Acta Scientific NUTRITIONAL HEALTH (ISSN:2582-1423)

Volume 9 Issue 6 June 2025

Research Article

Determination By Anthropometry of the Nutritional Status of People Aged 50-59; 60-69; 70-79; 80 and more from Friguiagbe Center, Tembaya, Daboya, And Khayokhoure in the Republic of Guinea-Conakry

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Received: May 27, 2025

Published: June 10, 2025

Abstract

This study was an assessment in the localities of Friguiagbé Centre, Tembaya, Daboya and Khayokhouré of the nutritional status of people aged 50 to 80 years and over to prevent the deterioration of their already fragile state of health. The results of this study of people aged 50 to 80 and over composed of 47.03% men and 52.97%) women living in the community showed undernutrition. Indeed, out of a sample of 202 people surveyed in the localities concerned from September to October 2023, we obtained the following results: According to the BMI, 105 people out of 202 (51.98%) were undernourished, 43.06% had a normal build, 4.95% were overweight and zero cases of obesity with an average BMI of 21.0kg/m2, an average height of 1.67m, an average age of 62 years and an average weight of 58.8kg. According to the overall assessment of the level of study of the people surveyed, we found that 76.23% were out of school, 7.90% at primary level, 4.45% at secondary level, 2.97% at higher level and 8.42% (Koranic school and others). Among these people, 66.34% were sick; a household situation which is as follows: 1318 children in care for a household size of 1979. The elderly people surveyed were distributed as follows: 50-59 years old (44.55%); 60-69 years (23.76%); 70-79 years (22.77%); 80 years and over (8.91%).

Keywords: Anthropometry; Nutritional Status; Undernutrition; Elderly People; Rural Areas

Introduction

Anthropometric assessment is of paramount importance in the aging process, a phase in which the individual exhibits physiological changes characteristic of age. These include alterations in the oral cavity, which hinder chewing, swallowing and the perception of sensory characteristics of food. In addition, there are also gastrointestinal and metabolic alterations and loss of muscle mass, leading to sarcopenia, reduced physical strength and total energy expenditure with a consequent loss of autonomy [1,2].

Nutrition and health are inseparable at any age, but even more so as we age. Eating is an essential act of life that we now know is also a key element of successful aging. After the age of 70, the major risk is no longer obesity or all the so-called overload diseases, but protein-energy malnutrition (PEM) or undernutrition. This risk is a real public health problem. However, it is well before age that lifestyle and diet influence the state of health. But it is never too late to do the right thing and «age better» [3].

The diet of the elderly is a factor that requires a lot of attention, as it is a period in which changes occur, either in the inter-

nal conditions of their body or in those related to the external contexts of the environment, which modify their eating habits. It is important to remember that old age is a process related to changes in behaviour, given the transformations that occur over time [1,2].

Undernutrition is currently a major contributor to morbidity and mortality, which is a major problem for older people in both developed and developing countries. Recognized since the 70s as a public health problem in some developed countries, undernutrition in the elderly must be prevented, diagnosed and properly managed. Unfortunately, a bitter observation emerges in this regard; it often goes unnoticed and seems to be little known in several countries, both developed and undeveloped [4].

In Africa, studies were conducted in variable settings (rural and/or urban), with a very variable number of people, that only the body mass index was used as a nutritional criterion. Nearly one in five African older people living in communities were malnourished and about 30% of people were overweight or obese. The nutritional disorders observed could compromise the aging of people by increasing the risk of comorbidities, reducing quality of life and increasing dependence. This could be a new burden on local economies, requiring appropriate policies to address it [5].

In Guinea, there is currently only one national study on the nutritional status of the elderly, conducted in 2011 in the general population. Malnutrition was found in 6% of men and 5% of women over the age of 65. This national survey representative of the population of elderly people at home in Guinea reveals that the prevalence of undernutrition was 14.4%, significantly higher. In addition, obesity was more prevalent in some more urban areas. Issues related to the management of the health and nutritional status of older people should be considered a national priority, and this care should be tailored to each region of the country [6].

The hypothesis that led us to this work is that the prevalence of alterations in the nutritional status (undernutrition and obesity) of the elderly in the localities of Friguiagbé Centre, Tembaya, Daboya and Khayokhouré would be high.

The objective of our work was to make a local assessment in the rural commune of Friguiagbé and three surrounding villages (Tembaya, Daboya and Khayokhouré) of the nutritional status of people aged 50 to 80 years and over, and associated factors, using the criterion recommended by the World Health Organization, namely the body mass index (BMI) In order to identify elderly people suffering from malnutrition/undernutrition in the localities mentioned, give nutritional advice and contribute to the improvement of their nutritional status by providing them with food (madeleine cakes, milk bread and fish croissants, chocolate, sandwich and butter, yogurt and pineapple juice) to prevent the deterioration of their already fragile state of health.

Material and Methods

Design and Study Topics

This is descriptive research on observational design. A team composed of researchers from the Institute of Food Technology of Guinea (ITAG), which is a public institution under the Ministry of Higher Education, Scientific Research and Innovation, of various specialties, carried out the field activities with the supervisors. Among the activities carried out are raising awareness among the population on good food practices. The research topics were defined using inclusion criteria: be in the age groups of 50 to 80 years and over, both sexes. The exclusion criteria were as follows: individuals who had a physical or mental condition that could have prevented them from participating or those who chose not to participate.

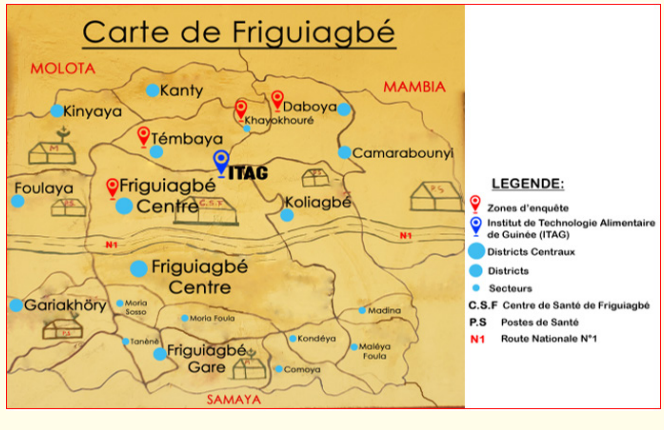


Figure 1: Map of the Rural Commune of Friguiagbé.

Procedures

The research was conducted at established times and days, with the collection of data from September to October 2023 on 202 people, with signature of the free and informed consent form of the Local Authorities. A questionnaire was developed specifically for this research, containing sociodemographic information such as age, sex, level of education, main activity, income, health status, number of meals per day, After completing this questionnaire, individuals were subjected to anthropometry, when measurements of height, weight (to calculate BMI), have been recorded. The height was measured by a measuring rod (T) with an accuracy of 1 mm. The measurement was carried out with individuals barefoot, in an upright position, with plain feet, buttocks, shoulders and heels against the head, with their arms loose at their sides.

The weight was measured using an Omron® digital scale with a capacity of 150 kg, with the individual standing, barefoot, using light clothing, plain feet and weight distributed on both feet. BMI was calculated by taking into account the ratio between body mass (in kg) and height (in meters) squared (kg/m^2) and classified according to the thresholds proposed by the World Health Organization (WHO, 2023), (Table 1).

Classification	Adult BMI	IMC seniors
Undernutrition	< 18.5	< 21
Normal build	18.5 to 25	22 to 30
Overweight	≥ 25	≥ 30
Obesity	≥ 30 - 35	≥ 35

Table 1: WHO classification of the different categories of BMI.

Source: Isaure Aliani (2023). BMI = Body Mass Index.

Results

The survey was carried out on a group of 202 people aged 50 to 80 and over, most of whom were women (53%), with a minimum age of 50 and a maximum of 80.

When analysing nutritional status, BMI indicated normal body size in 48 men and 48 women (BMI = 22 - 30 kg/m^2), undernutrition in 45 men and 51 women (BMI< 21). Overweight in 2 men and 4 women (BMI ≥ 30 kg/m^2), obesity in 4 women (BMI ≥ 35). The percentage of people with normal build gave 50.53% in men and 44.86% in women, undernutrition gave 47.37% in men and 50.47% in women, overweight 2.11% in men and 3.74% in women and obesity 3.74% in women. Table 2 below presents the characteristics of the sample.

Variables	Men N = 95	Wives N = 107
Age (years)	**50 to 80 years and older**	**50 to 80 years and older**
Marital status		
Married	85	72
Bachelor	0	0
Widow	-	45
Divorced	0	0
Level of Study:		
Not in school	61	93
Primary	10	6
secondary	8	1
Upper	5	1
Other	14	3
Situation de ménage:		
Number of children in care	659	659
Household size	1092	887
Main activities:		
Farmer	77	63
Merchant	2	24
Breeder	3	5
Other	18	10
Income:		
Has an income	48	39
Does Not Have Income	46	65
Pensioner with pension	3	0
Retired without pension	0	0
Health status:		
Sick	63	71
Not sick	33	33
Number of Meals per day:		
Once	8	11
Twice	40	56
Three times	46	37
Body mass index (kg/m^2)	50.53% (normal build)	50.47% (Undernutrition)

Table 2: Sociodemographic and anthropometric data of the sample, by sex in the localities of Friguiagbé Centre, Tembaya, Daboya and Khayokhouré.

The BMI of the elderly people assessed in these four (4) localities shows that the rate of undernutrition is higher in Friguiagbé (27 women), 12 women in Tembaya, 14 women in Daboya and 15 men in Khayokhouré. For normal build, 22 men in Tembaya, 15 women in Friguiagbé, 7 and 6 men respectively in Khayokhouré and Daboya. For overweight, Tembaya with 4 women has the highest rate. No cases of obesity were observed at each of the locations (Table 3,4).

Districts	Denutrition		Normal build		Overweight		Obesite	
	F	H	F	H	F	H	F	H
Friguiagbé Centre	27	15	15	13	1	1	0	0
Tembaya	12	6	17	22	4	2	0	0
Daboya	14	9	3	6	1	1	0	0
Khayokhowe	7	15	4	7	0	0	0	0
Total	60	45	39	48	6	4	0	0

Table 3: BMI by sex and location.

Age range	Denutrition		Normal build		Overweight		Obesite		Total
	Sex		Sex		Sex		Sex		
	F	H	F	H	F	H	F	H	
50-59	18	10	27	21	6	2	4	2	90
60-69	6	3	12	16	2	5	2	2	48
70-79	13	10	14	8	0	0	1	0	46
80 and over	2	11	1	4	0	0	0	0	18
TOTAL	39	34	54	49	8	7	7	4	202

Table 4: BMI results of individuals by age group and sex.

Sample identification and description

Sample by district

The sample of the populations of the localities concerned (interviewees) is distributed as follows: Of the 202 people, 35.6% are from Friguiagbé, 31.2% from Tembaya, 16.8% from Daboya and 16.3% from Khayokhouré (Figure 2).

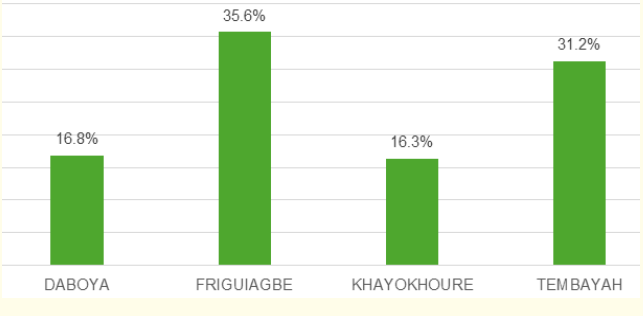


Figure 2: Sample distribution by district.

Average age of respondents by locality

The statistical analysis showed that the average age of the 202 respondents is 62 years old (Figure 3).

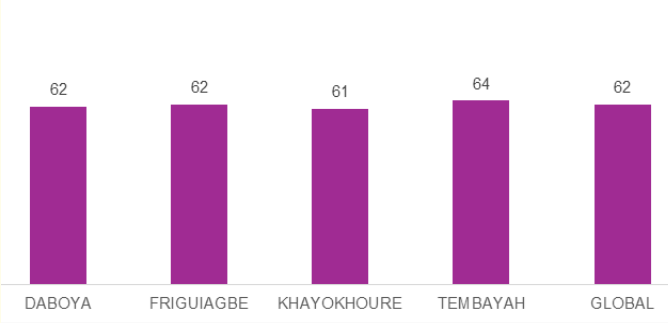


Figure 3: Average age of respondents.

Average BMI of respondents by location

Statistical analysis showed that the average BMI of the 202 respondents is 21.0%. (Figure 4).

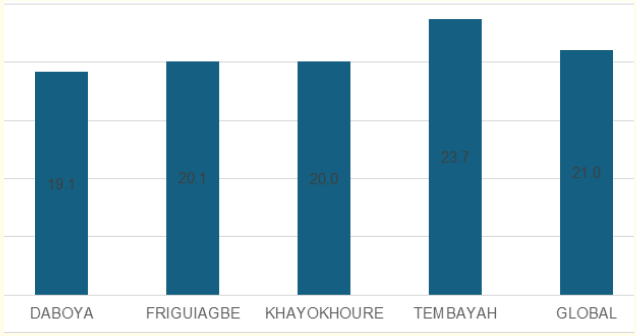


Figure 4: Average age of respondents.

Discussion

The assessment of the nutritional status of the elderly in the selected localities involved a sample of 202 people, of whom 72 are from Friguiagbé, 63 from Tembaya, 34 from Daboya and 33 from Khayokhouré. The group of elderly people interviewed consisted mainly of women: 59% in Friguiagbé, 56% in Daboya, 52% in Tembaya and the opposite is observed in Khayokhouré with 66.7% men.

The analysis of these tables above shows that out of 202 people surveyed, 105 (52%) are undernourished. These tables show that the female gender is much more affected by undernutrition, i.e. 60 out of 105 people.

These results reveal that the age group most affected by undernutrition is 50-59.

These tables reveal that those who do not have an income are the most affected by undernutrition (54.95%). This could be explained by the fact that these people do not carry out any activity.

The results of these tables allow us to conclude that out of a total of 202 people, the number of women is higher than that of men, respectively 107 women (52.97%) and 95 men (47.03%), of whom 45 people (22.28%) are widows. According to a study carried out in the United States in April 2012 by the Institute of Health Metrics and Evaluation published by the Huffington Post, men have a shorter life expectancy compared to women.

Half of the elderly people surveyed are between 50 and 60 years old, followed by 61 to 70 years old, i.e. 28.2%, we notice that as age increases, the number of respondents decreases. The average age of the respondents is 62 years old in Daboya and Friguiagbé, 61 years old in Khayokhouré and 64 years old in Tembaya, i.e. a general average age of 62 years with an average height of 1.67 m and an average weight of 58.8 kg.

Analysing the nutritional status, the BMI of the women of Friguiagbé is 45.0% ;p our Témbaya 20.0%, for Daboya 23.33% and for Khayokhouré 11.66%. These two values Tembaya and Daboya are comparable to that of Closs (29.58 ±5.96 kg/^{m2}) (2015), lower than Khayokhouré and higher than Friguiagbé. Increased BMI may be associated with an increased risk of death, in addition to the association with the development of cardiovascular risk factors in the elderly [7].

Regarding education, it was noted that most of the respondents had little access to education, 154 people (76.23%) were not in school, which can have a negative impact on the care and quality of life of the elderly. In addition, it can involve difficulty understanding and learning healthy eating habits [8-9].

The prevalence of undernutrition found in our study in general is 57.14% in women and 42.86% in men, an overweight of 5.0%. These values of undernutrition are much higher than those found (14.4%) [6].

With the aging process, older adults tend to become much more vulnerable to nutritional deficiencies, especially vitamins and minerals, along with bone tissue, predisposing to osteoporosis or bone fractures. Thus, older adults need a specific meal plan adapted to their nutritional particularities [10,11].

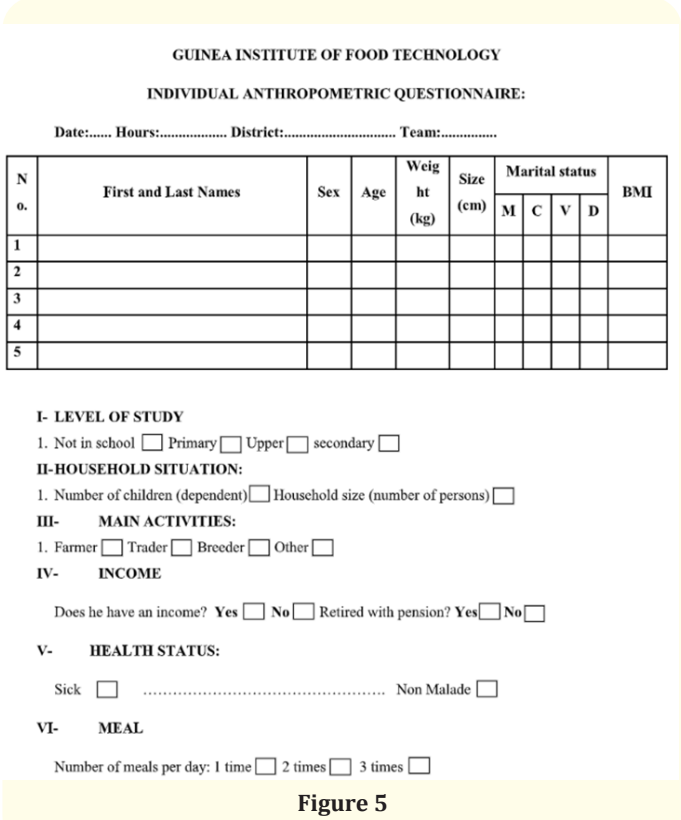
This research represented a survey of great relevance to the populations in question. However, there are some limitations that should be noted. The first is related to the size of the sample (202 elderly people). Nevertheless, all these elderly people concerned were evaluated.

Conclusion

The present study revealed a high percentage of elderly people assessed as undernourished 51.98%, normal build 43.06%, overweight 4.95% and no cases of obesity were observed. This fact has drawn attention to the need for nutritional orientation to awaken the adoption of healthier eating habits, since it is inevitable to link these lifestyle habits to the anthropometric data of the population, especially the elderly, who are already affected by many physiological influences of old age.

Therefore, it is important to detect people at nutritional risk early, as it is possible to carry out a primary and more specific nutritional intervention, such as the development of preventive actions, nutritional guidance, aimed at promoting a healthy diet and stimulating physical activity, in order to improve the quality of life of the elderly.

Thus, it is increasingly important to know the anthropometric characteristics of each age group, to know their nutritional status and to provide preventive advice in order to contribute to the improvement of their nutritional status by providing them with food (madeleine cakes, milk bread and fish croissants, chocolate, sandwich and butter, yogurt and pineapple juice) to prevent the deterioration of their already fragile state of health (Figure 5, Annex 1-7, Table 5-15).



GUINEA INSTITUTE OF FOOD TECHNOLOGY

INDIVIDUAL ANTHROPOMETRIC QUESTIONNAIRE:

Date:..... Hours:..... District:..... Team:.....

No.	First and Last Names	Sex	Age	Weight (kg)	Size (cm)	Marital status				BMI
						M	C	V	D	
1										
2										
3										
4										
5										

I- LEVEL OF STUDY

1. Not in school ☐ Primary ☐ Upper ☐ secondary ☐

II-HOUSEHOLD SITUATION:

1. Number of children (dependent) ☐ Household size (number of persons) ☐

III- MAIN ACTIVITIES:

1. Farmer ☐ Trader ☐ Breeder ☐ Other ☐

IV- INCOME

Does he have an income? **Yes** ☐ **No** ☐ Retired with pension? **Yes** ☐ **No** ☐

V- HEALTH STATUS:

Sick ☐ ..... Non Malade ☐

VI- MEAL

Number of meals per day: 1 time ☐ 2 times ☐ 3 times ☐

Figure 5

Friguiagbe Centre		
	Man	**Wife**
Age (year)	**60 to 80 years and older**	**60 to 80 years and older**
Marital status		
Married	23	23
Bachelor	0	0
Widow	0	18
Divorced	0	0
Level of Study:		
Not in school	12	36
Primary	5	5
secondary	4	1
Upper	5	1
Other	3	0
Situation de ménage:		
Number of children in care	194	219
Household size	348	394
Main activities:		
Farmer	21	17
Merchant	1	17
Breeder	0	1
Other	10	5
Income:		
Has an income	12	16
Does Not Have Income	20	38
Pensioner with pension	4	0
Retired without pension	17	28
Health status:		
Sick	16	30
Not sick	12	11
Number of Meals per day:		
Once	4	7
Twice	11	26
Three times	14	8

Annex 1: Summary of demographic and anthropometric data by locality.

Total number of people assessed: Male: 29, Female: 43 Total: 72.

Tembaya		
	Man	**Wife**
Age (year)	**50 to 80 years and older**	**50 to 80 years and older**
Marital status		
Married	30	28
Bachelor	0	0
Widow	0	4
Divorced	0	0
Level of Study:		
Not in school	18	36
Primary	3	0
secondary	2	0
Upper	0	0
Other	7	2
Situation de ménage:		
Number of children in care	229	169
Household size	369	273
Main activities:		
Farmer	27	21
Merchant	0	5
Breeder	0	2
Other	3	5
Income:		
Has an income	26	12
Does Not Have Income	13	26
Pensioner with pension	0	0
Retired without pension	6	10
Health status:		
Sick	24	24
Not sick	6	9
Number of Meals per day:		
Once	1	0
Twice	8	13
Three times	21	20

Annex 2: Summary of demographic and anthropometric data.

Total number of people assessed: Men: 30 and Women: 33 Total: 63.

Davoy		
	Man	**Wife**
Age (year)	**50 to 80 years and older**	**50 to 80 years and older**
Marital status		
Married	12	13
Bachelor	0	0
Widow	1	6
Divorced	1	0
Level of Study:		
Not in school	11	16
Primary	1	1
secondary	1	0
Upper	0	0
Other	3	1
Situation de ménage:		
Number of children in care	89	77
Household size	151	145
Main activities:		
Farmer	8	15
Merchant	1	2
Breeder	3	2
Other	3	0
Income:		
Has an income	9	10
Does Not Have Income	6	9
Pensioner with pension	0	0
Retired without pension	6	7
Health status:		
Sick	9	11
Not sick	5	2
Number of Meals per day:		
Once	0	2
Twice	11	10
Three times	3	6

Annex 3: Summary of demographic and anthropometric data.

Total number of people assessed:Male: 15, Female: 19 Total: 34.

Khayokhure		
	Man	**Wife**
Age (year)	**50 to 80 years and older**	**50 to 80 years and older**
Marital status		
Married	19	8
Bachelor	0	0
Widow	0	3
Divorced	0	0
Level of Study:		
Not in school	20	10
Primary	1	0
secondary	1	0
Upper	0	0
Other	1	0
Situation de ménage:		
Number of children in care	147	52
Household size	224	75
Main activities:		
Farmer	21	10
Merchant	0	0
Breeder	0	0
Other	2	0
Income:		
Has an income	9	3
Does Not Have Income	11	9
Pensioner with pension	0	0
Retired without pension	10	5
Health status:		
Sick	14	6
Not sick	10	5
Number of Meals per day:		
Once	3	1
Twice	10	7
7Three times	8	3

Annex 4: Summary of demographic and anthropometric data.

Total number of people assessed: Male: 22, Female: 11 Total: 33.

District	Average Age	Middle Weight	Medium Size	Average BMI
DAVOY	62	49,8	1,61	19,1
FRIGUIAGBE	62	59,5	1,72	20,1
KHAYOKHURE	61	58,1	1,70	20,0
TEMBAYAH	64	63,4	1,63	23,7
GLOBAL	62	58,8	1,67	21,0

Annex 5: Table of characteristics by locality.

Age range	Insufficiency	Obesite	Normal Weight	Over Weight	Total
50 to 60 years old	52,0%	0,0%	43,1%	4,9%	100,0%
61 to 70 years old	43,9%	0,0%	50,9%	5,3%	100,0%
71 to 80 years old	58,1%	3,2%	38,7%	0,0%	100,0%
81 to 85 years old	62,5%	0,0%	25,0%	12,5%	100,0%
Over 86 years old	100,0%	0,0%	0,0%	0,0%	100,0%
GLOBAL	52,0%	,5%	43,1%	4,5%	100,0%

Annex 6: Table of distribution of respondents by bracket according to the who standard.

Age Range	Average Age	Middle Weight	Medium Size	Average BMI
50 to 60 years old	53	59,5	1,67	21,2
61 to 70 years old	67	60,6	1,66	21,9
71 to 80 years old	76	56,0	1,67	20,0
81 to 85 years old	84	57,9	1,70	20,0
Over 86 years old	93	40,2	1,69	14,1
GLOBAL	62	58,8	1,67	21,0

Annex 7: Table of distribution of respondents by bracket by characteristics.

Nutritional status	Number	Percentage
Undernutrition	105	52%
Normal build	87	43%
Overweight	10	5%
Obesity	0	0%
Total	202	100%

Table 5: Distribution of seniors by BMI.

Sex	Number	Percentage
Wives	60	57,14%
Men	45	42,86%
Total	105	100%

Table 6: Distribution of undernourished people by sex.

Age range	Number	Percentage
50-59	90	44,55%
60-69	48	23,76%
70-79	46	22,77%
80 and over	18	8,91%
Total	202	100%

Table 7: Distribution of seniors by age.

Activity (profession)	Number	Percentage
Farmer	140	69,31%
Merchant	26	12,87%
Breeder	8	3,96%
Other	28	13,86%
Total	202	100%

Table 8: Distribution of seniors by activity.

Revenue	Number	Percentage
Has an income	87	43,07%
Does not have an income	111	54,95%
Pensioner with pension	4	1,98%
Retired without pension	0	0%
Total	202	100%

Table 9: Distribution of the elderly according to their income.

Marital status	Number	Percentage
Married	157	77,72%
Bachelor	00	0%
Widow	45	22,28%
Divorced	00	0%
Total	202	100%

Table 10: Distribution of seniors by marital status.

Level of Education	Number	Percentage
Not in school	154	76,23%
Primary	16	7,90%
Secondary	9	4,45%
Upper	6	2,97%
Other	17	8,42%
Total	202	100%

Table 11: Distribution of seniors by level of education.

Sex	Number	Percentage
Wives	107	52,97%
Men	95	47,03%
Total	202	100%

Table 12: Gender Distribution of the Sample.

Situation de ménage	Number	Percentage
Number of children in care	1318	39,98%
Household size	1979	60,02%
Total	3297	100%

Table 13: Distribution of seniors by household status.

Health status	Number	Percentage
Sick	134	66,34%
Not sick	68	33,66%
Total	202	100%

Table 14: Distribution of seniors by health status.

Number of Meals Per Day	Number	Percentage
1 time	23	11,39%
2 times	96	47,52%
3 times	83	41,09%
Total	202	100%

Table 15: Distribution of seniors according to number of meals per day.

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