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REVIEW

Diabetes in Panama: Epidemiology, Risk Factors, and Clinical Management

Anselmo J. Mc Donald Posso, MD, MSc, Ryan A. Bradshaw Meza, MD, Enrique A. Mendoza Morales, MD, Ycly Jaen, MD, Alberto Cumbrera Ortega, MSc, Enrique Jorge Mendoza Posada, MD, MSc, FACP

Panama City, Panama

Abstract

OBJECTIVES To draw evidence-based conclusions about the epidemiology, drivers, and management of diabetes in Panama based on a literature review and original analyses of large databases.

METHODS A search about diabetes in Panama was conducted through PubMed. We used the final reports of 2 studies: the first Survey of Health and Life Quality, 2007, and the first Survey of Risk Factors Associated to Cardiovasular Diseases, 2010-2011, conducted in Panama and analyzed the databases. We reviewed the approach adopted by the Panamanian Social Security institution and the diabetes national guidelines published by the Panamanian Ministry of Health.

FINDINGS The prevalence of diabetes, as estimated in 1 database (ENSCAVI), was 5.4% (4.3% men; 6.0% women; OR = 1.41 [confidence interval 1.26-1.59]; $P < 0.0001$), with the highest prevalence in urbanized regions. In another database (PREFREC), prevalence was 9.5% (10.3% men and 9.1% women), again higher in urbanized regions, but also in males, older adults, and Afro-Panamanians. Obesity, abdominal obesity, physical inactivity, family history of diabetes, high blood pressure, and triglycerides $\geq$ 150 mg/dL were associated as risk factors for diabetes in both genders ($P < 0.0001$). Total cholesterol $\geq$ 200 mg/dL and high-density lipoprotein cholesterol $<$ 40 mg/dL were risk factors in men ($P < 0.0001$). In the last 5 years, diabetes was ranked between the sixth and fifth cause of death in Panama. In response, the Panamanian Social Security created the "Program for Prevention and Control of Diabetes" to strengthen primary health care.

CONCLUSIONS Diabetes is a serious national public health threat in Panama. To address this problem in a public health modality, information from large databases was analyzed and presented to the Panamanian Ministry of Health to prompt constructive policy change to enhance diabetes prevention.

KEY WORDS diabetes mellitus, Panama, diabetes risk factors, diabetes care, Latin America

INTRODUCTION

Diabetes mellitus (DM) is a global epidemic representing a considerable health and socioeconomic burden[1] and affecting 6%-8% of the world's population.[2] It is estimated that by the year 2030, there will be 552 million people affected by diabetes worldwide; this is an increase of 50.8% from the 366 million cases recorded in 2011.[3] On a global scale, approximately 7% of people with diabetes live in Latin America.[1] In the last decade, the number of people in Latin America with diabetes has

The authors declare no conflicts of interest.
From the Gorgas Memorial Institute of Health Studies (AJMDP, RABM, EAMM, ACO); Panamanian Social Security (YJ); and University of Panama, Panama City, Panama (EJMP). Address correspondence to E.J.M.P. (enriquemp2004@yahoo.com).

been increasing as a result of urbanization and other risk factors.[1] In 2011, the diabetes adjusted prevalence in Latin America was 9.2% for adults between 20 and 79 years old, with the number of cases in 2030 expected to be higher in this region than in other regions.[4]

Panama is a Latin American nation located at the southernmost end of Central America (Fig. 1) and has been classified by the World Bank as a country with an upper middle income level.[5,6] In the last 3 decades, the per capita gross domestic product of Panama increased almost 5-fold, allowing the Panamanian economy to be the most vigorous of the region. At the same time, the percentage of people living in urban areas grew from 50% to 75%.[5,7,8] Economic growth in Panama, increased urbanization, and stimulated migration from rural and indigenous (ie, Indian reservations) areas toward larger cities produced noticeable behavioral changes in diet and lifestyle.[9-12] For instance, transitions in occupation, transportation modalities, and available technology, especially when directed at leisure activities at home, contributed to increased sedentary behaviors, decreased physical activity, and the development of overweight/obesity.[8,13-16]

Anthropometric factors, such as body mass index (BMI) $\geq$ 25 kg/m^2 and abdominal circumference $>$ 80 cm in women and $>$ 90 cm in men; clinical factors, such as arterial hypertension, triglycerides $\geq$ 150 mg/dL, high-density lipoprotein (HDL) cholesterol $<$ 40 mg/dL; and lifestyle factors, such as sedentary lifestyle ($<$150 minutes of physical activity per week), tobacco use, alcohol consumption, and excessive intake of calories, particularly when associated with an increased consumption of refined carbohydrates and fats, act in concert to increase the risk of diabetes in Panama.[16,17] Management of these risk factors can significantly diminish the likelihood of developing chronic complications related to sustained hyperglycemic states.[18,19]

An important biological risk factor for the development of diabetes in Panama is obesity.[20] The first Survey on Risk Factors Associated with Cardiovascular Disease (PREFREC; Spanish acronym), conducted in Panama from 2010 to 2011, estimated a prevalence of overweight of 34.7% (35.1% in men and 34.5% in women) and obesity of 27.1% (18.3% in men and 30.9% in women) in a sample of 3590 individuals 18 years old and over.[21] Since 1982, there has been a marked increase in the

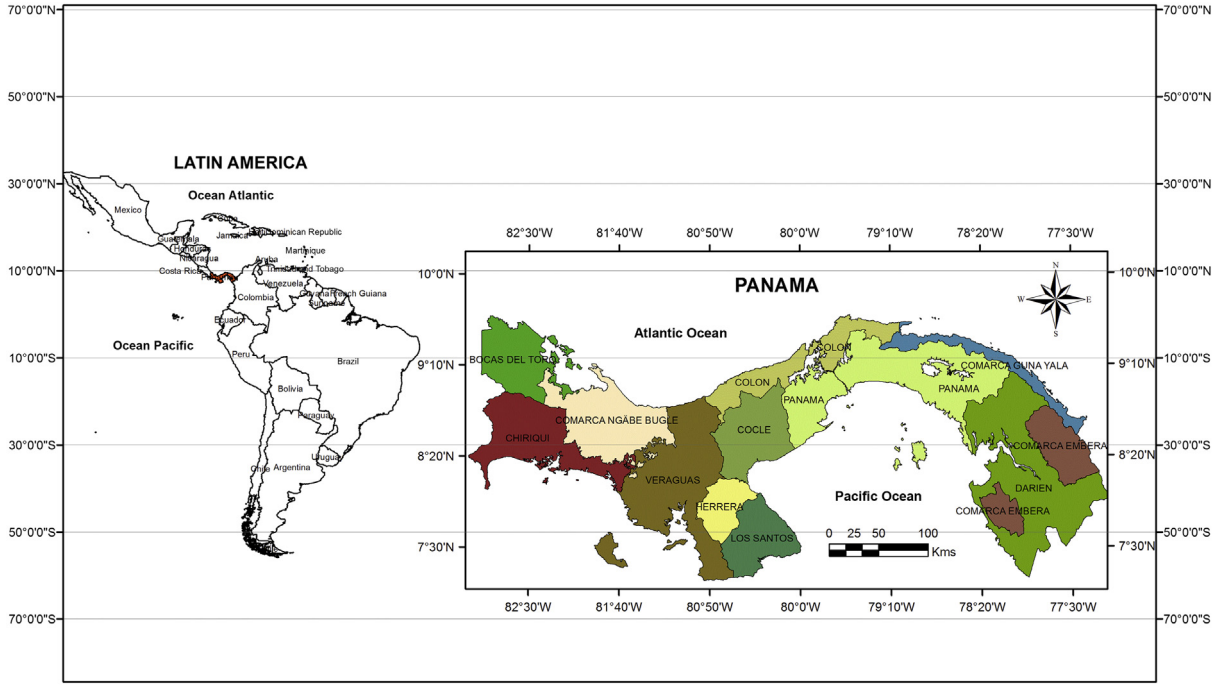

Figure 1. Panama in Latin America. (Source: Elaborated by the authors. Panama's cartographic shape, legally purchased from the National Institute of Statistics and Census. Each color represents a Panamanian province. Latin America's cartographic shape is included in World Arc View 3.2, legally acquired by our institution.)