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Binational Research Challenges: Assessing Diabetes Self-Management Behaviors in the US-Mexico Border Region

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Background: The prevalence of diabetes at the United States (US) and Mexico (MX) border is estimated to be 16% and exceeds the national averages in both countries (9.4% and 9.2-14.5% respectively). The chronic and complex trajectory of type 2 diabetes (T2DM) requires daily engagement in self-management activities. Researchers have recommended that the US-MX border region be treated as one epidemiological unit. However, assessing T2DM self-management behaviors in this binational context is challenging due to a paucity of binational and bilingual scientific protocols and infrastructure to guide systematic data collection and analysis. We report on an adaptation of the behavioral risk factor surveillance system (BRFSS) used to collect and describe diabetes self-management behaviors and health care access from Mexicans diagnosed with T2DM in the border state of Nuevo Leon, MX and from Hispanics with T2DM reported to BRFSS from four Arizona (AZ) border counties.

Purpose: To: 1) describe the adaptation used to collect demographic data and responses to the BRFSS diabetes questions with participants diagnosed with T2DM residing in Monterrey, a municipality of Nuevo Leon, MX; 2) use BRFSS diabetes data to describe personal characteristics, diabetes self-management behaviors and health care access for diabetes care for participants diagnosed with T2DM residing in Monterrey, MX; and 3) use BRFSS diabetes data to describe personal characteristics, diabetes self-management behaviors and health care access for diabetes care for Hispanics diagnosed with T2DM residing in four AZ border counties. The research questions that guided the study were: 1) is it feasible to collect BRFSS diabetes data using a face-to-face survey method and convenience sampling in Monterrey, MX; and 2) what are the differences and similarities between demographic characteristics, diabetes self-management behaviors, and diabetes care delivered by a health care provider between Hispanics in four AZ border counties and Mexicans in Nuevo Leon, MX diagnosed with T2DM.

Methods: The sample for the AZ cohort was selected from the 2014 and 2015 BRFSS conducted by the AZ state health department using a disproportionate stratified sample design for telephone survey. The survey was conducted in either English or Spanish, based on participant preference, and data from four AZ border counties were selected for this study. The sample for the MX cohort was selected using convenience sampling. Potential participants were recruited at six supermarkets in metropolitan areas of Monterrey. Data were collected by trained researchers in fall 2015 using the 2015 BRFSS diabetes questions in a face-to-face interview. Descriptive statistics were used to describe sample characteristics, diabetes self-management behaviors and health care access for diabetes care among the US and MX cohorts.

Results: The Monterrey survey developed in Spanish was composed of the BRFSS demographic items and diabetes questions. Data collectors were trained to conduct face-to-face interviews using a standardized protocol. A total of 567 participants (Monterrey, MX n=351; AZ n=216) who met inclusion criteria responded to the survey. Participant mean age was slightly higher in the AZ cohort (AZ M=65.54, SD=11.1 vs MX M=59.36 SD=11.5) with a higher percent completing high school or greater (AZ 59.7% vs MX 33.0%) and having an annual income greater than \$20,000 (AZ 38.9% vs MX 12.8%). Employment and having health insurance were similar across cohorts. A greater percent of the AZ cohort reported having a personal health care provider (85.2% vs 75.5%), exercising regularly (67.6% vs 45.6%) and a lower percent reported smoking (9.7% vs 13.7%) than the MX cohort. AZ participants were slightly older at time of diabetes diagnosis (AZ M=52.54, SD=13.3 vs MX M=47.31, SD=12.3) but mean years with

diabetes was similar across cohorts . Participants in the AZ cohort reported more self-management behaviors than those in the MX cohort related to checking blood sugar daily (60.6% vs 8.8%) and feet daily (69.4% vs 56.7%) while the MX cohort reported more visits to their health care provider in the past 12 months (M=9.09, SD=6.8 vs AZ M=4.9, SD=8.3). The health care providers checked A1C with a similar frequency in the past 12 months; AZ M=2.67, SD=2.3 compared to Monterrey M=2.61, SD=2.7.

Conclusions: This study is the first to use BRFSS diabetes items to examine demographic characteristics, diabetes self-management behaviors and diabetes care delivered by a health care provider between AZ border Hispanics and residents of Monterrey, MX diagnosed with T2DM. Despite robust evidence for shared treatment protocols and self-management education for diabetes control and prevention of complications, a gap continues to exist in translating the evidence into binational clinical practice and in engaging US-MX border residents in T2DM self-management behaviors. Conducting research in a bicultural and binational environment is complex and requires a skilled and expert interprofessional team. Approaching the US-MX border region as an integral epidemiological unit in which standards of diabetes care are consistently implemented and binational data collection tools and data analysis are shared, has the potential to strengthen diabetes surveillance, binational policies for decreasing diabetes health disparities and informing the development, effective targeting, and evaluation of future binational health interventions in this unique geopolitical region.

Title:

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Keywords:

BRFSS, binational research and diabetes self-management

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Abstract Summary:

Discussion of the complexities and challenges when conducting binational diabetes research in the US-Mexico border region, methodological adaptations to achieve a common data set and research protocols and results that can inform development, effective targeting and evaluation of future binational diabetes education and self-management interventions.

Content Outline:

Introduction: Discussion of the prevalence of type 2 diabetes (T2DM) in the US-Mexico (MX) border region, the challenges of conducting binational diabetes research in the absence of shared methodologies and research infrastructure. We report on an adaptation of the behavioral risk factor surveillance data system (BRFSS) used to collect and describe diabetes self-management data from Mexicans diagnosed with T2DM in Monterrey, MX with the BRFSS diabetes self-management data from Hispanics in the Arizona-Sonora border region.

Main Point #1: Explanation of the BRFSS used in the US and adaptation of the BRFSS for MX data collection.

Main Point #2: Describe the methods used to collect BRFSS diabetes data in two US-MX border states.

Main Point #3: Describe personal characteristics, diabetes self-management behaviors and health care access for diabetes care for participants diagnosed with T2DM residing in Monterrey, MX and 4 Arizona border counties.

Conclusions: Approaching the US-MX border region as an integral epidemiological unit in which standards of diabetes care are consistently implemented and data collection tools and data analysis are shared, has the potential to strengthen diabetes surveillance and binational policies for decreasing diabetes health disparities in this unique geopolitical region. We propose a unified tool, such as the adapted BRFSS, for binational assessment of the social and health system(s) contexts in which diabetes care and self-management occurs. Binational data collected using shared protocols and analyses could be used to inform the development, effective targeting, and evaluation of future binational health interventions.

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Professional Experience: I have conducted community-based research with Mexican American adults in the U.S.-Mexico border region for the past 25 years. My current 5-year NIH study that I will present builds upon three previously tested community based studies with Mexican Americans with Type 2 diabetes in partnership with promotoras, a certified diabetes educator, and several community health centers.

Author Summary: Dr. McEwen's background in public health nursing, with specific expertise in US-Mexico border health issues and community-based research has informed her program of research for decreasing health disparities in this geopolitical region. She has a record of successful and productive research projects in collaboration with community members in an area of high public health relevance - elimination of T2DM health disparities among Mexican American adults and their families.

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Author Summary: Dr. Gonzalez Salazar received his MD 20 years ago and has practiced as a pediatrician. His interest in migrant health issues, especially infectious diseases led him to seek a masters and PhD in microbiology. His research focuses on diabetes, obesity and tuberculosis health disparities in Mexico and in the U.S.-Mexico border region.