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Prevalence and Determinants of Adult Obesity in a Low-Income Population of Western Africa: Results from a Nationwide Cross-Sectional Survey

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Abstract

Background: The prevalence of obesity is rising in low/middle-income countries. Better understanding of the epidemiological characteristics of obesity will benefit the development of prevention programs in these countries. We sought to determine the prevalence of obesity and associated factors among adults in Togo, a low-income country in Western Africa.

Design: This was a secondary analysis from a nationwide cross-sectional survey conducted in September–October 2011.

Methods: The survey involved unselected respondents aged ≥ 18 years living in Lomé (urban population) and in central Togo (semi-urban population). Overweight was defined as Body Mass Index (BMI) 25–29.9 kg/m^2 and obesity as ≥ 30 kg/m^2. Central obesity was classified using National Cholesterol Education Program (NCEP) and International Diabetes Federation (IDF) definitions.

Results: Data from 2626 respondents were surveyed (1900 in Lomé, 726 in central Togo). Overall prevalence of obesity was 20.1% and overweight was 27.7%. Obesity was most prevalent among subjects aged 35–64 years (Odds Ratio (OR): 2.21 (95% Confidence Interval (CI): 1.80–2.72)). More women than men were obese (OR: 3.88 (95% CI: 3.08–4.87)), irrespective of whether they lived in an urban or semi-urban area. Obesity was more prevalent among urban inhabitants (OR: 2.15 (95% CI: 1.68–2.75)); this difference persisted after adjustment. The prevalence of central obesity was 33.7% with the NCEP definition, 48.8% with the IDF definition.

Conclusions: The prevalence of adult obesity in a low-income Western African population is high. Urban living, female sex and age 35–64 years were associated with obesity, suggesting that prevention programs should target these classes as a priority.

Keywords: Obesity; Prevalence; Adult; Western Africa

Abbreviations

BMI: Body Mass Index; NCEP: National Cholesterol Education Program; IDF: International Diabetes Federation; WC: Waist Circumference; WHO: World Health Organization; HIV–AIDS: Human Immunodeficiency Virus and Acquired Immune Deficiency Syndrome; USA: United States of America; SD: Standard Deviation

Introduction

The prevalence of obesity in many developed countries has reached alarming proportions [1,2]. A rapid increase in the prevalence of obesity has also been reported in major emerging countries such as China [3]. In low-income populations of Western Africa, which face serious problems of malnutrition and infectious diseases including malaria, tuberculosis and HIV–AIDS, health problems related to obesity are relegated to the background. However, the World Health Organization (WHO) estimated that obesity is becoming one of the main burdens for low- and middle-income populations, because it is associated with a cluster of metabolic and cardiovascular risk factors such as hypertension, and it increases the risk of acute coronary syndromes [4,5]. Obesity is also associated with cancer and asthma, depression and osteoarthritis [6,7]. It increases the risk of premature death and healthcare costs [8,9].

Epidemiological studies on obesity have been done in this region of Western Africa (Togo, Nigeria, Ghana). Some were conducted in selected outpatient cardiology departments, whereas others were restricted to urban or semi-urban settings only [10-15]. Few studies have focused on obesity in the general

population, including people living in urban and semi-urban regions [16,17]. Epidemiological data could provide important information for optimizing prevention programs in these populations. The aim of the present study was to determine the prevalence of obesity and associated factors among adults in Togo, a low-income country in Western Africa.

Methods

Study design

We performed a secondary analysis of data from a nationwide cross-sectional survey on hypertension and associated risk factors in Togo, a low-income country in Western Africa [18]. The analysis included unselected respondents aged ≥ 18 years living in an urban (Lomé) or semi-urban (central region of Togo) area, between 1 September and 14 October 2011. Unselected respondents presented to the survey sites after a week of publicity (sensitization) in local mass media (radio, television) in urban areas. In some locations of semi-urban areas, the heads of villages announced the survey through their local information committees, who highlighted the importance of participating in the survey.

The 2011 demographic statistics estimated the Togolese population to be approximately 6.1 million, with an average growth rate of 2.84‰ per year. The urban architecture is dominated by the city of Lomé, whose population amounts to 837,437 inhabitants. Lomé has most healthcare facilities and provides easy access to governmental and social services compared with other parts of the country. The central region of Togo, with 543,150 inhabitants, is a semi-urban area with an essentially informal economy system such as market workers and farmers [19].

Data collection and procedures

For data collection, nine sites were selected in the main districts of Lomé: Tokoin, Bè, Klikamé, Nukafu, Djidjolé, Atikoumé, Port, Cacaveli and Nyékonakpoé. Collection sites in the central region were Blitta, Tchamba and Sokodé. To limit selection bias, the study was done on different days of the week and at different times of the day. We systematically and exhaustively approached all passersby, inviting them to enroll in the study. The medical team at each site comprised two doctors and four registered nurses. To limit reproducibility bias, all members of the medical team were trained (for 1 day) on the methods of data collection. Data were available on location of residence, age, sex, profession, tobacco use (current smokers), alcohol consumption and use of hormonal contraception (among women).

Weight and height were measured using an adult hospital lever balance with participants wearing light clothing and no shoes or extra articles. Body mass index (BMI) was classified according to the WHO as underweight (BMI < 18.5 kg/m2), normal weight (BMI 18.5–24.9 kg/m^2), overweight (BMI 25–29.9 kg/m^2) and obese (BMI ≥ 30 kg/m^2). Severity of obesity was stratified into moderate (BMI 30–34.9 kg/m^2), severe (BMI 35–39.9 kg/m^2) and morbid (BMI ≥ 40 kg/m^2) [20].

Waist circumference was measured midway between the iliac crest and the lower-most margin of the ribs, with a bare belly and at the end of normal expiration according to the WHO guidelines [20]. Central obesity was defined by waist circumference using two definitions: (1) waist circumference > 88 cm for women and > 102 cm for men, according to the National Cholesterol Education Program (NCEP) Expert Panel on Detection, Evaluation, and Treatment of High Blood Cholesterol In Adults (Adult Treatment Panel III) classification and (2) waist circumference > 80 cm for women and > 94 cm for men, according to the International Diabetes Federation (IDF) definition [21,22]. Hypertension was defined as systolic blood pressure ≥ 140 mmHg and/or diastolic blood pressure ≥ 90 mmHg [23].

Ethical Considerations

Oral informed consent was obtained from all respondents, in accordance with the Declaration of Helsinki. The study was approved by the National Ethics Committee. Each respondent's answers and medical data were kept confidential. After screening, advice was provided to all respondents, some of whom were referred to hospital for treatment.

Statistical Analysis

Continuous variables are presented as mean ± Standard Deviation (SD) and categorical variables as count and percentage. The chi-square test was used to compare categorical variables and the t test was used for continuous variables. Univariate logistic regression analysis was used to determine the relationship between obesity and socio demographic factors (sex, location) [3]. Appropriate adjustment for potential confounders (e.g. age, sex, location of residence, tobacco use, alcohol consumption and use of hormonal contraception) was made in multiple logistic regression analysis. All tests were two-sided and $p < 0.05$ was considered statistically significant [24-26].

Anticipating that the prevalence of obesity would be 25%, a confidence interval of 23% to 27% was determined as clinically relevant. Thus, a sample size of 2000 respondents would be needed (Wald method) [11].

All statistical analyses were performed using Centers for Disease Control and Prevention (CDC) Epi-Info version 7 software.

Results

Among the 2749 respondents surveyed, 123 had missing anthropometric data and were excluded from the analysis, leaving a population of 2626 subjects. Of these, 1900 were living in Lomé (an urban area) and 726 were living in the central region of the country (semi-urban area).

Table 1 shows the comparison of the baseline characteristics of urban and semi-urban inhabitants and according to sex. Urban inhabitants was younger than semi-urban ones (40.9 ± 14.0 vs 47.0 ± 16.6 years; p < 0,001), whereas women were older than men (43.8 ± 15.5 vs 40.9 ± 14.2 years; p < 0,001). There were more manual workers among semi-urban inhabitants and among men (each p < 0.001), while there were

Table 1: Baseline characteristics, overall and according to residence and gender

	Total population (*n* = 2626)	By residence			By sex		
		Urban (*n* =1900)	Semi-urban (*n* = 726)	*P*	Women (*n* =1479)	Men (*n* =1147)	*p*
Men, *n* (%)	1147 (43.7)	872 (45.9)	275 (37.9)	0.0002	0	1147 (100)	–
Age (years), mean ± SD	42.6 ± 15.0	40.9 ± 14.0	47.0 ± 16.6	< 0.0001	43.8 ± 15.5	40.9 ± 14.2	< 0.0001
Age group, *n* (%)							
18–24 years	293 (11.2)	225 (11.8)	68 (9.4)	0.07	154 (10.4)	139 (12.1)	0.16
25–34 years	618 (23.5)	507 (26.7)	111 (15.3)	< 0.0001	312 (21.1)	306 (26.7)	0.0008
35–44 years	571 (21.7)	419 (22.1)	152 (20.9)	0.53	312 (21.1)	259 (22.6)	0.36
45–54 years	542 (20.6)	385 (20.3)	157 (21.6)	0.44	320 (21.6)	222 (19.4)	0.15
55–64 years	359 (13.7)	243 (12.8)	116 (16.0)	0.03	221 (14.9)	138 (12.0)	0.03
65–74 years	177 (6.7)	99 (5.2)	78 (10.7)	< 0.0001	110 (7.4)	67 (5.8)	0.10
≥ 75 years	66 (2.5)	22 (1.2)	44 (6.1)	< 0.0001	50 (3.4)	16 (1.4)	0.001
Profession, *n* (%)							
Manual worker	848 (32.3)	455 (23.9)	393 (54.1)	< 0.0001	446 (30.2)	402 (35.0)	0.007
Informal activity	786 (29.9)	682 (35.9)	104 (14.3)	< 0.0001	727 (49.2)	59 (5.1)	< 0.0001
Soldier/police	52 (1.9)	16 (0.8)	36 (5.0)	< 0.0001	2 (0.1)	50 (4.4)	< 0.0001
Student	251 (9.6)	213 (11.2)	38 (5.2)	< 0.0001	87 (5.9)	164 (14.3)	< 0.0001
Employee	543 (20.7)	412 (21.7)	131 (18.0)	0.03	177 (12)	366 (31.9)	< 0.0001
Retired	118 (4.5)	105 (5.5)	13 (1.8)	< 0.0001	27 (1.8)	91 (7.9)	< 0.0001
Unemployed	28 (1.1)	17 (0.9)	11 (1.5)	0.16	13 (0.9)	15 (1.3)	0.28
Lifestyle, *n* (%)							
Tobacco use	83 (3.2)	54 (2.8)	29 (4.0)	0.12	21 (1.4)	62 (5.4)	0.001
Alcohol consumption	835 (31.8)	687 (36.2)	148 (20.4)	< 0.0001	382 (25.8)	453 (39.5)	< 0.0001
Hormonal contraception[a]	99 (6.7)	94 (9.1)	5 (1.1)	< 0.0001	99 (6.7)	–	–
Blood pressure, mean ± SD							
SBP (mmHg)	134.3 ± 28.3	133.4 ± 27.5	136.8 ± 30.1	0.009	135.5 ± 30.3	132.8 ± 25.3	0.01
DBP (mmHg)	83.1 ± 17.5	83.0 ± 17.8	83.2 ± 16.6	0.42	82.9 ± 18.0	83.3 ± 16.7	0.53
Hypertension,[b] *n* (%)	988 (37.6)	725 (38.2)	263 (36.2)	0.41	603 (40.8)	385 (33.6)	0.0001
Anthropometric parameters, mean ± SD							
Weight (kg)	69.2 ± 14.6	70.5 ± 14.6	65.7 ± 14.1	< 0.0001	68.8 ± 15.9	69.8 ± 12.7	0.09
Height (m)	1.64 ± 0.09	1.64 ± 0.09	1.64 ± 0.09	0.06	1.59 ± 0.07	1.70 ± 0.07	< 0.0001
BMI (kg/m^2)	25.7 ± 5.4	26.2 ± 5.5	24.5 ± 5.0	< 0.0001	27.0 ± 6.0	24.0 ± 4.1	< 0.0001
Waist circumference (cm)	84.9 ± 19.5	88.3 ± 14.8	74.1 ± 27.3	< 0.0001	86.9 ± 20.5	82.4 ± 19.8	< 0.0001

SD: Standard Deviation; SBP: Systolic Blood Pressure; DBP: Diastolic Blood Pressure; BMI: Body Mass Index
[a]Data for women only
[b]SBP ≥ 140 mmHg and/or DBP ≥ 90 mmHg.

more employees among urban inhabitants and men (p = 0.03 and < 0.0001, respectively). Alcohol consumption and use of hormonal contraception were more prevalent in the urban population (both p < 0.0001). Men used alcohol and tobacco more often than women (p = 0.001 and < 0.0001, respectively). Higher mean BMI and higher mean waist circumference were noticed among urban population (all p < 0.0001) and among women (all p < 0.0001).

The overall prevalence of obesity was 20.1% (529/2626) and that of overweight was 27.7% (728/2626). The distribution of obesity according to age groups showed that most

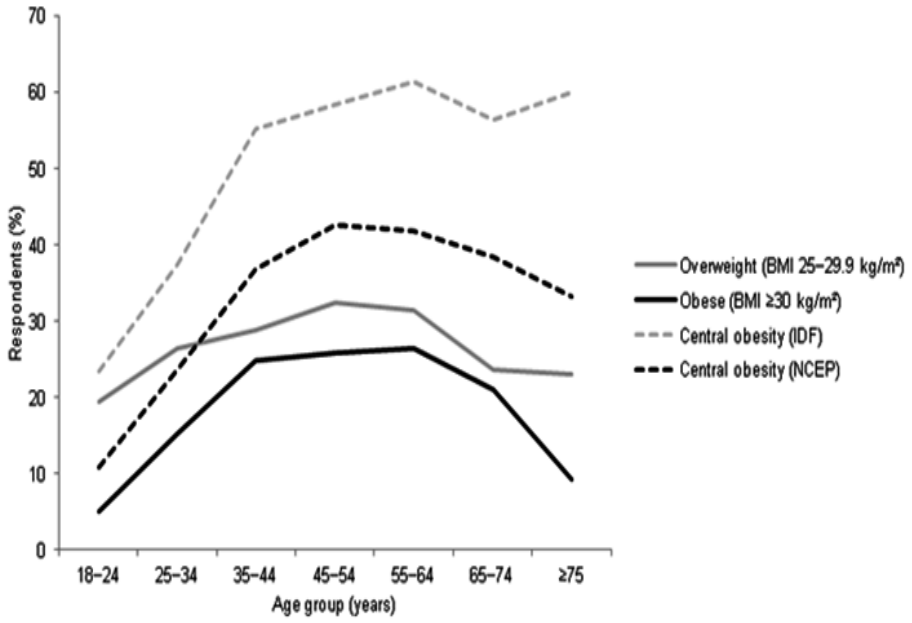

Figure 1: Prevalence of overweight (BMI 25–29.9 kg/m^2), obesity (BMI ≥ 30 kg/m^2) and central obesity in different age groups in Togo, a low-income country in Western Africa.
BMI: Body Mass Index; IDF: International Diabetes Federation; NCEP: National Cholesterol Education Program

obese people aged between 35 and 64 years (Figure 1).

In univariate logistic regression analysis, factors most associated with obesity were urban area, female sex and age 35–64 years (Table 2).

The anthropometric data, based on urban or semi-urban area, are shown in Table 3. Obesity was more prevalent in the urban population (p < 0.0001), whereas underweight (7.9% vs 3.2%, p < 0.001) and normal BMI (51.7% vs 46.1%, p = 0.01) were more common in the semi-urban population. This difference in the prevalence of obesity persisted after adjustment for age, sex, tobacco use, alcohol consumption and use of hormonal contraception. Moderate (15.9% vs 8.8%, p < 0.0001) and severe obesity (5.3% vs 2.1%, p = 0.0002) were more prevalent in the urban population, but there was no significant difference in the distribution of morbid obesity (1.9% vs 1.4%, p = 0.46) between the urban and semi-urban populations. The overall prevalence of central obesity was 33.7% based on the NCEP definition, 48.8% according to the IDF definition (Table 3).

Women were significantly more likely to be obese (p < 0.0001) and presented with higher rates of obesity at all levels of severity. Women had higher levels of central obesity than men for both the IDF and the NCEP definitions (all p < 0.0001).

Table 2: Univariate logistic regression analysis between obesity and associated factors

Variable	Obese (BMI ≥ 30 kg/m^2) (*n* = 529)	Non-obese (BMI < 30 kg/m^2) (*n*=2097)	OR (95% CI)	*P*
Urban area, *n*	440	1460	2.15 (1.68–2.75)	< 0.0001
Female sex, *n*	422	1057	3.88 (3.08–4.87)	< 0.0001
Age 35–64 years, *n*	375	1097	2.21 (1.80–2.72)	< 0.0001
Tobacco use, *n*	9	74	0.47 (0.23–0.95)	0.03
Alcohol consumption, *n*	164	671	0.95 (0.77–1.17)	0.66
Hormonal contraception,[a] *n*	23	76	1.00 (0.62–1.61)	0.98

BMI: Body Mass Index; OR: Odds Ratio; CI: Confidence Interval; [a] Data for women only

Table 3: Anthropometric characteristics, overall and according residence in an urban or semi-urban area

Variable	Total	Urban area	Semi-urban area	OR (95% CI)	*P*	OR[a] (95% CI)	*p*[a]
BMI, *n* (%)							
Underweight	118 (4.5)	61 (3.2)	57 (7.9)	-		-	-
Normal	1251 (47.6)	876 (46.1)	375 (51.7)	-		-	-
Overweight	728 (27.7)	523 (27.5)	205 (28.2)	-		–	-
Obese	529 (20.1)	440 (23.2)	89 (12.3)	2.15 (1.68–2.75)	< 0.0001	2.62 (1.96–3.50)	< 0.0001
Moderate	367 (14.0)	303 (15.9)	64 (8.8)	-		–	–
Severe	116 (4.4)	101 (5.3)	15 (2.1)	-		–	–
Morbid	46 (1.8)	36 (1.9)	10 (1.4)	-		–	–
Waist circumference (NCEP),[b] *n/N* (%)							
Normal	1234/1862 (66.3)	933/1416 (65.9)	301/446 (67.5)				
Central obesity	628/1862 (33.7)	483/1416 (34.1)	145/446 (32.5)	1.07 (0.85–1.34)	0.53	-	-
Waist circumference (IDF),[c] *n/N* (%)							
Normal	953/1862 (51.2)	717/1416 (50.6)	236/446 (52.9)			-	-
Central obesity	909/1862 (48.8)	699/1416 (49.4)	210/446 (47.1)	1.09 (0.88–1.35)	0.40		

OR: Odds Ratio; CI: Confidence Interval; BMI: Body Mass Index; NCEP: National Cholesterol Education Program; IDF: International diabetes Federation

[a] Adjusted for age, sex, tobacco use, alcohol consumption and use of hormonal contraception

[b] > 88 cm for women and 102 cm for men [21]

[c] > 80 cm for women and > 94 cm for men [22]

Table 4: Comparison of anthropometric data in men and women

Variable	Women (*n* = 1479)	Men (*n* = 1147)	OR (95% CI)	*P*	OR[a]	*p*[a]
BMI, *n* (%)						
Underweight	63 (4.3)	55 (4.8)			–	–
Normal weight	561 (37.9)	690 (60.2)			–	–
Overweight	433 (29.3)	295 (25.7)			–	–
Obese	422 (28.5)	107 (9.3)	3.88(3.08–4.87)	< 0.0001	4.46 (3.31–6.00)	< 0.0001
Moderate	279 (18.9)	88 (7.7)			–	–
Severe	99 (6.7)	17 (1.5)			–	–
Morbid	44 (3.0)	2 (0.2)			–	–
Waist circumference (NCEP),[b] *n/N* (%)						
Normal	484/1043 (46.4)	750/819 (91.6)				
Central obesity	559/1043 (53.6)	69/819 (8.4)	12.5 (9.5–16.5)	< 0.0001	11.8 (8.5–16.3)	< 0.0001
Waist circumference (IDF),[c] *n/N* (%)						
Normal	320/1043 (30.7)	633/819 (77.3)				
Central obesity	723/1043 (69.3)	186/819 (22.7)	7.68 (6.23–9.48)	< 0.0001	9.32 (7.09–12.24)	< 0.0001

OR: Odds Ratio; CI: Confidence Interval; BMI: Body Mass Index; NCEP: National Cholesterol Education Program; IDF: International Diabetes Federation

[a] Adjusted for age, location of residence, tobacco use, alcohol consumption and use of hormonal contraception

[b] >88 cm for women and >102 cm for men [21]

[c] >80 cm for women and >94 cm for men [22]

Table 5: Comparison of anthropometric data in women and men residing in urban and semi-urban areas

Variable	Urban area (*n* = 1900)			Semi-urban area (*n* = 726)		
	Women (*n* =1028)	Men (*n* = 872)	*p*	Women (*n* = 451)	Men (*n* = 275)	p
BMI, *n* (%)						
Underweight	27 (2.6)	34 (3.9)		36 (8.0)	21 (7.6)	
Normal weight	355 (34.5)	521 (59.7)		206 (45.7)	169 (61.5)	
Overweight	300 (29.2)	223 (25.6)		133 (29.5)	72 (26.2)	
Obese	346 (33.7)	94 (10.8)	< 0.0001	76 (16.9)	13 (4.7)	< 0.0001
Moderate	227 (22.1)	76 (8.7)		52 (11.5)	12 (4.4)	
Severe	85 (8.3)	16 (1.8)		14 (3.1)	1 (0.4)	
Morbid	34 (3.3)	2 (0.2)		10 (2.2)	0	
Waist circumference (NCEP),[a] *n/N* (%)						
Normal	330/752 (43.9)	603/664 (90.8)	< 0.0001	137/291 (47.1)	8/155 (5.2)	< 0.0001
Central obesity	422/752 (56.1)	61/664 (9.2)		154/291 (52.9)	147/155 (94.8)	
Waist circumference (IDF),[b] *n/N* (%)						
Normal	209/752 (27.8)	508/664 (76.5)	< 0.0001	111/291 (38.1)	125/155 (80.6)	< 0.0001
Central obesity	543/752 (72.2)	156/664 (23.5)		180/291 (61.9)	30/155 (19.4)	

BMI: Body Mass Index; NCEP: National Cholesterol Education Program; IDF: International diabetes Federation;
[a] > 88 cm for women and 102 cm for men [21]
[b] > 80 cm for women and >94 cm for men [22]

These differences persisted after adjustment for age, location of residence, tobacco use, alcohol consumption and use of hormonal contraception (Table 4).

Sex-related differences in anthropometric data for the urban and semi-urban populations are detailed in Table 5. Women were more often obese than men in both the urban and semi-urban areas (both p < 0.0001), whereas men were more likely to have a BMI indicating normal weight.

Discussion

The data from this cross-sectional survey show that the prevalence of adult obesity in a low-income population in Western Africa is 20.1% and the most obese groups were women, those age 35–64 years and subjects living in an urban area.

The prevalence of adult obesity in Togo is as high as that reported in other Western African countries such as Nigeria (19.6%) or Ghana (17.1%), and in Lebanon (18–22%) [27,28,12,2]. Whereas the rate in Togo is lower than the prevalence of 34.9% reported in the United States of America (USA) in the same period, the difference is not that great, which is a concern considering that the USA has one of the greatest rates of obesity in the world [29]. Furthermore, Western African countries that face other health challenges – such as infectious diseases and malnutrition – do not have sufficient health budgets to deal with the consequences of obesity. In comparison, some developed countries – such as France – have a modest prevalence of obesity (15%), even if that of overweight is high, at 32.3% [30]. Over the past three decades, the prevalence of obesity has increased worldwide, in both developed and developing countries [3].

We reported high prevalence of obesity among urban populations compared to semi-urban ones; this finding has been reported in another Western African country [16]. Indeed, Higher prevalence of overweight (27.2% vs 16.7%) and obesity (20.6% vs 8.0%) were estimated for urban than rural dwellers in a recent meta-analysis in Ghana [31]. In the same region, urban residence was strongly associated with obesity with an odd ratio of 7.8 (95% CI: 5.3 ± 11.3) [17].Many reasons may explain the discrepancy in the prevalence of obesity among urban and semi-urban populations in Western Africa. First, physical inactivity, a high-calorie diet and low consumption of vegetables and fruits are common among urban populations in developing countries. According to the WHO, increased urbanization, car dependence and sedentary occupations are greatly contributing to the global obesity epidemic [32]. Second, alcohol consumption was more prevalent in urban populations. Alcohol consumption may lead to overeating episodes and highly impulsive individuals may be

at risk for increased energy intake during or after episodes of drinking ("binge eating") [24]. Thus, alcohol may contribute to an increase in body weight associated with a certain drinking pattern [33]. Third, as medical care is easily accessible in the urban area of Lomé, the use of hormonal contraceptives was more common. It is suspected that the use of these contraceptives increases the risk of obesity, and Black race is a significant predictor of weight gain among contraceptive users [25,34].

We also found that obesity was more prevalent in women compared with men; in the same way, the meta-analysis of Ofori-Asenso in Ghana reported a prevalence of obesity of 21.9% in women vs 6.0% in men [27]. Higher prevalence of obesity was also found among women in Tanzania (East Africa) [35]. Globally, sex-related patterns in the prevalence of obesity differ in developed versus developing countries. In a systematic analysis on the worldwide prevalence of obesity and overweight between 1980 and 2013, Ng, et al. reported that, in developed countries, more men than women were overweight and obese, whereas overweight and obesity were more prevalent in women than in men in developing countries and this association persisted over time [3]. Lack of physical activity is common among African women and is one of the important risk factors for weight gain [36]. Sociologically, overweight or obese women are often valued in the African population; African women therefore need to be educated on the benefits of physical activity and on the health risks associated with obesity and overweight [37,38].

Finally, the question remains about which classification system for central obesity to use in African populations. If we consider the NCEP definition, the prevalence of abdominal obesity appears reasonable, but use of the IDF definition led to a high prevalence. It is uncertain whether the IDF definition of central obesity is suitable for the African population, as studies supporting this definition did not involve these populations. However, the IDF suggested using the cut-off of Europids for Africans [39]. More studies are needed in African populations to determine the precise cut-off for the definition of central obesity.

Limitations

This study may be subject to selection bias because subjects presented spontaneously to the screening after awareness sessions in the media; this type of bias is common to all such studies. However, the study population is likely to be representative because the proportion of women is close to that the general population (51.4% vs 48.6% of men), and all social strata were included [19]. Furthermore, the population included a high proportion (90.7%) of the potentially active population aged 18–64 years and a small proportion of elderly subjects (≥ 65 years), consistent with the profile of the Western African population [40]. The original aim of the survey was to determine the prevalence of hypertension in this population. Consequently, some data relevant to obesity were not collected (e.g. levels of physical activity and type of diet).

Conclusions

The prevalence of adult obesity in a low-income population of Western Africa is now closer to that of developed countries. This situation is likely to worsen health deficits in the countries that have not yet completed their epidemiological transition. Urban living, female sex and age 35–64 years were associated with obesity. These findings could be useful in obesity-prevention programs to target at-risk populations.

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