systems are a natural locus for improving nutrition security in societies because agriculture is the primary employment sector for the ultra poor and because food consumes a very large share of the expenditures of the ultra poor.
- The causal mechanisms underpinning the poverty trap are clearly rooted in the food system that guides their production, exchange, consumption and investment behaviours.

- The most basic thing we know is that ill health, malnutrition and ultra poverty are mutually reinforcing states.
- The links are multidirectional. Low real incomes are the primary cause of chronic and acute hunger
- Even when food availability is adequate – low incomes impede access to sufficient and appropriate food to maintain a healthy lifestyle.
- Undernutrition, including micronutrient deficiencies, is the leading risk factor for disease and death worldwide, accounting for over half the disease burden in low income countries.
- Undernutrition also impedes cognitive and physical development, thereby depressing educational attainment and adult earnings.

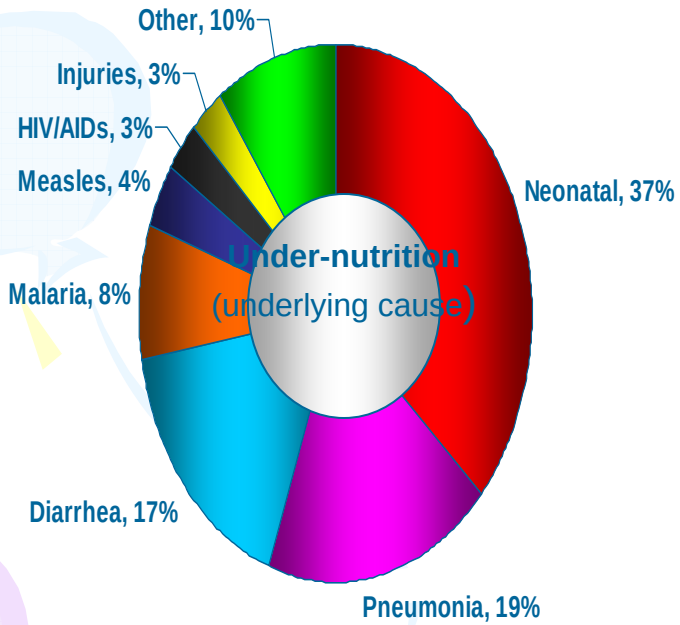
- Disease, in turn, impedes the uptake of scarce nutrients, aggravating hunger and micronutrient malnutrition problems and hurting labor productivity and earnings.

- Food systems are the natural locus for developing an integrated strategy for addressing hunger, ill health and poverty jointly and thus assuring nutrition security.

- Improvement in the food systems have been found to greatly reduce hunger, improve income and reduce malnutrition and the related disease conditions in so many countries.
- Food security is closely linked to nutrition security.

- Unacceptably high maternal, newborn and child mortality rates
  - A woman's chance of dying from pregnancy and childbirth is 1 in 13
  - IMR is 75 deaths per 1,000 live births
  - Child mortality is 88 deaths per 1,000 live births
  - Overall under-five mortality rate is 157 deaths per 1,000 live births.
- Coverage of key interventions is low .
  - Drop in EBF from 17 percent to 13 percent (NDHS 2008)

U-5 DEATHS



- Up to 1 million children die before the age of five.
- 50% underlying cause is under nutrition.
- 26% are neonatal deaths (284,000).

- Nutrition security is the access to adequate diet by every member of the household at all time.
- Access to food is tied to production of enough food by the agricultural system, income, cooking methods and house hold food sharing formula.
- Each of these factors is multifaceted such that an attempt to individually discuss them will be impossible within the scope of this presentation.

WHAT ARE THESE TRADITIONAL FOOD SYSTEMS

- These involve the methods and types of foods produced within the given community or state or country.
- In Nigeria the traditional foods available are many and varied depending on climatic/agro-ecological zone.
- Traditional foods are foods produced locally which form part of the food culture inherent in the locality.
- The local climate enables the cultivation of such crops either for subsistence or for income or both.
- Food plants are traditional in the sense that they are accepted by rural communities by custom, habit and tradition as appropriate and desirable food.
- People are used to them; they know how to cultivate and prepare them and enjoy the dishes

TRADITIONAL FOOD SYSTEMS CONTD

- They are grown for food within the farming systems operating in any particular locality or gathered as wild or semi-wild products.
- There are two groups of foods:
- First, those consumed in the areas where they are grown as traditional dietary staples, for example, cassava, yam, cocoyam, sweet potatoes (*Ipomoea batatas*), plantains (*Musa paradisiaca*) and maize.
- The second group is made up of those consumed as a component of accompanying relishes and sauces. These include oilseeds, fruits and vegetables.
- Communities have evolved their own preferences and food habits overtime and will rather stick to what is familiar.

TRADITIONAL FOOD SYSTEMS CONTD

- A few questions naturally arise at this point
- What is the nature of the Nigerian traditional food system?
- What are the methods of food production in Nigeria?
- What are the traditional foods in Nigeria?
- What are the nutrient compositions of traditional Nigerian foods?
- Can the traditional food systems and the nutrient compositions assure nutrition security?

- About 294 species and over 400 varieties of foods were documented in the South eastern part of Nigeria alone.
- The foreign rice syndrome has in the recent past overtaken many households, especially in the urban areas.
- Twenty one (21) species of starchy roots and tubers, 20 legumes, 21 nuts/seeds, 116 vegetables, 12 mushrooms and 36 fruits have been documented in southern Nigeria.
- Cereals, starchy roots and tubers are important food groups for the majority of Nigerians.

- They are available all year round but are more abundant during the harvest season.
- Most commonly consumed legume in Nigeria is the cowpea (*Vigna unguiculata*).

- Local varieties of cowpea and other species of legumes are also available but not produced in very large quantities including bambara nut, African yam bean, ground nut, etc.

- Mushrooms are also consumed though in relatively small quantities.
- Fruits are not main parts of the diet but are eaten outside regular meals.

- Two types of oil (red palm oil and vegetable oil- mainly ground nut oil) are commonly used.
- A total of 21 condiments and spices were identified. Some of these condiments are soup thickeners and are high in dietary fiber.
- Animal foods were about 27 species for meat/poultry/eggs, 12 species of fish and 3 species of insect/larvae were documented.
- The most popular game meats are grass-cutter, rabbit and antelope
- Milk and milk products not common food items except in the northern part of Nigeria.
- In all communities, foods are eaten not only for their nutritional values but also for their medicinal and socio-cultural significance.

Scientific name	*English/common name*	*Local name*	*Preparation*
Cereals, starchy roots and tubers			
Colocasia esculenta	Cocoyam	ede ofe, ngbowa, akikara	Boiled, dry chips
Colocasia var. esculenta	Cocoyam	Akanoke	Boiled and pounded with cassava
Colocasia spp. (3 var.)	Cocoyam	Cocoindia, nkpongnambing, okoroko	Boiled and pounded with cassava
Dioscorea alata	Water yam	ji abana, ji mvula	Boiled, pounded
Dioscorea bulbifera	Aerial yam	adu, aduinu	Boiled
Dioscorea cayenensis	Yellow yam	ji oku, ochiokpo	Boiled, roasted pounded
Dioscorea dumentorium	Three leafed yam	ona,uno, otsino	Boiled
Dioscorea praehensilis	Yam	ji okpuru, emhi	Boiled
Dioscorea rptimdata	White yam	jiocha,ji igwe	Boiled, roasted, fried, pounded
Ipomoea batatas (2 var.)	Potatoes, sweet white, potatoes, yellowish red	ji nwa nnu	Boiled, fried
Manihot esculenta (2 var.)	Cassava (sweet and bitter types)	akpu nkola inu	Fermented for foofoo, boiled and sliced for dry chips
Musa paradisiacal	Plantain	osukwu,obuunu, ogedenokhua	Boiled, roasted, fried and made into flour
Musa sapientum (many var.)	Banana	Unele, ogede	Eaten as ripe fruit
Oryza glaberrima	Red rice	Osikapa	Milled, boiled
Oryza sativa	Rice	Osikapa, iresi	Boiled, milled
Pennisetum spp.	Millets	Achara	Used for soup
Xanthosoma mafaffa (2 cvar.)	Cocoyam	ede oku, edebuji, akpahuri	Boiled, roasted

CLASSIFICATION OF TRADITIONAL FOODS

- Roots and tubers
- Cereals and legumes
- Vegetables and fruits
- Herbs and spices
- Livestock and game
- Soup condiments

(1) Roots and Tubers:

- Examples of roots and tubers include cassava, yams, coco yams – these are mainly produced and consumed in the humid savannah and rainforest agro- ecological zones. These stretch from middle belt to southern part of Nigeria.
- Products from roots and tubers include the following:
- Pounded yam, garri, eba, amala, boiled yam, yam porridge, akpu, tapioca, abacha flakes etc

- Some tubers of cassava and yams

Some products from cassava: Gari and akpu

- Yellow and white gari
- Akpu

Prepared from fermented cassava

- **(2) Cereals and legumes**
- Examples include maize, sorghum, millet, acha, rice, beni seed (cereals), and cowpeas, pigeon pea, African yam bean, mung bean, African breadfruit etc
- Food products from cereals and legumes
- -Boiled rice, jollof and rice pudding e.g Tuwo shinkafa , cornfood, pap, eko/agidi, “maize – rice”
- -African bread fruit jollof, toasted bread fruit seeds etc
- -Boiled bean, marshed beans, rice and beans jollof beans, moin moin, akara, gbegiri soup etc - Beni seed soup, acha, tuwo masara etc,
- -Boilled or roasted corn – corn and groundnut, groundnut soup etc

Maize and millet

- Some of the common foodstuffs

- Different legumes

Groundnuts and beans

- Unshelled groundnut Shelled groundnut and different beans.

Some products from legumes: Moin-moin and akara(from cowpea), okpa(from bambaranut), kwilikwili (from ground nut

Some Nigerian Traditional foods

	Scientific name	*English/common name*	*Local name*	*Preparation*
	Legumes, nuts and seeds			
1	*Aframomum danieli*	-	olima (ubulu – uku)	Milled and used as a spice
2	*Anacardum occidentalis*	Cashew nut	nkpulu cashew	Toasted and eaten as snack
3	*Arachis hypogeal* (2 var)	Groundnut	opapa	Boiled, roasted, milled to paste
4	*Cajanus cajan* (3 var.)	Pigeon pea	agbugbu	Boiled, roasted and milled
5	*Canavalia ensiformis*	Jack bean	odudu	Roasted , milled used as thickener
6	*Citrullus vulgaris*	Melon seed	egusi	Milled for soup and meat substitute (patties).
7	*Cocos nucifera*	Coconut	aku oyibo, akubekee	Eaten with other foods, milled to extract milk, sliced and roasted as candies etc.
8	*Cola acuminate* (2 var.)	Kola nut	oji awusa	Eaten as stimulant and for cultural purposes
9	*Cola nitida* (2 var)	Kola nut	oji igbo	Eaten as stimulant and for cultural purposes
10	*Cucurbita pepo*	Pumpkin seed	mkpuru anyu, ugboguru	Milled dry and used for soup
11	*Elaeis guineenis*	Palm nut	aku	Cracked and eaten with other fruits, roasted for oil extraction
12	*Glycine max*	Soya bean	-	Used as dried powder for infant feeding
13	*Irvingia gabonensis* (2 var.)	Dika nut	ogbono	Dry, milled and used as soup thickener

15	*Kerstingiella geocarpa*	Ground bean	akidi ani	Boiled, roasted, milled
16	*Mucuna spp.*	Winged bean	okwe	Roasted, milled
17	*Pentaclethra macrophylia*	African oil bean	ugba	Fermented sliced and used for various dishes
18	*Sesamum indicum*	Beniseed	-	Roasted, milled for soup.
19	*Sphenostylis stenocarpa*	African yam bean	okpa odudu	Boiled, roasted and eaten as snack
20	*Teleferia spp.*	Pumpkin seed	mkpuru ugu	Boiled and eaten as snack
21	*Tetracarpidium conophorum / Plukenetia conophora*	Conophor	Ukpa	Boiled and eaten as snack
22	*Tetrapleura tetraptera*	-	Kpokirikpo	Boiled
23	*Treculia Africana* (2 var.)	Breadfruit seed	Ukwa	Boiled, roasted and eaten as snack
24	*Vigna sinensis*	Cowpea	Akidi	Boiled, roasted
25	*Vigna spp.*	-	okpa nkilisi	Boiled
26	*Vigna subte rranea*	Bambara groundnut	okpa ibi	Boiled, milled, roasted, & eaten as snack
27	*Cola lepidota*	Conophor	achicha (yellow inside, velvet black	Peeled and eaten as a fruit snack

- **(3) Fruits and vegetables**
- Fruits are described as the ripened seeds of plants and the adjoining tissues which house them. They are commonly used as desserts.
- Vegetables are the leafy outgrowth of plants or part of plants that are used in making soups or eaten with the principal part of a meal.
- In southern Nigeria, leafy vegetables are grouped into:
- cultivated leafy vegetables such as pumpkin, green (spinach), bitter leaf, ewedu, water leaf etc
- semi – wild vegetables which grow wild in the bush but are now protected to grow in the home garden e.g utazi, uziza, atama (Ibos) okpai (Edo)

Some fruits and vegetables: tomatoes, pineapple, spinach, mangoes, garden eggs

Some fruits and vegetables:

- Okro, yellow and red pepper, pawpaw

Display of plantain for sale in the open market

Some Nigerian Traditional foods contd

	Scientific name	*English/common name*	*Local name*	*Preparation*
	Fruits			
1	*Abelmoschus esculenta*	Lady's finger	okwulu npiene	Used fir soups
2	*Anacardium occidentalis*	Cashew	mkpuru cashew	Roasted and eaten as a snack
3	*Anonas comosus*	Pineapple	Akwuolu	Fruit eaten when ripe
4	Anonas muricarta	Soursop	-	Fruit eaten when ripe
5	*Artocarpus communis*	Breadfruit	ukwa bekee	-
6	*Azadirachta indica*	Neem	Dogoyaro	Used for malaria
7	*Canarium schweinfurthii*	Pear	ube okpoko	Soften in hot water and pulp eaten
8	*Carica papaya*	Pawpaw	okwuru ezi	Fruit eaten when ripe
9	*Chrysophyllum albiduim*	Bush apple (African star apple)	udala nkiti	Fruit eaten when ripe
10	*Citrus aurantifolia*	Orange	Oromankiti	-
11	*Citrus aurantium*	Orange	Oroma	Fruit eaten when ripe
12	*Cocos nucifera*	Coconut	Akuoyibe	Eaten raw with corn/maize
13	*Cola spp.*	`kola	oji ogodo	Chewed raw, medicinal
14	*Curcurbita pepo* (2 var.)	Pumpkin	anyu, ugboguru	Used to cook yam or cocoyam. Soften on cooling, boiled and eaten as snack

15	*Curcurbita pepo* (1 var.)	Pumpkin	nkpuru anyu	Boiled, milled and used for soup
16	*Dacryodes edulis* (2 var.)	Pear	ube Igbo	Soften in boiled water or roasted and used to eat maize.corn or alone
17	*Dennettia tripetala*	Pepper fruit	Mmimi	Hot pepper eaten alone or with garden eggs
18	*Dialium guineense*	Velvet tamarind	Icheku	Eaten raw
19	*Elaeis guineensis*	Palm fruit	Aku	Major source of cooking oil
20	*Garcinia kola*	Bitter cola	aki ilu	-
21	*Grewia spp.*	Jute plant	Ayauma	-
22	*Husolandia opprosita*	Mint	Aluluisinmo	Used for upset stomach
23	Icacemia spp.	-	Urumbia	Eaten as a fruit
24	*Irvingia spp.*	Bush mango	Ugiri	Fruit eaten when ripe
25	*Landolphia owariensis*	Rubber plant	utu npiwa	Fruit eaten when ripe
26	*Landolphia spp.* (4 var.)	Rubber plant	akwari, utu mmaeso, utu mmaenyi, ubune	Fruit eaten when ripe
27	*Lycopersicum esculentum* (4 var)	Tomatoes	tomatoes	Used for stews and other preparations
28	*Magnifera indica* (4 var.)	Mabgo	mangoro	Fruit eaten when ripe
29	*Myrianthus arboreus*	Ujuju fruit	ujuju	Fruit eaten when ripe
30	*Pachystela breviceps*	Monkey apple	udala nwaenwe	Fruit eaten when ripe
31	*Persia Americana*	Avocado pear	ube oyibo	English pear is ripened and eaten alone
32	*Piper umbellate*	Sand pepper	njanja	Dry leaves used for soup during the dry season
33	*Psidium guajava*	Guava	gova	Eaten when ripe
34	*Senna occidentalis*	Nigero plant	sigbunmuo	Used for cooking yam pottage
35	*Solanum macrocarpum*	Garden egg fruit	anvara	A fruit eaten with peanut butter or alone

Fruits and Vegetables contd

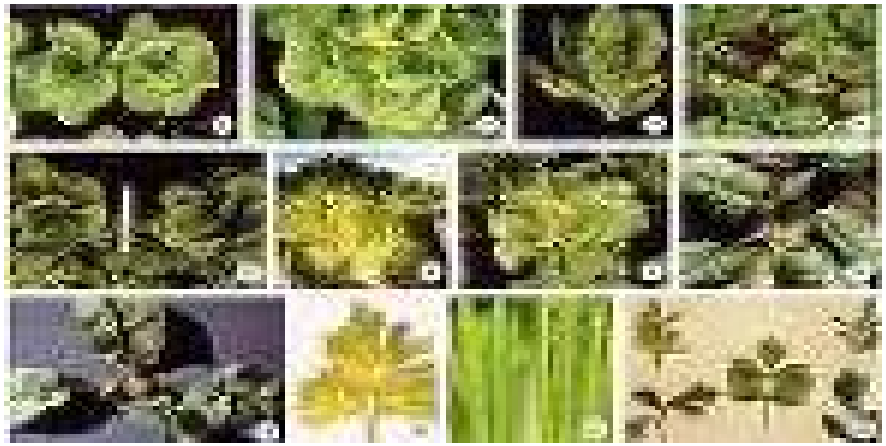
- Fruits and vegetables abound in the different Nigerian culture but are highly seasonal.

However, vegetables such:

- as bitter leaf, *Amaranthus* (green), *okazi* (*Gnetum* spp.) and pumpkin (*ugu*) are available year-round, but are expensive during the dry season.
- Among the vegetables used less frequently are *obiogbome* (*Peptadentia* spp.), *anya-azu* (*Psychotria* spp.), *kpugbum* (*Chromolaena odorata*), *ujuju* (*Myrianthus arboreus*), *ulumiri* (*Spathodea campanulata*), *Olili* (*Brillantaisia merrenia* spp.) *aluluisimmo* (*Husolandia opprosita*) and *okpanwaokuko* (*Aduraria chamae*).
- These are mainly obtained from the wild except *Merremia* spp., *Spathodea campanulata* and *Psychoria*, which are found in home gardens.
- Bananas and citrus fruits, particularly oranges, are the most readily available fruits

Some seasonal and non-seasonal leafy vegetables

- Green leafy vegetables



UNCOMMON VEGETABLES

Agbolukwu	71.1	107	447	7.9	0.4	18.0	1.7	0.9	18.9	0.28	0.36	3.0	0	4.48	529.0	188	2.0
Agili ezi	57.9	160	669	6.4	0.3	33.0	0.7	1.6	-	-	-	-	-	-	4.1	15.7	5.4
Alice mose	65.7	121	506	14.8	0.7	13.9	2.1	2.9	-	-	-	-	-	-	380.9	127.8	11.1
Aluluisi	36.0	319	1333	4.6	1.2	72.4	1.6	3.4	55.5	0.09	0.93	1.2	3.0	18.0	657.6	338.3	9.5
Anya-azu	66.4	131	548	12.8	1.3	17.1	0.6	1.8	25.7	0.18	1.1	1.5	6	22.9	166.2	134.6	14.6
Awolowo weed	47.3	192	803	9.6	0.4	37.4	2.1	3.2	69.5	0.17	0.52	2.4	6	30.8	582.1	326.2	5.8
Azei	60.8	117	489	4.2	0.4	24.1	6.3	4.2	6.9	0.18	0.36	1.1	6	2.9	43.4	85.0	11.9
Bush marigold	52.9	181	757	6.8	0.6	37.0	0.9	1.8	-	-	-	-	-	-	473.4	235.6	5.4
Flame tree	44.0	212	886	8.6	0.3	43.7	0.8	2.6	28.3	1.3	0.54	2.0	44	31.5	76.1	33.8	5.4
Hog weed	65.9	121	506	8.6	0.2	21.3	1.6	2.4	19.4	0.69	0.86	1.1	23	16.4	65.7	233.8	2.1
Ifulu nkpisi	46.0	192	803	6.8	0.2	40.7	2.1	4.2	69.5	0.32	0.54	3.7	11	54.4	260.4	131.5	9.4
Illenagbelede	32.9	210	878	16.4	1.4	32.9	4.6	1.4	32.7	0.36	0.94	1.2	12	16.1	367.4	405.2	9.9

NUTRIENT CONTENT OF SOME NIGERIAN TRADITIONAL FOODS (Some Tubers)

	Dry matter	Protein	Fat	Ash	Energy	Vit. C	Ca	P	Fe
Commodity	(g)	(g)	(g)	(g)	Kcals	mg	mg	mg	mg
Cassava	31.94	2.71	0.53	2.66	390.0	35.0	10.0	35.0	0.50
Yam	26.17	5.87	0.46	4.30	385.9	17.0	18.9	40.7	0.48
Cocoyam (Taro)	26.52	8.66	0.71	4.83	376.4	14.0	24.0	53.6	0.72
Cocoyam (Tannia)	24.89	7.85	0.70	5.22	382.6	10.0	6.0	36.0	0.70
Sweet potato	28.08	5.36	0.33	3.15	391.0	26.2	16.6	31.0	0.83

Spices and other vegetable

- Some soup condiments-melon seeds (egusi) African bush mango seed (ogbonor) and minor melon (irere)

Contribution of Traditional foods to Assuring Nutrition Security

- Several authors have assessed the contribution of traditional foods to meeting adequate nutrition
- A detailed work (Okeke et al 2009) showed that traditional Nigerian foods fed to children 3 -5 years supplied adequate energy (101.24%) but deficient in proteins and some micronutrients.
- Over 80% of protein intake came from plant proteins
- Studies involving school age children 6-12yr (Onimawo et al 2010) indicated low protein and micronutreints intake particularly iron and zinc.
- However when meals were prepared from traditionally available foods for children 3-5yr, the result showed adequate intake of energy, protein and most of the micronutrients in some cases

- Their intake was adequate for calcium (88.5%) and riboflavin (81.0%) only.
- Traditional foods contributed over 90% of the energy, protein, thiamin, niacin and ascorbic acid
- Over 70% of vitamin A and iron intakes of these children.
- Among the traditional foods, cereals made the most significant contribution to energy (31.1%) and niacin (39.9%).
- Legumes made the highest contribution to protein (49.1%).
- The calcium intake came mainly from vegetables (16.8%) and legumes (16.0%).

Contribution of Traditional foods to Assuring Nutrition Security contd

- About 26.5% of the iron came from cereals.
- This was followed by legumes (26.3%).
- Only 6.8% of the vitamin A came from vegetables.
- The rest (71.8%) came from red palm oil.
- Thiamin and riboflavin came mainly from nuts and seeds (33.9%) and (29.9%).
- The bulk of the ascorbic acid came from starchy roots and tubers (58.1%).
- The energy, protein, calcium, iron, riboflavin and niacin intakes of school children 6-12 years were low.
- Intakes were adequate for pro vitamin A, thiamin and ascorbic acid
- Starchy roots and tubers contributed most of their energy intake (29.7%). This was followed by legumes (23.9%).

Contribution of Traditional foods to Assuring Nutrition Security contd

- The bulk of the protein, calcium and iron came from legumes (44.1%,18.2% and 37.9%).
- Vegetables contributed only about 14.7% of the total vitamin A intake.
- Red palm oil was the major source of vitamin A (71.5%). Vegetables were also a significant contributor of thiamin (34.8%) and riboflavin (31.9%).
- Legumes also made some contribution to thiamin (35.7%).
- Nuts and seeds were also significant contributors of riboflavin (30%). Niacin was derived mainly from legumes (28.4%), cereals (25.9%).
- Vegetables made significant contributions to ascorbic acid intake (25.6%)

Summary of the findings on Nigerian traditional foods

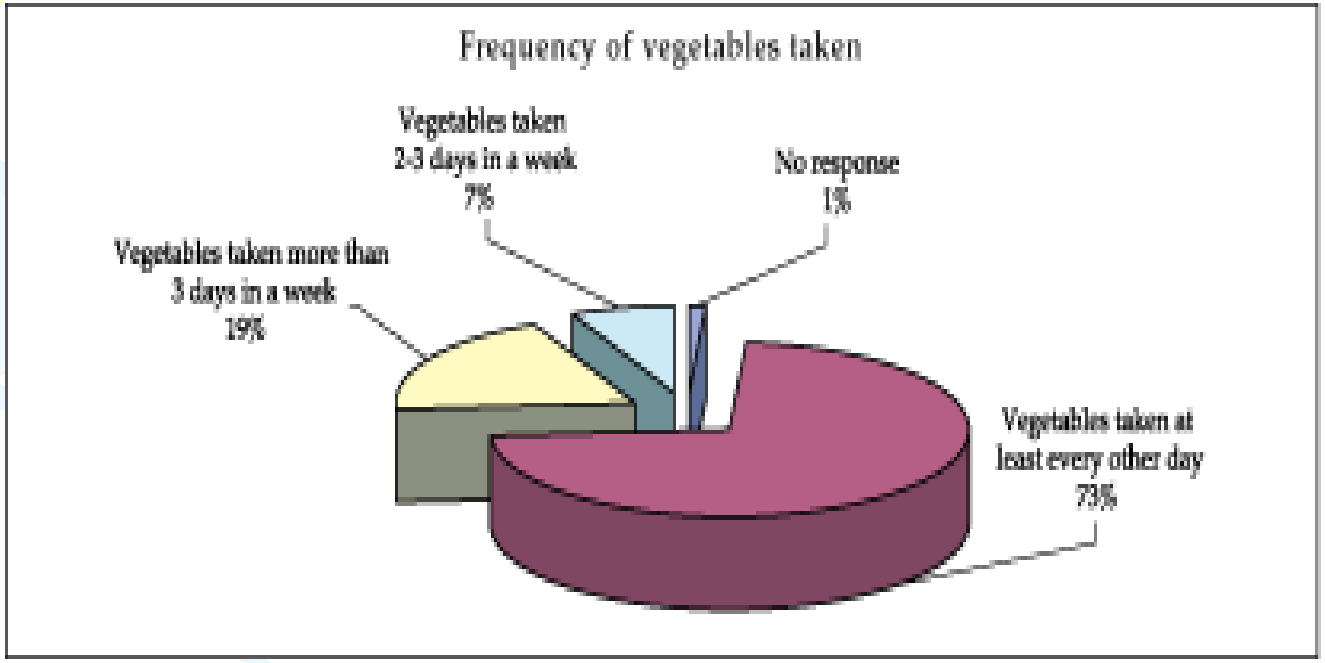
- Several other studies indicated the following:
- Traditional foods are rich in all the required nutrients
- Poor combination of the various foods is the bane of adequate nutrient intake
- Poor processing and culinary methods contribute significantly to nutrient losses
- Under exploitation of tradition foods undermine their rich nutritional value

- Lack of nutrition education contributes to the inappropriate uses of traditional foods
- Low consumption levels of traditional fresh fruits and vegetables contribute significantly to micronutrient deficiency
- Wrong choice of Food and age long food/dietary habits affected adequate nutrient intake.
- There are community variations in the contribution of specific food groups.
- In the Southern states in Nigeria, starchy roots and tubers, legumes, nuts and seeds made substantial contributions to energy intake,
- In northern Nigeria, legumes and cereals significantly contribute to the intake of energy.

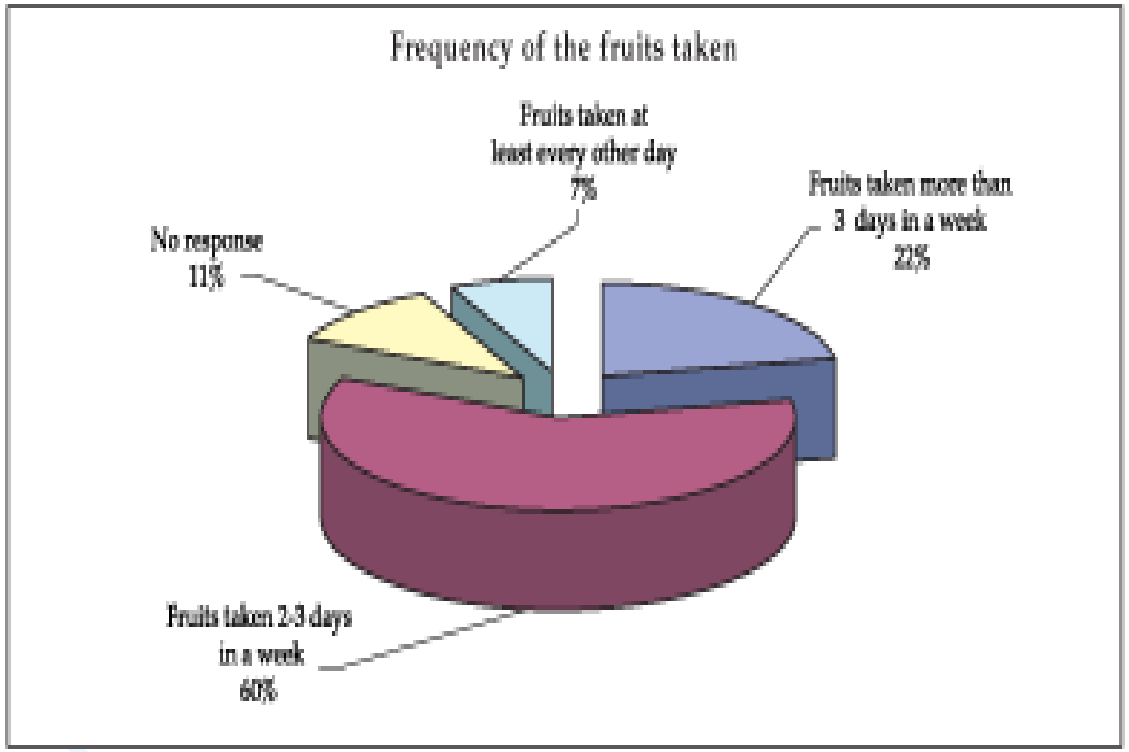
Contribution of traditional foods to nutrient intake

- Traditional Nigerian diets are plant-based, with little contribution made by meat and their products.
- In the Northeast and North west geo-political zones meat and milk products (suya and fura de nono) are consumed to considerable extent.
- Simple processing (e.g. fermentation) and cooking methods (e.g. steaming, baking and roasting) were used in preparing traditional foods.
- Traditional foods/diets are high in moisture, bulky and low in nutrient density

Contribution of nutrition education to improved intake of vegetables



Contribution of nutrition education to improved intake of fruits



CONCLUSION

- Malnutrition characterised by under-nutrition is prevalent in Nigeria
- Poverty causes and aggravates malnutrition
- Under-nutrition can be reduced significantly when the traditional Nigerian food system is improved using a combination of strategies including nutrition education.
- **Need to draw attention to traditional foods that are almost forgotten in preference to westernised diets that invaded our food system**
- **One of the main areas that need attention if our traditional food system will assure food security is encouragement in vegetables and fruit consumption.**

Thanks for your Attention