Scientific Research Publishing

Overweight and Obesity: Epidemiological, Diagnostic and Therapeutic Aspects (Preliminary Study of 64 Cases Followed in Dietetic Consultation and Review of the Literature)

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Abstract

Obesity and excess weight are on the rise in developing countries, which is a source of legitimate concern on the part of the institutions responsible for the health of populations. Overweight and obesity are the fifth most common risk factor for death worldwide, killing at least 2.8 million people each year. In view of the importance of the subject and the lack of sufficient data in our context, it seemed appropriate to us to carry out this preliminary work in Burkina Faso on a population of subjects followed in consultation with Nutrition and Dietetics. The general objective of our work, of a descriptive cross-sectional type, was to describe the epidemiological, clinical, biological and therapeutic aspects of obesity in a population of consultants, black Africans over a period of one year. The study concerned three (03) private care establishments (clinics) in the city of Ouagadougou in which a Nutrition and Dietetics consultation was available. This was a descriptive cross-sectional study which concerned 64 patients followed in nutrition and dietetics consultations from January 2 to December 31, 2012. The material of the study is represented by the analysis of the files of 64 patients followed in consultation of Nutrition and Dietetics in three (03) medical clinics. The most affected age groups were 30 to 40 years (19 cases) and 40 to 50 years (18 cases); 53 women (82.8%) and 11 men (17.2%), *i.e.* a sex ratio of 4.82. Among our patients, 12 people were overweight (18.75%), 23 had moderate type I obesity (35.94%), 15 severe type III (23.44%) and 14 had type III obesity massive (21.87%). An-

droid-like obesity was predominant in 53 people (82.81%). Among our patients 16 (25%) presented with dyslipidemia, 49 (76.56%) had eating disorders. The most common cloudy snacking was observed in 33 people (67.35%). In terms of evolution and therapy, 31 people (48.44%) followed the diet at term; the others had either abandoned or discontinued treatment, namely therapeutic changes in lifestyles. A total of 51.56% were lost to follow-up. The mean duration of follow-up was 2.7 months. In sum, obesity mostly affects young adults (30 to 40 years old) and females, with a predominance of type I obesity (moderate). Android-type obesity was predominant in both sexes. Preventive actions are needed for citizens of Ouagadougou.

Keywords

Overweight, Obesity, Epidemiology, Diagnosis, Ouagadougou

1. Introduction

Obesity, once considered the preserve of industrialized countries, has now grown into a global epidemic. According to the World Health Organization [1] overweight affected 1.9 billion people (aged 18 and over) in 2016. Of this total, more than 650 million were obese. According to this same source by 2030, the number of overweight people is expected to reach 3.3 billion. Overweight and obesity are the fifth most common risk factor for death worldwide, killing at least 2.8 million people each year. Obesity and excess weight are on the rise in developing countries, which is a source of legitimate concern on the part of the institutions responsible for the health of populations. This situation would be linked to the change of lifestyle in countries considered to be in a situation of economic transition [2]. Obesity exposes the individual to long-term complications which make the disease serious. In Africa, some studies have shown a progression of Obesity [3] [4] [5]. In view of the importance of the subject and the lack of sufficient data in our context, it seemed appropriate to us to carry out this work in Burkina Faso concerning a population of subjects followed in consultation of Nutrition and dietetics. The general objective of our prospective work was to describe the epidemiological, diagnostic, therapeutic and evolutionary aspects of obesity in a population of consultants, black Africans.

2. Methods

2.1. Framework, Type and Duration of the Study

The study concerned three (03) private care establishments (clinics) in the city of Ouagadougou in which a nutrition and dietetic consultation was available. -This was a descriptive cross-sectional study which concerned 64 patients followed in nutrition and dietetics consultation from January 2 to December 31, 2012. Indeed, the study continued until April 2021, and we wanted to see the trends through a preliminary study. Analyzing the final data will allow us to do more

in-depth analyzes from a larger workforce. The material of the study is represented by the analysis of the files of 64 patients followed in Nutrition and Dietetics consultation in three (03) medical clinics.

2.2. Selection Criteria

Were included in the study all people over the age of 18, of both sexes, black, who came to consult during the incriminated period because of overweight or obesity and having a higher body mass index (BMI). Or equal to 25 Kg/m². Subjects under the age of 18 were excluded. The consent of the subjects was obtained beforehand during the prospective phase. Socio-demographic, clinical, anthropometric, biological and therapeutic data formed the basis of the analysis.

2.3. Data Collection

The questioning which allowed us to specify the socio-demographic data (identity of the patient, age, sex, profession), the reason (s) for consultation or hospitalization, the functional signs (precordial pain, epigastralgia and/or heartburn, lower back pain, knee and/or hip, exertional dyspnea, sleep apnea, menstrual disorders), family history of obesity, metabolic disorders, chronic medication intake. The clinical data concerned the measurement of anthropometry (weight, height, waist circumference, hip circumference, Waist to hip ratio, body mass index (BMI)), and the search for other cardiovascular risk factors (diabetes, dyslipidemia). Weight was taken with a scale in an undressed patient. Height was measured with a measuring rod in a patient with no shoes on. The BMI was obtained by the ratio: Weight (Kg)/(height (m)²). Overweight was defined as a BMI between 25 and 29.9 kg/m², obesity a BMI between 30 and 34.9 kg/m², and morbid obesity, a BMI over 35 kg/m². Waist circumference (TT) and hip circumference (TH) were measured with a tape measure on a standing, undressed subject. When the TT/TH ratio was less than 0.9 in women and 1 in men, obesity was considered gynoid and android in the opposite case according to VAUGE [6] [7]. For biology, the standards retained were a glycemia < 1.26 g/l, a total cholesterol level < 2 g/l, an LDL-cholesterol level < 1.6 g/l, a triglyceride level < 1.5 g/the. Blood glucose was controlled in individuals with a first dosage > 1.26 g/l. The data collected was entered and analyzed with the software Epi info version 3.5.1.

3. Results

3.1. Socio-Demographic Characteristics of Our Study Population

Our study population consisted of 64 people with an average age of 36.44 years with extremes of 12 and 65 years. The largest age group was between 30 and 45 years (45.31%) (**Figure 1**).

These were 53 women (82.8%) and 11 men (17.2%), for a sex ratio of 4.81. Women made up the majority of our population across all age groups. They were mainly civil servants (36 out of 63 or 57.14%) who made up the largest class, followed by pupils and students (12 out of 63 or 19.05%), shopkeepers and
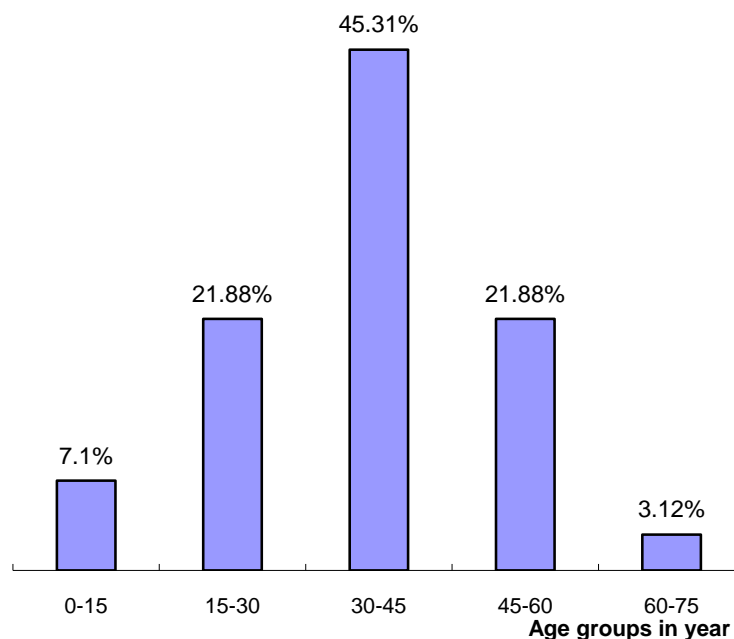
45.31%

21.88%   21.88%

7.1%

3.12%

| 0-15 | 15-30 | 30-45 | 45-60 | 60-75 |

Age groups in year

Figure 1. Distribution of the study population by age group (n = 64).

housewives (7 out of 63 or 11.11% for each) then retirees (1 in 63 or 1.59).

3.2. Clinical and Anthropometric Data

Regarding the degree of obesity, 12 people were overweight (18.75%), 23 had type I obesity-moderate (35.94%), 15 type II-severe (23.44%) and 14 had type III obesity-massive (21.87%) (Table 1). In short, 18.75% of patients were overweight and 81.25% of patients were obese.

As for the type of obesity according to Vague [6] [7], in our study population 53 had android-type obesity (82.81%) and 11 gynoid-type obesity (17.19%). The family history found was: obesity (62.5%); type II diabetes (26.56%) hypertension (15.62) (Table 2). Eating disorders associated with obesity were dominated by snacking (67.34%) (Table 3).

It should be noted that a patient could with several family history.

As for the comorbidities associated with obesity, they were dominated by type II diabetes (26.56%) and hypertension (15.62%) (Table 4). Note 2 cases of metabolic syndrome.

3.3. Biological Data

At the level of biology, we were essentially interested in the 64 people who composed our population, 17 had a dyslipidemia, of which 6 had hypercholesterolemia (35.3%) which constitutes the most important fringe, 6 a mixed hyperlipidemia (35.3%) and 5 hypertriglyceridemia (29.4%) (See Table 5).

3.4. Therapeutic and Evolving Data

Treatment of obesity and overweight in our patients, consisted mainly of

Table 1. Degree of overweight.

Degree of excess weight	Number	Percentage%
Overweight	12	18.75
Obesity type I	**23**	**35.94**
Obesity type II	15	23.44
Obesity type III	14	26.42
Total	**64**	**100**

Table 2. Distribution according to family history.

family history	Number	Percentage (%)
Type II diabetes (n = 64)	17	26.56
Dyslipidemias (n = 64)	1	1.56
Obesity (n = 64)	40	62.50
High blood pressure (n = 64)	10	15.62
Hyper uricemia (n = 64)	9	14.06

Table 3. Eating disorders.

eating disorders	Number	Percentage (%)
Binge eating disorder	2	4.08
Food compulsion	4	8.16
Snacking	**33**	67.34
Snacking + Binge eating	4	8.16
Snacking + compulsion	6	12.24
Total	**49**	**100**

Table 4. Comorbidities associated with obesity.

Comorbidities	Number	Percentage %
Type II diabetes (n = 64)	17	26.56
High blood pressure (n = 64)	10	15.62
Hepatic steatosis(n = 64)	2	3.12
Rheumatologic disorders (n = 64)	3	4.69
Respiratory disorders(n = 64)	5	7.81
Neurological disorders(n = 64)	2	3.12

Table 5. Distribution by type of dyslipidemia.

Dyslipidemies	Effective	Percentage%
High cholesterol rate	6	35.3
High triglycerides rate	5	29.4
Mixed hyperlipidemia	6	35.3
Total	**17**	**100**

therapeutic lifestyle changes: low-calorie regime reducing daily energy requirements, correction of eating disorders, regular physical activity all for 14 days. During this period, the subject should lose between 3 and 5 kilograms. This plan phase was followed by a stabilization regime for 7 days consisting of a sort of relative rest, while stabilizing weight. The number of people followed until term was 31 corresponding to 48.44%. The average follow-up time was 2.7 months and the average weight loss of 2.8 kg/month.

4. Discussion

4.1. The Limits of the Study

They are those most often observed in retrospective data analysis. Indeed, some biological parameters such as blood sugar and uric acid could not be obtained. The lack of qualitative data is also a limit because the discourse of patients on the causes of obesity and their feelings, could have shed more light on this problem in urban areas.

4.2. Epidemiological Aspects

The study of obesity and other cardiovascular risk factors is of great interest in our developing countries. Indeed studies had showed the constant progression of obesity since the 1990s, both in developed [8] [9] and developing countries [5]. In our study we found 18.75% of overweight patients and 81.25% patient in obesity. Our work exclusively concerned patients who had a weight overload and were sent to us by a doctor, or who came on their own initiative. A female predominance of obesity has been emphasized in our study. These were 53 women (82.8%) and 11 men (17.2%) or a 4.81 ratio sex. Women accounted for the majority of our population all aged. Although some authors [10] [11] had noted a male predominance, most studies both in developing countries and industrialized countries found a predominance of women in obesity [4] [12] [13] [14]. The predominance of female gender could be linked to cosmopolitan factors such as menopause, sedentarity, multiparity but also looking for compliance with a reference aesthetic model. Indeed, in Africa, overweight is part of the beauty canons of the average population. Gavage is a common practice in some African societies. But, nowadays for the role of medical standards this phenomenon is being mitigated. The average age was 36.44 years with extremes of 12 and 65 years. The largest age group was between 30 and 45 (45.31%). Most studies find a young people among obese [4] [12] [13]. However, Pessinaba [15] in Lomé found an older population with an average age of 49.53 ± 17.24 years. It was mainly officials (36 of 63 = 57.14%) that constituted the most important class. Foyer women arrived in the last position with 11.11% of cases. Our study does not comply with those of Sheikh Omar [12] and Kéita [13] in Mali who found a predominance of housewives. This difference can be explained by the fact that their study has affected people during a survey while in our case, it was obese people who came to consult or referred by their doctors themselves. Since the

officials are better financially bound, and could thus ensure nutritionist consultation.

Volken T (16) in Switzerland, found a higher risk of overweight and obesity among migrants compared to nationals. The need for nutritional education among these sometimes poorly educated people was imperative. In our study we did not make this distinction between national and non-national migrants.

In addition, civil servants (office officers, secretaries, directors, teachers, etc.) spend the majority of their time in the offices, in the laboratories and the lack of time they benefit is devoted to leisure, Students are little in sport, this can be explained by the fact that school spots are increasingly cluttered time jobs; It is also necessary to add the change of eating habits where you can see an increase in the consumption of sandwiches, skewers and drinks at the time of breaks. Note that sports activity is no longer rigorous in schools and electronic games tend to replace football and other sports. As for the housewives, they are mostly assisted by other people who are aid-households reducing household chores, all of the work is entrusted to them. So, women's sedentarity is increased with a higher risk of obesity. Traders meaning more and more in the markets and at the edge of the roads which decrease their displacement and more people are people who nibble a lot and are big consumers of products rich in sugar and lipid. The rate of obesity in retirement individuals is weak because these people have changed their eating habits and those who are obese spend the majority of their time drinking and eating meat (skewers, grills), which promotes An accumulation of fats especially at the level of the abdomen so an android obesity.

4.3. Clinical and Anthropometric Aspects

Concerning the degree of obesity, 12 people were overweight or 18.75%, 23 had (moderate) type I obesity, or type II (severe), or 14% and 14 had an Obesity type III (massive) or 21.87% (Table 1). in sum of 18.75% of overweight patients and 81.25% patient in obesity As for the type of obesity according to Vague, in our study population 53 had an android obesity (82.81%) and 11 of the gynoid type (17.19%). Zabsonre and al [4] find in their study 28.5% of overweight, 61.4% obesity and 10.1% massive obesity. It should be noted, however, that we have not used exactly the same classifications. At home the types I and II of WHO constitute one and the same group called "obesity". By analogy, the two stages give in our series 59.38% close to 61.4% of Zabsonré. Massive obesity in our series (21.8%) is greater than 13% observed by Cheick Oumar [12] in Bamako. This population whose BMI is greater than or equal to 40, with a maximum risk of making cardiovascular accidents and metabolic diseases such as type II diabetes, hyperuricemia, dyslipidemias and especially with a state-pronounced state of insulin resistance [17]. Our results differ from those of Soulemane Pessinaba1 [15] in Lomé who found in consultation of cardiology 64.9% overweight compared to 32.9% obesity. In our study, women more often had an android obesity concerning 43 cases in 53 (81.13%) and gynoid obesity in only 10 cases in 53

(18.87%). So, men had an android obesity for 10 cases in 11 (90.91%) and only 1 case of gynoid obesity in 11 (9.09%). We noticed that gynoid obesity although not very important in our series, was mainly met in women (18.87% of women versus 9.09% of men) and android obesity in men (90.91% of men against 81.13% of women). Blouza in her study found similar values at the level of visceral obesity (94.6% of men versus 87% of women) [18]. The gynoid obesity provides women a form of roundness that constitutes for her an aesthetic asset. This type of obesity is very little linked to the occurrence of cardiovascular and metabolic diseases opposite android obesity Indeed, most studies found in the literature highlight a co-relationship between android obesity and the occurrence of cardiovascular and metabolic complications [4] [17]. The reason for the disturbances of android obesity or central obesity (hyperinsulinemia, insulino-resistance, hyperlipidemia, arterial hypertension and diabetes), is not completely elucidated. It could be linked to an increase in androgenic activity and an increase in lipolysis and the production of fatty acids in the abdominal region, with a lower clearance of insulin by the liver and an increase in hepatic production of glucose [19]. In our series 62.50% of obese subjects (40 cases) had a family history of obesity. Family history of cardiovascular and metabolic diseases are also found in these people thus reflecting their degree of susceptibility to make such complications of obesity. These results reflect the hereditary character of obesity. Studies shown that the heritability of obesity were around 25% to 40% [20] [21]. According to the reflection group on obesity and overweight (wholesale) the child had 40% chance of becoming obese if a bosom parent and 80% of the future if both parents were [22]. RICA [23] Treating the hereditary aspect of obesity reached the same conclusion. A study conducted by Allison *et al.* [24] concluded that the relative risk was about 2 for overweight and 3 to 4 for obesity. This situation is undoubtedly linked to the fact that, in addition to the genes, families share lifestyle, type of food and sociocultural context.

Among our 64 patients, 49 (76.5%) had eating disorders. Nibbling was the most frequently observed disorder in 33 people (67.35%). Food behavior disorders are one of the key elements of weight gain. Indeed, they contribute to increase daily energy balance of the subject, with contributions above energy needs. The weight gain is fast because of the consumption of foods with very high energy density namely saturated fats and fast sugars. These dietary behavior disorders are essentially binge eating attacks (prandial and extra prandial) which are frequent in obese or overweight subjects. The most encountered are: nibbling, food compulsions and binge eating disorder [13] [17]. According to Sadoul [25], compulsions and nibbling are 40% of food disorders in obese people. These behavioral disorders are most often psychological disorders and rarely related to lesional dysfunctions of brain areas controlling the dietary catch: the hypothalamus [25] [26]. In addition, we can evoke the organoleptic factors (taste, palatability) and physiological ones (pubs, availability of food). Regarding the co-morbidities associated with obesity, the Table 4 shows the diversity of chronic

diseases associated with obesity in our series. There is a predominance of diseases such as diabetes with 17 cases (26.56%) and high blood pressure in 10 cases (15.62%). These cases include 5 cases (7.81%) of respiratory disorders (3 cases of asthma and 2 cases of sleep apnea with suffocation); 3 cases (4.69%) of rheumatological conditions (2 cases of knee osteoarthritis and 1 cases of hyper uricemia); 2 cases (5.12%) of hepatic steatosis, and 2 cases of neurological conditions (1 case of epilepsy and 1 case of sciatica). It should be noted that most metabolic and cardiovascular complications have frequently been associated with android obesity as gynoid ones [16] [24] in our cohort mainly composed of individuals with an android grease distribution. Indeed, if compared to the subcutaneous adipose tissue, the intra-abdominal adipose tissue has more cells per mass unit, a larger vascularization, a higher number of glucocorticoid receptors (cortisol) as well as androgen receptors (testosterone) and especially with lipolysis induced by more important catecholamines. These differences mean that intra-abdominal adipose tissue is more sensitive to hormonal stimulation and variations in lipid storage and metabolism. In addition intra-abdominal adipocytes are located upstream of the liver in the door; This means that there is a more marked increase in the intake of non-esterified fatty acids by the liver by traffic carries in subjects with abdominal obesity [17]. We have good reasons to think that abdominal obesity plays an important role in the appearance of insulin resistance and metabolic syndrome that combines obesity, high blood pressure, diabetes, hypertriglyceridemia. This syndrome has been observed in 2 persons.

4.4. Biological Aspects: Dyslipidemia

Of the 64 people who composed our population, 17 had dyslipidemia including 6 high cholesterol rate (35.3%), 6 mixed hyperlipidemia (35.3%) and high triglycerides rate (29.4%). Obese subjects mostly android type are frequently characterized by a state of dyslipidemia in which concentrations in LDLC and plasma triglycerides are increased with a decrease in the concentration of HDLC; This metabolic profile has been associated with increased risk of coronary artery disease (atherosclerosis) and high cardiovascular risk [27] [28]. Excess cholesterol in the blood in particular the LDL (bad cholesterol) results from the excessive consumption of saturated fats. This LDL cholesterol when it undergoes oxidation due to oxidative stress, is deposited on the wall of the arteries, resulting in their obstruction: it is arteriosclerosis that leads to cardiovascular disease. The accumulation of triglycerides comes from excessive consumption of high glycemic index sugars. It can result in their accumulation in the liver, lymphatic liquid and arteries [27]. For individuals who have dyslipidemia associated with obesity, the regime in addition to be low in calories is devoid of saturated fats and high glycemic sugars.

4.5. Therapeutic and Evolving Aspects

The number of people followed until term was 31 (48.44%), the others aban-

doned the treatment, therapeutic lifestyle changes. The number of losses is very important (51.56%) and poses the problem of compliance with the regime found in most studies [5] [17] [25]. This explains the fact that the average follow-up time was 2.7 months, insufficient period to observe a significant weight loss. We obtained satisfactory results with obese subjects whose care has been longer with good compliance. The weight loss was often accompanied by a clear improvement of the comorbidities namely high blood pressure, knee arthritis, respiratory difficulties, and even self-esteem disorders. The weight loss was 2.8 kg/month and approached that recommended in the 1600-calorie diet which is 3 to 4 kg/month [25]. In obese that were observing this weight loss varied between 3 and 5 kg/month. These results were not achieved in the opposite case. Also, a lot of failures of management stem from lack of physical activity. The evolution of dyslipidemia after hypocaloric and hypolipidic diet was very satisfactory. Indeed all the subjects who presented a dyslipidemia saw this anomaly correct after 2.3 months of low cholesterol and triglyceride regimes associated with regular physical activity. It is now admitted that physical activity is able to decrease the LDL cholesterol in the blood and increase the HDL which has a protective effect on the vessels of the heart [17] [27]. Effect, according to the literature, it was estimated that the loss of 1 kg of weight led to the decrease of 1% of the LDL cholesterol level [13].

5. Conclusion

This study showed that young adults (30 to 40 years old) are the most confronted with the problem of obesity. Women are more exposed than men. Also, women are most concerned about their health. There is a predominance of type I obesity (moderate) according to WHO, followed by Type III (severe). Android obesity was predominant in both sexes. If the role of heredity in the genesis of obesity is known, we could notice that eating habits of our populations associated with strong sedentarity, can explain it. Indeed, food investigations revealed excessive consumption of saturated fats and fast sugars, food with high density energy. Real public health problem with consequences in terms of morbidity and mortality, prevention actions are needed towards Ouagadougou's citizens.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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