

Food Vulnerability in the Urban Area of Banjul and Kanifing Municipality (The Gambia)



Bah - Jeng-Ngom - Phall - Chazaly - Dembele - Becquey

*Supported by CILSS/NUSAPPS Initiative and NaNA
2009*



NaNA
National Nutrition Agency

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Acknowledgement:

The National Nutrition Agency under the Office of The Vice President extends it sincerest gratitude to CILSS through its NUSAPPS Initiative and also IRD for the financial and technical assistance given to the Republic of The Gambia to conduct this worthwhile survey.

The authors of this report would like thank all those individuals who have participated or contributed to the conduct of the survey, the data entry and the analysis of the data. Special thank you goes to Mr. Abu Camara of the Gambia Bureau of Statistics and Mr. Nyakassi Sanyang of the Central Bank of The Gambia both statisticians who have been of great help. We also thank Mr. Bakary Jallow of NaNA for his valuable contribution to the report.

We wish to express special appreciation to the family members in both Banjul and Kanifing for their cooperation and willingness to participate in this study.

The Authors:

Amat Bah is a Principal Programme Officer at NaNA

Isatou Jeng-Ngom is a Senior Programme Officer at NaNA

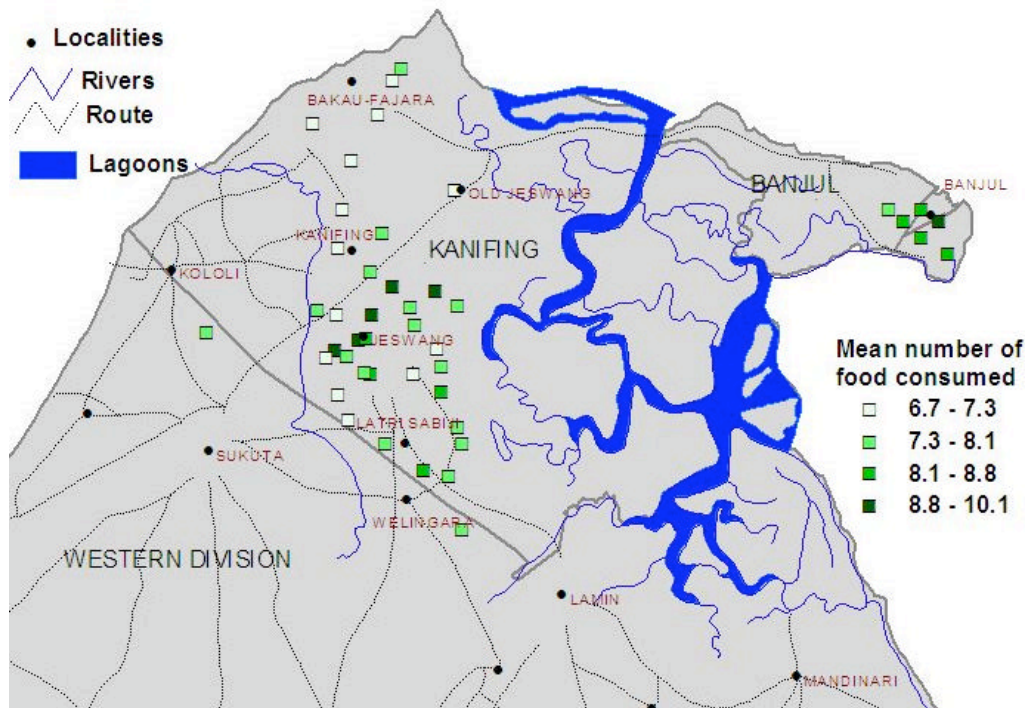
Modou C. Phall is the Executive Director of NaNA

Catherine Chazaly is a Technical Assistant to the NUSAPPS Initiative at CILSS

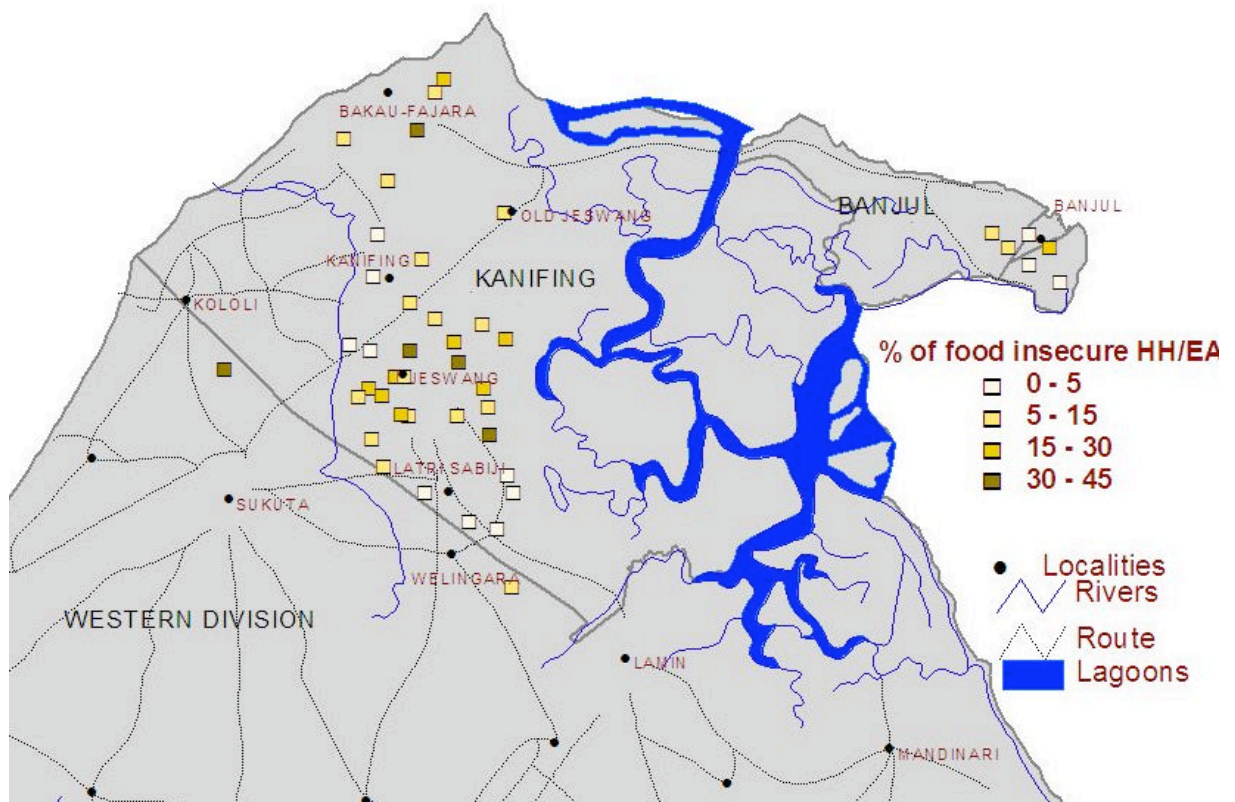
Bernard Dembele is an Expert in Nutrition and Food Security at CILSS

Elodie Becquey is a PhD student in Public Health with IRD

Map 1 showing level of food diversity in Banjul and Kanifing Municipality



Map2 showing proportion of food insecurity within Banjul and Kanifing Municipality



Abstract

Like in other developing countries, demographic transition and urbanization is fast expanding in The Gambia, and with poverty high, food insecurity in urban areas is becoming an issue. Unfortunately, it is difficult to measure the degree of food insecurity in urban areas as, in the past, national food security systems only focused on rural areas, and thus the approach used is not suited to the urban areas.

In recognition of this, the Permanent Inter-state Committee for Drought Control in the Sahel (CILSS), as part of its mandate to improve food security in the Sahel, embarked on an initiative, the Nutrition, Food Security and Public Policies in the Sahel' (NUSAPPS) Initiative, focusing on Food Vulnerability in Urban Areas (VAMU, French acronym).

In April/May 2008, the National Nutrition Agency (NaNA) started the process of assessing food vulnerability in the urban areas of the city of Banjul and the Kanifing Municipality as a result of a tripartite collaborative effort between CILSS-IRD-NaNA.

A total of 1000 households (20 households from each of the 50 enumeration areas) were randomly selected and involved in the survey. Household food insecurity and food diversity were measured in accordance with methods recommended by the FANTA project (Food And Nutrition Technical Assistance) and FAO. The household food insecurity is based on a questionnaire containing nine items on the lack of food and households' reactions to the situation. The food diversity score, also a questionnaire, relates to the consumption or not of 22 different food groups and sub-groups in the 24 hours preceding the survey. In addition, based on a simple questionnaire concerning access to water and electricity, livelihood and assets of the household, the economic situation of households were estimated. Anthropometric measurements of some household members were also taken.

The results of this survey revealed that over 50% of households in the urban areas of Banjul and the Kanifing Municipality were experiencing some form of food insecurity. As expected, well-off households were less food insecure than poorer households.

Cereals remain the most commonly consumed food in The Gambia as 99.7% of all households consume cereals. The consumption of cereals by almost every household is not surprising, as rice is the staple food in the country.

Because of the nutrition transition where overweight and obesity and all its risk factors are becoming major concerns, the consumption of oils and fats are becoming very important. This survey has shown that even the least diversified food group (2-6 food groups) would contain oil and fat. Eighty five percent of households consumed fats and oils.

Anecdotal evidence has shown in the past that Gambians do not eat their fruits and vegetables. However, this survey has shown that 92% of households do consume vegetables with 72% consuming fruits rich in vitamin A.

The high consumption of fish and sea food (89%) is to be expected in The Gambia as fish is one of the cheapest and most available source of protein especially in the urban area which is closest to the Atlantic Ocean. However, the low consumption of offal (16%), eggs (27%), meat (37%) and other fruits such as apples (32%) may be attributable to the high cost of these foods.

Child malnutrition rates are 5.5% (wasting or acute malnutrition), 14.7% (stunting or chronic malnutrition), 8.6% (underweight, a possible combination of both acute and chronic malnutrition), and 2.8% (undernutrition using the mid-upper arm circumference).

Overweight and obesity have been known to be risk factors for hypertension, diabetes and cardiovascular diseases. About 25% of the women living in the urban area of Banjul and Kanifing were found to be overweight and 17% obese. Under-nutrition in the form of energy deficiency was also found in about 9% of the women. This is an indication that both over nutrition and under-nutrition co-exist in The Gambia.

The Gambia has not yet witnessed the proliferation of big fast food chains. Although street foods are popular in the urban areas, eating at home, usually with the family members, is still very popular and the majority of household members (98.9%) consume food cooked at home.

In order to determine the trend of food insecurity and diversity in the urban areas, the Agency is recommending for the survey to be repeated and the adoption of the food vulnerability survey in The Gambia as a means of vulnerability surveillance for the entire country.

Food Vulnerability in the Urban Areas Banjul and Kanifing Municipality -The Gambia

1.0 Introduction

This survey on Food Vulnerability in Urban Areas (VAMU, French acronym) for The Gambia is as a result of a tripartite collaborative effort between the Permanent Inter-State Committee for Drought Control in the Sahel (CILSS), the Research Institute for Development (IRD) and the National Nutrition Agency (NaNA). The work is part of the "Nutrition, Food Security and Public Policies in the Sahel" Initiative (NUSAPPS) implemented by CILSS in collaboration with IRD and the French Ministry of Foreign Affairs (MAE). The initiative aims at helping CILSS member countries consider nutritional and food security data, in terms of collection and analysis, to improve monitoring and early warning in the sub-region (9 CILSS countries, to be expanded to the 14 ECOWAS countries).

One of the objectives of this initiative is to determine risks of food and nutritional insecurity in urban areas, leading to the design and development of tools for assessing and monitoring household food vulnerability, which is vital in National Early Warning Systems.

In April/May 2008, NaNA started the process of assessing food vulnerability in urban areas (VAMU) in the city of Banjul and the Kanifing Municipality in an effort to better understand the risks associated with the living conditions of the population. The VAMU protocol used was adopted from a field survey conducted in Ouagadougou (Burkina Faso). The protocol was adapted to the specific conditions of Banjul and the Kanifing Municipality as representing the urban area of The Gambia.

The Context

«A household is food secure when it has access to the food needed for a healthy life for all its members (adequate in terms of quality, quantity, safety and culturally acceptable), and when it is not at undue risk of losing such access»¹. Today, the ideal of food security for all people and at all times is far from being achieved in West Africa, where more than 20% of the population is undernourished.

In developing countries, demographic transition is underway and urbanization is a fast-expanding phenomenon. The latter is often regarded as a factor of economic growth. As far as food access is concerned, cities or urban areas are believed to experience less seasonal variations, have better availability as well as a wide range of food compared to rural areas. Hence, stakeholders dealing with food security issues are often, not much interested in urban areas. However, in towns, food insecurity is masked by aggregated statistics, which do not consider the significant disparities in the social and economic conditions that characterize urban areas. As a matter of fact, poverty in towns is a phenomenon, which is exacerbating in developing countries. Likewise, it has been shown that the urban poor account for infant malnutrition rates comparable with those of the rural poor. Furthermore, it is difficult to identify food insecure people because the "at risk areas" approach usually used in rural areas is not suited to cities.

Households' food security depends on several known factors: food availability at national and local levels, technologies allowing the dissemination of agricultural products in time and space, distribution channel, selling prices, income, acceptance by the community, food habits

¹ Definition ACC/SCN 1991

and food choices, among other things, are essential factors, which significantly impact on the food security status. Depending on the context (urban or rural), their relative importance changes. Therefore, any food security analysis must consider the specific environment of the households.

In addition, it is judicious to assess food security over time, in order to comprehend the stability of food availability, accessibility and biological utilization. This is described by the concept of household food *vulnerability*, which depends on two important factors: the degree of exposure of households to shocks/risks on the one hand and on the other hand, their capacity to cope with them, also called “resilience”.

At the moment, there is no national system in West Africa, that assesses urban forms of food insecurity. Existing research work underscores the complex and multifactorial nature of food vulnerability in towns and the inadequacy of traditional monitoring and early warning tools. It is therefore urgent to fine-tune indicators, methods and tools for identifying, measuring and monitoring urban vulnerability and even to propose new ones specific to urban areas. To this end, it is essential to be acquainted with the causes and mechanisms associated with vulnerability and to identify who the vulnerable people in towns are, and where they reside.

In order to improve national systems in terms of food vulnerability, monitoring and analysis in urban areas, a survey protocol was developed within the framework of a pilot study carried out in Ouagadougou. The protocol comprised two phases referred to as "quick" and "in-depth", respectively. The first phase aims at characterizing the level of food vulnerability and its distribution in towns; the second phase is carried out on a sub-sample of the first one and has more explanatory objectives or in-depth assessment.

2.0 Main objective

The objective of the VAMU survey is to give a characterization of the household food vulnerability in the urban areas of the Sahel with a view to improving analysis of early warning systems.

2.1 Specific objectives

1. To determine and characterize urban vulnerability profile in the town of Banjul and the municipality of Kanifing;
2. To analyze the spatial distribution of food vulnerability in the city of Banjul and the municipality of Kanifing;
3. To contribute to ongoing debate over the need to take food vulnerability in urban areas into account;
4. To develop capacity in terms of food vulnerability diagnosis.

3.0 Methodology and data quality

3.1 Design of the questionnaire (structure)

The data collection is centred on tools such as the HFIAS (Household Food Insecurity Access Scale) and the IDDS (Individual Dietary Diversity Score). These instruments, which were developed by FAO and the FANTA project (Food and Nutrition Technical Assistance), provide an assessment of food insecurity of the household and individual dietary diversity respectively. The questionnaire also contains the socio-demographic and economic characteristics of the households and its heads. Also, anthropometric measurements of both adults and children were taken to determine nutritional status.

3.2 Adaptation and field pre-testing

NaNA and counterpart statisticians adapted the Food Vulnerability Survey questionnaire for the urban area for use in The Gambia (appendix 1). The enumerators were trained on the use of the questionnaire including the interpretation of the questions in two local languages. They were also trained on the use of the survey instruments. A field pre-testing of both the questionnaire and the instruments were done before finalisation and use.

3.4 Characteristics of Banjul and Kanifing Municipality

For administrative purposes, the country is divided into eight Local Government Areas (LGAs), with Banjul and the Kanifing Municipality being two of the eight LGAs. The population of The Gambia at the 2003 Population and Housing Census, was 1,360,681. The population is heavily concentrated along the coast where the three largest cities, Banjul, Kanifing Municipality and Brikama, are located. About 27% of the population live in the Greater Banjul Area comprising of the City of Banjul and the Kanifing Municipality, a combine area of 88 sq. km (0.08% of the total land area). Banjul, the Capital City is the only Local Government Area that has experienced a decrease in population (17%) between 1993 and 2003. On the other hand, the Kanifing Municipality is the second most populous Local Government Area with 24% of the country's population. Between 1993 and 2003, the Municipality registered a population increase of 21% (GboS, 2006).

Fifty-three percent of urban dwellers live in Banjul and the Kanifing Municipality. About 20% of the population of The Gambia are between 15 and 24 years old. This age group is most affected by the rural-urban migration as evident by higher than average concentration of the age group in Banjul and Kanifing (GboS, 2006).

3.5 Reaching the target population

After the identification and selection of the survey area and the 50 Enumeration Areas (EAs) access to the households in the selected EAs was relatively easy as Banjul and the Kanifing Municipality are urban areas with reasonable transport facilities. In reaching the actual target population for the survey, no sensitization was carried out to avoid any misunderstanding by the public on the nature and purpose of the survey. However, supervisors or team leaders do inform the participants a day before the assessment and prior to the arrival of the team. This proved very successful with almost no resistance from the population.

3.6 Sample selection

The target population consisted of all the households in the city of Banjul and Kanifing Municipality. There are several possible methods to take a sample of this population. The one used in the VAMU survey consist of drawing at random, proportionally to their size in terms of number of households, 50 enumeration areas (EAs). A fixed number of households in each area are then drawn at random, based on the random-walk method, in order to come up with a total sample of 1000 households (20 households in each of the 50 EAs).

4.0 Measuring Indicators and Instruments

The first point of interest is the household. The person surveyed for most of the questions is the person in charge of food in the household.

4.1 Measuring household food insecurity: this is carried out in accordance with the method recommended by FANTA, which is based on a questionnaire containing nine items on the lack of food and households' reactions to this situation. For each item, the response is graded

from "0" to "3" depending on the severity or frequency of the situation mentioned. The accumulation of answers for each item gives a score on a food insecurity scale (SIAM) ranging from 0 to 27 with the score 27 corresponding to maximum food insecurity.

4.2 Measuring food diversity: a questionnaire, administered to the youngest mother of the household, relates to the consumption or not of 22 different food groups and sub-groups in the 24 hours preceding the survey. The information then allows for the construction of a dietary diversity score (DDS).

4.3 Estimating the household's economic situation: this is based on a simple questionnaire concerning access to water and electricity, livelihood and assets of the household (vehicles, TV, refrigerators, animals etc.), the quality of the housing (materials used to build the walls, ceilings, floors) and the household's cropping practices.

4.4 Anthropometric measurements of some members of the household: measurement of weight, height/length, body fat mass percentage (through impedance measurement), arm circumference, waist and hip circumferences, made it possible to assess the nutritional status of each individual involved in the assessment. The people concerned include children less than 5 years of age, their mothers and the head of the household.

4.5 Instruments: 10 "Tanita"- Bio-impedance scale with batteries, 10 Salter Hanging scales, 10 Stadiometres (height gauges for adults) and 10 measuring boards for children, 20 measuring tapes for Hip/Waist measurements, 20 Mid Upper Arm Circumference tapes, GPS machines and EA maps.

4.6 Fieldwork

The Food Vulnerability Survey of the urban areas of Banjul and the Kanifing Municipality of The Gambia began with training from 29th April to 1st May 2008 followed by data collection from 3rd to 25th May 2008.

Nine teams of 2 enumerators and 3 supervisors were responsible for the data collection and revision with overall supervision by the coordinator. One supervisor was in charge of supervising three teams. Each team visited five households per day. In the field, the supervisors were in charge of managing the enumerators, collecting the questionnaires and doing their first checking. They reviewed the questionnaires in the field to ensure completeness and accuracy. They were also responsible for taking the GPS Coordinates of the households surveyed. Five of the teams of enumerators were assigned to survey six enumeration areas (EAs) and four of the teams, five EAs each (that is to say, four to five days per area on average plus possible making up for lost time).

5.0 Data Processing

5.1 Data Quality

The evaluation of data quality in this study is on the anthropometric measurements (height/length, weight, MUAC, age) for the children and also hip and waist measurements for adults. The methods used are decimal attraction and standard deviation, see appendix 2 for the details.

5.2 Data entry and analysis

Five data entry operators were given the responsibility of coding the questionnaire and double data entry. Two persons were responsible for the data processing with assistance from CILSS. The report writing was undertaken by NaNA and CILSS.

5.3 Indices used in the data analysis

The Individual Dietary Diversity Score (IDDS) was measured for women between 15- 49 years of age. In each household, the respondent woman was selected on a hierarchical order according to their role in food preparation. The IDDS includes fourteen food groups that are derived from the 20 twenty food groups collected. The fourteen food groups are as follows : Cereals, vitamin A rich vegetables and tubers, white roots and tubers, leafy vegetables, other vegetables, vitamin A rich fruits, other fruits, offals, meat, eggs, fish and other seafood, legumes, nuts and seeds, milk and dairy products, oils and fats.

The Household Food Insecurity Access Scale (HFIAS) is calculated using the scores for each of the 9 questions about household food insecurity. Each question has a potential score of 3 depending on the frequency of the experience (e.g. 0 for “never” to 3 for “often”). The HFIAS is used to classify households by food security status using a matrix that takes into consideration the frequency of the four responses for each question (never, rarely, sometimes or often). The matrix for household classification and further explanation are presented in the relevant section.

Body Mass Index (BMI) is calculated by dividing weight (kg) by height(m)². The calculation was done for women/girls between the ages of 15 - 49 years old, who were not pregnant or not suffering from physical abnormalities that could affect the anthropometric measures.

The wealth index was created from a set of variables concerning household materials and assets owned.

Anthropometric index for underfives is established based on the measurements of length or height, weight, MUAC and the estimation of age expressed in months. Then zscores were produced using WHO-reference curves for Height for Age, Weight for Height, Weight for Age and MUAC.

6.0 Results

6.1 Demography (Description of population)

Table 1: General Characteristics of Household

Variables	Items	Percentage
HHH age group	<=35 yrs	30.2
	36-50 yrs	41.7
	>50 yrs	28.1
Sex of the HH head	Male	74.1
	Female	25.9
Number of spouses of HHH living in compound	0	2.7
	1	84.7
	2	10.2
	3	1.7
	4	0.7
Demographic dependency ratio	less 30%	33.7
	30%-50%	32.5
	50%+	33.9
Size of HH in number of persons	1	1
	2	4
	3	7.9
	4	12.1
	5	13.1
	6	9.8
	7	9.7
	8	7.4
	9	7
	10 +	28.1
Economic dependency ratio	Less 70%	39.4
	70%+	60.6
Health insurance	Yes	3.6
	No	96.4
Duration of residence in Banjul and Kanifing	Less 1 yr	2.8
	1-4 yrs	17.5
	5-9 yrs	5.8
	10 yrs +	73.9
Duration of residence in compound	Less 1 yr	7.8
	1-4 yrs	26.8
	5-9 yrs	10.9
	10 yrs +	54.5
Origin of foods consumed	cooked at home	98.9
	Ready made dishes	1.0
	Given	0.1
Food stocks	None	30.4
	Condiments	21.6
	Cereals	48

The Heads of households are divided into three age groups of <35 years, 36-50 years and >50 years. The 36-50 years group has the highest representation at 41.7%, followed by the <35 years group with 30.2% and then the >50 years group with 28.1%.

Of the households assessed, about three quarters (74.1%) are headed by males and the rest (25.9%) headed by females. The majority of Heads of households (84.7%) had only one

spouse, whilst 10.2% had 2 spouses, 1.7% had 3 and 0.7% had 4. Only 2.7% did not have any spouse. In total, 12.6% of the male heads of households are in polygamous union.

The Demographic Dependency Ratio is the ratio between the dependent population (0 to 15 and more than 60 years old) and the active population (16 to 59 years old). In 33.9% of households, the demographic dependency ratio is more than 50% i.e. there are more dependent people than active ones. In 33.7% of households, the dependency ratio is less than 30% and in 32.5%, the dependency ratio is between 30-50%.

More than a quarter of the households (28.1%) have more than 10 people living in a household. The number and percentages of people in other households are as follows: 2 people (4%); 3 people (7.9%); 4 people (12.1%); 5 people (13.1%), 6 people (9.8%); 7 people (9.7%); 8 people (7.4%) and 9 people (7%).

In 60.6% of households, more than 70% of the household members are economically dependent on the breadwinner(s) of the household, and in 39.4% of households, less than 70% are.

Only 3.6% of households have Health Insurance and the majority (96.4%) do not.

The majority of respondents (73.9%) had resided in Banjul and Kanifing for more than 10 years, and 17.5% for between 1-4 years. Other respondents have resided in Banjul and Kanifing for between 5-9 years (5.8%) and less than 1 year (2.8%). Over half of the respondents (54.5%) have resided in the compound for more than 10 years, 26.8% for between 1-4 years, 10.9% for between 5-9 years and 7.8% for less than 1 year.

The majority of households (98.9%) consume food cooked at home, 1% eat ready-made dishes and in 0.1% the food they consume is given to them.

Under less than half of the households (48%) have stocks of cereals, while 30.4% had no food stocks and 21.6% have stocks of condiments.

6.3 Economic Situation

Table 2: Household characteristics and living conditions

Variables	Items	Percentage
Kitchen	indoor kitchen	16.1
	outdoor kitchen	70.1
	no place demarcated to serve as kitchen	13.9
Main source of drinking water supply	mineral water	1.5
	private/own tap	27.1
	shared tap	42.1
	stand pipe	19.6
	Well	2
	borehole	0.2
	purchase of water	6.4
Main source of lighting used	others	1.1
	electricity	58.1
	Generator	2.6
	Batteries	1.8

	Gas	0.1
	paraffin	0.3
	candle	35.3
	solar panel	0.4
	others	1.4
Source of cooking fuel	Elect/gas	6.9
	Charcoal	35.2
	Fuelwood	57.9
Type of lavatories	modern lavatories with flush	34.5
	constructed lavatories	54.2
	pit in the plot of land	10.3
	no lavatories	0.9
Possession of showers	modern indoor showers (with shower head)	26.1
	simple indoor showers	21.4
	outdoor showers	52.3
	no showers	0.2
Persons per room	1 or less	9.3
	1-2 person	39.8
	2-3 person	28
	3 person+	23
Type of tenure/tenancy	owner with title deed	36.6
	owner without title deed	2.6
	tenant	54.2
	lodged by the employer	1.1
	lodged for free by a third party	4.5
	others	1
Type of compound	family compound with one household	21.3
	family compound with several related households	7.7
	households with several unrelated households	71
Waste water disposal	pit or cesspool	44.1
	gutter	19.4
	Road	10.1
	others	26.4
Storage of household refuse	rubbish heap in the compound	16.8
	bin (drum) in the compound	68.8
	dumping in the street	2.6
	rubbish heap in the street	2
	refuse body/drums in the street	1.6
	others	8.2
Sources of revenue	None	0.9
	Salary	42.7
	Pension	6.5
	Scholarship	12.5
	Regular work	16.2
	Commercial	53.4
	Rent	4
Vegetation in compound	No vegetation	25.8
	Fruit tree	63.7
	Non-fruit tree	9.3
	Food garden	1.2

Table 2 above shows the household characteristics and living conditions. The majority of households (70.1%) have outdoor kitchens while 16.1% have indoor kitchens. The rest (13.9%) have no demarcated place to serve as kitchens.

Tap water was the main source of drinking water for most of the households. As shown in the table above, 27.1% had private/owned tap, 42.1%, shared tap and 19.6%, standpipes. The other sources of drinking water are wells (2%), mineral water (1.5%) and borehole (0.2%). In other households, 6.4% purchase water and 1.1% use other sources.

Electricity was the main source of lighting for most of the households (58.1%). Other sources of lighting are candles (36.3%), generators (2.6%), batteries (1.8%), solar panels (0.4%), paraffin (0.3%), and gas (0.1%). The most commonly used fuel for cooking by households is firewood (57.9%) followed by charcoal (35.2%) and the rest (6.9%) use electricity or gas.

Constructed lavatories (toilets) were the most common type (54.2%) used by households. The other types of lavatories used by households are modern lavatories with flush (34.5%) and pit in the plot of land (10.3%). Only 0.9% did not have lavatories. For the possession of showers, 52.3% have outdoor showers, 26.1% have modern indoor showers, and 21.4% have simple indoor showers while 0.2% did not have showers.

The study found that 9.3% of households have 1 person per room, 39.8% have 1 to 2 persons per room, 28% have 2 to 3 persons per room, and 23% have more than 3 per room. The majority of households (54.2%) are occupied by tenants, while 36.6% are owners with title deeds and 2.6% are owners without deeds. The rest of householders are either lodged by their employers (1.1%) or are there free of charge through a third party (4.5%) while 1% have other types of tenancy. The types of compounds in which householders live are family compounds with one household (21.3%), family compounds with several related households (7.7%) and compounds with several unrelated households (71.1%).

Most of the households (44.1%) dispose of waste water in pits or cesspool, 19.4% in gutters and 10.1% on the road. The rest (26.4%) use other means of disposing of waste water. As for storage of household refuse, 16.8% of households use rubbish heaps in the compounds, 68.8% use bins (drums) in the compound, 2.6% dump refuse in the street, 2% use rubbish heaps on the street and 1.6% use refuse body/drums in the street. The rest (8.2%) use other forms of refuse storage.

The sources of revenue for households in this study are salaries (42.7%), pensions (6.5%), scholarships (12.5%), regular work (16.2%), commercial (53.4%) and rent (4%).

As for vegetation, 63.7% of compounds have fruit trees, 9.3% have non-fruit trees and 1.2% have food gardens. The rest (25.8%) of the compounds have no vegetation.

Table 3: Possession of Consumer Goods

Variables	Items	Percentage
Bike possession	1 bike	22.8
	2 bikes +	8.5
	No	68.7
Car possession	Have car	18.3
	No	81.7
Radio possession	1 radio	54.6
	2 radio +	20.1
	No radio	25.3
Cell-phone	1cphone	25.1
	2 cell phones+	64.6
	No cell phone	10.3
Lounge (Armchair and Sofa)	Yes	64.4
	No	35.6
fan	No fan	51.5
	1 fan	25
	2 fans +	23.4
refrigerator	No	65.2
	Yes	34.8
freezer (separate)	No	82.6
	Yes	17.4
TV set	No	53
	Yes	47
Hi-Fi (system)	No	86.7
	Yes	13.3
Computer	No	93.1
	Yes	6.9
Home telephone	No	81.5
	Yes	18.5
Air conditioner	No	97.9
	Yes	2.1
Possession of a livestock animal	No	73.5
	Yes	26.5
Total		100

Table 3 shows the possessions of household respondents. The proportion of households that had bikes is one third (33.1%) and out of this 22.8% have one bike while the rest 8.5% have 2 or more. The proportion that does not have bikes is 68.7%. As for possession of a car, 18.3% of respondents have cars and the rest (81.7%) do not.

The findings revealed that a quarter (25.3%) of the households did not have a radio. For the rest, 54.6% had one (1) radio and 20.1% had 2 or more. A quarter (25.1%) of the households possessed one (1) cell phone while about two thirds (64.6%) had 2 or more. The rest of the households (10.3%) had no cell phone. In the case of home telephones, most of the households (81.5%) had none but the rest ,18.5%) had.

In a majority of the households, 64.4% had lounges with either armchairs or sofa while the rest do not. Fans were owned by just under half the households. A quarter (25%) of the households had one (1) fan while 23.4% had 2 or more. Most of the households (97.9%) do

not have air conditioners, only 2.1% of the households have. Refrigerators were owned by about a third of the households (34.8%) whereas only 17.4% have freezers.

As for possession of television sets, 47% of households had while the rest (53%) did not. A smaller proportion of households, 13.3% and 6.9% have a Hi-Fi system and computer respectively.

Just over a quarter of households (26.5%) possessed animals, such as chicken, sheep, goat, ox and pig. All the others (73.5%) do not possess animals.

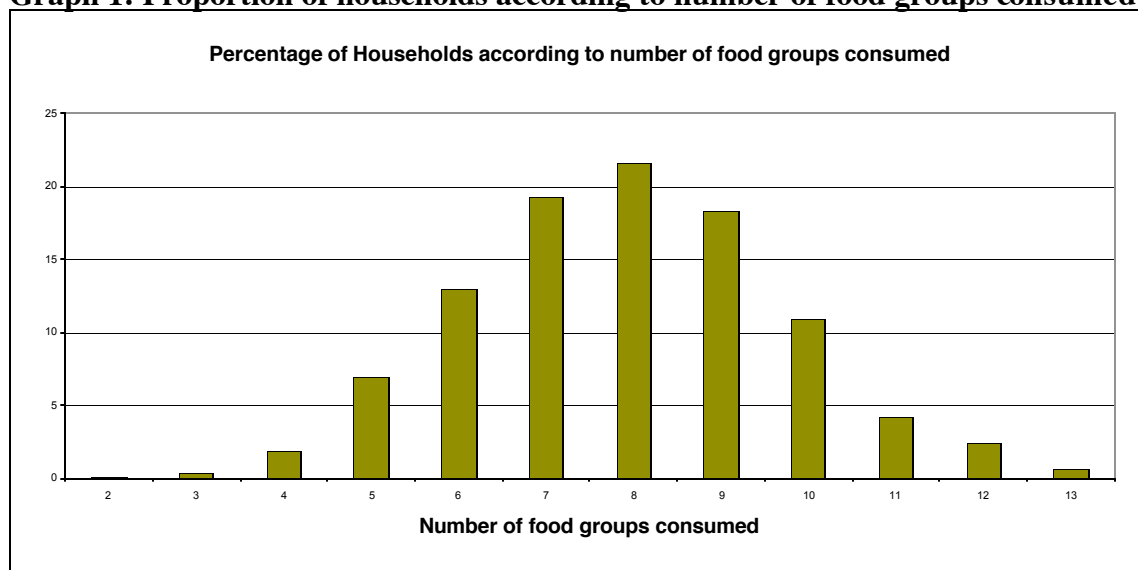
7.0 Food Diversity

7.1 Summary of Dietary Diversity Scores

As the name implies, Food Diversity means eating a variety of foods, which will likely enhance the adequate intake of essential nutrients. Studies have shown that dietary diversity is related to nutrient adequacy of the diet, children's and women's anthropometry, socio-economic status and household food security (Ruel 2003; Hoddinot & Yohannes, 2002; Hatloy et al., 2000).

Dietary diversity scores are calculated by either adding up the number of individual foods or food groups consumed over a reference period. The dietary diversity scores used to assess food diversity in this survey consist of a simple count of 14 food groups that an individual has consumed over a 24-hour period (Appendix 1). These 14 groups are obtained from 20 food types collected by the survey.

Graph 1: Proportion of households according to number of food groups consumed



The graph above shows the number of food groups consumed by a household. The mean number of food groups consumed by households in this survey is 8. A proportion of 21.6% of the households consumed 8 food groups, 19.2% 7 food groups, 18.2% 9 food groups. None of the households consumed foods from all 14-food groups whilst 0.6% and 2.5% consumed 13 and 12 food groups respectively.

The 24-hour recall of assessing food intake is a quick and simple way to recall past food intake. However, it has its disadvantages mainly:

- It depends on memory, reliability of which may vary.

- There is a possibility of fabrication of dietary intake.
- The assessment is restricted to a short period. The food intake over the previous 24 hours may not be typical of one's usual diet and will not reflect daily variations.

Therefore, there is the possibility that due to the reasons mentioned above (reliability; under or over reporting; time restriction), some households may be consuming less or more than what is shown in Graph 1. However, memory bias are limited by the short and close period of recall (24 hours).

7.3 Terciles of Food Groups

Table 4: Food groups consumed by >50% of households by dietary terciles in urban Gambia

Less diversified (2-6 food groups)	Mildly diversified (7-8 food groups)	Highly diversified (9-13 food groups)
Cereals	Cereals	Cereals
Other vegetables	Other vegetables	Other vegetables
Fish and seafoods	Fish and seafoods	Fish and seafoods
Oil and fats	Oil and fats	Oil and fats
	Vit A rich veg and tub	Vit A rich veg and tub
	Vit A rich fruits	Vit A rich fruits
	Roots and tubers	Roots and tubers
		Leg, nuts and seeds
		Green leafy veg.
		Milk and dairy products

The table above shows how households are classified in terms of food diversity and the number of food groups consumed. Households that are less food diversified eat only food groups in the first column ($DDS \leq 6$), those who are mildly food diversified eat food groups in the second column ($6 < DDS \leq 8$), and those who are highly food diversified eat groups in the third column ($DDS > 8$).

The table also gives at a glance, information on which food groups are predominantly consumed at different levels of the dietary diversity score, foods eaten by those whose diets are less diversified, and foods added in diets considered as mildly and highly diversified.

7.4 Food Diversity in Relation to Household Characteristics:

Table 5: Food diversity according to main household characteristics

		N	Mean	Significance
Sex	Male	655	7.8519	
	Female	221	8.0090	0.271
Marital Status	Single	15	7.1333	
	Monogamous	556	7.7932	
	Polygamous	15	8.5333	0.102
Demographic Dependency	Less 30%	311	7.8424	
	30%-50%	283	7.9329	
	50%+	280	7.9000	0.831
Economic dependency	Less 70%	347	7.7666	
	70%+	526	7.9734	0.104
Size of HH	5 members or less	323	7.8638	
	6-9 members	291	7.7663	
	10 members +	261	8.0690	0.145
Duration of stay in Banjul/Kanifing	Less 1 yr	22	8.7727	
	1-4 yrs	60	7.8167	
	5-9 yrs	57	7.9123	
	10 yrs +	737	7.8697	0.152
Duration of stay in compound	Less 1 yr	70	8.0857	
	1-4 yrs	155	7.7806	
	5-9 yrs	108	7.8519	
	10 yrs +	543	7.9061	0.698
Food stock	None	184	7.4565	
	Condiments	212	7.9151	
	Cereals	479	8.0501	0.001
Wealth index	Poor	266	7.4173	
	Middle class	302	7.8510	
	Well-off	308	8.3409	<0.001
Possession of animals	No animal	650	7.8954	
	Animals possessed	226	7.8805	0.917
Total		876	7.8916	

Although not significant ($p = 0.271$), women tend to consume slightly more varied diet (mean of 8.0) than men, whose mean is (7.8). Also, respondents in a polygamous relationship ate a more diverse selection of foods (8.5) than either people in a monogamous relationship (7.7) or those who are single (7.1). However, the difference is also not significant ($p = 0.102$).

In both demographic and economic dependency, there is no significant difference ($p = 0.831$ and 0.104) in the diversity of foods eaten in households with low, medium and high dependencies, with an average consumption mean of 7.9 food groups.

The size of the household also does not have an impact on food diversity. However, although not significant ($p = 0.145$), in households with more than 10 people, people consumed on average 8 food groups, compared to 7 food groups in the other categories of households.

With none significant values of ($p = 0.152$) and ($p = 0.698$), duration of stay in either Banjul/Kanifing or compound respectively do not have an effect on the number of food groups consumed.

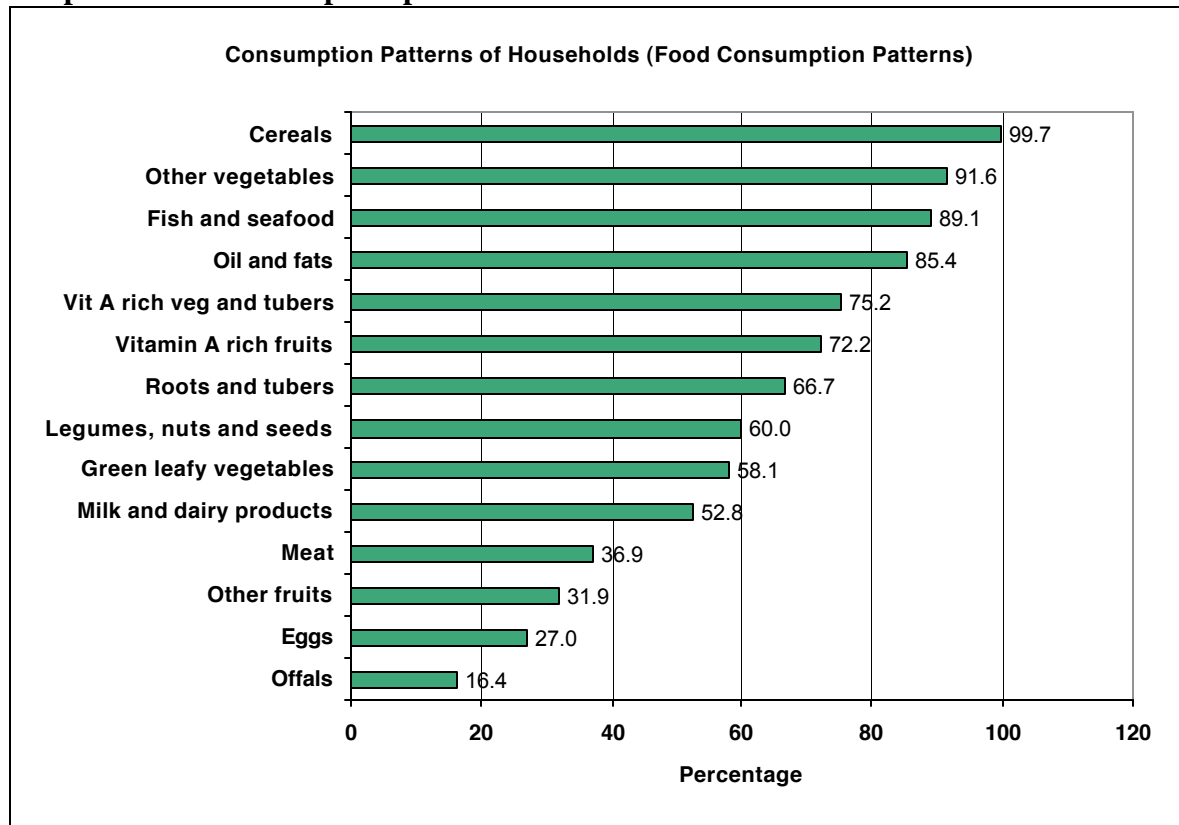
The two variables in which food diversity is significant are Food Stock and Wealth Index ($p = 0.001$ & $p < 0.001$ respectively). Households with stocks of cereals on average consumed 8 food groups compared to 7 food groups for those who stock condiments or those with no stock.

Well-off families also consumed 8 food groups compared to the 7 food groups consumed by poor and middle class families. The possession of animals does not have an impact ($p = 0.917$) on the variety of foods consumed, with both those possessing animals and those without consuming 7 food groups.

7.5 Consumption patterns of households (Individual Dietary Diversity):

The distribution in the graph below shows the details of the foods consumed by the households.

Graph 2: Food consumption patterns of households



Cereals are the most commonly consumed food by the households (99.7%), followed by other vegetables (91.6%). Fish and seafoods are consumed by 89.1% of households while oils and fats are consumed by 85.4%. Offals have the least proportion of household consumption at 16.4%, followed by eggs (27%), other fruits (31.9%) and meat (36.9%).

Vitamin A rich vegetables and tubers, vitamin A rich fruits, roots and tubers, legumes, nuts and seeds, green leafy vegetables and milk and dairy products are consumed by 75.2%, 72.2%, 66.7%, 60.0%, 58.1% and 52.8% of households respectively.

8. Household Food Insecurity Access Scale (HFIAS)

8.1 Measuring Food Insecurity using the HFIAS Index

In 1992, the United States Agency for International Development (USAID) defines ‘Food Security’ as a state in which ‘all people at all times have both physical and economic access to sufficient food to meet their dietary needs for a productive and healthy life’. Due to the complex nature of measuring food insecurity, the USAID’s Food and Nutrition Technical Assistance (FANTA) and its partners identified a set of questions referred to as The Household Food Insecurity Access Scale (HFIAS) to measure access to food and level of food insecurity in the household. The FANTA classification used to assess HFIAS is as shown below in Table 6. The set of questions can be found in the Questionnaire (Appendix 1).

Table 6: FANTA Classification of HFIAS

QV	Never	Seldom	Sometimes	Often
01	A	A	B	B
02	A	B	B	B
03	A	B	C	C
04	A	B	C	C
05	A	C	C	D
06	A	C	C	D
07	A	D	D	D
08	A	D	D	D
09	A	D	D	D

8.2 Categories of Food Insecurity

Table 7: Categories of Food Insecurity using Continuous HFIAS Values

Insecurity Scale	Category A Food secure	Category B Mildly food insecure	Category C Moderately food insecure	Category D Severely food insecure
0	417	0	0	0
1	45	4	2	1
2	0	78	20	1
3	0	32	6	1
4	0	19	25	5
5	0	13	30	4
6	0	0	56	5
7	0	0	25	5
8	0	0	31	10
9	0	0	14	7
10	0	0	26	13
11	0	0	8	10
12	0	0	13	12
13	0	0	1	13
14	0	0	2	5
15	0	0	0	8
16	0	0	0	11
17	0	0	0	4
18	0	0	0	8
19	0	0	0	2
20	0	0	0	1
21	0	0	0	1
23	0	0	0	1
25	0	0	0	1
27	0	0	0	1
Total	462 (46.3%)	146 (14.6%)	259 (26%)	130 (13%)

According to the FANTA classification, less than half (46.3%) of the households are categorized as being food secure, 14.6% as being mildly food in-secure, 26% as being moderately food in-secure and 13% as being severely food in-secure.

8.3 Characteristics of Food Insecurity

Table 8: Food insecurity score according to household background characteristics

		N	Mean	Significance
Sex of HH head	Male	739	3.64	0.289
	Female	258	4.00	
Marital status	Single	20	2.90	0.174
	Monogamous	628	3.78	
	Polygamous	17	1.77	
Demographic dependency	Less 30%	335	3.58	0.302
	30%-50%	323	3.56	
	50%+	337	4.06	
Economic dependency	Less 70%	393	3.84	0.570
	70%+	600	3.67	
Size of HH	5 members or less	325	4.19	0.496
	6-9 members	291	4.49	
	10 members +	260	4.01	
Duration of stay in Banjul/Kanifing	Less 1 yr	28	3.96	<0.001
	1-4 yrs	174	1.50	
	5-9 yrs	58	4.66	
	10 yrs +	737	4.18	
Duration of stay in compound	Less 1 yr	78	4.31	<0.001
	1-4 yrs	267	2.40	
	5-9 yrs	109	4.29	
	10 yrs +	543	4.19	
Food stock	None	303	3.38	<0.001
	Condiments	214	5.85	
	Cereals	479	3.01	
Wealth index	Poor	333	5.20	<0.001
	Middle class	333	3.75	
	Well-off	331	2.24	
Possession of animals	No animal	732	3.73	1.000
	Animals possessed	265	3.73	

There is no significant difference ($p = 0.289$) in the level of food insecurity in households headed by males and in those headed by females. There are also no significant differences in the level of food insecurity in terms of marital status ($p = 0.174$), demographic dependency ($p = 0.302$), economic dependency ($p = 0.570$), number of people in a household ($p = 0.496$) and possession of animals ($p = 1.000$).

However, significant differences are noted in duration of stay in Banjul/Kanifing and duration of stay in a compound ($p < 0.001$), with people living for a duration of 1-4 years in both variables being less food insecure compared to others with less or more duration of stay. With regards to food stock, households with stocks of cereals and surprisingly those with no stocks are less food insecure compared to those with stocks of condiment, a difference that is highly significant with a p value of less than 0.001. As expected, well-off households are also less food insecure than middle class and poor households, also a highly significant difference with a p value of less than 0.001.

9 Anthropometry of Under-fives

All the analyses of the anthropometry for the children are based on indices that used the new WHO reference curves released in 2006.

9.1 Frequency of child malnutrition:

Table 10: Percentages of wasting by age

Child's age	N	Percentage	Significance
0-6 mths	180	7.2	
7-11 mths	83	7.2	
12-23 mths	272	5.5	
24-35 mths	247	3.6	
36-47 mths	217	5.5	
48-59 mths	146	5.5	0.679
Total	1145	5.5	

Weight-for-Height (Wasting) is an indicator of acute malnutrition (malnutrition over a short period of time). These children are lighter than they should have been due to food deprivation or recent illness. Children with acute or recent malnutrition are at risk of becoming seriously ill and therefore needs special attention.

Overall, 5.5% of the children are wasted in this survey. The difference in the prevalence of wasting between the age groups is not significant ($p = 0.679$), although children within the age group of 24-35 months have the lowest wasting rate (3.6%). Children in the age groups of 48-59 months, 12-23 months and 36-47 months have rates of 5.5%, 5.5% and 5.5% respectively. Infants aged 7-11 months and 0-6 months have the highest proportions of wasting at 7.2%. This is unexpected for those aged 0-6 months as they are supposed to be exclusively breastfed with breastmilk being a complete food and providing all the nutrients needed at this age. However, if they are not being exclusively breastfed and not getting enough breastmilk, they are susceptible to becoming malnourished.

For the 7-11 months group, it is hardly surprising as this is a critical stage in the infant's life as they are exposed to more infections. This is the time when they are introduced to complementary foods and drinks, which may be contaminated leading to diarrhoea and infections. They may also not be getting the required energy and nutrients from the complementary feeds.

Table 11: Percentages of wasting by gender

Sex	N	Percentage	Significance
Male	584	5.7	
Female	584	5.3	0.797
Total	1168	5.5	

There is no significant difference in the prevalence of wasting ($p = 0.797$) when comparison is made between the two sexes. In females, 5.3% are wasted, whereas in males, 5.7% are wasted.

Table 12: Percentages of stunting by age

Child's age	N	Percentage	Significance
0-6 mths	181	5.0	0.023
7-11 mths	86	4.7	
12-23 mths	273	15.0	
24-35 mths	247	22.7	
36-47 mths	218	17.4	
48-59 mths	147	14.3	
Total	1152	14.7	

Height-for-Age (Stunting) is an indicator of chronic malnutrition, i.e. long standing malnutrition and gives an indication of the proportion of stunted children who have been exposed to infections or low food intake or a combination of both, over a long term. Stunting usually takes place before the age of two years, and is irreversible in most cases. Not eating the required complementary food often causes growth failure in the second 6 months of life (7 to 12 months) and severe malnutrition in the second year. Children who are stunted are considerably shorter than they should have been for their ages.

The proportion of stunted children is 14.7%. There is a significant difference ($p < 0.05$) in the prevalence of stunting when the different age groups are compared. In the age groups of 7-11 months and 0-6 months, 4.7% and 5% respectively are stunted. Children aged 24-35 months have the highest proportion of stunting (22.7%), followed by those aged 36-47 months (17.4%), then the 12-23 months (15.0%) and the 48-59 months (14.3%).

Table 13: Percentages of stunting by gender

Sex	N	Percentage	Significance
Male	574	16.4	0.02
Female	578	13.0	
Total	1152	14.7	

Unlike wasting, there is a significant difference ($p = < 0.05$) in the prevalence of stunting when the two sexes are compared. A higher proportion of males (16.4%) are stunted compared to 13.0% of girls.

Table 14: Percentages of underweight by age

Child's age	N	Percentage	Significance
0-6 mths	182	3.3	0.0001
7-11 mths	84	3.6	
12-23 mths	276	10.1	
24-35 mths	250	9.2	
36-47 mths	220	10.0	
48-59 mths	149	12.1	
Total	1161	8.6	

Weight-for-Age (underweight) is an indicator of underweight and is a combination of chronic and acute malnutrition. These children have weights that are low for their ages.

Overall, 8.6% of the children were found to be underweight. There is a highly significant difference ($p < 0.01$) in the prevalence of underweight when the children are segregated by age group, with the age groups of 0-6 months and 7-11 months having the least rates at 3.3% and 3.6% respectively.

The 48-59 months group has the highest proportion (12.1%) of underweight children, followed by the 12-23 months group (10.1%), then the 36-47 months group (10.0%) and the 24-35 months group (9.2%).

Table 15: Percentages of underweight by gender

Sex	Underweight status		Significance
	N	Percentage	
Male	579	10.5	0.109
Female	582	6.7	
Total	1161	8.6	

There is no significant difference ($p = 0.109$) in the prevalence of underweight on comparison of the two sexes. However, a smaller proportion of females (6.7%) are underweight compared to 10.5% of males.

Table 16: Percentages of Underweight using MUAC by age

Child's age	N	Percentage	Significance
0-6 mths	16	NA	0.792
7-11 mths	29	NA	
12-23 mths	264	2.7	
24-35 mths	247	3.2	
36-47 mths	219	3.7	
48-59 mths	149	2.0	
Total	924	2.8	

In using MUAC to assess undernutrition, 2.0% of the children were found to be under-nourished. There is no significant difference ($p = > 0.05$) in the prevalence of under-nutrition using MUAC when the children are segregated into age groups. The non applicability for the first two groups (0-6 months & 7-11 months) is due to the fact that MUAC assessment is for children 12-59 months. The 36-47 months and 24-35 months groups have the highest rates at 3.7% and 3.2% respectively. The 48-59 months and 12-23 months groups have rates of 2.0% and 2.7% respectively.

Table 17: Percentages of Undernutrition using MUAC by gender

Sex	N	Percentage	Significance
Male	463	2.8	0.991
Female	461	2.8	
Total	924	2.8	

Again, there is no significant difference ($p = > 0.05$) in the prevalence of under-nutrition using MUAC when the two sexes are segregated. In both males and females 2.8% are under nourished.

9.2 Factors associated with malnutrition:

Table 18: Wasting according to background characteristics

		N	Percentage	Significance
Sex of head of HH	Male	886	5.0	.172
	Female	282	7.1	
Marital status	Single	5	0.0	0.835
	Monogamous	694	5.5	
	Polygamous	47	6.4	
Demographic dependency	Less 30%	248	4.0	0.521
	30%-50%	435	5.8	
	50%+	484	6.0	
Economic dependency	Less 70%	349	6.3	0.422
	70%+	818	5.1	
Size of HH	5 members or less	248	4.4	0.399
	6-9 members	311	5.1	
	10 members +	476	6.7	
Duration of stay in Banjul	Less 1 yr	38	2.6	0.240
	1-4 yrs	188	4.3	
	5-9 yrs	70	1.4	
	10 yrs +	872	6.2	
Duration of stay in compound	Less 1 yr	68	8.8	0.218
	1-4 yrs	295	4.4	
	5-9 yrs	115	2.6	
	10 yrs +	690	6.1	
Food stock	None	319	4.4	0.316
	Condiments	234	4.3	
	Cereals	614	6.4	
Wealth index	Poor	381	4.5	0.349
	Middle class	371	5.1	
	Well-off	416	6.7	
Possession of animals	No animal	843	5.2	0.530
	Animals possessed	325	6.2	
Terciles of FI Score (0-27)	Low level of food insecurity	492	5.3	0.799
	medium level of food insecurity	278	5.0	
	High level of food insecurity	392	6.1	
Fanta classification of FI	Food secure.	540	5.0	0.538
	Mildly food insecure	166	4.8	
	Moderately food insecure	308	7.1	
	Severely food insecure	148	4.7	
Food diversity	1 Less diversified	216	6.5	0.183
	2 Midly diversified	420	6.9	
	3 Highly diversified	396	4.0	

Again, the different variables collected do not seem to have an effect on wasting as none of the p values were significant; (p values: sex of HHH = 0.172; Marital Status = 0.835; Demographic Dependency = 0.521; Economic Dependency = 0.422; Size of HH = 0.399; Duration of stay in Banjul = 0.240; Duration of stay in compound = 0.218; Food stock =

0.316; Wealth Index = 0.349; Possession of animals = 0.530; Food Insecurity = 0.799 & 0.538 and Food Diversity = 0.183).

Table 19: Stunting according to background characteristics

		N	Percentage	Significance
Sex of head of HH	Male	878	14.6	
	Female	274	15.0	0.875
Marital status	Single	4	25.0	
	Monogamous	690	13.8	
	Polygamous	46	19.6	0.456
Demographic dependency	Less 30%	245	14.7	
	30%-50%	430	13.5	
	50%+	476	15.8	0.630
Economic dependency	Less 70%	347	14.7	
	70%+	804	14.7	0.993
Size of HH	5 members or less	246	16.7	
	6-9 members	306	14.4	
	10 members +	467	11.8	0.183
Duration of stay in Banjul	Less 1 yr	38	23.7	
	1-4 yrs	188	18.1	
	5-9 yrs	71	19.7	
	10 yrs +	855	13.1	0.062
Duration of stay in compound	Less 1 yr	69	15.9	
	1-4 yrs	292	17.5	
	5-9 yrs	113	13.3	
	10 yrs +	678	13.6	0.434
Food stock	None	315	16.8	
	Condiments	229	16.2	
	Cereals	607	13.0	0.235
Wealth index	Poor	380	21.6	
	Middle class	365	12.9	
	Well-off	407	9.8	0.000
Possession of animals	No animal	833	14.8	
	Animals possessed	319	14.4	0.882
Terciles of FI Score (0-27)	Low level of food insecurity	489	13.9	
	medium level of food insecurity	269	15.6	
	High level of food insecurity	388	14.7	0.814
Fanta classification of FI	Food secure.	536	13.6	
	Mildly food insecure	159	15.1	
	Moderately food insecure	305	15.4	
	Severely food insecure	146	15.8	0.859
Food diversity	1 Less diversified	211	15.6	
	2 Midly diversified	415	13.0	
	3 Highly diversified	391	13.6	0.659

The only variable in which lower stunting rates of significance ($p < 0.001$) has been observed is in the wealth index variable, where children from well off families have lower stunting rates (9.8%) compared to those from middle class (12.8%) and poor households (21.5%).

In all the other variables, the differences in the rates of stunting are not significant (p values: sex of Household Head = 0.875; Marital Status = 0.456; Demographic Dependency = 0.630; Economic Dependency = 0.993; Size of HH = 0.183; Duration of stay in Banjul = 0.062; Duration of stay in compound = 0.434; Food stock = 0.235; Possession of animals = 0.882; Food Insecurity = 0.814 & 0.859 and Food Diversity = 0.659).

Table 20: Underweight according to background characteristics

		N	Percentage	Significance
Sex of head of Household Head	Male	880	7.7	
	Female	281	11.4	0.057
Marital status	Single	5	20.0	
	Monogamous	690	7.8	
	Polygamous	46	10.9	0.475
Demographic dependency	Less 30%	249	8.8	
	30%-50%	431	9.3	
	50%+	480	7.9	0.758
Economic dependency	Less 70%	348	11.8	
	70%+	812	7.3	0.012
Size of HH	5 members or less	246	10.2	
	6-9 members	313	9.3	
	10 members +	469	8.3	0.707
Duration of stay in the municipality	Less 1 yr	38	5.3	
	1-4 yrs	189	7.4	
	5-9 yrs	71	8.5	
	10 yrs +	863	9.0	0.780
Duration of stay in compound	Less 1 yr	70	8.6	
	1-4 yrs	292	7.2	
	5-9 yrs	115	6.1	
	10 yrs +	684	9.7	0.456
Food stock	None	318	9.1	
	Condiments	235	8.5	
	Cereals	607	8.4	0.932
Wealth index	Poor	381	9.7	
	Middle class	368	9.0	
	Well-off	412	7.3	0.457
Possession of animals	No animal	839	8.3	
	Animals possessed	322	9.3	0.597
Terciles of FI Score (0-27)	Low level of food insecurity	490	6.5	
	Medium level of food insecurity	274	10.2	
	High level of food insecurity	391	10.0	0.104
Fanta classification of FI	Food secure.	537	6.5	
	Mildly food insecure	161	9.9	
	Moderately food insecure	310	10.3	
	Severely food insecure	147	10.9	0.139
Food diversity	1 Less diversified	215	12.6	
	2 Midly diversified	415	8.9	
	3 Highly diversified	396	7.3	0.098

Underweight was found to affect 8.6% of the study population. Underweight according to the sex of the household head was 7.7% for male and 11.4% for female heads. However, the difference in the proportion of underweight is not statistically significant with a p value slightly more than 0.05.

The prevalence of underweight was highest among the single households (20%) followed by polygamous households (10.9%). The lowest rate was among monogamous family households (7.8%). However, there was no significant difference between the marital statuses.

Households with demographic dependence of more than 50% had the lowest proportion of underweight (7.9%) followed by those with less than 30% (8.8%) and in households with 30% - 50% dependence, 9.3% are underweight. Although differences are noted, they are not significant.

In households with less than 70% economic dependence, 11.8% are underweight whilst for those with 70% or more dependence, 7.3% are underweight. This difference is significant at a p value of 0.012.

The prevalence of underweight was highest in households with 5 or less members (10.16%) followed by those with 6 -9 members (9.27%) and households with 10 or more members had 8.32%. There is no significant difference in the prevalence of underweight by household size.

The prevalence of underweight was found to be highest in those households, which stayed longer in the study areas (Banjul and Kanifing Municipalities). As shown on table 8 above, those households with 10 years or more stay in these municipalities had a prevalence of 9.04%, those with 5 – 9 years had 8.45%, those with 1 – 4 years had 7.19% and those with less than 1 year had 5.26%. However this difference in the prevalence of underweight was not statistically significant ($p = 0.78$).

As for length of stay in the current compound, those households with less than 1 year stay had a prevalence of 8.6%. For those who had stayed in the current compound for 1 to 4 years, 5 to 9 years and 10 and more years, the prevalence of underweight was 7.2%, 6.1% and 9.7% respectively. There was no significant difference in the prevalence for the different years of stay ($p = 0.456$).

Households with more food stocks have lesser prevalence of underweight. Households with no food stock have a prevalence of 9.1%, those with condiments have 8.5% prevalence and those with cereals have 8.4% prevalence. This difference was not significant ($p = 0.932$).

The prevalence of underweight according to the wealth index is 9.7% for the poor, 9.0% for the middle class and 7.3% for the well off. This difference was however not statistically significant ($p = 0.457$)

Underweight was higher in households that possessed animals (9.3%) than in those without animals (8.3%). There was no significant difference in the prevalence of underweight in these groups ($p = 0.597$)

For households classified as being food insecure according to the terciles, underweight was highest in those classified as medium level of food insecurity (10.2%) followed by high level of food insecurity (10.0%) and low level of food insecurity (6.5%). The difference in the

prevalence of underweight in the three categories was however, not found to be statistically significant ($p = 0.104$). Using the FANTA classification, the more food insecure a household is, the higher the prevalence of underweight. For those households classified as food insecure, the prevalence of underweight was 6.5%. In households that are mildly food insecure, 9.9% were underweight, in those with moderate food insecurity the underweight prevalence was 10.3% and for the highly food insecure 10.9% were underweight. However, this difference was not statistically significant ($p = 0.139$).

The prevalence of underweight for households classified as having a less diversified diet was 12.6%, households with mildly diversified diets had 8.9% and those which have highly diversified diet, the prevalence of underweight was 7.3%. Even though it is logical that the more varied the diet, the lesser the prevalence of malnutrition, there was no statistical difference in the prevalence of underweight.

Table 21: Under-nutrition using MUAC according to background characteristics

		N	Percentage	Significance
Sex of head of HH	Male	708	2.7	0.665
	Female	216	3.2	
Marital status	Single	5	0.0	0.882
	Monogamous	550	3.3	
	Polygamous	41	2.4	
Demographic dependency	Less 30%	200	2.0	0.402
	30%-50%	343	2.3	
	50%+	380	3.7	
Economic dependency	Less 70%	268	4.9	0.017
	70%+	655	2.0	
Size of HH	5 members or less	192	4.7	0.248
	6-9 members	258	3.5	
	10 members +	372	2.2	
Duration of stay in the municipalities	Less 1 yr	31	3.2	0.473
	1-4 yrs	151	2.0	
	5-9 yrs	59	0.0	
	10 yrs +	683	3.2	
Duration of stay in compound	Less 1 yr	62	3.2	0.971
	1-4 yrs	228	2.6	
	5-9 yrs	92	2.2	
	10 yrs +	542	3.0	
Food stock	None	247	2.0	0.563
	Condiments	189	3.7	
	Cereals	487	2.7	
Wealth index	Poor	305	3.3	0.200
	Middle class	291	3.8	
	Well-off	328	1.5	
Possession of animals	No animal	673	2.7	0.675
	Animals possessed	251	3.2	
Terciles of FI Score (0-27)	Low level of food insecurity	378	1.3	0.066
	Medium level of food insecurity	214	4.2	
	High level of food	327	3.7	

	insecurity			
Fanta classification of FI	Food secure.	416	1.4	
	Mildly food insecure	121	6.6	
	Moderately food insecure	261	3.1	
	Severely food insecure	121	3.3	0.025
Food diversity	1 Less diversified	161	1.9	
	2 Midly diversified	338	3.3	
	3 Highly diversified	322	3.7	0.542

Under-nutrition was also assessed using the mid upper arm circumference (MUAC). Table 21 above shows the prevalence of under-nutrition using MUAC according to background characteristics. Overall, the prevalence of under-nutrition using MUAC is 2.8%, and among households headed by males, 2.7% and 3.2% for female headed households. The difference in these two is not statistically significant ($p = 0.665$).

There was no under-nutrition (0%) amongst the single households. Among monogamous and polygamous households, 3.3% and 2.4% respectively are under-nourished. There is however no significant difference between the different marital statuses ($p = 0.882$).

The prevalence of under-nutrition increased with increasing demographic dependency. As shown on the table above, in households with less than 30% dependency, there was 2.0% under-nutrition; households with 30% - 50% dependency, there was 2.3% under-nutrition and households with more than 50% dependency the prevalence of under-nutrition was 3.6%. However, there was no statistical difference in the prevalence of under-nutrition by demographic dependency ($p = 0.402$).

In the case of economic dependency, households with less than 70% dependency had more under-nutrition (4.9%) than those with 70% or more dependency (2.0%). This is found to be statistically significant at $p = 0.017$.

With regards to the size of households, the prevalence of under-nutrition using MUAC, decreases with increasing size. The prevalence of under-nutrition was 4.6% in households with 5 members or less while it was 3.5% and 2.2% for households with 6 – 9 and 10 or more members respectively. However, there is no significant difference in these prevalences.

The highest prevalence of under-nutrition was observed in households that have lived less than 1 year in the municipalities and those who have been in the municipalities for 10 years or more (3.2%) followed by those that lived there for 1 – 4 years (2.0%) There was no underweight (0%) among households that have lived in the municipalities for 5 – 9 years. There is no significant difference in the prevalence of under-nutrition by length of stay in the municipalities ($p = 0.473$).

The prevalence of under-nutrition was highest in those who have stayed less than 1 year in the current compound (3.23%) followed by 10 years or more (3.0%), 1 to 4 years (2.6%) and 5 to 9 years (2.2%). There is no significant difference noted in the prevalence ($p = 0.971$).

The prevalence of under-nutrition according to the food stock is as follows: none – 2.0%, condiments – 3.7% and cereals – 2.7%. In the case of wealth index, the prevalence of under-nutrition was highest among the middle class (3.8%) followed by the poor (3.3%) and the well off (1.5%). There was no significant difference in either of them ($p = 0.563$ and 0.2 respectively).

Households that possessed animals had a higher prevalence of under-nutrition (3.2%) than those who do not possess animals (2.7%). However, no significant difference in the two prevalence is noted ($p = 0.675$)

For the terciles of food insecurity score, the prevalence of under-nutrition was highest amongst households that have medium level of food insecurity (4.2%) followed by those with high level of food insecurity (3.7%) and low level of food insecurity (1.3%). As for the FANTA classification, those classified as being food secure had a prevalence under-nutrition rate of 1.32%, the mildly food insecure had 6.6%, the moderately food insecure had 3.1% and the severely food insecure had 3.3%. The prevalence of under-nutrition is only significantly different in the FANTA classification of food insecurity with a p value of 0.025.

In the case of food diversity, the prevalence of under-nutrition was 1.86% for the less diverse diets, 3.20% for the mildly diverse diets and 3.72% for highly diversified ($p = 0.542$). This looks like an inverse relationship between under-nutrition using MUAC and the diversity of the diet but the difference is not statistically significant.

10 Anthropometry of Adult women

10.1 Anthropometric indices and basic statistics:

Table 22: Descriptive statistics for adults' anthropometric indices

Statistics	Body Mass Index	Body fatness	MUAC	Waist Hip ratio
N	894	903	905	902
Mean	24.92	31.54	29.00	0.80
Median²	23.95	32	28.8	0.80
Minimum	13.15	3.8	18	0.30
Maximum	48.82	55.1	48	1.91

The table above shows some of the basic statistics on the four anthropometric indices (Mean, median, minimum and maximum values) for adult women. For body mass index, the mean value is 24.9 kg/m² and the median value is 23.9 kg/m². For body fatness, the mean percentage is 31.5% and the median, 32%. The mean and median values for MUAC are very close (29 cm and 28.8 cm). For Waist and hip ratio, the mean and median are of the same value (0.8).

10.2 Anthropometry of adult women and socio-economic characteristics

Table 23: WHO Reference cut-off points for BMI

Status	WHO BMI cut-off points (kg/m ²)
Severe energy deficiency	< 16.0
Chronic energy deficiency	16.0 - 18.5
Normal status	18.5 – 25.0
Overweight	25.0 – 30.0
Obesity	>30.0

The table above shows the WHO cut-off points for Body Mass Index (BMI). This is a reference used internationally.

In using the WHO reference cut-off points for BMI, results of the anthropometric data of the women in Banjul and Kanifing are presented in the pie chart below. The results indicated that only about half (49.7%) of the women in Banjul and Kanifing can be considered to have normal nutritional status. In other words, 42% of the women in the two urban areas have weights above what would be considered normal for their heights with 24.6% being overweight and 17.3% obese. On the other hand, the results have indicated that 7.5% showed chronic energy deficiency and 1% severe energy deficiency (under-nourished).

² The median divides the distribution into two equal parts, with cases ranked in ascending order.

Graph 3: Nutritional status of women based on WHO reference cut-off points

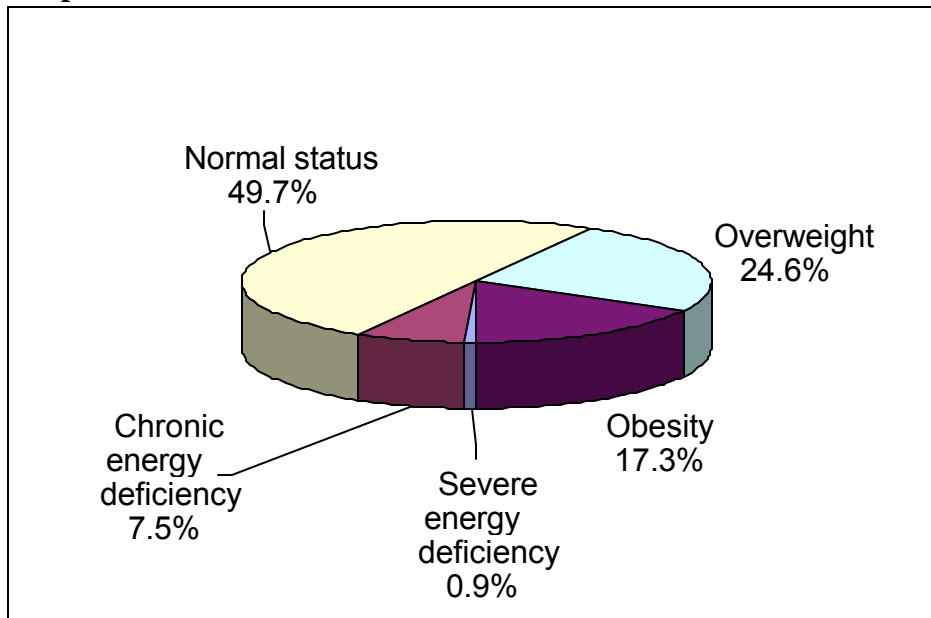


Table 24: Mean values of body mass index by background characteristics

Variables	Items	N	Mean	Significance
Age group	12-20 years	122	22.2905	<0.001
	21-30 years	409	23.7351	
	31-40 years	188	26.1090	
	41-50 years	109	28.3528	
	51 years +	66	28.0607	
Demographic dependency ratio	< 30%	223	25.8022	0.481
	30%-50%	221	25.2021	
	50%+	218	25.2745	
Economic dependency ratio	< 70%	243	25.3705	0.837
	70%+	418	25.4653	
Duration of residence	Non-permanent	279	24.6211	0.002
	Permanent	384	26.0373	
Wealth index	Poor	210	24.2589	<0.001
	Middle class	225	25.1055	
	Well off	228	26.8619	
Household size	1-5 members	178	25.3317	0.696
	6-9 members	171	25.3078	
	10 members & +	220	25.7381	
Level of food insecurity	Food secure	297	25.2195	0.187
	Mildly food insecure	101	26.5272	
	Moderately food insecure	171	25.0933	
	Severely food insecure	89	25.5313	
Residence setting	Kanifing	592	25.2894	0.047
	Banjul	71	26.7088	
Level of food diversity	Less diversified (2-6 grps)	126	25.7529	0.581
	Mildly diversified (7-8 grps)	221	25.1360	
	Highly diversified (9-14 grps)	312	25.5338	

Table 24 shows the mean BMI of the women and their background characteristics. The results show a significant difference ($p < 0.001$) between age group and BMI. The older the

women are, the higher the means of their BMI. A steady increase in BMI with age has been noticed; from 12-20 years old to 41-50 years old, the mean value increases from 22.3 kg/m² to 28.4 kg/m² but for the last age group, the values start to stagnate. This may be due to old age.

A significant difference is also observed in the duration of residence in Banjul and Kanifing (p=0.002). The permanent residents have higher BMI than the non permanent residents (26.0 kg/m² vs. 24.6kg/m²). It has also been shown that the wealth of the family shows a significant difference (p<0.001) to the BMI of the women. As shown on table 24, in comparing those living in poor households to those living in well-off households, BMI increases from (24.3 kg/m²) to (26.9 kg/m²). Although not shown on the table, women living in Banjul the capital, have significantly higher BMI (26.7kg/m²) than those residing in Kanifing (25.3kg/m²).

Aside from these significant relations, there are variables that did not show differences between the women. These are demographic dependency ratio, economic dependency ratio, household size, level of food insecurity and level of food diversity. In this survey, there has not been a straight link between food access in household and BMI of the woman.

10.3 Body fatness

Table 25 : Mean percent body fatness by some background characteristics

Variables	Items	N	Mean	Significance
Age group	12-20 years	125	25.3600	<0.001
	21-30 years	412	29.7595	
	31-40 years	189	34.0836	
	41-50 years	109	36.8789	
	51 years +	68	38.1191	
Demographic dependency ratio	less 30%	224	32.8567	0.504
	30%-50%	224	32.2192	
	50%+	221	31.7855	
Economic dependency ratio	less 70%	245	32.1073	0.726
	70%+	423	32.3804	
Duration of residence	Non-permanent	280	30.6850	<0.001
	Permanent	390	33.4549	
Wealth index	Poor	212	29.7627	<0.001
	Middle class	227	31.7119	
	Well off	231	35.1987	
HH size	1-5 members	179	31.6006	0.357
	6-9 members	173	32.6364	
	10 members & +	221	32.9448	
Level of food insecurity	Food secure	299	32.2709	0.505
	Mildly food insecure	103	33.4825	
	Moderately food insecure	174	31.9799	
	Severely food insecure	89	31.4798	
Residence setting	Kanifing	599	31.9159	0.003
	Banjul	71	35.5155	
Level of food diversity	Less diversified (2-6 grps)	127	32.5488	0.801
	Midly diversified (7-8 grps)	221	32.5104	
	Highly diversified (9-14 grps)	318	32.0226	

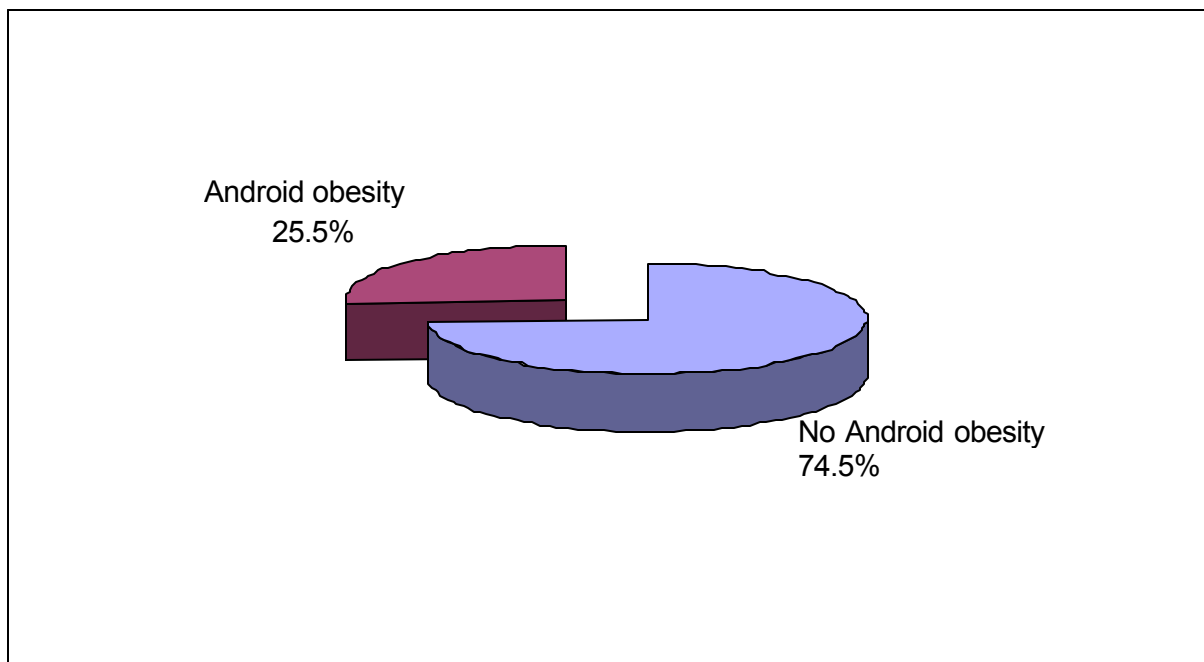
The proportion of body fat increases with age. A steady increase of body fatness as the women aged has been noted. Body fatness increased from 25.4% in age group 12-20 years to

38.1% for those aged 50 years and above. The data also showed that women who resided permanently in Banjul and Kanifing have more body fat than their counterparts (i.e. non permanent) and the difference have been found to be significant ($p < 0.001$).

The body fatness is also shown to depend on wealth index. The wealthier the household, the higher the percentage body fat. The mean value for the poor is 29.8%, while that for the well-off is 35.2% ($p < 0.001$).

10.4 Waist and hip ratio (WHR)

Graph 4: Percentage of central obesity in women ($WHR \geq 0.85$)



This index is estimated by dividing waist circumference by hip circumference expressed in the same unit. It is used to determine what is commonly called "central obesity" or sometimes "android obesity". Even though there is no consensus on the cut-off point for waist/hip ratio (WHR), nonetheless for women, numerous authors³ tend to adopt the threshold of 0.85. Accordingly, this threshold has been used as a reference for this study.

Using the 0.85 ratio as a cut-off point, one fourth of the women seen during the assessment showed central obesity as can be seen on the graph above.

Further looking at the distribution of central obesity with BMI, it appears that there is a significant correlation between the two variables. The proportion of central obesity within those with normal BMI is only 16.5%. The proportion for the over-weight and the obese according to BMI are 32.6% and 44.5% respectively. Central obesity appears to be very common among obese people.

Table 26: Mean values of waist hip ratio by background characteristics

Variables	Items	N	Mean	Significance
Age group	12-20 years	125	0.783139	<0.001
	21-30 years	411	0.794898	
	31-40 years	189	0.807408	
	41-50 years	110	0.842869	
	51 years +	67	0.844610	
Demographic dependency ratio	less 30%	224	0.811879	0.927
	30%-50%	224	0.809835	
	50%+	221	0.808410	
Economic dependency ratio	less 70%	244	0.815089	0.321
	70%+	424	0.807534	
Duration of residence	Non-permanent	281	0.806474	0.383
	Permanent	389	0.812941	
Wealth index	Poor	211	0.804628	0.363
	Middle class	226	0.808436	
	Well off	233	0.817040	
HH size	1-5 members	180	0.825226	0.044
	6-9 members	172	0.800199	
	10 members & +	221	0.808951	
Level of food insecurity	Food secure	300	0.808998	0.771
	Mildly food insecure	102	0.807374	
	Moderately food insecure	174	0.809164	
	Severely food insecure	89	0.820098	
Residence setting	Kanifing	601	0.811125	0.470
	Banjul	69	0.802427	
Level of food diversity	Less diversified (2-6 grps)	127	0.817503	0.232
	Midly diversified (7-8 grps)	223	0.801564	
	Highly diversified (9-14 grps)	316	0.813163	

The distribution of obesity within socio-economic characteristics shows a significant difference with age and household size. The obvious difference with age is understandable. However, the significant difference of obesity with household size is rather interesting and since there is no link with variables associated with living conditions such as wealth index and duration of residence in Banjul and Kanifing, the relation with the size of household should be investigated further.

10.4 Mid-upper arm circumference (MUAC)

The MUAC measure is frequently used to assess under-nutrition status of people especially in cases of emergency or when rapid assessment is required. As with the WHR and Body fatness, there is also no committed cut-off points for MUAC. However, there are references that are commonly used, and are presented in the table below:

Table 27: Adults cut-off points for MUAC

Cut-off points	Nutritional status
< 16.0 cm	Severe under-nutrition
16.0 – 18.5 cm	Moderate under-nutrition
>18.5 cm	Normal situation

The classification of individual values into these brackets presents interesting results as almost all the women are categorized as being in a normal nutritional state. This is rather

astonishing and therefore the results should be confirmed by other studies or use other more sensitive indicators such as those used above. Nonetheless, it should be noted that MUAC takes into account both fat and muscle mass and therefore if one is of normal nutritional status or is over-weight or obese, she will be considered normal using MUAC as an indicator.

Table 28: Mean values of MUAC by background characteristics

Variables	Items	N	Mean	Significance
Age group	12-20 years	124	26.4524	<0.001
	21-30 years	414	27.9599	
	31-40 years	189	30.2751	
	41-50 years	110	32.2327	
	51 years +	68	31.3191	
Demographic dependency ratio	less 30%	225	29.7538	0.165
	30%-50%	225	28.8578	
	50%+	221	29.4127	
Economic dependency ratio	less 70%	245	29.4584	0.622
	70%+	425	29.2584	
Duration of residence	Non-permanent	282	28.7918	0.015
	Permanent	390	29.7564	
Wealth index	Poor	211	28.3512	0.000
	Middle class	228	29.0895	
	Well off	233	30.5142	
HH size	1-5 members	180	29.0772	0.586
	6-9 members	173	29.4416	
	10 members & +	222	29.6081	
Level of food insecurity	Food secure	301	29.1023	0.436
	Mildly food insecure	103	29.8427	
	Moderately food insecure	174	29.1649	
	Severely food insecure	89	29.8303	
Residence setting	Kanifing	601	29.1331	0.001
	Banjul	71	31.2014	
Level of food diversity	Less diversified (2-6 grps)	126	29.8198	0.376
	Mildly diversified (7-8 grps)	224	29.0348	
	Highly diversified (9-14 grps)	318	29.3714	

As seen in table 28 above, MUAC presents a similarity with other indices in its relation with age. It increases significantly until the age of 50 years, and then decreases slightly thereafter. According to place of residence, those who live in Banjul showed higher MUAC measurements than those living in the Kanifing Municipality. Likewise, those who have spent a longer time in their area of residence location and those who have got better conditions in terms of wealth have higher MUACs.

11. Conclusion

There is a paucity of data on food insecurity and diversity in The Gambia and this is an attempt to provide accurate information on food insecurity and diversity albeit in the urban area.

The consequences of food insecurity in a country can be far reaching and in The Gambia data on food insecurity especially in the urban area is rare. The availability of such data will enable informed decision making.

The results of this food vulnerability survey conducted in May 2008 showed that over 50% of households in the urban area of Banjul and the Kanifing Municipality were experiencing some form of food insecurity. About 15% of households were mildly food insecure, 26% moderately food insecure and 13% severely food insecure. From these percentages, one can estimate the absolute number living within these households who are vulnerable or food insecure.

As was expected, well-off households were less food insecure than poorer households. Availability of cereals as food stock in the household have been shown to render these households less food insecure. The number of years household members have stayed in the urban area or the compound they live seems to have a profound effect on the level of food insecurity as those living in Banjul and Kanifing or living in the individual compounds for between 1-4 years were found to be less food insecure.

Even though the economic dependency ratio is very high, and may result in people not having enough food to eat both in terms of quantity and quality, the impact on food insecurity was not significant. It was also expected that demographic dependence, number of people living in the household and probably which of the sexes heads a household would have an effect on food insecurity but no significant difference was found. The study also found that possession of animals does not have a significant effect on the levels of household food insecurity.

Adequate dietary intake is essential for the best possible state of health and this can be achieved through the consumption of diverse food items in moderation. The under-consumption or over-consumption of food energy and other nutrients may lead to malnutrition a problem many governments the world over are concern with.

Cereals remain the most commonly consumed food in The Gambia as 99.7% of all households consume cereals. The consumption of cereals by almost every household is not surprising, as rice is the staple food in the country.

Because of the nutrition transition where overweight and obesity and all its risk factors are becoming a major concern, the consumption of oils and fats are becoming very important. This survey has shown that even the least diversified food group (2 -6 food groups) contains oil and fat. Eighty five percent of the households in the urban areas consumed fats and oils.

Anecdotal evidence in the past has shown that Gambians do not consume their fruits and vegetables. However this survey has shown that 92% of households do consume vegetables, with 72.2% consuming vitamin A rich fruits and 32%, fruits other than those rich in vitamin A.

The high consumption of fish and sea food (89%) is to be expected in The Gambia as fish is one of the cheapest and most available source of protein especially in the urban areas which is closest to the Atlantic Ocean. However, the low consumption of offal (16%), eggs (27%), meat (37%) and other fruits such as apples (32%) may be attributable to the high cost of these foods.

The number of food groups consumed by the household members has been used as an indicator for how varied the diet of the members are. Both wealth of the family and the presence of food stock in the form of cereals has significant impact on the variety of foods consumed as well-off families and those with stocks of cereal consume on average foods from 8 groups instead of 7.

The 5.5% prevalence of wasting or acute malnutrition in Banjul and Kanifing is rated as medium prevalence according to the WHO classification. It is rather surprising that lower wasting rates of significance were not found in children from households deemed to be well off, food secure and diversified, and less demographically and economically dependent.

Stunting, an indicator of chronic or long standing malnutrition, was found in 14.7% of the children under five and according to WHO, this is considered low prevalence. The variable with the lowest prevalence of stunting of statistical significance is the level of wealth of the household.

Underweight, a possible combination of both acute and chronic malnutrition was seen in 8.6% of the children. This according to WHO references for classifying malnutrition among population groups is low. None of the variables considered apart from food insecurity using the FANTA classification seems to have a significant effect on the level of underweight.

Nutritional status of the children was also assessed using the mid-upper arm circumference (MUAC) and overall 2.8% of the children were found to be under nourished. The only variable with significant impact on the level of under-nutrition using MUAC is the FANTA classification of food insecurity. This is consistent with underweight (above) in that malnutrition is more prevalent in households that were found food insecure.

Overweight and obesity have been known to be risk factors for hypertension, diabetes and cardiovascular diseases. About 25% of the women living in the urban area of Banjul and Kanifing were found to be overweight and 17% obese. Under-nutrition in the form of energy deficiency was also found in about 9% of the women. This is an indication that both over nutrition and under-nutrition co-exist in The Gambia.

There appears to be a relationship between BMI, body fatness and age. As age increases so does the mean BMI and the body fatness of the women. The duration of stay in these two urban areas also has a significant relationship with BMI and body fatness as those who have stayed permanently in the urban area have higher BMI means and body fat. Those living in Banjul have also shown higher means of overweight. The level of wealth of a household has been seen to have an impact on BMI and amount of body fat. Women from poorer households have lower BMI and body fat than those from the middle class or well-off households. This phenomenon is different from the trend seen in affluent/developed countries where the prevalence of obesity is inversely related to wealth.

Both for BMI and body fatness, it is noticed that the same variables; demographic dependency ratio, economic dependency ratio, household size, level of food insecurity and level of food diversity were not found to be relevant in explaining them.

Central or android obesity appears to be common (25.5%). Central obesity (obesity in the waist and hips) is particularly associated with cardiovascular disease and is known to be the most common cause of insulin resistance (van der Sande 2001). This survey has shown that overweight and obese women have a higher proportion of central obesity.

As can be seen, the level of wealth has a lot of bearing on the living conditions of families in the urban area. In Banjul and Kanifing, the main source of revenue is from commercial activities (53.4%) with salaries at 42.7%, an indication that the majority of the household members fend for themselves. This is coupled with a high economic and demographic dependency with more than 70% of the household members economically depending on the breadwinners. This may be responsible for more than half of the households not being able to have stocks of cereals.

The Gambia has not yet witnessed the proliferation of big fast food chains yet. Although street foods are popular in the urban areas, eating at home, usually with family members, is still very popular and the majority of household members (98.9%) consume food cooked at home.

The main source of drinking water is from tap water and close to ninety percent of the water comes from privately owned taps, shared taps or public stand pipes. As for toilets, almost all the households have toilets.

Electricity remains the main source of lighting in Banjul and Kanifing (58.1%). However, over a third (36.3%) of the households use candle as their main source of lighting. Even where food items are available, these have to be cooked and this study has shown that the majority of households (57.9%) depend on firewood and 35.2% on charcoal for cooking. Only 6.9% use electricity or gas and this may be because of the cost.

Radio and television can be the best medium of communication especially for informing and educating the population. However, a quarter of the households in the City of Banjul and the Kanifing Municipality reported not having a radio set. As for a television, up to 53% of the households did not have a television. This is an indication that even though a quarter of the households do not have a radio set, radio remains the most common form of acquiring information through the electronic media.

12. Recommendations :

- It is important that for 2009, the survey be repeated to determine if the results will be consistent
- It will also be important to adapt and adopt the food vulnerability survey in The Gambia as a means of vulnerability surveillance for the entire country as NaNA and its partners have proven that the tools can be acceptably used in The Gambia
- Given the absence of a surveillance system on nutrition and food security in urban areas, the VAMU survey can be an integral part of national planning to help formulate strategies concerning specifically the urban dwellers.

Appendices

Appendix 1: The Questionnaire



FOOD VULNERABILITY SURVEY IN URBAN AREAS SESSION 1, QUICK SURVEY

This session is funded by the CILSS

EA | | | | | Compound | | | Household | | | Date : | | | | | _08_ Enumerator : | | |
Surname/Forename of the
HH: _____

GPS Coordinates at compound entrance: 28P | | | | | UTM | | | | |

GENERAL QUESTIONNAIRE FOR HOUSEHOLDS

QG01	Does the head of the household live here for at least 6 months /year and at least 2 nights/week? 1.yes 2.no	
------	--	--

Respondent : 1.HH 2.spouse 3.others | | | Sex : 1.male 2.female | | | Age : | | | Forename: _____

GENERALITIES		
QG02	Age of the head of the household (years)	
QG03	Sex of the head of the household (HH) 1.male 2.female (if 2, go to QG05)	
QG04	Number of spouses of the HH living in this compound	
QG05	Number of children below 15 years of age fed and lodging with the household	
QG06	Number of other individuals of 15 years and above (apart from the HH and spouses counted in QG04) fed and lodged	
QG07	Total Number of people in the household	
QG08	Number of people contributing to the household's expenses (regularly or <u>not</u>)	
QG09	Number of dependent people in the household (= people who do not earn money)	
QG10	"Regular" income (+) 00.none 01.salary 02.retirement pension 04.remittance 08.regular remunerative work 16. regular commercial activity 32. rent or others (+)	
QG11	Health insurance 1.yes 2.no	
QG12	How long has the HH been living in Banjul/KMC? 00.< 1 year ; 99. always; if other cases apply, please indicate the number of years (rounded down to the nearest year) : 01, 02, 03.....	
QG13	How long has the HH been living in this compound? 88.< 6 months 00. between 6 month and 1 year 99. always If there is another case, indicate the number of years : 01, 02, 03	
QG14	Currently, the dishes consumed are most often ? 1.cooked at home 2. ready made dishes 3.Given	
QG15	Food stocks 1. none 2.yes, a little (some condiments for at least 2 days) 3.yes, cereal stocks of at least 20kg, already touched or not	
HOUSING (1)		
QG16	Roof 1.with a ceiling put in 2.sheet metal or equivalent (equally good) without ceiling 3.fences of woven straw/live fence 4.others (specify)	
QG17	Walls 1.permanent construction (concrete, cement, stone) 2.Mud blocks 3.beaten earth/adobe 4.timber, plants, mats 5.others (specify)	
QG18	Floor 1.tiled floor/lino/fitted carpet 2.cement 3.beaten earth 4.others (spec.)	
QG19	Kitchen 1.Indoor kitchen 2.outdoor Kitchen 3.no place demarcated to serve as kitchen	
QG20	Cooking fuel (+) 1.electricity 2.gas 4.paraffin 8.charcoal 16.fuelwood 32.others (specify) (+)	

QG21	Main source of drinking water supply	1.mineral water 2.private/own tap 3.shared tap 4.standpipe 5.well 6.borehole 7.purchase of water in drum from vendors 8.pond/backwater/dam/watercourse/rain 9.others (specify)	___
QG22	Best source of lighting used	1.electricity 2.generator 3.batteries 4.gas 5.paraffin 6.candle 7. solar panel 8.others (specify) (if different from 1, go to QG24)	___
QG23	Electricity : total amount of the household's bill for the last month (dalasis)		___
QG24	Possession of toilets	1.modern toilets with flush 2. constructed toilets 3.pit in the plot of land 4. no toilet	___

QG25	Possession of showers	1. modern indoor showers (with showerhead) 2. simple indoor showers 3. outdoor showers 7. no showers	___
QG26	number of rooms (lounge, rooms, dining room)		___
QG27	state of the construction	1.completed 2.uncompleted	___
QG28	type of tenure/tenancy	1.owner with title deed 2. owner without title deed 3.tenant 4.lodged by the employer 5.lodged for free by a third party 6.hire purchase 7.others (specify)	___
QG29	type of compound	1. family compound with one household 2. family compound with several related households 3. Compound with several unrelated households	___
QG30	Wastewater disposal	1.pit or cesspool 2.gutter 3.road 4.others (Specify.....)	___
QG31	storage of household refuse	1.rubbish heap in the compound 2.Bin (drum) in the compound 3. dumping in the street 4. rubbish heap in the street 5. refuse body/drums in the street 6.others (specify)	___

CONSUMER GOODS possessed by the entire household

QG32	bike (indicate the number)		___
QG33	moped or motorcycle (indicate the number)		___
QG34	car, van or lorry (indicate the number)		___
QG35	radio set (indicate the number)		___
QG36	mobile phone (indicate the number)		___
QG37	cooker (gas or electric)	1.yes 2.no	___
QG38	lounge (armchairs and sofa)	1.yes 2.no	___

if there is electricity (electricity grid, generator, batteries or solar panels) :

QG39	fan (indicate the number)		___
QG40	refrigerator	1.yes 2.no	___
QG41	freezer (separate)	1.yes 2.no	___
QG42	TV set	1.yes 2.no	___
QG43	Hi-Fi (system)	1.yes 2.no	___
QG44	Computer	1.yes 2.no	___
QG45	home telephone	1.yes 2.no	___
QG46	air conditioner	1.yes 2.no	___

ANIMALS (apart from pets like dogs and cats)

QG47	chicken and other poultry	0.none 1. 1 bird, 2. 2 birds, 3. 3 birds, 4. 4 birds, 5. 5 birds, 9. >5 birds	___
QG48	sheep	0.none 1. 1 sheep, 2. 2 sheep, 3. 3 sheep, 4. 4 sheep, 5. 5 sheep, 9. >5 birds	___
QG49	goat	0.none 1. 1 goat, 2. 2 goats, 3. 3 goats, 4. 4 goats, 5. 5 goats, 9. >5 goats	___

QG50	ox	0.none 1. 1 ox, 2. 2 oxen, 3. 3 oxen, 4. 4 oxen, 5. 5 oxen, 9. >5 oxen	_ _ _
QG51	pig	0.none 1. 1pig, 2. 2 pigs, 3. 3 pigs, 4. 4 pigs, 5. 5 pigs, 9. >5 pigs	_ _ _
QG52	others (indicate the nature + number)	0.none 1. 1 animal, 2. 2 animals, 3. 3 animals, 4. 4 animals, 5. 5 animals, 9. >5 animals	_ _ _
VEGETATION			
QG53	vegetation in the compound(+)	0.No 1. fruit tree (mango tree, shea tree...) 2.non-fruit tree or ornamental plants 4.food garden (+)	_ _
URBAN AGRICULTURE			
QG54	picking of wild plants	1.never or practically never 2.sometimes 3.often	_ _
QG55	plot cultivated by the household	1.yes 2.no (if no, move on to the questionnaire on diversity)	_ _
QG56	Ownership	1.owner-occupied 2.renting 3. loan	_ _
QG57	Plot size	1.small (<1/4 ha) 2.average 3.large (>=1ha)	_ _
QG58	Surface area, if known	_ _ _ _ _ _ _ m ²	
QG59	distance plot-house	_ _ _ _ km	
QG60	type of crop (+)	01.vegetable gardening 02.cereals 04.sesame/groundnut 08.in backyard farms 16.others (specify) (+)	_ _ _
QG61	utilization (+)	01. sale 02. home consumption 04.barter 08.donation 16.other (specify) (+)	_ _ _

FOOD DIVERSITY OF ADULT WOMEN

respondant : 1.youngest mother with child <5years 2.youngest mother 3. youngest spouse 4.youngest woman >=15 years 5.Man

Forename: _____

Age :

QD00	<u>Yesterday, have you eaten in an unusual way compared to the other days of the week?</u> (festival, ceremony, or conversely unusual absence of meal)	1.yes 2.no <input type="checkbox"/>
------	---	--

We are interested in all what you have eaten or drank yesterday, from the time you woke up yesterday morning until that of this morning. What have you consumed ?

Wakin up/breakfast	morning	lunch	afternoon	dinner	evening/night

Did what you eat and drink yesterday, at home or elsewhere, at anytime, include... ?

			YES	NO	DNK*	in case there is a doubt, specify
QD01	CEREALS	White sorghum, red sorghum, millet, rice, maize, pasta (macaronis..), wheat (couscous, bread, round flat cake/buscuit...), findi...	1	2	3	
QD02	ROOTS AND TUBERS	White sweet potato, potato, yam, cocoyam, other tubers , cassava (attiéké -dried and cooked cassava, Ivorian speciality- gari), + plantain (fried plantain)	1	2	3	
QD03	LEGUMES	Beans (cowpea), Bambara groundnut, garden pea, lentil, other grain legumes	1	2	3	
QD04	NUTS AND SEEDS	Groundnut (paste or others), soybean, sesame, cashew nuts, shea kernels, wild nuts, cotton seeds, palm seed...	1	2	3	
QD05	VITAMINE A-RICH VEGETABLE	Gourd/squash, pumpkin, carrot, red pepper, sweet potato with orange-coloured flesh	1	2	3	
QD06	LEAFY VEGETABLES	Red sorrel, amaranth, salad, baobab leaves, Corchorus, spinach, onion leaf, bean leaf, cassava leaf and sweet potato leaves, etc. + any wild leaf, kapok, etc.	1	2	3	
QD07	OTHER VEGETABLES	Tomatoes (except for concentrated tomato), fresh or dry okra, eggplants/aubergines, courgettes, cucumbers, cabbage, turnips, onions, green pepper, green/French beans...	1	2	3	
QD08	VIT A-RICH FRUITS	Mango, red/orange-coloured papaya, orange-coloured melon , locust bean tree (fruits or flour)	1	2	3	
QD09	OTHER FRUITS	Pinapple, banana, goyava, dates, watermelon, sugar cane, custard apple/sweetsop, orange, lemon, etc., fresh fruit juice (squeezed fruits), wild fruits («wild grape», tamarind, "monkey bread"/fruit of baobab tree, etc.)	1	2	3	

QD10	VIT A-RICH OIL	Red palm oil	1	2	3	
QD11	OTHER OILS AND FATS	Vegetable oil (sauces, seasoning, fried food), butter (milk or shea), margarine, mayonnaise, bacon, lard...	1	2	3	
QD12	EGGS	Chicken, guinea fowl, quail eggs...	1	2	3	
QD13	DAIRY PRODUCTS	Fresh milk, powdered milk, sweetened condensed milk or evaporated milk, yoghurt, cheese, Sour milk, cream...	1	2	3	
QD14	LIVERS / RED OFFALS (ORGAN MEAT)	Liver (veal, mutton, poultry,,), red offals (heart, kidneys, spleen, lungs) and blood sausage	1	2	3	
QD15	OTHER OFFALS	Offals other than red offals (tripes, ox tail, etc.)	1	2	3	
QD16	MEAT AND POULTRY	Beef, mutton, goat meat, pork (including delicatessen), tongue, rabbit, game, chicken, guinea fowls...	1	2	3	
QD17	FISH AND SEA FOOD	Fresh, smoked, salted, dried fish (except for a pinch), tinned food (sardines, tuna..), any sea food	1	2	3	
QD18	SIMPLE SUGAR	Caster or lump sugar (in tea, coffee, porridge...), sweetened beverages (soft drinks, bissap, ginger...), sweetened condensed milk, honey, jam, sweets, sweetened cakes... ?	1	2	3	
QD19	ALCOHOLIC BEVERAGES	Beer, millet beer (made from red sorghum), palm wine, wine, sangria, pastis, whisky, etc.	1	2	3	
QD20	CONDIMENTS	concentrated tomatoes, Maggi sauce, Netetu (Locust bean), hot pepper...	1	2	3	
QD21	OTHERS	Another food not mentioned. If yes, specify:	1	2		

* Does not know= the person does not know whether an item of a given food group was part of one of the dishes consumed; or if the enumerator does not know how to classify a specific food; or if he is not sure that the quantity was sufficient enough to consider the food. In any case, this code should be used as less as possible and be always accompanied with necessary details

LEVEL OF FOOD INSECURITY OF THE HOUSEHOLD

respondant : 1.first spouse 2.HH 3.second spouse 4.others ; if others, sex : 1.male 2.female

Forename: _____

Age : ||

For each of the following questions, consider what happened during the past 30 days. Please tell if:

- it **never** happened during the past 30 days

- it did happen

If it happened, please tell if :

- it **rarely** happened: only once or twice during the past 30 days

- it happened **sometimes** : from time to time during the past 30 days (3 to 10 times)

- it happened **often**: almost everyday during the past 30 days (11 to 30 times)

For QV01 : rarely= minor concern, sometimes= notable concern, and often = very great concern which lasted.

N°	Questions	Possible answers	Code
QV01	during the past 30 days, have you been worried that your household would not have enough food?	0.never 1.rarely 2.sometimes 3.often	<input type="text"/> <input type="text"/> <input type="text"/>
QV02	during the past 30 days, for lack of resources (money), were you or any member of your household unable to eat kinds of foods that you usually like to consume ?	0.never 1.rarely 2.sometimes 3.often	<input type="text"/> <input type="text"/> <input type="text"/>
QV03	during the past 30 days, for lack of resources, did you or any member of your household eat the same thing everyday?	0.never 1.rarely 2.sometimes 3.often	<input type="text"/> <input type="text"/> <input type="text"/>
QV04	during the past 30 days, for lack of resources, have you or any member of your household eat foods that you preferred not to eat ?	0.never 1.rarely 2.sometimes 3.often	<input type="text"/> <input type="text"/> <input type="text"/>
QV05	during the past 30 days, for lack of food, have you or any member of your household eat a smaller meal than you felt you needed ?	0.never 1.rarely 2.sometimes 3.often	<input type="text"/> <input type="text"/> <input type="text"/>
QV06	during the past 30 days, for lack of food, have you or any other household member reduced the number of meals usually consumed per day?	0.never 1.rarely 2.sometimes 3.often	<input type="text"/> <input type="text"/> <input type="text"/>
QV07	during the past 30 days, for lack of food, have you or any member of your household gone to bed at night while being hungry?	0.never 1.rarely 2.sometimes 3.often	<input type="text"/> <input type="text"/> <input type="text"/>
QV08	during the past 30 days, was there ever no food at all in your household because there were no resources to get more ?	0.never 1.rarely 2.sometimes 3.often	<input type="text"/> <input type="text"/> <input type="text"/>
QV09	during the past 30 days, for lack of resources, did you or any member of your household go a whole day without eating anything ?	0.never 1.rarely 2.sometimes 3.often	<input type="text"/> <input type="text"/> <input type="text"/>

QA15	Height (cm)	_ _ _ _ _ _ _ _	_ _ _ _ _ _ _ _	_ _ _ _ _ _ _ _	_ _ _ _ _ _ _ _	_ _ _ _ _ _ _ _	_ _ _ _ _ _ _ _
QA16	Weight (kg)	_ _ _ _ _ _ _ _	_ _ _ _ _ _ _ _	_ _ _ _ _ _ _ _	_ _ _ _ _ _ _ _	_ _ _ _ _ _ _ _	_ _ _ _ _ _ _ _
QA17	Body fatness (%)	_ _ _ _ _ _ _ _	_ _ _ _ _ _ _ _	_ _ _ _ _ _ _ _	_ _ _ _ _ _ _ _	_ _ _ _ _ _ _ _	_ _ _ _ _ _ _ _
QA18	MUAC (cm)	_ _ _ _ _ _ _ _	_ _ _ _ _ _ _ _	_ _ _ _ _ _ _ _	_ _ _ _ _ _ _ _	_ _ _ _ _ _ _ _	_ _ _ _ _ _ _ _
QA19	Waist circumference (cm)	_ _ _ _ _ _ _ _	_ _ _ _ _ _ _ _	_ _ _ _ _ _ _ _	_ _ _ _ _ _ _ _	_ _ _ _ _ _ _ _	_ _ _ _ _ _ _ _
QA20	Hip circumference (cm)	_ _ _ _ _ _ _ _	_ _ _ _ _ _ _ _	_ _ _ _ _ _ _ _	_ _ _ _ _ _ _ _	_ _ _ _ _ _ _ _	_ _ _ _ _ _ _ _

* Handicap, which can affect height measurement

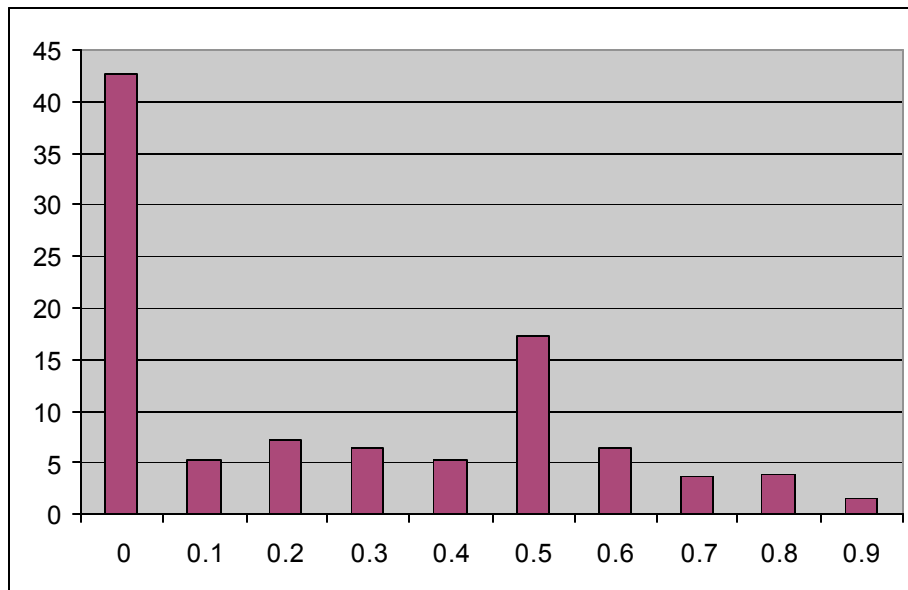
Appendix 2 : Data Quality

Table 29: References of cut-off points for underfives anthropometric indices

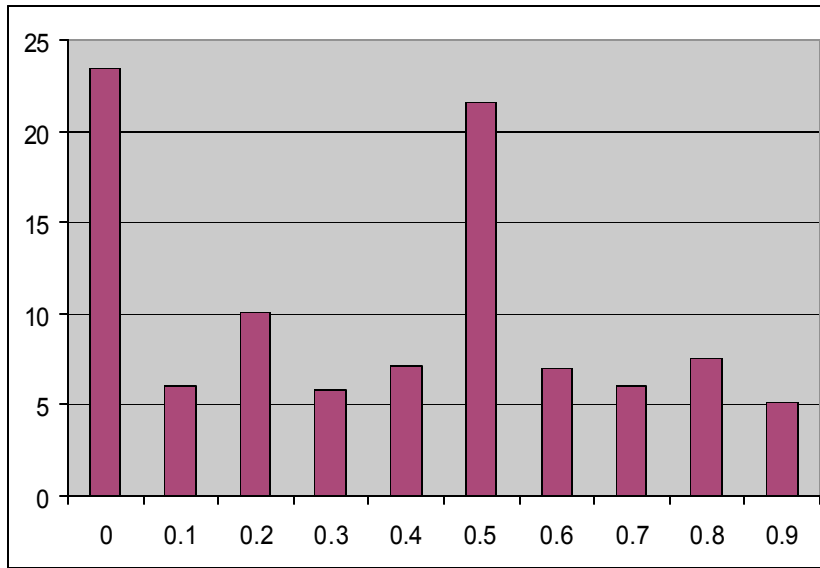
<i>Index</i>	<i>Cut-off points for zscore</i>	<i>Cut-off points for standard deviation of zscores</i>
Weight-for-height	[-5 ; 5]	[1,08 ; 1,55]
Weight-for-age	[-6 ; 5]	[1,17 ; 1,46]
Height-for-age	[-6 ; 6]	[1,35 ; 1,95]
MUAC	[-5 ; 5]	[1,08 ; 1,55]

According to the comparison of these reference values and those observed (table in appendix), data quality is low for weight-for-height, height-for-age, but it is better for weight-for-age and MUAC.

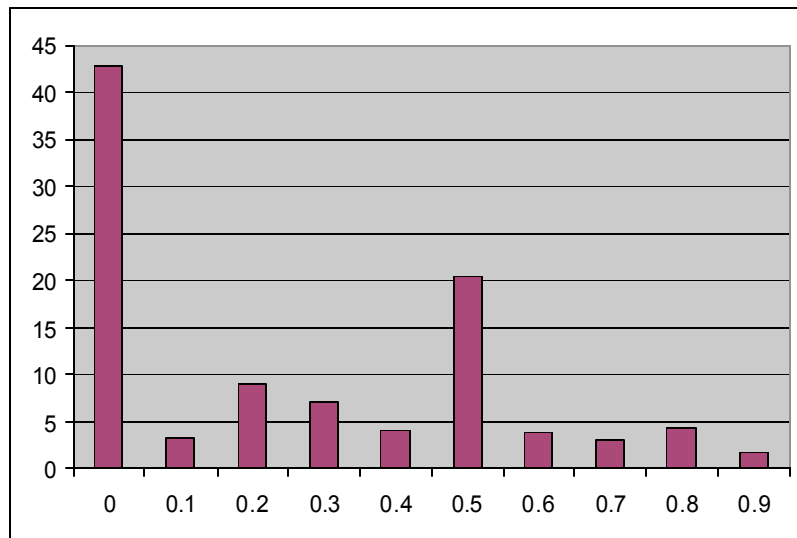
Graph 5: Quality of height measurements using decimal points



Graph 6: Quality of weight measurements using decimal points



Graph 7: Quality of muac measurements using decimal points



Graph 8: Age of underfives in months

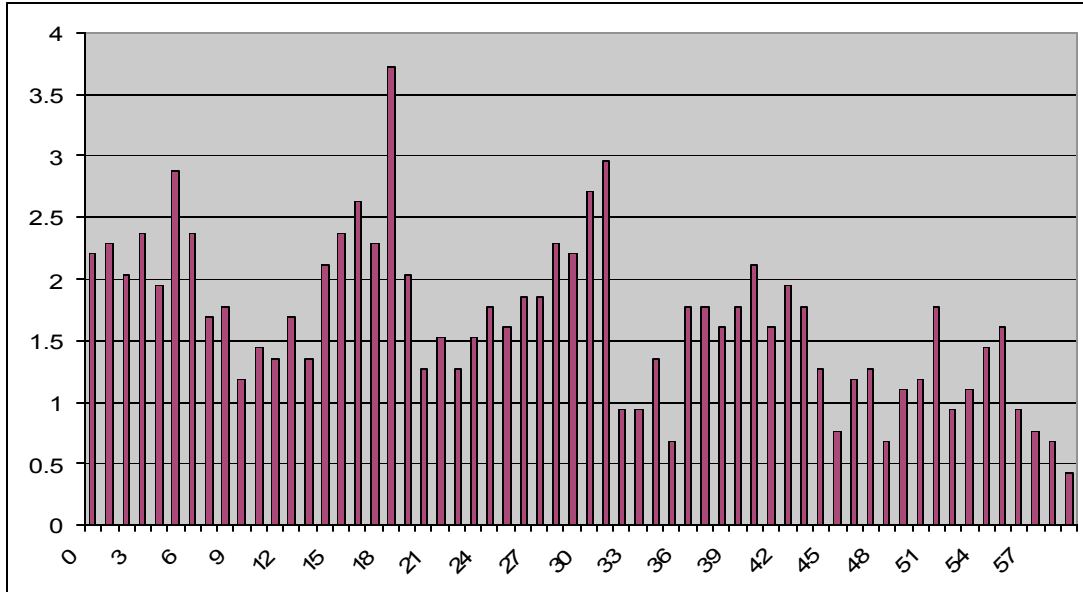
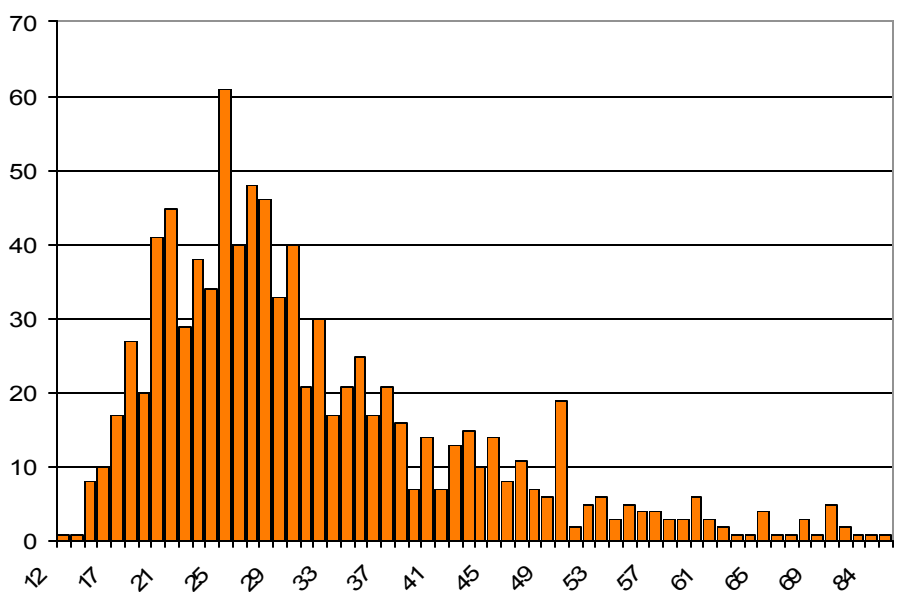


Table 30: Observed standard deviation values for underfives antropometry

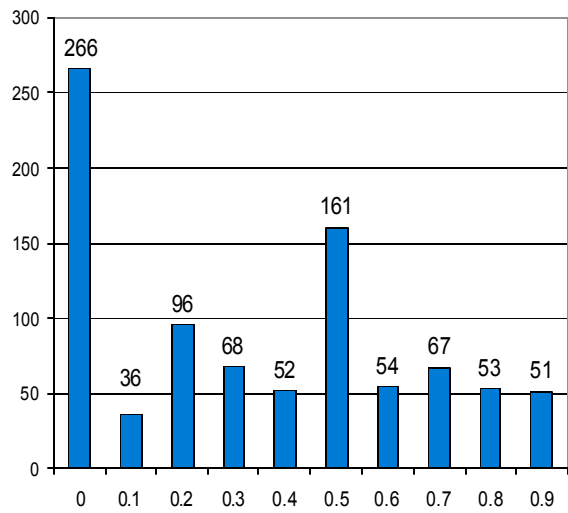
	N	Minimum	Maximum	Mean	Std. Deviation
whz	1168	-4.92	4.42	-0.20574486	1.16829787
haz	1152	-5.13	5.96	-0.61101562	1.49960977
waz	1161	-5.77	5	-0.47232558	1.20633676
muacz	924	-4.33	3.34	-0.08584416	1.02865839

Data quality of measurements for adults :

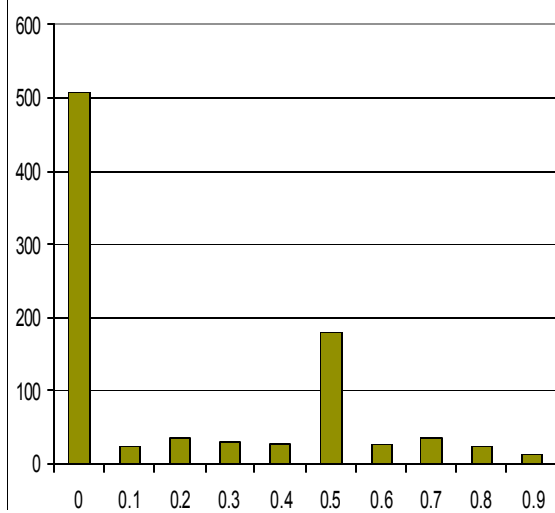
Table 31: Distribution of women's age



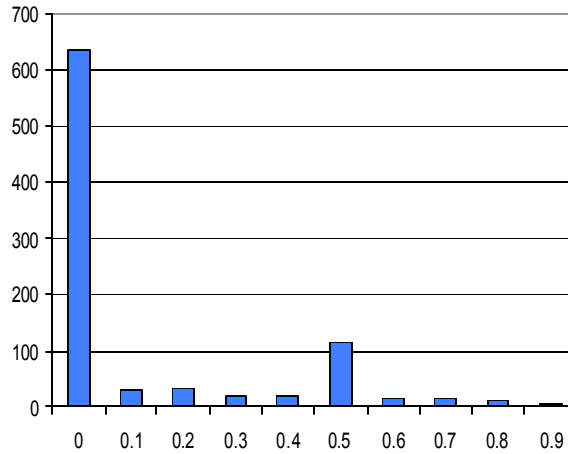
Graph 9: Decimal numbers for adults' measures



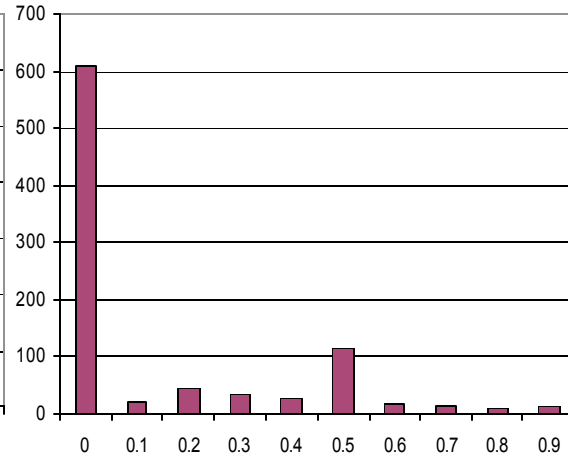
Graph 10: Decimal number for MUAC height measurements



Graph 11: Decimal number for waist number for measurements

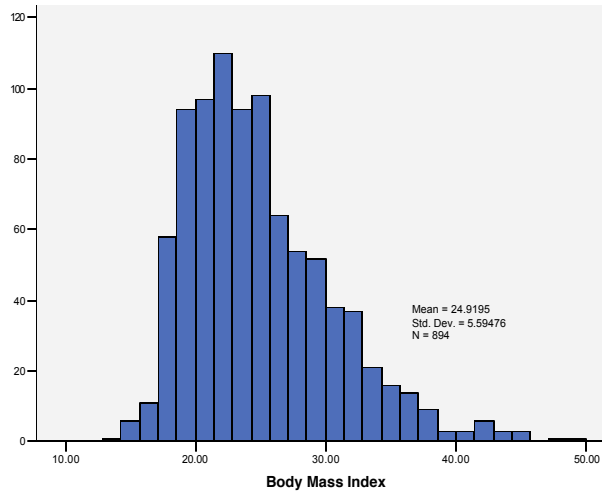


Graph 12: Frequency of decimal hip measurements

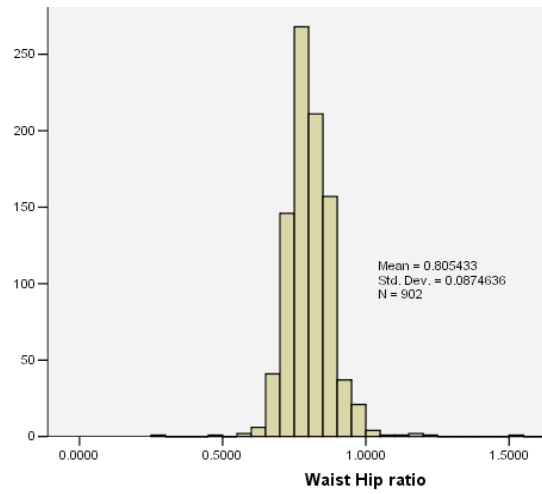


- Description of the distributions of anthropometric measures

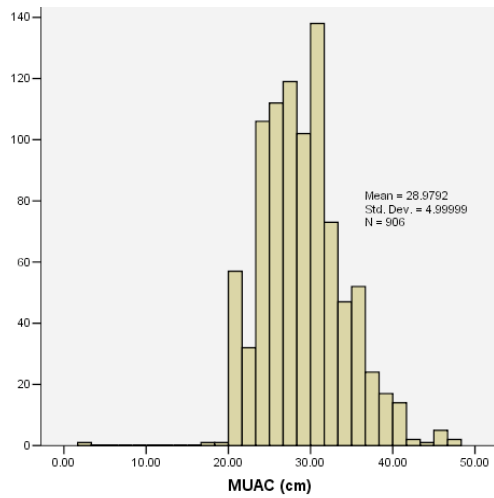
Graph 13: Distribution of body Mass Index ratio



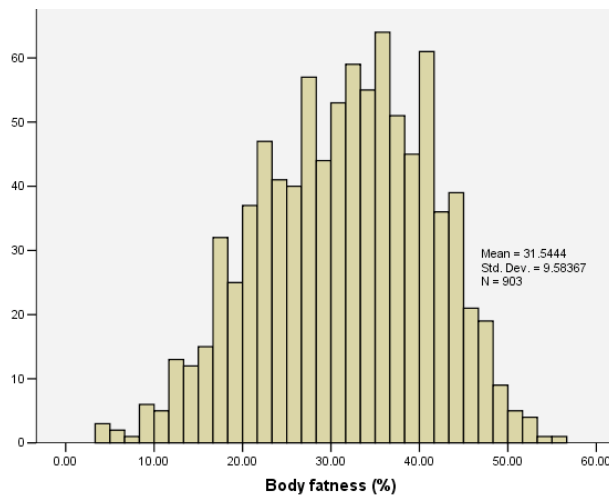
Graph 14: Distribution of Waist Hip ratio



Graph 15: Distribution of MUAC



Graph 16: Distribution of percentage of body fatness



Appendix 3: The Food Groups used in the Analysis

Table 31: Correspondence between the 14 analysis food groups and the 20 observation food groups

<i>Num.</i>	<i>Analysis food groups</i>	<i>QD</i>	<i>Observation food groups</i>
01	Cereals	01	Cereals
02	Vitamin A rich vegetables and tubers	05	Vitamins A rich vegetables
03	White roots and tubers	02	Roots and tubers
04	Leafy vegetables	06	Leafy vegetables
05	Other vegetables	07	Other vegetables
06	Vitamin A ⁺ rich fruits	08	Vitamin A rich fruits
		10	Vitamin A rich fruits (Red palm oil)
07	Other fruits	09	Other fruits
08	Offals	14	Livers/red offals (organ meat)
		15	Other offal/insects
09	Meat	16	Meat and poultry
10	Eggs	12	Eggs
11	Fish and other seafood	17	Fish and seafood
12	Legumes, nuts and seeds	03	Legumes,
		04	Nuts and seeds
13	Milk and dairy products	13	Dairy products
14	Oils and fats	11	Other oils and fats

Appendix 4 : Nutrition indices' z-score means

Table 32: Wasting z-score (means) according to background characteristics

		N	Mean	Significance
Sex of head of HH	Male	886	-0.2205	
	Female	282	-0.1595	0.446
Marital status	Single	5	-0.8040	
	Monogamous	694	-0.2282	
	Polygamous	47	-0.1477	0.496
Demographic dependency	Less 30%	248	-0.1156	
	30%-50%	435	-0.2517	
	50%+	484	-0.2086	0.341
Economic dependency	Less 70%	349	-0.2140	
	70%+	818	-0.2022	0.874
Size of HH	5 members or less	248	-0.2542	
	6-9 members	311	-0.2798	
	10 members +	476	-0.2156	0.741
Duration of stay in Banjul	Less 1 yr	38	0.1232	
	1-4 yrs	188	-0.0490	
	5-9 yrs	70	-0.1153	
	10 yrs +	872	-0.2611	0.032
Duration of stay in compound	Less 1 yr	68	-0.1378	
	1-4 yrs	295	-0.1604	
	5-9 yrs	115	-0.1076	
	10 yrs +	690	-0.2482	0.495
Food stock	None	319	-0.1410	
	Condiments	234	-0.1092	
	Cereals	614	-0.2723	0.101
Wealth index	Poor	381	-0.1703	
	Middle class	371	-0.2828	
	Well-off	416	-0.1695	0.306
Possession of animals	No animal	843	-0.2132	
	Animals possessed	325	-0.1865	0.726
Terciles of FI Score (0-27)	Low level of food insecurity	216	-0.2408	
	Medium level of food insecurity	420	-0.3274	
	High level of food insecurity	527	-0.1027	0.012
Food secure.	Mildly food insecure	492	-0.1191	
	Moderately food insecure	278	-0.3116	
	Severely food insecure	392	-0.2506	0.062
Fanta Classification	Food secure	540	-0.1393	
	Mildly food insecure	166	-0.1841	
	Moderately food insecure	308	-0.3939	
	Severely food insecure	148	-0.1106	0.013
Total		1,162	-0.2095	
1 Less diversified		216	-0.2408	
2 Midly diversified		420	-0.3274	
3 Highly diversified		396	-0.1653	0.137
Total		1,032	-0.2471	

Table 33: Stunting z-score (means) according to background characteristics

		N	Mean	Significance
Sex of head of HH	Male	878	-0.6109	0.996
	Female	274	-0.6114	
Marital status	Single	4	-1.1975	0.190
	Monogamous	690	-0.5540	
	Polygamous	46	-0.9387	
Demographic dependency	Less 30%	245	-0.6161	0.050
	30%-50%	430	-0.4818	
	50%+	476	-0.7258	
Economic dependency	Less 70%	347	-0.6461	0.598
	70%+	804	-0.5953	
Size of HH	5 members or less	246	-0.6478	0.534
	6-9 members	306	-0.6112	
	10 members +	467	-0.5256	
Duration of stay in Banjul	Less 1 yr	38	-0.7105	0.192
	1-4 yrs	188	-0.7687	
	5-9 yrs	71	-0.8139	
	10 yrs +	855	-0.5551	
Duration of stay in compound	Less 1 yr	69	-0.9596	0.047
	1-4 yrs	292	-0.7386	
	5-9 yrs	113	-0.5321	
	10 yrs +	678	-0.5338	
Food stock	None	315	-0.7552	0.061
	Condiments	229	-0.6652	
	Cereals	607	-0.5168	
Wealth index	Poor	380	-0.7984	0.004
	Middle class	365	-0.6011	
	Well-off	407	-0.4450	
Possession of animals	No animal	833	-0.6089	0.938
	Animals possessed	319	-0.6166	
Terciles of FI Score (0-27)	Low level of food insecurity	489	-0.5826	0.861
	medium level of food insecurity	269	-0.6151	
	High level of food insecurity	388	-0.6378	
Fanta Classification	Food secure.	536	-0.5732	0.628
	Mildly food insecure	159	-0.6770	
	Moderately food insecure	305	-0.5774	
	Severely food insecure	146	-0.7314	
Total		1,146	-0.6089	
Terciles of food diversity				
Less diversified		211	-0.7420	0.199
Midly diversified		415	-0.5578	
Highly diversified		391	-0.5179	
Total		1,017	-0.5807	

Appendix 5 : Enumerators, Supervisors, Coordinator and their contacts

VAMU SURVEY LIST OF DATA ENUMERATORS, SUPERVISORS AND COORDINATOR WITH CONTACT NUMBERS		
No	Name	Phone no.
	Enumerators	
1.	Sana Wally	9805624 / 6453070
2.	Alimatou Juwara	9921698 / 7444544
3.	Lisa Ceesay	9944837 / 7213676
4.	Lamin Sanyang	9939734 / 7292503
5.	Ebrima Jaiteh	9836618
6.	Mbasi T. L. Bojang	7706621
7.	Kumba Sabally	9879100
8.	Bubacarr Jallow	9946044
9.	Babucarr Jarjusey	7432978
10.	Buri Joof	9940434 / 7652102
11.	Malang Janneh	9947968 / 6947968
12.	Amie Drammeh	9736222
13.	Tumbul Drammeh	9948926 / 7297607
14.	Nyimasata Saidykhan	7735477 / 9305669
15.	Marie Joof	9911112 / 7205615
16.	Ousman Samba	9892250
17.	Alieu Sonko	6525644
18.	Mbakaddy Jarjue	9739635
	Supervisors	
19.	Musa B Dahaba	9923651
20.	Malang N. Fofana	9992531
21.	Bakary Jallow	9827407
	Co-ordinator	
22.	Amat Bah	9901696

References:

1. United States Agency for International Development (USAID). 'Policy Determination 19, Definition of Food Security, April 13, 1992.' Washington DC, 1992.
2. Ruel MT. 2003. Operationalizing dietary diversity: a review of measurement issues and research priorities. *Journal of Nutrition* 133: 3922S-3926S.
3. Hatloy, A., Hallund, J., Diarra, MM. & Oshaug A. 2000. Food variety, socioeconomic status and nutritional status in urban and rural areas in Koutiala (Mali). *Public Health Nutrition* 3:57-65.
4. Hoddinott, J. & Yohannes, Y. 2002. *Dietary diversity as a food security indicator*. FANTA 2002, Washington DC.
<http://www.aed.org/Health/upload/dietarydiversity.pdf>
5. Cataldo CN, DeBruyne LK, Whithney EN. 1995. *Nutrition and Diet Therapy*. New York
6. Van de Sande MAB, Ceesay SM, Milligan PJM, Nyan OA, Banya WAS, Prentice A, McAdam KPWJ, Walraven GEL. 2001. Obesity and underweight and cardiovascular risk factors in rural and urban Gambian communities. *AMJ Public Health*, 91 (10) 1641-1644.
7. Gambia Bureau of Statistics. 2006. *The Gambia: Atlas of 2003 Population and Housing Census*.