

## High Cardiovascular Risk Profile in Adult Patients with Newly Diagnosed Diabetes in Haiti

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### Introduction

Unpublished data collected by clinicians in Haiti have suggested that prevalence of coronary heart disease (CHD) among Haitian adults with diabetes may be low despite a high prevalence of cerebrovascular events. To our knowledge, no epidemiologic study has been performed to confirm this. We evaluated the necessity to conduct a prospective study on the cardiovascular outcomes in this population by cross-sectionally examining cardiovascular risk factors in Haitian adults aged 30-74 years with newly diagnosed diabetes. Our aim was to determine whether their baseline characteristics supported the assertion of low CHD prevalence, and estimate the 10-year absolute cardiovascular disease (CVD) risk of these patients.

We retrospectively studied the medical records of 104 consecutive adult diabetic patients attending a clinic in Port-au-Prince affiliated with FHADIMAC (Haitian Diabetes Foundation). Inclusion criteria were diabetes diagnosed <1 month before the first visit and age 30-74 years at diagnosis. Patients with a history of CVD, dyslipidemia treatment, or pregnancy in the last 3 months were excluded. Data collected at the first evaluation included past medical history, anthropometric parameters, blood pressure, fasting blood glucose, uric acid, lipid profile, and hemoglobin A1c (HbA1c). Metabolic syndrome was defined according International Diabetes Federation criteria [1]. Patient CVD risk was predicted by the Framingham Heart Study (FHS) 10-year cardiovascular risk calculator, using the covariates age, gender, diabetes, current smoking, antihypertensive medication use, systolic blood pressure, total cholesterol, and HDL cholesterol [2]. CVD is defined as a composite of coronary heart disease (coronary insufficiency, angina, myocardial infarction, and coronary death), cerebrovascular events (ischemic stroke, transient ischemic attack, and hemorrhagic stroke), peripheral artery disease (intermittent claudication) and heart failure. Vascular or heart age was calculated according FHS, i.e. using the same above-mentioned predictors but BMI instead of lipids. It is defined as the age a person would be with the same calculated cardiovascular risk but whose risk factors were all within normal ranges. Statistical analyses were performed using Student's t-test and  $\chi^2$  where appropriate. A P-value of <0.05 was considered statistically significant.

The results of the study are summarized in Table 1. Mean age at diagnosis of diabetes was  $52.4 \pm 11.6$  years, 54.8% were women. Mean HbA1c was  $10.5 \pm 2.4\%$ . Considering the risk factors LDL cholesterol  $\geq 100$  mg/dl, triglycerides  $\geq 150$  mg/dl, HDL cholesterol <40 mg/dl in men or <50 mg/dl in women, hypertension, BMI  $\geq 25$  kg/m<sup>2</sup>, and smoking, 68.2% and 32.7% of patients had  $\geq 3$  and  $\geq 4$  risk factors,

respectively. A total of 92.3% of patients presented  $\geq 1$  type of dyslipidemia, 75.6% had LDL cholesterol  $\geq 100$  mg/dl, 52.1% (women: 68.6%, men: 32.6%,  $p=0.0005$ ) had low HDL cholesterol, and 47.6% had triglycerides  $\geq 150$  mg/dl.

	Men (n=47)	Women (n=57)	Total (n=104)	P-value
Age, years	52.2 $\pm$ 10.8	52.6 $\pm$ 12.3	52.4 $\pm$ 11.6	0.84
HbA1c%	10.2 $\pm$ 2.4	10.9 $\pm$ 2.4	10.5 $\pm$ 2.4	0.18
$\geq 3$ risk factors	32 (68.1)	39 (68.4)	71 (68.2)	0.97
$\geq 4$ risk factors	16 (34.0)	18 (31.6)	34 (32.7)	0.78
$\geq 1$ type of dyslipidemia	45 (95.7)	51 (89.5)	96 (92.3)	0.23
LDL-C $\geq 100$ mg/dL	33 (82.5)	35 (70.0)	68 (75.6)	0.17
Low HDL-C*	14 (32.6)	35 (68.6)	49 (52.1)	0.0005†
Triglycerides $\geq 150$ mg/dL	24 (51.1)	25 (44.6)	49 (47.6)	0.51
Hypertension	30 (63.8)	34 (59.7)	64 (61.5)	0.74
BMI $\geq 25$ Kg/m <sup>2</sup>	29 (61.7)	41 (71.9)	70 (67.3)	0.26
Metabolic syndrome	15 (31.9)	22 (38.5)	37 (35.5)	0.47
Current smoker	9 (19.2)	5 (8.8)	14 (13.5)	0.12
10-year CVD risk% (using lipids)	29.8 $\pm$ 18.6	19.0 $\pm$ 13.2	23.7 $\pm$ 16.5	0.002†
10-year CVD risk% (using BMI)	29.4 $\pm$ 17.6	20.3 $\pm$ 13.5	24.3 $\pm$ 16.0	0.005†
Vascular age, years	79.3 $\pm$ 21.8	97.2 $\pm$ 35.7	89.5 $\pm$ 31.6	0.01†

Data are mean  $\pm$  SD or n (%).  
\*HDL-C<40 mg/dL in men, or <50 mg/dL in women.  
† Statistically significant.

**Table 1:** Patient characteristics at diagnosis of diabetes.

Hypertension was prevalent in 61.5%, overweight or obesity affected 67.3%, 35.5% had metabolic syndrome, and 13.5% were current smokers. Mean general 10-year CVD risk prediction was  $23.7 \pm 16.5\%$  (men:  $29.8 \pm 18.6\%$ , women:  $19.0 \pm 13.2\%$ ,  $p=0.002$ ), with 50.9% of patients (men: 53.1%, women: 49.1%) having a risk >20%. The calculation of this risk score with BMI instead of lipids gave similar results (men:  $29.4 \pm 17.6\%$ , women:  $20.3 \pm 13.5\%$ ,  $p=0.005$ ; all:  $24.3 \pm 16.0\%$ ). Mean vascular age was  $89.5 \pm 31.6$  years (men:

79.3  $\pm$  21.8, women: 97.2  $\pm$  35.7,  $p=0.01$ ) compared to mean chronological age of 52.4  $\pm$  11.6 years ( $p<0.001$ ).

## Conclusion

Baseline CVD risk profile is remarkably high and prevalence of dyslipidemia is elevated in this sample of Haitian adults with diabetes, suggesting that a low incidence of coronary complications in these patients seems unlikely. Prospective data are needed to determine the actual cardiovascular outcomes among the Haitian adult diabetic patients. They could also evaluate the accuracy of the FHS risk score in this population.

## References

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