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Nutritional and Clinical Profiles of Elderly People with Diabetes and Hypertension at Conakry University Hospitals

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Abstract

Introduction: In Guinea, there is few data on dietary practices socio-economic and clinical characteristics of elderly diabetics and hypertensives. **Methods:** This was a descriptive cross-sectional study of people aged 60 years and over, seen in consultation or hospitalised in Conakry University hospitals during the period from 5 September to 15 December 2023 inclusively. **Results**: Among the 320 subjects included in the study, there were more men (50.6%). The average age was 67 ± 7.69 years; 53.43% had hypertension and 46.57% had diabetes. Sex was significantly associated with diabetes ($p = 0.035$). Women in the study were more affected by diabetes (55.7%), 64.4% of diabetic subjects were married and more than 64% of them had dependent children. 26.2% of diabetics were not employed; 85.9% had an income; 34.9% had an income of less than one million Guinean francs per month and 74.5% of them had 3 meals a day. Physical activity, 24-hour recall for lunch ($p < 0.017$), consumption of dairy products and sugger-rich foods were significantly associated with diabetes ($p < 0.021$ and $p < 0.002$, respectively). Hypertension affected more men (50.9%) than women; 73.7% of hypertensive subjects were in the 60 - 69 age group; 67.8% were married, 58.5% were not educated. 70.2% of hypertensive subjects were taking care of children, 63.7% had 3 meals a day. **Conclusion:** Effective management of diabetes and hypertension in the elderly should necessarily involve nutrition education in hospitals.

Keywords

Diabetes, Hypertension, Elderly, Diet

1. Introduction

The ageing of the world's population is a new phenomenon that industrialised

countries are confronted with and are still trying to adapt to. The number of people aged over 60 is growing faster than any other population group: between 1980 and 2020, the world's population of elderly people increased by almost 240% [1]. The increase in civil and physiological age is accompanied by modifications to the shape of the body and changes to the compartments that make it up [2]. Senescence favours gastrointestinal changes that are accompanied by a reduction in gastric emptying and intestinal transit and an increase in the production of anorectic hormones [3]. It is often correlated with one or more chronic diseases that affect appetite or the ability to swallow food [4]. In the elderly, there is an increase in the duration of satiety, which leads to food intake being spaced out or reduced [5]. Arterial hypertension is a public health problem in the African continent, and the elderly are highly exposed to this pathology because its incidence increases with age, reaching 65% of people over 65 years of age [6]. According to the WHO, some seven million Africans currently have diabetes mellitus, including 3.3 million in West Africa [7]. The prevalence of diabetes in people over the age of 65 can be as high as 10% - 20%. One of the factors behind diabetes is the ageing of the population [8].

Dietary advice and the acquisition of good eating habits through nutrition education in hospitals for the elderly play a very important role in the management of cardiovascular disease.

At Conakry teaching hospitals (Donka and Ignance Deen), there are few studies on the dietary practices of elderly diabetics and hypertensives.

In the cardiology, neurology, diabetology and endocrinology departments of Guinea's university hospitals, hypertension, diabetes and eating habits are frequently detected, diagnosed and treated during consultations with the elderly, but this information is never documented. Many elderly people live with these diseases without knowing it. To the best of our knowledge, there are few systematic studies of hypertension, diabetes and diet among older people in consultation or hospitalised in Guinea.

The aim of this study was to identify the dietary practices, socioeconomic and clinical profiles of elderly diabetics and hypertensives seen in consultation or hospitalised in Conakry's university hospitals.

2. Methods

2.1. Type, Scope and Period

This was a descriptive cross-sectional study that took place in the Donka (Diabetes and Cardiology Departments) and Ignace Deen (Neurology and Cardiology Departments) teaching hospitals between 5 September and 15 December 2023 inclusive.

2.2. Study Population

It was made up of people aged 60 and over who had been seen in consultation or hospitalised in the four departments of the Donka and Igance Deen University

hospitals mentioned above.

2.3. Inclusion Criteria

The inclusion criteria for our study were people aged 60 and over, subjects followed by Donka and Ignace Deen University Hospitals (in cardiology and diabetology at Donka, and in neurology and cardiology at Ignace Deen), people whose state of health and physical condition allowed the collection of data (anthropometric, biological, socio-economic and dietary), and elderly people who had given their consent to participate in the study.

2.4. Determined Parameters

2.4.1. Socio-Economic Parameters

They included: Sex, age, level of education (Not enrolled, Primary, Secondary and Higher), occupation, source of income, estimated income, family history of diabetes and hypertension, marital status (married, single, widowed, divorced) and marital regime (monogamous and polygamous), lifestyle, household size and number of dependent children. The information was collected using a survey sheet designed for this purpose. Age was determined by means of the identity cards, voter registration cards and medical records.

2.4.2. Biological Parameters

Blood pressure was measured using an Omron® automatic cuff blood pressure monitor. A first measurement was taken on each arm to determine which arm had the highest blood pressure, then two measurements were taken on the arm selected with an interval of one minute between measurements. Elderly people who had a systolic blood pressure greater than or equal to 140 mmHg and/or a diastolic blood pressure greater than or equal to 90 mmHg [9] [10] were considered hypertensive.

Blood glucose was measured using a glucometer to determine capillary blood glucose in mg/dl; diabetes was confirmed if fasting blood glucose was greater than 126 mg/dl [11].

2.4.3. Food Parameters

The dietary survey involved a 24-hour recall, with participants describing the food and drink consumed during the 24 hours preceding the survey. The frequency of meals and the consumption of the different food groups consumed by the subjects in our study were determined. These data were collected using a survey sheet containing a questionnaire of 24-hour food recall for different meals and eventual snacks, as well as a questionnaire on the consumption and the frequency of consumption of fruits and vegetables. There were also questions about the consumption of diary products, high protein foods, high sugar products and high fat food consumptions. The survey was administered in a face-to-face interview.

2.5. Statistical Analysis

Data were collected using a survey form designed with sphinx software. Data

analysis was carried out using IBM SPSS version 23 software. Quantitative variables were expressed as means and standard deviations. Qualitative variables were expressed as numbers and percentages. Qualitative variables were compared using Chi2 or Fischer statistical tests.

2.6. Ethical Approval and Consent to Participate

This study was approved by the National Health Research Ethics Committee of Guinea, under number: 166/CNERS/23. The study was conducted in accordance with the principles of the Declaration of Helsinki.

3. Results

Our study involved three hundred and twenty (320) people aged 60 and over, hospitalised or seen in consultation in the university hospitals of Conakry. The average age in our sample was 67 ± 7.69 years; extreme values of 60 and 97 years were observed with a sex ratio of 1.02 in favour of the male sex. The predominant age group in our study was 60 to 69 years (72.5%), with diabetes and hypertension affecting 46.56% and 53.43% of the elderly, respectively. Women in our study were more affected by diabetes (55.7%), with a significant association between sex and diabetes ($p = 0.035$). Hypertension was slightly more prevalent in males (50.6%) but was not related to gender. Married people had the highest rates of diabetes (64.4%) and hypertension (67.8%), compared with 0.7% for diabetic divorced people and 0.6% for hypertensive single people. In terms of level of education, 57.7% of diabetics did not attend school, with a slight difference between primary and higher education levels for diabetics (10.7% and 11.4%, respectively). The non-schooled hypertensive participants were 58.5%; the subjects with primary education were 11.7%. In our study, 85.9% of diabetics had an income and more than 30% had an income of less than 1.000.000 fg (70.000 fcfa) per month, while 84.2% of hypertensive subjects had an income with 36.3% of them having an income between one and two million Guinean francs (140.000 fcfa) monthly. Income and amount of income were not related to diabetes or hypertension.

Looking at Table 1, we see that the only socio-economic parameter of the participants that was related to diabetes was gender, with a p value of less than 0.036. Age, marital status, marital regime, level of education, dependent children, household size, position in the household, housing, occupation, income and lifestyle were not significantly associated with diabetes.

According to Table 2, we found that more than 74% of diabetic subjects in our study had three (3) meals a day, the frequency of meals ($p < 0.012$), physical activity ($p < 0.002$), the frequency of physical activities ($p < 0.007$), 24-hour recall for lunch ($p < 0.017$), consumption of dairy products ($p < 0.021$) and consumption of sugar-rich products ($p < 0.002$) were significantly associated with diabetes.

Table 3 shows that antecedent of parental illness and other pathologies were significantly associated with diabetes, with p-values of less than 0.047 and 0.042 respectively.

Table 1. Socioeconomic profiles of elderly diabetics in Conakry's university teaching hospitals.

	N = 320 n. (%) Mean AND	Diabetes (N = 149) n. (%)	No Diabetes (N = 171) n. (%)	p
Age	67 ± 7.69	63.33 ± 7.69	67 ± 7.69	
60 - 69	232 (72.5%)	111 (74.5%)	121 (70.8%)	
70 - 79	56 (17.5%)	27 (18.1%)	29 (17.0%)	0.346[a]
More than 80	32 (10.0%)	11 (7.4%)	21 (12.3%)	
Gender				
Men	162 (50.6%)	66 (44.3%)	96 (56.1%)	**0.035[a]**
Women	158 (49.4%)	83 (55.7%)	75 (43.9%)	
Marital status				
Single	4 (1.3%)	4 (2.7%)	0 (0.0%)	
Married	216 (67.5%)	96 (64.4%)	120 (70.2%)	0.071[b]
Widows	95 (29.7%)	48 (32.2%)	47 (27.5%)	
Divorced	5 (1.6%)	1 (0.7%)	4 (2.3%)	
Matrimonial regime				
Monogames	151 (47.2%)	77 (51.7%)	74 (43.3%)	0.232[b]
Polygamous	160 (50.0%)	67 (45.0%)	93 (54.4%)	
Level of education				
No education	187 (58.4%)	86 (57.7%)	101 (59.1%)	
Primary	38 (11.9%)	16 (10.7%)	22 (12.9%)	0.666[a]
Secondary	56 (17.5%)	30 (20.1%)	26 (15.2%)	
Superior	39 (12.2%)	17 (11.4%)	22 (12.9%)	
Dependent children				
Yes	218 (68.1%)	96 (64.4%)	122 (71.3%)	0.185[a]
No	102 (31.9%)	53 (35.6%)	49 (28.7%)	
Household size				
≤4	35 (10.9%)	16 (10.7%)	19 (11.1%)	0.915[a]
≥4	285 (89.1%)	133 (89.3%)	152 (88.9%)	
Position in the household				
Head of household	200 (62.5%)	94 (63.1%)	106 (62.0%)	0.839[a]
Not head of household	120 (37.5%)	55 (36.9%)	65 (38.0%)	
Housing				
Rental	77 (24.1%)	38 (25.5%)	39 (22.8%)	0.574[a]
Personal/family	243 (75.9%)	111 (74.5%)	132 (77.2%)	

Continued

Profession				
Retailers	87 (27.2%)	45 (30.2%)	42 (24.6%)	0.912[b]
Retirees	36 (11.3%)	17 (11.4%)	19 (11.1%)	
Farmers	20 (6.3%)	8 (5.4%)	12 (7.0%)	
Breeders	5 (1.6%)	3 (2.0%)	2 (1.2%)	
Fishermen	3 (0.9%)	2 (1.3%)	1 (0.6%)	
Workers	43 (13.4%)	18 (12.1%)	25 (14.6%)	
Civil servants	39 (12.2%)	17 (11.4%)	22 (12.9%)	
Not active	87 (27.2%)	39 (26.2%)	48 (28.1%)	
Do you have income				
Yes	272 (85.0%)	128 (85.9%)	144 (84.2%)	0.672[a]
No	48 (15.0%)	21 (14.1%)	27 (15.8%)	
How much				
<to One million FG	98 (30.6%)	52 (34.9%)	46 (26.9%)	0.389[a]
Between one and two million	111 (34.7%)	46 (30.9%)	65 (38.0%)	
>two million	63 (19.7%)	30 (20.1%)	33 (19.3%)	
Lifestyle				
Only	6 (1.9%)	4 (2.7%)	2 (1.2%)	0.207[b]
With partner only	10 (3.1%)	2 (1.3%)	8 (4.7%)	
With partner and children	136 (42.5%)	62 (41.6%)	74 (43.3%)	
With partner and grandchildren	16 (5.0%)	11 (7.4%)	5 (2.9%)	
With partner sons and grandchildren	62 (19.4%)	27 (18.1%)	35 (20.5%)	
Without a partner but with children	90 (28.1%)	43 (28.9%)	47 (27.5%)	

a = chi-square; b = Fisher.

Table 2. Eating habits of people aged 60 and over with diabetes.

	N = 320 n. (%)	**Diabetes (N = 149) n. (%)**	**No Diabetes (N = 171) n. (%)**	**p**
Number of meals per day				
1 meal	1 (0.3%)	0 (0.0%)	1 (0.6%)	**0.011[b]**
2 meals	90 (28.1%)	30 (20.1%)	60 (35.1%)	
3 meals	212 (66.3%)	111 (74.5%)	101 (59.1%)	
More than 3 meals	17 (5.3%)	8 (5.4%)	9 (5.3%)	

Continued

Vegetable consumption				
Yes	314 (98.1%)	146 (98.0%)	168 (98.2%)	1.000
No	6 (1.9%)	3 (2.0%)	3 (1.8%)	
Frequency of vegetable consumption				
1 time/day	37 (11.6%)	12 (8.1%)	25 (14.6%)	
2 times a day	220 (68.8%)	105 (70.5%)	115 (67.3%)	0.272[b]
3 times a day	58 (18.1%)	30 (20.1%)	28 (16.4%)	
Fruit consumption				
Yes	177 (55.3%)	81 (54.4%)	96 (56.1%)	0.750[a]
No	143 (44.7%)	68 (45.6%)	75 (43.9%)	
Frequency of fruit consumption				
1 time/day	120 (37.5%)	55 (36.9%)	65 (38.0%)	
2 times a day	51 (15.9%)	23 (15.4%)	28 (16.4%)	0.982[b]
3 times a day	6 (1.9%)	3 (2.0%)	3 (1.8%)	
Alcohol consumption				
Yes	31 (9.7%)	11 (7.4%)	20 (11.7%)	0.193[a]
No	289 (90.3%)	138 (92.6%)	151 (88.3%)	
Do you smoke				
Yes	46 (14.4%)	17 (11.4%)	29 (17.0%)	0.158[a]
No	274 (85.6%)	132 (88.6%)	142 (83.0%)	
Physical activity				
Yes	118 (36.9%)	40 (26.8%)	78 (45.6%)	**0.001[a]**
No	202 (63.1%)	109 (73.2%)	93 (54.4%)	
Frequency of physical activity				
1 time/week	21 (6.6%)	5 (3.4%)	16 (9.4%)	
2 times a week	36 (11.3%)	12 (8.1%)	24 (14.0%)	
3 times a week	40 (12.5%)	17 (11.4%)	23 (13.5%)	**0,006[a]**
More than 3 times a week	21 (6.6%)	6 (4.0%)	15 (8.8%)	
24-hour breakfast reminder				
Yes	306 (95.6%)	146 (98.0%)	160 (93.6%)	0.054[a]
No	14 (4.4%)	3 (2.0%)	11 (6.4%)	
24-hour lunch reminder				
Yes	284 (88.8%)	139 (93.3%)	145 (84.8%)	**0.016[a]**
No	36 (11.3%)	10 (6.7%)	26 (15.2%)	
24-hour dinner reminder				
Yes	291 (90.9%)	139 (93.3%)	152 (88.9%)	0.171[a]
No	29 (9.1%)	10 (6.7%)	19 (11.1%)	

Continued

Consumption of dairy products				
Yes	**138** (43.1%)	**54** (36.2%)	**84** (49.1%)	**0.020[a]**
No	**182** (56.9%)	**95** (63.8%)	**87** (50.9%)	
Consumption of protein-rich products				
Yes	298 (93.1%)	138 (92.6%)	160 (93.6%)	0.738
No	22 (6.9%)	11 (7.4%)	11 (6.4%)	
Consumption of sugar-rich products				
Yes	136 (42.5%)	49 (32.9%)	87 (50.9%)	**0.001[a]**
No	184 (57.5%)	100 (67.1%)	84 (49.1%)	
Consumption of high-fat products				
Yes	113 (35.5%)	49 (33.1%)	64 (37.6%)	0.399[a]
No	205 (64.5%)	99 (66.9%)	106 (62.4%)	

a = chi-square; b = Fisher.

The table also shows that 81.9% of elderly diabetics were treated on an outpatient basis, with only 18.1% hospitalised. Among the pathologies associated with diabetes, cardiovascular disease was the most common, accounting for over 30%, followed by osteoarthritis (16.8%).

Table 3. Clinical status of people aged 60 and over with diabetes in Conakry's teaching hospitals.

	N = 320 n. (%)	**Diabetes (N = 149) n. (%)**	**No Diabetes (N = 171) n. (%)**	**p**
History of illnesses (father or mother)				
Yes	99 (30.9%)	54 (36.2%)	45 (26.3%)	
No	119 (37.2%)	57 (38.3%)	62 (36.3%)	**0.046[a]**
Don't know	102 (31.9%)	38 (25.5%)	64 (37.4%)	
Type of treatment				
Ambulatory	269 (84.1%)	122 (81.9%)	147 (86.0%)	0.319[a]
Hospital	51 (15.9%)	27 (18.1%)	24 (14.0%)	
Pathology				
MCV	93 (33.8%)	46 (30.9%)	47 (27.5%)	
Gastritis	29 (9.1%)	15 (10.1%)	14 (8.2%)	
Respiratory infection	17 (5.3%)	11 (7.4%)	6 (3.5%)	**0.041[a]**
Rheumatism	26 (8.1%)	15 (10.1%)	11 (6.4%)	
Osteoarthritis	47 (14.7%)	25 (16.8%)	22 (12.9%)	

Table 4. Socioeconomic profiles of elderly hypertensive patients in Conakry's teaching hospitals.

	N = 320 n. (%)	Hypertension (N = 171) n. (%)	No hypertension (N = 149) n. (%)	p
Age				
60 - 69	232 (72.5%)	126 (73.7%)	106 (71.1%)	
70 - 79	56 (17.5%)	28 (16.4%)	28 (18.8%)	0.844[a]
More than 80	32 (10.0%)	17 (9.9%)	15 (10.1%)	
Gender				
Men	162 (50.6%)	87 (50.9%)	75 (50.3%)	0.923[a]
Women	158 (49.4%)	84 (49.1%)	74 (49.7%)	
Marital status				
Single	4 (1.3%)	1 (0.6%)	3 (2.0%)	
Married	216 (67.5%)	116 (67.8%)	100 (67.1%)	0.122[b]
Widows	95 (29.7%)	49 (28.7%)	46 (30.9%)	
Divorced	5 (1.6%)	5 (2.9%)	0 (0.0%)	
Matrimonial regime				
Monogames	151 (47.2%)	71 (41.5%)	80 (53.7%)	0.077[b]
Polygamous	160 (50.0%)	94 (55.0%)	66 (44.3%)	
Level of study				
Out of school	187 (58.4%)	100 (58.5%)	87 (58.4%)	
Primary	38 (11.9%)	20 (11.7%)	18 (12.1%)	0.976[a]
Secondary	56 (17.5%)	29 (17.0%)	29 (17.0%)	
Superior	39 (12.2%)	22 (12.9%)	22 (12.9%)	
Dependent children				
Yes	218 (68.1%)	120 (70.2%)	98 (65.8%)	0.399[a]
No	102 (31.9%)	51 (29.8%)	51 (34.2%)	
Household size				
≤4	35 (10.9%)	19 (11.1%)	16 (10.7%)	0.915[a]
≥4	285 (89.1%)	152 (88.9%)	133 (89.3%)	
Position in the household				
Head of household	200 (62.5%)	105 (61.4%)	95 (63.8%)	0.664[a]
Not head of household	120 (37.5%)	66 (38.6%)	54 (36.2%)	
Housing				
Rental	77 (24.1%)	47 (27.5%)	30 (20.1%)	0.125[a]
Personal/family	243 (75.9%)	124 (72.5%)	119 (79.9%)	

Continued

Profession				
Retailers	87 (27.2%)	45 (26.3%)	42 (28.2%)	0.817[b]
Retirees	36 (11.3%)	17 (9.9%)	19 (12.8%)	
Farmers	20 (6.3%)	9 (5.3%)	11 (7.4%)	
Breeders	5 (1.6%)	3 (1.8%)	2 (1.3%)	
Fishermen	3 (0.9%)	1 (0.6%)	2 (1.3%)	
Workers	43 (13.4%)	26 (15.2%)	17 (11.4%)	
Civil servants	39 (12.2%)	24 (14.0%)	15 (10.1%)	
Not active	87 (27.5%)	46 (26.9%)	41 (27.5%)	
Do you have income				
Yes	272 (85.0%)	144 (84.2%)	128 (85.9%)	0.672[a]
No	48 (15.0%)	27 (15.8%)	21 (14.1%)	
How much				
<to One million FG	98 (30.6%)	50 (15.8%)	48 (32.2%)	0.845[a]
Between one and two million	111 (34.7%)	62 (36.3%)	49 (32.9%)	
>two million	63 (19.7%)	32 (18.7%)	31 (20.8%)	
Lifestyle				
Only	6 (1.9%)	2 (1.2%)	4 (2.7%)	0.201[b]
With partner only	10 (3.1%)	7 (4.1%)	3 (2.0%)	
With partner and children	136 (42.5%)	78 (45.6%)	58 (38.9%)	
With partner and grandchildren	16 (5.0%)	5 (2.9%)	11 (7.4%)	
With partner sons and grandchildren	62 (19.4%)	29 (17.0%)	33 (22.1%)	
Without a partner but with children	90 (28.1%)	50 (29.2%)	40 (26.8%)	

According to Table 4 of this study, there was no significant relationship between the socio-economic parameters considered and hypertension in the participants.

In Table 5, we see that among the hypertensive patients in our study, 63.7% ate three meals a day, but this was not associated with hypertension, whereas consumption of sugar-rich products ($p < 0.002$) and consumption of fat-rich products were significantly associated with hypertension. ($p < 0.025$). There was no significant relationship between arterial hypertension and the other dietary parameters mentioned in this table.

Table 5. Eating habits of people aged 60 and over with hypertension.

	N = 320 n. (%)	Hypertension (N = 171) n. (%)	No hypertension (N = 149) n. (%)	p
Number of meals per day				
1 meal	1 (0.3%)	1 (0.6%)	0 (0.0%)	0.647[b]
2 Meals	90 (28.1%)	52 (30.4%)	38 (25.5%)	
3 Meals	212 (66.3%)	109 (63.7%)	103 (69.1%)	
More than 3 meals	17 (5.3%)	9 (5.3%)	8 (5.4%)	
Vegetable consumption				
Yes	314 (98.1%)	168 (98.2%)	146 (98.0%)	1.000[b]
No	6 (1.9%)	3 (1.8%)	3 (2.0%)	
Fruit consumption				
Yes	177 (55.3%)	94 (55.0%)	83 (55.7%)	0.895[a]
No	143 (44.7%)	77 (45.0%)	66 (44.3%)	
Alcohol consumption				
Yes	31 (9.7%)	20 (11.7%)	11 (7.4%)	0.193[a]
No	289 (90.3%)	151 (88.3%)	138 (92.6%)	
Do you smoke				
Yes	46 (14.4%)	28 (16.4%)	18 (12.1%)	0.275[a]
No	274 (85.6%)	143 (83.6%)	131 (87.9%)	
Physical activity				
Yes	118 (36.9%)	64 (37.4%)	54 (36.2%)	0.826[a]
No	202 (63.1%)	107 (62.6%)	95 (63.8%)	
24-hour breakfast reminder				
Yes	306 (95.6%)	163 (95.3%)	143 (96.0%)	0.776[a]
No	14 (4.4%)	8 (4.7%)	6 (4.0%)	
24-hour lunch reminder				
Yes	284 (88.8%)	154 (90.1%)	130 (87.2%)	0.427[a]
No	36 (11.3%)	17 (9.9%)	19 (12.8%)	
24-hour dinner reminder				
Yes	291 (90.9%)	155 (90.6%)	136 (91.3%)	0.844[a]
No	29 (9.1%)	16 (9.4%)	13 (8.7%)	
Consumption of dairy products				
Yes	138 (43.1%)	82 (48.0%)	56 (37.6%)	0.062[a]
No	182 (56.9%)	89 (52.0%)	93 (62.4%)	
Consumption of protein-rich products				
Yes	298 (93.1%)	161 (94.2%)	137 (91.9%)	0.437[a]
No	22 (6.9%)	10 (5.8%)	12 (8.1%)	

Continued

Consumption of sugar-rich products				
Yes	136 (42.5%)	88 (51.5%)	48 (32.2%)	**0.001[a]**
No	184 (57.5%)	83 (48.5%)	101 (67.8%)	
Consumption of high-fat products				
Yes	113 (35.5%)	70 (41.2%)	43 (29.1%)	**0.024[a]**
No	205 (64.5%)	100 (58.8%)	105 (70.9%)	

Table 6. Clinical status of people aged 60 and over with arterial hypertension in Conakry university hospitals.

	N = 320 n. (%)	hypertension (N = 171) N. (%)	No hypertension (N = 149) n. (%)	p
History of illnesses (father or mother)				
Yes	99 (30.9%)	57 (33.3%)	42 (28.2%)	
No	119 (37.2%)	58 (33.9%)	61 (40.9%)	0.402[a]
Don't know	102 (31.9%)	56 (32.7%)	46 (30.9%)	
Type of treatment				
Ambulatory	260 (81.3%)	142 (83.0%)	118 (79.2%)	0.379[a]
Hospital	60 (18.8%)	29 (17.0%)	31 (20.8%)	
Are you undergoing treatment				
Yes	304 (95.0%)	167 (97.7%)	137 (91.9%)	**0.000[a]**
No	16 (5.0%)	4 (2.3%)	12 (8.1%)	
Type of treatment				
Medicinal	308 (96.3%)	168 (98.2%)	140 (94.0)	**0.000[b]**
Special scheme	7 (2.2%)	2 (1.2%)	5 (3.4%)	
Use of traditional remedies	5 (1.6%)	1 (0.6%)	4 (2.7%)	
Pathology				
MCV	125 (39.1%)	67 (39.2%)	58 (38.9%)	
Gastritis	40 (12.5%)	22 (12.9%)	18 (12.1%)	
Respiratory infection	17 (5.3%)	9 (5.3%)	8 (5.4%)	0.417[b]
Rheumatism	8 (2.5%)	5 (2.9%)	3 (2.0%)	
Osteoarthritis	39 (12.2%)	26 (15.2%)	13 (8.7%)	

According to Table 6, treatment and type of treatment were clinical parameters associated with hypertension with a p-value of less than 0.0001. In fact, 97.7% of hypertensive patients were on treatment, compared with 2.3% who were not. However, the history of illness of the father and mother, the type of treatment

(outpatient or inpatient) and the presence of other pathologies were not linked to hypertension.

4. Discussions

In this study, we determined the socioeconomic, dietary and clinical parameters of elderly people with diabetes and/or hypertension. The data obtained showed that the mean age of our sample was 67 ± 7.69 years, almost identical to that of Ouango and Taoko in Burkina Faso, 66.7 ± 7.4 years [12], and which is also similar to a study carried out at the Centre de Gériatrie in Senegal (65 years) [6]. However, our result was lower than that of the study by Menadi *et al.* (73.2 ± 6.1 years) [13] and that of the study done by Millimono *et al.* carried out on the general population of elderly people in the Republic of Guinea (71.5 ± 9.3 years) [14]. The most represented age group in our study was 60 to 69 years (72.5%). Similar results have been found in several studies of elderly people in Africa [6]. The slightly higher representation of males (50.6%) does not corroborate the study carried out at Treichville University Hospital in Côte d'Ivoire, where males accounted for 60.77%, with a sex ratio of 1.54 [15] which differs from the sex ratio in our study of 1.02. Consumption of fruit and vegetables by the elderly in our study was 55% and 98.1% respectively. This result differs from that of a study carried out in Canada, in which women consumed 67.3% and men 77.5% [16]. In our survey, 9.7% of subjects drank alcohol, a lower rate than in a study conducted in Côte d'Ivoire, where 28.4% of subjects drank alcohol [17].

Diabetes affected more women in this study (55.7%) than men (44.3%) with a (p-value = 0.035). We do not know the reason of this disparity, but similar results were found by a study carried out in Algeria, in which women and men with diabetes represented 53.40% and 46.60% respectively [18]. A study in Côte d'Ivoire also found that women (59.41%) were affected by diabetes compared with men (40.59%) [19]. The diabetic husbands in our study were 64.4%, which does not corroborate the Bassin study with 73.68% [20]. However, 58.5% of diabetic brides and grooms in our study had a non-significant p-value ($p > 0.05$) [21]. In our study, more than 68.1% of the subjects had dependent children and 96% of these elderly subjects were diabetic, which is different from the result of the study by Faye *et al.*, in which only 27% of elderly people had dependent children [22]. Our study showed that 74.5% of diabetics had 3 meals a day and the frequency of meals was significantly related to diabetes. The study by Ake-tano *et al.* showed that 99.2% of diabetics had 3 meals a day [23]. Cardiovascular disease accounted for more than 30% of pathologies associated with diabetes, followed by osteoarthritis 25%, gastritis and rheumatism 15% each in our study. On in a cohort study, SAGES-Observatoire Diabète, the complications of diabetes were largely dominated by coronary heart disease, stroke, heart failure, nephropathy [24]. Physical activity protects the body against the onset of diabetes; it is a protective factor. However, in our survey, only 26.8% of elderly diabetic subjects were physically active, compared with 73.2% who were sedentary, and physical activity was

significantly associated with diabetes (p = 0.001). However, in a study of subjects aged 65 and over at the Mohamed VI University Hospital in Morocco, physical activity was not significantly associated with diabetes (p = 0.232) [8]. As for hypertension, it affected 171 people aged 60 and over (52.8%) in our study, this rate is strictly lower (14%) than the study by Faye *et al.* in 2017 at the Ouakam Gerontology Centre in Senegal [22]. Our results concurred with those of Ka *et al.* (60.9%) [6]. Men were more affected by hypertension (51.9%) than women (48.1%). The HAS confirms that the prevalence of hypertension was higher in men (34.1%) than in women (27.8%) [10] [16]. In the literature, it has been observed that women are more affected by hypertension [25]. In our study, we found that no socio-economic factors were associated with hypertension. Consumption of high-fat foods (41.2%) was associated with hypertension (p < 0.025), which was higher than the value observed in the study by KA *et al.* (25.8%) [6]. In our study, cardiovascular disease was not significantly associated with hypertension in elderly subjects. This result is markedly different from the information described in the literature, where high blood pressure is accompanied by a significant risk of cardiovascular disease [26]. The study by Bellanger *et al.* emphasises that hypertension can be avoided by giving priority to eating fruit, vegetables, wholegrain cereals, pulses, fish and skimmed or semi-skimmed dairy products, and also by limiting the consumption of white meat and salt [27]. Tobacco consumption was not significantly associated with diabetes and hypertension in our study, but one study showed that tobacco consumption was significantly associated with arterial hypertension (p < 0.05) [28]. The study carried out at the Kinshasa General Provincial Reference Hospital shows that diabetes affected 56.0% of the subjects compared to 24.0% who suffered from high blood pressure [29]. These results are different from the results of our studies, in which diabetics represented 46.56% and hypertensive patients 53.44%. This difference could be explained by the type of study that was cross-sectional retrospective with a sample size that was smaller than the sample size of our study. It could also be explained by the youth of their sample. The older adults in our study had no social protection support which is similar to the study by Konan *et al.* who report that 92.51% had no social protection [19].

The main limitation of our study lies in the fact that most of the data were collected by interview (marital status, number of children in care, type of housing, etc.)

The remining of the 24 hours food consumption may be biased. However, a cross-country study was carried out in Côte d'Ivoire among elderly people with diabetes using questionnaires on a form, which found that women were more affected by known diabetes (59.41%) [19] which is similar to our result. Our study is consistent with the study carried out at the geriatrics of the Treichville University Hospital in terms of the collection of information, the data of which were collected by means of a survey sheet and diabetes affected 79.56% of the elderly subjects in that study [15].

5. Conclusion

This study determined certain socio-economic, dietary and clinical parameters of elderly people with diabetes and/or hypertension. It also showed statistically significant links between the hypertension and/or diabetes of these people and these parameters. Hypertension and diabetes are risk factors for cardiovascular disease, especially in people aged 60 and over. The establishment of a geriatric centre and the management of elderly subjects in Guinea could considerably reduce the prevalence of cardiovascular disease and diabetes in this age group.

Data Availability

Data from the study is available from the microbiology and microbial biotechnology laboratory at the Joseph Ki-ZERBO University in Ougadougou.

Authors' Contributions

Field survey, data analysis, conceptualisation, methodology, design, revision, control, final approval and editing: Ibrahima KABA, Aboubacar S OUATTARA, and Fanta TOURE.

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Conflicts of Interest

The authors declare that they have no conflict of interest in relation to this article.

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Abbreviations

BMI: Body Mass Index,

FG: Guinean Franc,

FCFA: Franc des Colonies Française d'Afrique,

BP: Brachial Perimeter,

MNA-SF: Mini Nutritional Assessment Short From.