High blood pressure and obesity: disparities among four French Overseas Territories

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Background and purpose **The epidemiological characteristics of hypertension and obesity in French Overseas Territories (FOTs) have never been compared.**

Methods **This cross-sectional survey included representative population-based samples of 602, 601, 620 and 605 men and women aged more than 15 years, respectively, from four FOTs of Guadeloupe, Martinique, French Guiana, and French Polynesia. Hypertension was defined as blood pressure (BP) at least 140/90 mmHg or the current use of antihypertensive treatment.**

Results **The prevalence of hypertension was 29.2% in Guadeloupe, 17.9% in French Guiana, 27.6% in Martinique and 24.5% in French Polynesia. Considering the Guadeloupe population as the reference group, prevalence of hypertension was significantly lower in French Guiana ($P<0.001$), even after controlling for age and sex ($P=0.006$). Awareness and treatment of hypertension were similar in French Guiana, Martinique and Guadeloupe (68.8–75.1% and 69.0–73.4%, respectively). Awareness was lower in French Polynesia (50.0%, adjusted *P* value = 0.04), as was treatment of hypertension (32.4%, adjusted *P* value = 0.001). Control of hypertension was also lower in French Polynesia (8.8%, adjusted *P* value = 0.001) compared with the other territories (29.7–31.8%). French Polynesia had the highest prevalence of obesity (33.1%, adjusted *P* value < 0.001) as compared with the other territories (17.9–22.8%). It had also the largest population attributable fraction of hypertension due to obesity (35.5%) compared with Guadeloupe (13.3%), Martinique (12.3%) and French Guiana (23.6%).**

Conclusion **Wide variations were observed in the prevalence and the management of hypertension between these FOTs, and an especially challenging low control of hypertension was found in French Polynesia. Obesity appears a key target to prevent hypertension, particularly in French Polynesia.** *J Hypertens* **29:1494–1501 © 2011 Wolters Kluwer Health | Lippincott Williams & Wilkins.**

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Abbreviations: FOTs, French Overseas Territories; IDF, International Diabetes Federation; NCEP, National Cholesterol Education Program Adult Treatment Panel III; PAF, population attributable fraction

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Introduction

The French Overseas Territories (FOTs) include various regions located in the Caribbean Sea (Guadeloupe and Martinique), South America (French Guiana), the Indian Ocean (Reunion Island) and the Pacific Ocean (French Polynesia and New Caledonia). These regions are all French administrative territories. However, they are distant from each other and display different geographic, demographic, ethnic and economic features. Furthermore, French Polynesia has a locally managed healthcare system, whereas the other three have a common one, centrally managed in Paris ('Caisse Nationale d'Assurance Maladie').

A high prevalence of hypertension has been previously described in Martinique, Guadeloupe and French Guiana as compared with mainland France [1,2]. This high prevalence of hypertension goes along with a higher incidence of stroke [3] and chronic kidney disease [4], as well as a higher prevalence of obesity, above all among women [2]. Whether this pattern of high prevalence of obesity and hypertension applies to all FOTs has not been investigated. Thus, analysis of regional differences in hypertension and obesity between these regions could provide new insights into the evaluation of hypertension and eventually improve prevention strategies.

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The Podium Survey (Prévalence de l'Obésité dans sa diversité Ultra-Marine) was designed to assess the prevalence and management of obesity and hypertension in the FOTs. This report presents an analysis of data collected in the adult population of a representative population-based sample from four FOTs.

Methods

The Podium Survey is a cross-sectional study of four FOTs: Guadeloupe, Martinique, French Guiana and French Polynesia; two FOTs, Reunion Island and New Caledonia, did not participate. The survey took place from December 2007 to November 2008. Each territory was stratified into administrative districts. In each district, sampling points were randomly selected after weighting according to the population distribution from the most recent 1999 census of the French Statistical Institute (INSEE). Ninety-eight sampling points were used in Guadeloupe (population 400 000 in 2006), 111 in Martinique (400 000), 71 in French Guiana (220 000) and 101 in French Polynesia (260 000). A first house was designated at each sampling point, with subsequent houses selected by the random route method for inclusion in the survey: every fourth house turning left/right at each road junction. Houses were visited at least four times, and if there was still no one at home, the house was abandoned for the survey. In each house, only one person was selected for the survey, according to the method of Kish [5].

A sample size of 600 adults per FOT was chosen to allow the prevalence of obesity to be estimated to within 4%, with at least 95% confidence. The total number of households was 1663, 1705, 2032 and 1448, respectively, in the four FOTs. The final participation rates, taking into account absentees and nonacceptance, were 55.6, 53.0, 45.0 and 63.2%, respectively. Each participant gave informed consent to participate in the study, and all data were anonymized. The protocol was reviewed by an ethical review board. According to French regulations, there was no need for signed consent by the participants who were informed about the aims of the survey and of their rights to access and control their data. The study protocol was approved by the French Commission Nationale de l'Informatique et des Libertés.

At the same visit, anthropometric measurements were taken. Height was measured with an electronic device (Soehnle TE) from SOEHNLE, France. Weight was measured using an electronic scale (TANITA BF 522 W, from Tanita France). Blood pressure was measured using a validated automatic device (OMRON M7; Omron Corporation, Kyoto, Japan) [6]. Two different cuff sizes (22–32 and 32–42 cm) were available to better fit the arm size. SBP and DBP were measured at the fifth, sixth and seventh minutes in the sitting position with a cuff adapted to arm size. Blood pressure and heart rate values used in this study are based on the average of the three measurements. All investigators received a 2-day training session to ensure that measurements were collected reliably and all apparatus used correctly.

Study coordination, training of the investigators, centralization and quality control of the data were under the responsibility of one center (HC).

Hypertension treatment and control

Hypertension was defined either by an average blood pressure 140 mmHg or more (SBP) or 90 mmHg (DBP) or by the current use of antihypertensive medication.

Awareness was defined as answering 'yes' to the question: 'Have you ever been told by your doctor that you had high blood pressure?' Treatment was defined as current use of antihypertensive medications among hypertensive patients aware of the disease. Identification of current medication was based on self-report. All medications, with the doses used, were recorded.

Control was defined as a SBP less than 140 mmHg and DBP less than 90 mmHg. Control in treated hypertensive patients was defined as the number of controlled hypertensive patients divided by the number of treated hypertensive patients. Nonpharmacologic interventions to treat hypertension were not considered in this analysis. The control in all was the number of hypertensive patients with a SBP/DBP less than 140/90 mmHg divided by the total number of hypertensive patients.

BMI was calculated as weight divided by height squared (kg/m^2). Obesity was defined as BMI at least 30 kg/m^2. A cutoff of 35 kg/m^2 was used to define severe obesity. Abdominal obesity was defined either as waist circumference more than 102 cm in men and more than 88 cm in women (National Cholesterol Education Program Adult Treatment Panel III criteria) or as waist circumference 94 cm or more in men and 80 cm or more in women (International Diabetes Federation criteria) [7,8]. Data from the questionnaire were used to establish tobacco and alcohol consumption, educational attainment and physical activity level. Respondents were defined as being smokers if they reported currently smoking cigarettes, cigarillos, cigars or a pipe on a regular basis. Alcohol consumption (beer, cider, wine or liquor) was quantified in glasses per day, and heavy drinkers defined as consuming four glasses or more per day. Sedentary lifestyle was defined as having less than 60 min of sporting activity per week. Educational attainment was grouped into three categories: 6 years or less, 7–11 years and 12 years or more of formal education.

Statistical analysis

Data are expressed as mean ± SD or as n (%). Comparisons between groups were evaluated using analysis of variance after normality assumptions were verified or by χ^2-tests when appropriate. To take into account differences in sample composition, comparisons

between regions were adjusted on age and sex with logistic regression or analysis of covariance. Age-standardized and sex-standardized estimates of prevalence, awareness, treatment and control of hypertension were computed by direct standardization, using the whole population as the reference population. The trend of hypertension prevalences across BMI categories within each territory was evaluated with logistic regression after adjusting for age and sex. The impact of obesity on hypertension at the community level was addressed by the population attributable fraction (PAF), which was computed with the Stata macrocommand Aflogit following multivariate logistic regressions in which hypertension and obesity were used as the independent and the explicative variables, respectively; confounding factors entered in the model were age, sex, smoking, sedentary lifestyle habits, alcohol consumption and education level [9,10].

All analyses used the statistical package Stata SE 9.1 (Stata Corp., College Station, Texas, USA).

Results

Clinical characteristics of the population

The Podium Survey enrolled 602 participants from Guadeloupe, 601 from Martinique, 620 from French Guiana and 605 from French Polynesia. Eleven patients (nine from Guadeloupe and two from Martinique) were excluded because of the lack of reliable information on their current medications. Mean age of participants varied from 35.8 ± 15.0 years in French Polynesia to 42.5 ± 17.9 years in Martinique. Apart from similar sex ratios and distributions of education levels, the four regions displayed significant differences in most of their demographic characteristics (Table 1).

Prevalence of hypertension

Hypertension was found in 29.2% of participants from Guadeloupe, 27.6% from Martinique, 17.9% from French Guiana and 24.5% from French Polynesia (Table 2). When the population in Guadeloupe was taken as the reference group, French Guiana had a significantly lower prevalence of hypertension ($P < 0.001$). The difference remained significant after controlling for age and sex ($P = 0.006$). In contrast, no significant difference was observed for Martinique or French Polynesia. Standardized estimates of the prevalence of hypertension in the four territories are presented in Fig. 1. French Guiana had the lowest standardized prevalence of hypertension (16.7%) compared with Guadeloupe (26.6%), Martinique (22.4%) and French Polynesia (24.5%).

Awareness, treatment and control of hypertension

Awareness of hypertension was not homogenous across the FOTs (Table 2). Martinique, Guadeloupe and French Guiana had similar high rates from 65.8 to 75.1%. Knowledge of the disease was significantly lower in French Polynesia (50.0%, $P < 0.001$), even after controlling for age and sex (adjusted P value $= 0.04$). The proportion of treated hypertensive participants among those with knowledge of the disease was also similarly high in Guadeloupe, Martinique and French Guiana (69.0, 73.4 and 69.9%, respectively). In contrast, the proportion of treated was as low as 32.4% in French Polynesia (adjusted P value $= 0.001$). Among treated hypertensive participants, the control of blood pressure was very similar across the FOTs from 54.2 to 64.7%. However, due to its lower rate of treatment, French Polynesia had an extremely low rate of controlled hypertension (8.8%, $P < 0.001$), when all participants with hypertension were considered. In the other FOTs, corresponding values ranged from 29.7 to 31.8% (Table 2). The low control of hypertension in French Polynesia was not due to differences in the sex or age composition of its population (age and sex adjusted P value $= 0.001$). Standardized estimates of control are also shown in Fig. 1b.

Differences in adiposity

Various estimates of adiposity were used in this study. Significant differences were observed in the distribution of BMI, even after controlling for age and sex. Differences were mainly found between French Polynesia, which had the highest mean BMI

Table 1 Characteristics of the population-based study in four French Overseas Territories

	Guadeloupe ($n = 593$)	Martinique ($n = 599$)	French Guiana ($n = 620$)	French Polynesia ($n = 605$)	P[a]
Age (years, mean ± SD)	41.6 ± 18.6	42.5 ± 17.9	36.9 ± 16.2	35.8 ± 15.0	<0.001
Men [*n* (%)]	274 (46.2)	273 (45.6)	299 (48.2)	321 (51.2)	<0.19
SBP (mmHg, mean ± SD)	119.9 ± 18.1	121.4 ± 19.5	115.0 ± 17.5	123.0 ± 17.8	<0.001
DBP (mmHg, mean ± SD)	76.6 ± 11.6	76.9 ± 11.9	75.4 ± 11.8	79.7 ± 11.7	<0.001
Heart rate (beats/min, mean ± SD)	76.0 ± 12.4	75.7 ± 11.6	78.9 ± 11.5	78 ± 12	<0.001
Sedentary lifestyle [b] [*n* (%)]	316 (53.3)	313 (52.3)	290 (48.8)	229 (37.8)	<0.001
Smoker [*n* (%)]	82 (3.8)	87 (14.5)	84 (13.6)	217 (35.9)	<0.001
Alcohol ≥4 glasses per day [*n* (%)]	7 (1.4)	24 (4.0)	15 (2.4)	81 (13.4)	<0.001
Education level [*n* (%)][c]					
Still studying	53 (8.9)	67 (11.2)	82 (13.2)	62 (10.2)	0.48
≤6 years	244 (41.1)	199 (33.2)	205 (33.1)	198 (32.7)	0.04
7–11 years	148 (25.0)	162 (27.0)	147 (23.7)	175 (28.9)	0.17
≥12 years	148 (25.0)	171 (28.6)	186 (30.0)	170 (28.1)	0.26

BP, blood pressure. [a] χ^2-test to assess homogeneity of distributions, or analysis of variance for continuous variables. [b] Sedentary lifestyle = physical activity level <1 h per week. [c] P value for lack of homogeneity of the whole distribution is 0.015.

Table 2 Prevalence, treatment, and control of hypertension in four French Overseas Territories[a]

	Guadeloupe ($n=593$)	Martinique ($n=599$)	French Guiana ($n=620$)	French Polynesia ($n=605$)
Prevalence				
n (%)	173 (29.2)	165 (27.6)	111 (17.9)	148 (24.5)
Unadjusted *P*	–	0.53	<0.001	0.07
Adjusted *P*	–	0.27	0.006	0.34
Awareness				
n (%)	126 (72.8)	124 (75.1)	73 (65.7)	74 (50.0)
Unadjusted *P*	–	0.63	0.21	<0.001
Adjusted *P*	–	0.24	0.59	0.04
Treatment				
n (%)	87 (69.0)	91 (73.4)	51 (69.9)	24 (32.4)
Unadjusted *P*	–	0.45	0.90	<0.001
Adjusted *P*	–	0.98	0.58	0.001
Control in treated				
n (%)	55 (63.2)	51(56.0)	33 (64.7)	13 (54.2)
Unadjusted *P*	–	0.33	0.86	0.42
Adjusted *P*	–	0.46	0.96	0.49
Control in hypertensive				
n (%)	55 (31.8)	51 (30.9)	33 (29.7)	13 (8.8)
Unadjusted *P*	–	0.86	0.71	<0.001
Adjusted *P*	–	0.45	0.75	0.001

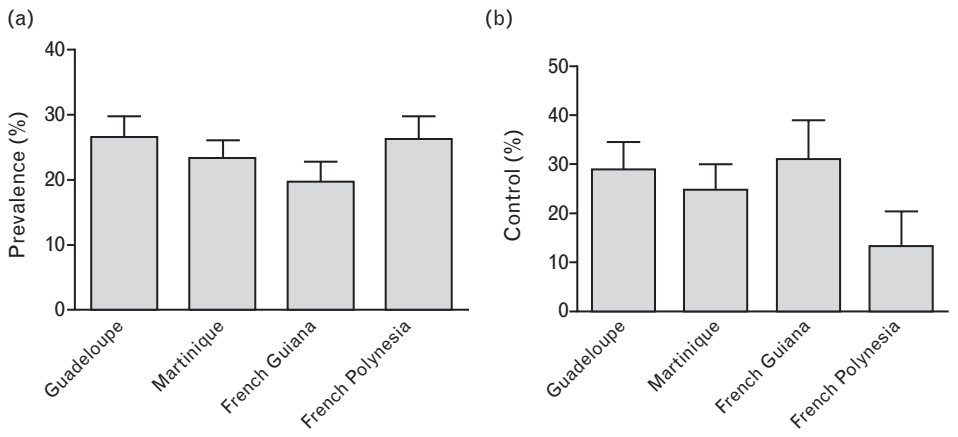
[a] *P* values are calculated in logistic regression equations where prevalence, treatment, or control of hypertension are the dependent variables. The region is the independent parameter. Age and sex are added into the model to give adjusted *P* values.

of 28.5 kg/m^2, and the other territories with mean BMI from 25.8 to 26.3 kg/m^2. Consistently, French Polynesia also had the highest prevalence of obesity and severe obesity. Severe obesity was two times more frequent in French Polynesia (14.9%) than in the other FOTs (around 6%). As for abdominal obesity, men and women from French Guiana and from French Polynesia displayed the lowest and the highest mean values of waist perimeter, respectively. Again, Martinique and Guadeloupe had very similar values among men and among women. The prevalence of abdominal obesity was assessed according to both the International Diabetes Federation and the National Cholesterol Education Program Adult Treatment Panel III [7,8]. Whatever the definition used, abdominal obesity was more prevalent in French Polynesia than in the other FOTs. French Guiana had consistently lower values. All these data are shown in Table 3.

Prevalence of hypertension according to obesity and population attributable fraction of obesity

In Guadeloupe, there was a positive and significant relationship between BMI and prevalence of hypertension. This relation was independent of sex and age. Hypertension was found in 18.7% of participants with BMI below 25 kg/m^2. This proportion increased to 51.4% in participants with a BMI at least 35 kg/m^2. The trend described in Guadeloupe was similar to that in the other territories. Thus, to further evaluate differences in the joint pattern of obesity and hypertension at the community level, the PAF of hypertension due to obesity was calculated. French Polynesia had the highest PAF for

Fig. 1



Prevalence (a) and Control (b) of hypertension in French Overseas Territories (standardized data for age and sex).

Table 3 Adiposity in four French Overseas Territories

	Guadeloupe ($n=593$)	Martinique ($n=599$)	French Guiana ($n=620$)	French Polynesia ($n=605$)	Unadjusted[a] *P*	Adjusted[b] *P*
BMI (kg/m^2, mean ± SD)	26.3 ± 5.4	26.3 ± 5.3	25.7 ± 5.2	28.5 ± 6.8	<0.001	<0.001
Waist perimeter (cm, mean ± SD)						
Women	88.9 ± 16.6	87.4 ± 14.8	81.0 ± 15.8	97.7 ± 20.1	<0.001	<0.001
Men	88.3 ± 16.1	88.8 ± 14.4	85.1 ± 14.2	98.0 ± 16.3	<0.001	<0.001
BMI >30 kg/m^2						
n (%)	135 (22.8)	131 (21.0)	111 (17.9)	200 (33.1)		
Unadjusted *P*	–	0.71	0.04	<0.001		
Adjusted *P*	–	0.61	0.22	<0.001		
BMI >35 kg/m^2						
n (%)	37 (6.2)	38 (6.2)	38 (6.1)	90 (14.9)		
Unadjusted *P*	–	0.96	0.94	<0.001		
Adjusted *P*	–	0.92	0.73	<0.001		
Abdominal obesity						
IDF criteria[d]						
n (%)	311 (53.1)	317 (52.9)	230 (37.1)	420 (69.6)		
Unadjusted *P*	–	0.96	<0.001	<0.001		
Adjusted *P*	–	0.57	<0.001	<0.001		
NCEP criteria[e]						
n (%)	191 (32.6)	187 (31.2)	117 (18.9)	279 (46.3)		
Unadjusted *P*	–	0.61	<0.001	<0.001		
Adjusted *P*	–	0.38	<0.001	<0.001		

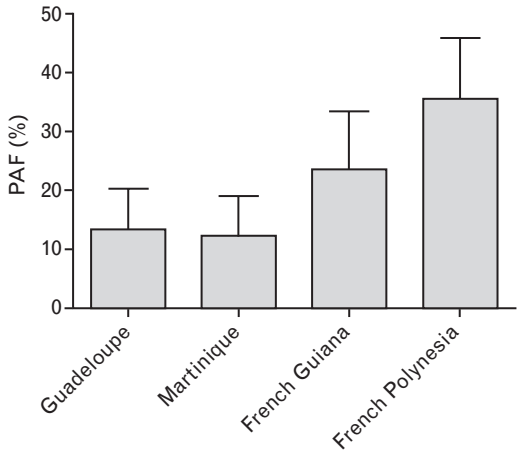
[a] *P* values estimation from analysis of variance. [b] Analysis of covariance with age and sex as co-variables. [c] *P* values in this column are calculated in logistic regression equations where prevalence, treatment, or control of hypertension are the dependent variables. The region is the independent parameter. Age and sex are added into the model to infer adjusted *P* values. [d] International Diabetes Federation (IDF) criteria: waist circumference ≥94 cm in men and ≥80 cm in women. [e] National Cholesterol Education Program (NCEP) criteria: waist circumference >102 cm in men and >88 cm in women.

hypertension (35.5%). The corresponding values were 13.3% in Guadeloupe, 12.3% in Martinique and 27.6% in French Guiana (Fig. 2).

Discussion

This study is the first to compare the epidemiological characteristics of hypertension in relation to obesity between FOTs. It shows wide variations in the prevalence and management of hypertension and the prevalence of obesity. A lower prevalence of hypertension was found in French Guiana compared with the other regions. But, above all, management of hypertension strikingly differed between French Polynesia and the other regions with a very poor control of hypertension. The study also shows that the alarmingly high rate of obesity found in French Polynesia is a potent driving factor for hypertension in the community.

Fig. 2



Population attributable fraction of obesity among French Overs Territories.

Strengths of the study

Previous reports have evaluated the differences in prevalence and management of hypertension between countries or between regions [11–14]. They have been very useful to show areas where clinical practice could be improved. However, many of these reports are based on surveys held separately at different periods. Thus, posthoc analysis of the differences may be hampered by differences in population sampling, procedures to collect data or the definitions of hypertension used. Such limitations were avoided in the study presented here. Procedures to measure blood pressure, height, weight and waist circumference were carefully calibrated and monitored by the same center (HC). The study also benefited from the common language, common administration, used in all these regions. However, despite these similarities, the FOTs remain separate entities, making it possible for differences in obesity and hypertension to be evaluated. Thus, the Podium Survey is the

first to accurately evaluate and compare the epidemiological characteristics of hypertension and obesity in FOTs.

Low prevalence of hypertension and obesity in French Guiana

A low prevalence of hypertension was found in French Guiana as compared with the other three FOTs. This low prevalence of hypertension did not result only from the lower mean age of the population, as the difference remained significant after controlling for age and sex. This low prevalence of hypertension appeared in concordance with the lower prevalence of obesity in the population, by all measures (BMI, weight excess, waist perimeter and abdominal obesity) less frequently found in French Guiana than in the other territories.

Low awareness, treatment and control of hypertension in French Polynesia

The characteristics of prevalence and management of hypertension in Martinique and Guadeloupe are in accordance with previous reports [1,2]. Fewer data are available for French Polynesia and French Guiana. An important result of this study is the major difference found in the management of hypertension between French Polynesia and the other territories. French Polynesia had three times lower control of hypertension compared with the other territories. This poorer control was related both to poorer awareness of the disease and a lower rate of treatment among those who knew they had the disease. This record low control of hypertension was reached even if the use of pharmacological treatment, as expected, was as efficient in French Polynesia as in the other territories. Furthermore, associated morbid conditions, such as diabetes, were not considered in this study. Diabetes is driven by obesity and might be more prevalent in French Polynesia than in the other territories. Accordingly, differences in control between French Polynesia and the other territories could be even larger than shown here. Potential reasons for such a gap could involve a lower commitment of the physicians in French Polynesia to diagnose and treat hypertension, cultural differences resulting in less knowledge of diseases or decreased adhesion to their treatment. Another major point to consider is to which extent the differences in the healthcare management system between French Polynesia and the three other territories may result in differences in access to healthcare. Previous studies have emphasized the importance of these factors in controlling hypertension [15,16].

These results may also illustrate a fast epidemiological transition taking place in French Polynesia [17]. Acute forms of rheumatic fever, an epidemiological feature of underdeveloped countries, are still described in this region [18]. At the same time, as shown in this study, French Polynesia has a high prevalence of obesity and hypertension, which are more usually observed in developed countries. Whether this high prevalence of hypertension and poor control translate into high morbidity and mortality from stroke, heart failure and kidney disease is not known. Such epidemiological data are not available in French Polynesia, but already, the findings here call for renewed action to improve the management of hypertension and obesity.

Contrasted dynamics of hypertension and obesity

Obesity is a well known, powerful risk factor for hypertension. Accordingly, in this study, the prevalence of hypertension was higher among obese than in nonobese participants. Nonetheless, related patterns of hypertension and obesity vary between the territories. In French Guiana, the low prevalence of obesity matched a low prevalence of hypertension. The joint pattern of obesity and hypertension was quite different in French Polynesia where the prevalence of obesity reached alarming values. Two-thirds of the population had an excess weight and the prevalence of severe obesity (BMI exceeding 35 kg/m^2) was more than two times higher than that in the other territories. However, surprisingly, this large excess of obesity did not translate into similar differences in the prevalence of hypertension. Martinique, Guadeloupe and French Polynesia had roughly the same prevalence of hypertension. Some reasons for this phenomenon can be suggested. First, hypertension is driven not only by obesity but also by risk factors such as low physical activity, high salt and alcohol consumption, ethnicity and unfavorable psychosocial conditions. Accordingly, the proportion of participants with a sedentary lifestyle was lowest in French Polynesia, even though they had higher alcohol consumption. The distribution of some risk factors for hypertension, not measured in this study, may also be different. For example, French Polynesia is well known for high consumptions of fish. Epidemiological findings and clinical trials have suggested a potential for fish consumption to reduce the incidence of hypertension [19,20]. Second, the relationship between obesity and hypertension is not a simple one. Part of the relationship is directly linked to weight excess, through increases in cardiac output and impaired vascular impedance. Apart from this direct relationship, endocrine changes linked to abdominal obesity [21] and sleep apnea syndrome have an additional deleterious role. Sleep apnea was not evaluated in the study.

Population attributable fraction of obesity

This study analyzed the prevalence of obesity, the prevalence of hypertension and their relation in the different FOTs. As expected, in all territories, the prevalence of hypertension increased in the presence of obesity. However, this does not correctly describe the potential impact of obesity on hypertension at the community level. In this study, an attempt to do so was undertaken

by computing the PAF due to obesity. The PAF is best used in cohort studies and measures the proportion of the outcome that is attributable to exposure to certain risk factors [22]. It is a public health issue, as it theoretically indicates the expected change in outcome following eradication of a risk factor. In some instances, the PAF has been used in cross-sectional studies [10,23,24]. In such studies, the prevalence is thought as reflecting a cumulative incidence. In our study, minor differences were observed between the different territories in the risk of hypertension for obese individuals. At the same time, important variations in the impact of obesity can be observed at the community level between the territories, as reflected by differences in the PAF of obesity. French Polynesia has the highest value. Thus, it remains the region wherein measures taken to fight obesity would have the greatest potential to reduce the frequency of hypertension.

Generalization of the results

This population-based study included participants from the four regions who were randomly selected on the basis of the 1999 census. The basic characteristics of the sample and the population were compared for each of the regions. No significant difference was found (data not shown).

Clinical implications

Our results constitute a clear call for action in French Polynesia to improve the screening and treatment of hypertension. Given the low rate of control of hypertension observed in this population, even the most limited actions could have a potential to decrease the incidence of cardiovascular diseases. The study also emphasizes the need to target obesity in the primary prevention of hypertension, and its expected impact, as shown by the PAF.

Study limits

The study was powered to investigate the prevalence of obesity. Therefore, it might have been underpowered to assess differences in awareness, treatment and control of hypertension. In addition, participation rates ranged from 45 to 63%. Although sex and age composition of the samples did not differ from census data, a recruitment bias cannot be excluded. Another limitation of the study is that sedentary lifestyle has been defined according to the time spent in leisure physical activity. Although this definition makes it easy to compare to other epidemiological studies in the medical literature, a detailed evaluation of physical activity might have been more accurate to describe the joint pattern of sedentary lifestyle and hypertension among all these territories.

In conclusion, significant differences have been found in the prevalence and management of hypertension among the FOT. French Guiana had a lower prevalence of hypertension than the other territories. Management followed a different dynamic: Martinique, Guadeloupe and French Guiana had similar awareness, treatment and control of hypertension. In contrast, French Polynesia had an alarmingly poor control of the disease. It also has the highest rate of obesity, which translated into the highest PAF for hypertension.

The observation of differences in the prevalence and management of hypertension among the FOT should help to improve prevention strategies and daily management of hypertension. More detailed studies are needed to analyze why the high prevalence of obesity did not fully translate into a higher prevalence of hypertension. Analysis of the ethnic composition of the populations, not detailed in this first, global paper, should also shed light on the dynamics of hypertension and obesity presented above.

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