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REVIEW

An Epidemiologic Analysis of Diabetes in Colombia

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Abstract

BACKGROUND The burden of diabetes is a global problem, wherein the significant growth of diabetes in Colombia reflects a complex pathophysiology and epidemiology found in many other South American nations.

OBJECTIVES The aim of this study was to analyze epidemiologic data from Colombia and the South American region in general to identify certain disease drivers and target them for intervention to curb the increasing prevalence of diabetes.

METHODS A detailed search was conducted using MEDLINE, SciELO, HINARI, LILACS, IMBIOMED, and Latindex databases, in addition to clinical practice guidelines, books, manuals, and other files containing relevant and verified information on diabetes in Colombia.

FINDINGS According to the International Diabetes Federation and the World Health Organization, the prevalence of diabetes in Colombia is 7.1% and 8.5%, respectively. In contrast, a national survey in Colombia shows a prevalence ranging from 1.84% to 11.2%, depending on how the diagnosis is made, the criteria used, and the age range studied. The prevalence exclusively in rural areas ranges from 1.4% to 7.9% and in urban areas from 1% to 46%. The estimated mean overall (direct and indirect) cost attributed to type 2 diabetes is 5.7 billion Colombian pesos (US $2.7 million). Diabetes is the fifth leading cause of death in Colombia with a rate of 15 deaths per 100,000 individuals.

CONCLUSIONS Based on a clustering of factors, 4 relevant disease drivers emerge that may account for the epidemiology of diabetes in Colombia: demographic transition, nutritional transition, forced displacement/internal migration and urban development, and promotion of physical activity.

KEYWORDS Colombia, diabetes, epidemiology, global burden, hyperglycemia, incidence, prevalence

INTRODUCTION: GLOBAL EPIDEMIOLOGY OF DIABETES

The prevalence of diabetes has increased worldwide, leading to a massive social, economic, and health care burden. According to the International Diabetes Federation (IDF), 8.3% of the world's population experiences diabetes (382 million people); this figure is expected to rise to >592 million in <25 years, implying ≥175 million undiagnosed cases.[1] Diabetes is most prevalent in the Western Pacific region with 138 million cases, followed by South East Asia with 72 million, Europe with 56 million, North America and the Caribbean with 37 million, the Middle East and Northern Africa with 35 million, South and Central America (SACA) with 24 million, and Africa with 20 million cases.[1] The SACA region is comprised of 20 countries: 11 in

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South America (SA), 6 in Central America, and 3 in the Caribbean islands; all of these countries, except French Guiana, belong to what is recognized as Latin America (LA), which also includes Mexico, although Mexico is not part of SACA. It is estimated that SACA diabetes cases will increase 59.8% from 24 million in 2013 to 38.5 million in 2035.[2] In SACA, the 2 countries with the highest number of individuals with diabetes are Brazil (11.9 million) and Colombia (2.13 million), and according to the World Health Organization (WHO), the 3 countries with the highest diabetes prevalence rates in SA are (by male/female) Argentina with 9.9%/8.2%; Bolivia with 6.7%/8.5%; and Brazil with 8.5%/7.2%.[2]

In Colombia, the prevalence of type 2 diabetes (T2D) varies depending on age, the specific population studies, and diagnostic criteria. According to the IDF 2013, Colombia has a national prevalence rate of diabetes of 7.12% (referring to the adult population of 29,989,290 inhabitants aged 20-79 years), and the number of people with T2D in Colombia is 2,135,380.[1] Similarly, studies on the incidence of type 1 diabetes (T1D) in Colombia are scarce. For children aged ≤14 years by the year 1990, an adjusted incidence (for both sexes) of 3.8 per 100,000 and an estimated prevalence of 1.8 per 10,000 were found.[1] By 2000, the incidence rate was 3.7 per 100,000, and by 2013 an incidence of 1.3 per 100,000 was seen.[1-3] Few studies have been conducted in Colombia on the frequency of gestational diabetes; the incidence is low (0.34%) depending on the population studied and the diagnostic criteria used.[4] The estimated prevalence varies from 1.43% to 2.03%, but may increase to 10% to 14% if the calculation is aimed at pregnant women with risk factors for diabetes.[4,5]

METHODS

A narrative medical literature review was completed according to a strict methodology and using the information obtained from MEDLINE with the following MeSH terms: "diabetes," "diabetes mellitus," "type 2," "type 1," "epidemiology," "prevalence," "incidence," "Colombia," "global burden," and "metabolic syndrome" in combination with the words "yes" or "not" and the "also try" option. The search included data published on "any date," limiting the scope to articles that included the link "abstract" and "full text," exclusively in humans and regardless of sex. The review comprised clinical trials, cohort studies, intervention studies, meta-analyses, clinical practice guidelines, and descriptive review articles that used a systematic approach and focused on epidemiologic aspects. The search was limited to articles published in English and Spanish, regardless of age. The following databases were searched: SciELO, HINARI, LILACS, IMBIOMED, and Latindex. Additionally, reviews of clinical practice guidelines, books, manuals, and files containing relevant and verified diabetes information in Colombia were included.

Demographics of Colombia. Colombia is an SA country with a surface area of 1,141,748 km^2. The country is divided into 5 geographical regions: Andean, Caribbean, Amazon, Pacific, and Orinoco or Eastern Plains and is politically organized into 32 departments. The estimated population in 2014 was 48,929,706 people. Contrary to all expectations regarding Colombia, migration from the rural to the urban areas has not stopped but instead experienced a new impetus because of the decline of the agricultural sector, rural poverty, concentration of ownership, violence promoted by outlaws (ie, related to drug cartels, drug traffickers, urban and rural guerrillas, and criminal gangs), and the subsequent forced displacement mainly from rural areas and small villages into large cities.[4] Recently, forced displacement from neighboring countries (such as Venezuela) has affected health care access by vulnerable populations. Moreover, physical activity is greatly curtailed as a result of people's fear of violence and kidnapping, which also promoted unhealthy eating habits.

Ethnic diversity in Colombia is the result of the crossbreeding of indigenous Amerindians, Spanish settlers, and African slaves. Colombia officially acknowledges 3 ethnic minority groups: the Afro-Colombian, Indigenous, and Romani populations. The 2005 census reported that the "nonethnic population," consisting of whites and mestizos (those of mixed white European and Amerindian ancestry, including almost all of the urban business and political elite), constituted 86% of the national population. The 86% figure is subdivided into 49% mestizo and 37% white.[5]

Current status of Diabetes Care in Colombia. According to the 2007 National Health Survey (ENS 2007), 96.5% of patients with diabetes had been treated by a general practitioner and 47.4% by a medical specialist.[6] Similarly, the survey showed that 75% of patients with diabetes were advised to quit smoking and manage stress, and >80% were advised to lose weight and undergo lipid testing to regularly measure their blood or