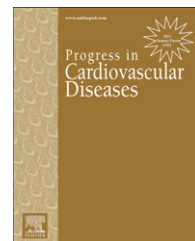


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Challenges in Preventing Heart Disease in Hispanics: Early Lessons Learned from the Hispanic Community Health Study/Study of Latinos (HCHS/SOL)

Neil Schneiderman^{a,*}, Diana A. Chirinos^a, M. Larissa Avilés-Santa^b, Gerardo Heiss^c

^aDepartment of Psychology and Behavioral Medicine Research Center, University of Miami, Miami, FL

^bDivision of Cardiovascular Sciences, National Heart, Lung, and Blood Institute, National Institutes of Health, Bethesda, MD

^cDepartment of Epidemiology, UNC at Chapel Hill, Chapel Hill, NC

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ABSTRACT

The challenge of preventing cardiovascular disease (CVD) in US Hispanics depends upon being able to understand and communicate about the diversity within this population in terms of environmental exposures, health behaviors, socio-cultural experiences and genetic background to CVD risk factor profiles and disease burdens. Recent publications from the Hispanic Community Health Study/Study of Latinos (HCHS/SOL) launched by the National Institutes of Health (NIH) have begun to accomplish this task. In this article we review some of the HCHS/SOL findings concerning cardiometabolic and other CVD risk factors and relate them to the need for increased access to health care and attention to lifestyle variables including nutrition. A major challenge that needs to be accomplished is to alert our lawmakers, public health officials, health care providers and the Hispanic population at large about how to lighten the CVD risk factor and disease burdens now carried by our Hispanic population.

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Considerable evidence indicates that the health of a population is strongly influenced by economic and social circumstances as well as access to health care services.^{1,2} Although Hispanics living in the United States (US) have less education, a higher poverty rate and worse access to health care than non-Hispanic whites, it has been widely reported that Hispanics have better health outcomes.^{3–6} Thus, the average life expectancy in 2006 for Hispanics was 80.6 years, for non-Hispanic whites 78.1 years and for non-Hispanic blacks 72.9 years.³ The incongruity between the relatively disadvan-

tagged life circumstances of the overall Hispanic population and their apparent mortality advantage compared to non-Hispanic whites is referred to as the Hispanic health paradox.

The limited information available concerning Hispanic health raises important questions and potential challenges. First, given the relatively disadvantaged life circumstances of the Hispanic population, what can be done to ameliorate the consequences of these disadvantages and improve Hispanic health? In order to confront these challenges, we need to know how specific adverse circumstances are influencing health

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* Address reprint requests to Neil Schneiderman, Department of Psychology and Behavioral Medicine Research Center, University of Miami, 5665 Ponce de Leon Boulevard, FLIPSE Bldg., 4th Floor, Room 408, Coral Gables, FL 33146.

E-mail address: nschneid@miami.edu (N. Schneiderman).

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Abbreviations and Acronyms

AHA = American Heart Association
A1c = Glycosylated hemoglobin
AHI = Apnea-hypopnea index
BMI = Body mass index
CDC = Centers for Disease Control and Prevention
CHD = Coronary Heart Disease
CVD = Cardiovascular disease
DM = Diabetes mellitus
HCHS/SOL = Hispanic Community Health Study/Study of Latinos
HHANES = Hispanic Health and Nutrition Survey
HTN = Hypertension
MetS = Metabolic Syndrome
NHANES = National Health and Nutrition Examination Survey
NHLBI = National Heart, Lung and Blood Institute
NIH = National Institutes of Health
SDB = Sleep disordered breathing
T2DM = Type 2 diabetes mellitus
US = United States

among Hispanics. Second, is the mortality advantage among Hispanics accompanied by good health and perceived health quality of life? Third, how widely does the morbidity in the overall Hispanic population vary as a function of ethnic background or geographic location? Fourth, does the prevalence of morbidity vary between those born in the US and those who have immigrated, and how does duration of time living in the US relate to morbidity? Fifth, is the apparent mortality advantage enjoyed by the Hispanic population likely to last? Given the substantial changes that have been occurring in recent decades in Hispanic population size, shifting demographics and changing lifestyles, it is conceivable that belief in the sustainabili-

ty of the Hispanic mortality advantage may be promoting a false sense of security among public health officials, health care providers and the Hispanic population. This could have severe negative consequences. The purpose of the present paper is to examine the preceding questions within the context of early research findings from the Hispanic Community Health Study/Study of Latinos (HCHS/SOL).

Hispanic Community Health Study/Study of Latinos (HCHS/SOL)

According to the 2010 US Census, there are approximately 50.5 million Hispanics in the US, comprising about 16% of the population.⁷ Demographers expect that the proportion of Hispanics will grow to 30% by the year 2050.⁸ Although Hispanics are a diverse group in terms of sociocultural and genetic backgrounds, there is a paucity of information about Hispanic health derived from national exams and surveys. The National Health and Nutrition Examination Survey (NHANES), initiated in 1959, consists of a series of programs that combines interviews and physical examinations to assess the health and nutritional status in a nationally

representative sample of adults and children in the US.^{9,10} Until 2010 NHANES' Hispanic arm was almost exclusively Mexican-American. Thus, participants were classified as non-Hispanic white, non-Hispanic black and Mexican-Americans. NHANES assesses a variety of health variables and indicators, but does not assess the incidence of chronic diseases. The Hispanic Health and Nutrition Examination Study (HHANES), conducted between 1982 and 1984, examined 11,653 Hispanics in a one-time cross sectional examination of the prevalence of specific health factors.^{11–13} Carried out in a manner similar to NHANES, it provided a nationally representative sample of individuals from Mexican, Puerto Rican and Cuban origins enrolled in Texas, Colorado, New Mexico, Arizona, California, Florida, New York, New Jersey and Connecticut. The survey was estimated to represent 76% of the total 1980 US Hispanic civilian population. Although a valuable contribution to the study of Hispanic health, the data are now more than 30 years old.

In order to characterize the contemporary health status, health risks and CVD disease burden of Hispanics living in the US and to identify likely causal factors of many chronic diseases in a population with diverse environmental exposures, genetic backgrounds and early life experiences, the US National Institutes of Health (NIH) launched the HCHS/SOL with the National Heart, Lung and Blood Institute (NHLBI) serving as the lead sponsor.

The design and sampling methods of HCHS/SOL have previously been described.^{14,15} Briefly, HCHS/SOL is a longitudinal cohort study of 16,415 Hispanics, aged 18–74 years at their baseline visit in 4 of 11 urban metropolitan areas with the largest number of Hispanics in the US (Bronx, NY; Chicago, IL; Miami, FL; and San Diego, CA).¹⁶ The cohort self-identified as Mexican, Puerto Rican, Cuban, Dominican, Central or South American. HCHS/SOL used a stratified 2-stage area probability sample design in which census blocks were randomly selected in the defined community areas of each field center, and households were randomly selected in each sampled block group. Sampling weights were established based on the probability of selection, adjustment for non-response, trimming to handle extreme values of the weights, calibration to the known population distribution and normalization to the entire HCHS/SOL target population based on the 2010 US census. At baseline (2008–2011) participants underwent a clinical exam that included assessment of CVD risk factors (e.g., elevated blood pressure, diabetes mellitus/DM, dyslipidemia, smoking, obesity, sleep apnea) and information on demographics, medical history, medication usage, diet, physical activity, socioeconomic and sociocultural (acculturation) factors. The study also involves annual follow-up data since 2009 and a planned second clinic visit for each participant from 2014 to 2017.

Cardiometabolic risk factors

Various cardiometabolic risk factors have been examined in HCHS/SOL including the prevalence of: (a) DM, (b) metabolic

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