

The U.S.-Mexico Border Diabetes Prevention and Control Project

FIRST REPORT OF RESULTS



**Pan American
Health
Organization**

Regional Office of the
World Health Organization



Partners in Phase I of the Project

Mexico

Ministry of Health of Mexico

Centro Nacional de Vigilancia Epidemiológica y Control de Enfermedades

Mexican Diabetes Association in Nogales, Sonora

Mexican Diabetes Association in the State of Chihuahua

State Diabetes Prevention and Control Program in Baja California,

State Diabetes Prevention and Control Program in Chihuahua,

State Diabetes Prevention and Control Program in Coahuila,

State Diabetes Prevention and Control Program in Nuevo León,

State Diabetes Prevention and Control Program in Sonora

State Diabetes Prevention and Control Program in Tamaulipas

Local Health Departments in all Border Cities

Abstract

The goal of the U.S.-Mexico Border Diabetes Prevention and Control Project is to reduce the impact of diabetes on the residents living along the U.S.-Mexico border, through a model of participation and shared leadership along the border region.

The first phase of the project was to conduct a prevalence survey of diabetes and related biological and behavioral risk factors. The survey was administered from February 2001 to October 2002 to a stratified, random sample of 4,027 individuals, representative of the non-institutionalized population aged 18 years or older living in the U.S.-Mexico border region.

Diabetes is defined by self-report or fasting plasma glucose (FPG) 126 mg/dl.; prediabetes as having FPG in the range 100-125 mg/dl and no diagnosis of diabetes; underweight was defined as body mass index (BMI) <18.5 kg/m², normal weight as BMI 18.5-24.9 kg/m², overweight as BMI 25.0-29.9 kg/m², and obesity as BMI ≥ 30.0 kg/m².

Results show that among the 7.5 million persons 18 years and older living at the U.S.-Mexico border, 15.7%, or approximately 1.2 million have diabetes. Of these adults, 500,000 live on the Mexican side of the border and about 700,000 live on the U.S. side. The prevalence of prediabetes is 14%. Prediabetes affects approximately one million people; more than half (51%) are women. It is estimated that 5.3 million adults are overweight or obese. Among the obese, 1 million live on the Mexican side of the border, and 1.5 million on the U.S. side. Obese individuals on the U.S. side of the border have a 2.8 times greater risk of having type 2 diabetes than individuals with normal weight; on the Mexican side, the risk is 2.2 times greater.

First Report of Results

Introduction

The goal of the U.S.-Mexico Border Diabetes Prevention and Control Project is to reduce the impact of diabetes among residents along the U.S.-Mexico border, through a model of participation and shared leadership throughout the U.S.-Mexico border region.

Non-communicable or chronic diseases are of major importance in the U.S.-Mexico border region, along with the burden they represent in terms of disability for individuals and costs to health systems and communities. Until now, most of the known information about diabetes on the border has been from mortality data. In México, between 1980 and 2001 the national mortality rate for type 2 diabetes increased from 20 to nearly 50 deaths per 100,000 inhabitants. For the Mexican border municipalities, 6 out of 14 municipalities report a higher mortality rate than the national level. In the U.S., diabetes was the sixth leading cause of death in 2003, with a national rate of 25.4 deaths per 100,000 inhabitants. In 2002, diabetes was the 4th leading cause of death among Hispanics in Texas and in New Mexico, the 5th leading cause of death in El Paso, Texas, and the 6th in Dona Ana, New Mexico.

The adult population of the U.S.-Mexico border region is now approximately 7.5 million. Eighty percent of the population in the U.S. border counties is of Hispanic or Latino origin, ranging from 27% in San Diego, California to 95% in Presidio and Webb Counties, Texas. The poverty rates are also high, with an average of 27% of the families in the U.S. border region living below the federal poverty level .

Background

In 1995, the Division of Diabetes Translation (DDT) at the Centers for Disease Control and Prevention established the National Hispanic/Latino Initiative for Action. The goal of this initiative was to address the disproportionate impact of diabetes, in a culturally and linguistically appropriate manner, among the Hispanic/Latino population. DDT convened a group of Hispanic/Latino experts that made two vital recommendations: a) increase and improve data collection, surveillance, and program evaluation in Hispanic populations, and b) in states with high Hispanic/Latino population, implement interventions programs to reach out to the Hispanic/Latino population.

The U.S.-Mexico Border Diabetes Prevention and Control Project was created in 1997 and 1998 by a collaborative effort of the Diabetes Prevention and Control Programs from the health departments of Arizona, California, New Mexico, Texas, the Diabetes Programs from the states of Baja California, Sonora, Chihuahua, Coahuila, Nuevo León, and Tamaulipas; the Mexican Secretariat of Health; the Paso del Norte Foundation; and the El Paso Diabetes Association. Representatives from other agencies and offices, such as the California Endowment/Project Concern and the states' border health offices were also involved in this collaboration.

The project was funded in 1999. In the first phase, the collaborators designed and conducted a prevalence study of diabetes and related biological and behavioral factors, including prediabetes, overweight and obesity, and preventive health practices. In the second phase, the project will undertake a pilot study of the effectiveness of an intervention model aimed at improving the self-management of diabetes among those individuals living with type 2 diabetes, and to prevent or delay the onset of diabetes among those at high risk.

Some important principles that have guided this collaboration and the project are to:

1. Consider the U.S.-Mexico border region as one epidemiological unit
 2. Involve representatives from both countries in the planning, implementation, and evaluation of the project
 3. Gather all data through a randomized household survey
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A Binational Executive Committee was formed to manage the project and provide guidance and oversight to the project. This Committee makes recommendations regarding administrative procedures and scientific policies related to the implementation of the project and makes decisions pertaining to the project's functioning and funding. The Executive Committee has two working committees (Scientific and Intervention Advisory), supported in turn by workgroups responsible for tasks agreed upon in coordination with the Executive Committee.

This project has received financial and human resources support from border cities, counties, and municipalities, from state and federal entities in the U.S. and Mexico, and from nongovernmental organizations. The involvement of these many entities, at all different levels, has made this project very challenging, but it has also made it very successful with a strong scientific and programmatic integrity.

Methodology

A diabetes prevalence survey was conducted from February 2001 to October 2002 using a stratified, random sample of 4,027 individuals (1,905 on the U.S. side and 2,122 on the Mexican side) representative of the non-institutionalized population aged 18 years or older living in the U.S.-Mexico border region. A multistage, cluster sample design was designed with strata: state and county (in California and Texas), and ethnicity on the U.S. side. Within each stratum, census tracts and census blocks were randomly selected; then, within each block (U.S.) or AGEB (Mexico) households were randomly selected and, within each household, adult members were randomly selected.

The survey was conducted in 44 border communities: 28 in Mexico and 16 in the U.S. The questionnaire had 65 questions about diabetes, general health, access to health care, hypertension, physical activity, diet, eating habits, tobacco use, alcohol consumption, reproductive health, social culture aspects, acculturation, education, work history, and demographic variables, including ethnicity.

The survey also included anthropometric (weight, height, waist and hip circumferences) and blood pressure measurements. In the final part of the survey, a fasting blood sample was collected by a certified phlebotomist to estimate fasting plasma glucose and hemoglobin A1C levels.

Persons who reported having been told by a health professional that they had diabetes were classified as having diagnosed diabetes. Persons without previous diagnosed diabetes were those who reported that they had never been told and women who were told only during pregnancy. Undiagnosed diabetes was defined as a fasting plasma glucose (FPG) ≥ 126 mg/dl among persons without diagnosed diabetes. Total diabetes is the sum of diagnosed and undiagnosed cases. Prediabetes was defined as having no diabetes and FPG in the range 100-125 mg/dl. Underweight was defined as body mass index (BMI) < 18.5 kg/m² normal weight as BMI 18.5-24.9 kg/m² overweight as BMI 25.0-29.9 kg/m² and obesity as BMI ≥ 30.0 kg/m².

Results

A total of 4,027 questionnaires were completed, 1,905 (47.3%) on the U.S. side of the border and 2,122 (52.7%) on the Mexican side. The number of surveys conducted in the four U.S. border states were: California 652, Arizona 324, New Mexico 342, and Texas 587. In the six Mexico border states, the distribution of the surveys was as follows: 326 in Baja California, 352 in Sonora, 444 in Chihuahua, 338 in Coahuila, 331 in Nuevo León, and 331 in Tamaulipas.

Among the participants, the mean age was 41.1 (\pm 16.9) years of age; 29.2% were male, and 88.2% (n=3,550) identified themselves as Hispanic.

Completed Surveys by Country & State

U.S.	1905	México	2122
California	652	Baja California	326
Arizona	324	Sonora	352
New Mexico	342	Chihuahua	444
Texas	587	Coahuila	338
		Nuevo León	331
		Tamaulipas	331
Total		4,027	

Selected Characteristics United States-Mexico Border Region Study Population

Characteristics	N.	%
Total	4027	100.0
Country		
México	2122	52.7
United States	1905	47.3
Age (years)		
18-29	934	23.2
30-39	938	23.3
40-49	773	19.2
50-59	579	14.4
60+	803	19.9
Sex		
Male	1177	29.2
Female	2850	70.8
Ethnicity		
Hispanic	3550	88.2
Non-Hispanic	475	11.8
BMI Kg/m²		
Underweight: <18.5	49	<1
Normal: 18.5-24.9	942	23.6
Overweight: 25.0-29.9	1469	36.9
Obesity: 30	1525	38.3

U.S.-Mexico Border Region

Prevalence of Diabetes

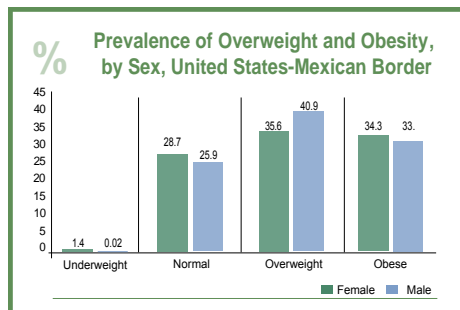
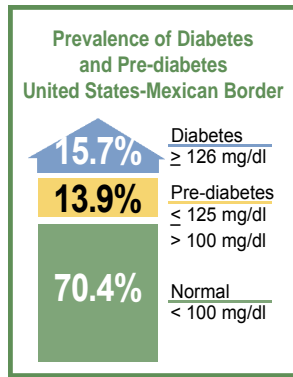
Among residents of the border region, the total (self-reported and diagnosed through the study) prevalence of diabetes was 15.7%. More than eleven percent (11.4%) reported having been told by a health professional that they had diabetes and an additional 4.3% did not know that they had diabetes at the time of the study.

Prevalence of prediabetes

In the total border population, the prevalence of prediabetes was 13.9%.

Prevalence of overweight and obesity

Body Mass Index (BMI) was used to classify the participants as underweight, normal, overweight or obese. By these criteria, it was found that less than 1% of the border population was underweight, 23.6% was normal weight, 36.9% was overweight, and 38.3% was obese. In the border area, men were more overweight than women (40.9 vs 35.6), where as women were more obese than men (34.3% vs 33%).



Mexico Border Area Prevalence of Diabetes

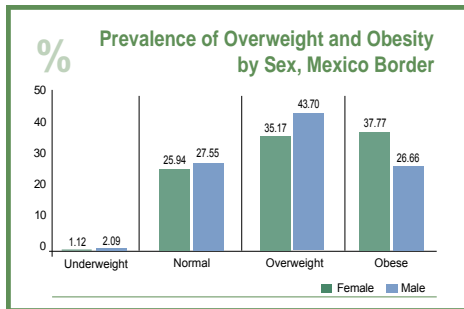
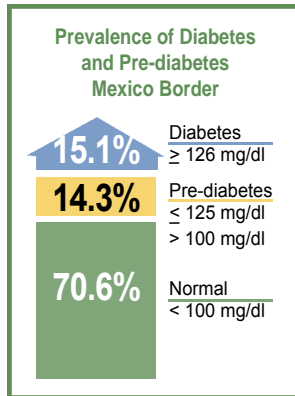
In the Mexico border area, the total prevalence (diagnosed and undiagnosed) of diabetes was 15.1%. Almost nine percent (8.5%) of the participants reported having been told by a health professional that they had diabetes and 6.6% did not know that they had diabetes at the time of the survey.

Prevalence of Prediabetes

Along the Mexican border, the percentage of individuals that had levels of blood glucose between 100 and 125mg/dl of blood glucose was 14.3%.

Overweight and Obesity

Using the BMI measurements as explained before, it was found that 1.6% of the population in the Mexican border was underweight, 26.7% was normal weight, 39.4% was overweight and 32.2% was obese. When data was analyzed by sex, men were more overweight than women (43.7% vs. 35.1%), whereas women were more obese than men (37.8% vs. 26.7%).



U.S. Border Area Prevalence of Diabetes

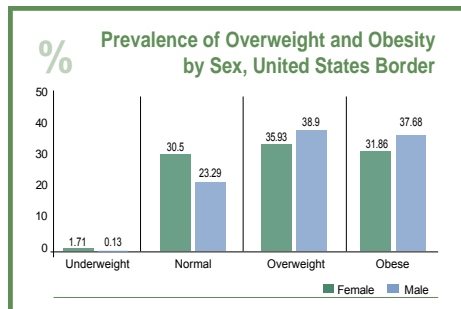
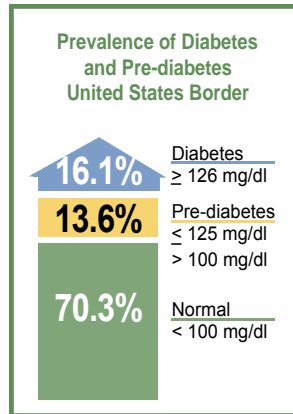
In the U.S. border area, the total prevalence (self-reported and diagnosed through the study) of diabetes was 16.1%. 13.5% reported having been told by a health professional that they had diabetes, and 2.6% did not know that they had diabetes at the time of the survey.

Prevalence of Prediabetes

In the U.S. border area, the prevalence of prediabetes was 13.6%.

Overweight and Obesity

In the U.S. border area, less than 1.0% of inhabitants were underweight, 27.0% were normal weight, 37.4% were overweight, and 34.7% were obese. Men were more overweight (38.9% vs. 35.9%) and more obese (37.7% vs. 31.9%) than women.



Conclusions

Currently, along the U.S.-Mexico border there are 7.5 million adults. Approximately 1.2 million of them have type 2 diabetes (15.7%). The diabetes prevalence study showed that nearly 500,000 of the individuals living with diabetes are on the Mexican side of the border and more than 700,000 are on the U.S. side.

It is estimated that 5.3 million adults in the U.S.-Mexico border region are overweight or obese. One million of the obese individuals live on the Mexican side of the border, and 1.5 million live on the U.S. side. Obese individuals along the U.S. side of the border have 2.8 times greater risk of developing diabetes than individuals with normal weight, and on the Mexican side, the risk is 2.2 times greater.

The prevalence of prediabetes in the U.S.-Mexico border is 14% in the total adult population. Prediabetes affects approximately one million individuals (51% of women and 49% of men).

Partners in Phase I of the Project

United States

United States Department of Health and Human Services
Health Resources and Services Administration
Centers for Disease Control and Prevention
Arizona Department of Health Services
California Department of Health Services
New Mexico Department of Health
Texas Department of State Health Services
Pan American Health Organization
U.S.-Mexico Border Health Association
Paso del Norte Health Foundation
The California Endowment
Project Concern International
California Diabetes Control Program
Arizona Diabetes Control Program
New Mexico Diabetes Control Program
Texas Diabetes Control Program
El Paso Diabetes Association
University of Missouri, School of Medicine
Center for Border Health Research
Primus Corporation
RE Thomason Hospital, El Paso, TX
Rio Grande Council of Governments
New Mexico State University at Las Cruces
Doña Ana County Community College
Arizona Health Border Office
Local Border Health Departments
County of San Diego Public Health Laboratory
Gateway Community Health Center
Southwest Arizona Health Education
University of Texas at Houston School of Public Health at El Paso
College of Public Health University of Arizona
Western Arizona Area Health Education Center

Partners



Paso del Norte Health Foundation

