

# DIABETES IN SUB-SAHARAN AFRICA: DISTRIBUTION BASED ON SOCIAL STATUS IN LIBREVILLE (GABON)

Guy S. Padzys, PhD; Joseph P. Ondo, PhD;  
Linda P. Omouenze, PhD; Sylvie Zongo, PhD

**Objectives:** Many researchers continue to believe that urbanization is a major contributor to diabetes. We seek to demonstrate that the social status associated with urbanization has an impact on the prevalence of diabetes in Libreville, Gabon in sub-Saharan Africa.

**Methods:** Our study was conducted in Libreville, the capital of Gabon; the city has a population of 397,000. Our study analyzed data from the registries of patients hospitalized in 2013 in the main diabetes center in Libreville.

**Result:** The results revealed that, for 2013, 798 patients were hospitalized with diabetes at a prevalence of .2%. We found differences ( $P < .05$ ) between women (423) and men (375). Mean age for women was 52.02 years and 48.88 years for men. The number of existing cases hospitalized was significantly more than new cases. All levels of society were represented in our study: students (42); military (36); administratives (99); technicians (180); unemployed (295); and retired (146). The results showed that the unemployed (36%), particularly women (29.40%) are most affected by diabetes.

**Conclusion:** Our results show the impact of social status on the increase of diabetes in Libreville. We found that urbanization, associated with insecurity especially in women, had an effect on the prevalence of diabetes in Libreville. These results indicate that, apart from the non-modifiable factors (age, race, ethnicity), insecurity is a modifiable factor that should be taken into account. *Ethn Dis.* 2015;25(4):459-462; doi:10.18865/ed.25.4.459

**Keywords:** Diabetes, Urbanization, Social Status

## INTRODUCTION

About 18 million people die each year of cardiovascular diseases often related to risk factors such as diabetes mellitus or hypertension.<sup>1</sup> Unlike a widespread opinion that considers diabetes mellitus as a disease of only wealthy nations, the disease is now increasingly becoming a major concern in developing countries, particularly in sub-Saharan Africa. The World Health Organization (WHO) recognizes several causes of this phenomenon, in particular, the aging of the population and rapid urbanization, one cause of inactivity in modern African societies.<sup>2-4</sup> The INTERHEART study conducted in Africa<sup>5</sup> found that the prevalence of diabetes was 7.6% in the control group (average age, 52) and 4% in the subgroup of African Black patients (average age, 52). Djrolo et al<sup>6</sup> found a prevalence of 1.7% of diabetics in the sedentary population vs .9% in physically active study participants.

In addition to sedentary lifestyles, diet also plays an important

role in diabetes prevalence in Africa. Researchers have found that population migration is leading to a nutritional transition in many African countries.<sup>7</sup> People arriving in town abandon their traditional lifestyles to adopt a diet rich in saturated animal products, salt, sugars and fats. Urbanization and the nutrition tran-

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sition<sup>8</sup> that results are recognized as the two main factors responsible for the development of diabetes and obesity in Africa, especially in the sub-Saharan area. In addition to urbanization, the social status of the individual may also be a factor related to the prevalence of diabetes.<sup>9-12</sup>

The prevalence of diabetes in Gabon is 5%, making it the third of the sub-Saharan Africa countries most affected by the disease.<sup>13</sup> We hypothesized that social status associated with the physiological consequences

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From the Université des Sciences et Technique de Masuku BP; 943 Franceville, Gabon

Address correspondence to Guy Stéphane Padzys, PhD; Département de Biologie, Faculté des Sciences, Université des Sciences et Technique de Masuku, Franceville 943, Gabon; padzys@gmail.com

of urbanization was a risk factor for diabetes prevalence in Libreville.

## METHODS

The study was conducted in Libreville, which is located in northeastern Gabon. It is the nation's capital and has 397,000 inhabitants. Our study examined the records of diabetic Black patients hospitalized in Endocrinology Service of the University Hospital of Libreville (CHUL), which is the main Diabetes Center of Gabon. To determine the prevalence of diabetes among hospitalized patients, several parameters were studied: the number of patients (existing and new cases), age, sex and social status (defined as student, military, administrative, technician, retired, and unemployed). Data are reported as mean  $\pm$  standard deviation. Categorical data are presented as percentages with 95% confidence intervals (CIs) when appropriate. Comparisons within groups were made using the Chi-squared test for categorical variables and Student's *t* test for continuous variables. A  $P < .05$  was considered as statistical significance. Statistical analyses were performed using Statview 5.0 software (SAS Institute, Cary, NC, USA).

## RESULTS

Our results showed that the total number of patients hospitalized with diabetes was 798, representing a prevalence of .2%. Table 1 shows that the number of hospitalized women (423) is significantly higher ( $P < .05$ ) than of men (375).

**Table 1. General characteristics of study patients**

Characteristic	Overall (N=798)	Men (n=375)	Women (n=423)
Age, years <sup>a</sup>	50.43 $\pm$ 10	48.83 $\pm$ 10.13	52.02 $\pm$ 9.84
Existing cases	657	305	352
New cases	211	70	141
Student	42	17	25
Military	36	30	6
Administrative	99	58	41
Technician	180	109	71
Retired	146	101	45
Unemployed	295	60	235

Data are n or mean  $\pm$  SD.

a. Calculated for only 798 patients of known age.

We found a diabetes prevalence of 53% among women vs 47% for men.

The mean age of the patients was 50.43 years. There are no difference between the mean age of men (48.83 years) and the women (52.02 years). The total number of existing cases hospitalized (657) was significantly different ( $P < .05$ ) than the number of new cases (211). Among unemployed patients, 295 had diabetes; among these 235 were women. Rates of diabetes were found to decrease among subgroups in this order: unemployed, technicians, retired, administrative, student and military. We also found that 657 of 798 hospitalized patients were existing cases, with a prevalence of 83.33%. The mean average age of existing case was 78  $\pm$  9.36. Among these cases, unemployed women (22.8%) were the most prevalent, followed by men who were technicians (11.52%) and retired (10.65%).

We also analyzed patients newly diagnosed with diabetes and found that the average age of new cases was 43.97  $\pm$  10.07 and that unemployed women were most affected by the disease (37.58%).

## DISCUSSION

Unlike the widespread opinion that considers diabetes as a disease of wealthy nations, this condition is now becoming a major concern in developing countries, particularly in sub-Saharan Africa. Our results show that the number of women hospitalized for diabetes were higher than that of men. These results are in agreement with previous studies in Libreville and other African capitals. This may be explained by the fact that, in Africa, women are more likely to be obese than men. Indeed, the prevalence of obesity in type 2 diabetes varies between 14%<sup>14</sup> and 35%.<sup>15</sup> Yet, obesity prevalence among women with diabetes has been reported to be 80% for women and 20% for men,<sup>16-17</sup> and has also been associated with andropause and menopause, two conditions known for having an impact on the onset of diabetes and cardiovascular disease.<sup>18-22</sup>

Our overall results could serve as a warning for complications related to diabetes. Because we found a higher prevalence of existing cases, several common complica-

tions observed in diabetic patients may be expected: infections, micro and macro vascular disorders, lesions of the feet and chronic renal failure are common complications observed in diabetic patients.<sup>23-28</sup>

According to their social status, the unemployed individuals, especially women, were most affected by diabetes. These results agree with other studies that showed that the prevalence of diabetes was high-

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er among high-risk individuals.<sup>29</sup> Meanwhile, those in the military were least affected by diabetes. Our results may indicate that instability and sedentary lifestyle associated with urbanization are recognized factors responsible for mortality and the development of obesity and diabetes.

## CONCLUSION

The purpose of this study was to determine whether urbanization and its physiological consequences were associated with diabetes prevalence in Libreville. Our results showed that unemployed women were the most affected by the disease. These results are consistent with those made

in other cities. This new information could help develop prevention policies to reduce the rapid development of this disease in Africa.

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## AUTHOR CONTRIBUTIONS

Research concept and design: Padzys, Ondo, Omouenze, Zongo. Acquisition of data: Padzys, Ondo, Omouenze, Zongo. Data analysis and interpretation: Padzys, Ondo, Omouenze, Zongo. Manuscript draft: Padzys, Ondo, Omouenze, Zongo. Statistical expertise: Padzys, Ondo, Omouenze, Zongo. Acquisition of funding: Padzys, Ondo, Omouenze, Zongo

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