



Diabetes among Latinos in the Southwestern United States: border health and binational cooperation

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SYNOPSIS

This analysis reviews cooperation between the four border states of the United States of America (Arizona, California, New Mexico, and Texas) and international partners in Mexico with regard to type 2 diabetes among Latinos. Binational cooperation, academic collaboration, preventative health initiatives, and efforts to improve health care access for the border population are highlighted. This meta-analysis of the literature points out causative factors of the increased type 2 diabetes prevalence among Latinos in the United States; an inverse correlation between diabetes and education and socioeconomic level; contributing factors, including barriers with language, health care payment, transportation, and underestimating diabetes implications; and a lack of social and environmental support for disease management. Medical and indirect costs in socioeconomic terms are also included.

Cooperation between the United States and Mexico may be beneficial to promoting further collaborative efforts between these nations, and serve as a template for greater cooperative efforts to mitigate the substantial public health and socioeconomic implications of type 2 diabetes globally.

Key words: diabetes mellitus; border health; border areas; Mexico; United States.

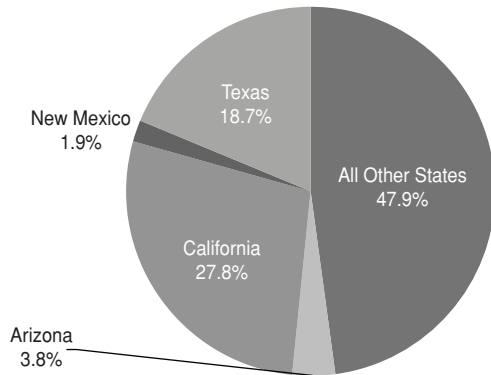
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By the year 2025, an estimated 333 million people in the world will be affected by type 2 diabetes (1); the related socioeconomic and public health challenges will be substantial and global. Preparation would be aided by globally-applicable preventative and therapeutic guidelines. A possible model for such a degree of international cooperation is that of the United States–Mexico border area. Here, binational efforts to address type 2 diabetes, along with other health concerns that tend to be common to border areas, have been successful despite major discrepancies in health care. Also, although geographically similar, the countries have significantly different languages, cultures, economies, and health care. Plus, the United States–Mexico border area has a high incidence of infectious disease transmission, with one study (2, 3) finding it had a four- to eight-fold increase in the transmission of certain infectious diseases, including tuberculosis. These dynamics make for a strong model that might be emulated by other countries as they collaborate to address the global diabetes crisis.

The United States–Mexico border area extends 100 km into each country along the length of the 3 145 km (4) border and has an approximate total population of 13 million. In 2010, the United States Census Bureau found that approximately 52% of the Latino population of the United States was residing in the four border states of Arizona, California, New Mexico, and Texas (Figure 1); and that from 2000–2010, the Latino population in each of these four states had grown by close to 46%, 28%, 25%, and 42%, respectively (Table 1). Considering the area's substantial Latino population, the extensive data and analysis available, and its numerous cooperative health programs, this paper focused primarily on multiple research studies specific to the United States–Mexico border area.

The largest ethnic minority group in the United States is Latino (5), and Latinos have a higher proportion of risk for type 2 diabetes than other ethnic groups (6). The causative factors and health care access that put Latinos at greater risk of type 2 diabetes morbidity and mortality should be examined (7). Also, it is important to note that, in the border area, type 2 diabetes has a higher prevalence of 15.7%, compared to 5.2% for the United States overall and 8.2% for Mexico overall (8). Although the heightened prevalence of diabetes in the border area is likely multifactorial, research suggests that there is a statistically significant correlation between the low socioeconomic level of many Mexican immigrants in the United States and the development of obesity and diabetes (9).

FIGURE 1. Latino population in the United States, by state, 2010

Source: United States Census Bureau. 2010 census summary file 1. Washington, DC, United States.

Binational cooperation

Organizations such as the U.S.–Mexico Border Health Commission (USMBHC) have been tasked with addressing disparities in health between the border populations and the respective United States and Mexico populations outside the border area. Working together with the Department of Health and Human Services (Washington, DC, United States) in the border states of Arizona, California, New Mexico, and Texas, and with health officials in Mexico, the USMBHC has developed a 5-year cooperative health initiative known as “Healthy Border 2010: An Agenda for Improving Health on the United States-Mexico Border” (10). Its purpose is to further binational, academic cooperation in border health, to advance preventative health initiatives, and to improve health care access among the border population. The program has been successful in identifying 11 important areas of health care for continued focus, one of which is an effort to decrease diabetes-related mortality and hospitalizations in the United States and Mexico. The binational cooperative is now working towards a Healthy Border 2010/2020 initiative that will continue the binational effort to gather relevant data in an effort to recognize health concerns and help prioritize future actions (11).

The Pan American Health Organization (PAHO)/World Health Organization (WHO) working together with the United States Centers for Disease Control and Prevention (Atlanta, Georgia, United States), the Ministry of Health of Mexico, the California Endowment, (Los Angeles, California, United States), and the Paso Del Norte Health Foundation (El Paso, Texas, United States) have published collective research through the U.S.–Mexico Diabetes Prevention and Control Project (12). This was a peer-reviewed study that is considered the first successful binational effort to develop a prevalence study encompassing the entire United States–Mexico border.

One finding of the U.S.–Mexico Diabetes Prevention and Control Project was that diabetes is inversely related to education and socioeconomic level. A second finding was that there is an increased probability of undiagnosed diabetes on both sides of the border in people of Mexican descent (8). Additionally, with the statistically significant findings in Phase I data collection and interpretation, the authors were able to make recommendations for future border studies and efforts. Two significant recommendations were to form a binational committee made up of health care professionals and representatives from various fields of expertise, and to develop locally available educational material tailored to the culture and language of the area (12). With the successful Phase I surveillance, data collection, and establishment of recommendations, the U.S.–Mexico Diabetes Prevention and Control Project implemented Phase II in 2004. Phase II actions consisted of training for community health care workers and providers, diabetes forums, publications, policy briefs, and development of a network of border area researchers (13).

Barriers to care

Recognizing that disparities in health statistics exist within populations living with type 2 diabetes, there is a question of whether barriers to medical care exist in the United States. An analysis in a stratified two-stage randomized cross-sectional health survey conducted in 2009–2010 among 1 002 Mexican American households, found diabetes rates of 15.4%. Of this population with diabetes, 86% reported comorbidities (14). According to the study, those with diabetes dem-

TABLE 1. Increase in proportion of Latino population in the United States of America, 2000–2010

Year and population	Arizona	California	New Mexico	Texas
Year 2000				
Total population	5 130 632	33 871 648	1 819 046	20 851 820
Latino population	1 295 617	10 966 556	765 386	6 669 666
Latinos as % of total population	25.3	32.4	42.1	32.0
Year 2010				
Total population	6 392 017	37 253 956	2 059 179	25 145 561
Latino population	1 895 149	14 013 719	953 403	9 460 921
Latinos as % of total population	29.6	37.6	46.3	37.6
Increase from 2000–2010	46.3	27.8	24.6	41.8

Sources: United States Census Bureau. 2000 and 2010 census summary files. Washington, DC, United States.

onstrated statistically significant barriers to receiving health care compared to those without diabetes. Barriers included difficulty with language, inability to pay for medical care, and lack of access to transportation. This same study also discovered that Mexican-American citizens within the study group were 2–3 times more likely to seek medication and medical care in Mexico due to the same stated barriers. This data supports the importance of binational health efforts to provide more accessible, better quality health care to a large population seeking health care and medications on both sides of the border.

A descriptive and correlational design interview of 144 Latino adults (15), many of whom had type 2 diabetes symptoms, reportedly did not pursue health care services due to reduced understanding of diabetes implications and barriers to health care. Another study regarding diabetes self-management highlighted the importance of social and environmental support resources for disease management, especially for the Latino population which tended to have lower compliance to attain glycemic control (16). Those in the Latino population who reported better diabetes self-management also described having received sufficient support resources (14).

Health promotion and prevention

In addition to findings on the inverse relationship between education and socioeconomic level with diabetes and the importance of social and environmental support resources, a border area study of type 2 diabetes prevalence and risk factors also found that 1 of every 4 type 2 diabetes cases along the U.S.-Mexico border had gone undiagnosed (17). Among the border population, both Mexicans and Mexican immigrants were more likely to go undiagnosed than were the non-Hispanic whites and United States-born Hispanics (18). These statistics emphasize the importance of culture-specific health promotion and disease prevention efforts to educate, diagnose, and manage the undiagnosed population.

The United States has a multitude of support resources for diabetes prevention and management, but these programs may need to be modified to more effectively deliver education and promote diabetes management among ethnic minorities (6). According to one study (7), optimal care for the Latino population requires a firm understanding of language and

culture, and only health care that is culturally sensitive can optimize the full benefits of compliance.

When evaluating border-area health cooperation between the United States and Mexico regarding diabetes, the U.S.-Mexico Border Diabetes Prevention and Control Project is an example of the usefulness of a health research survey that provides data and encourages additional research (17–23). A binational approach on local, state, and federal levels requires immense cooperation, especially when factoring in language and cultural barriers, as well as varying sociopolitical entities and bureaucracies. One study (23) that analyzed the planning and application of the U.S.-Mexico Border Diabetes Prevention and Control Project found that what most threatened cooperation was insufficient understanding of the health care and political systems of the other nation.

Socioeconomics

With respect to the socioeconomic implications of diabetes in the United States (Table 2), it is relevant to note the importance of primary care and preventative medicine in reducing the national burden of delayed diabetes diagnosis and continuous chronic disease management. Both the medical and indirect costs, such as lost productivity, should be considered.

In highlighting past binational cooperative efforts in the Southwestern United States border area and the resulting proliferation of research, it is relevant to address public health among the vast and rapidly-growing Latino population and its rising type 2 diabetes-related morbidity and mortality. With the current expansion of health care access in the United States and the emphasis on cost reduction, it is becoming more pertinent to identify cost-effective models for providing primary and preventative care to benefit public health. Based on collaborative research between the United States and Mexico, it appears that an important precedent has been created to foster the provision of health care resources for type 2 diabetes health education, early diagnosis, and disease management.

Continued research and analysis

Binational cooperation has been effective in achieving statistically significant research studies. Considering that a significant percentage of the popu-

TABLE 2. Diabetes prevalence and economic costs in the United States, 2012

	Prevalence %	Population with diabetes	Medical costs (US\$ billions)	Indirect costs (US\$ billions)	Total costs (US\$ billions)
Arizona	7.00	470 200	3.48	1.28	4.76
California	6.40	2 435 600	19.32	8.23	27.55
New Mexico	7.70	161 700	1.16	0.37	1.53
Texas	7.30	1 919 500	13.35	4.89	18.24
United States Total	7.00	22 290 200	175.80	68.6	245.00

Note: Data compiled from national and officials surveys (2006–2012) available from <http://aspe.hhs.gov/sp/surveys/index.cfm> and the U.S. Census Bureau.

lation is seeking medical care on both sides of the border, continued development of binational cooperation is imperative for the improved health in both countries. Also, given the unique characteristics of the United States–Mexico border area, this continued binational effort could work as a model on a more global scale, especially in border areas where health care provision can be challenged to completely encompass factors such as migration and diversity. There is a need for continued analysis, research initiatives, and collaboration to mitigate the public health and socioeconomic implications of type 2 diabetes among the Latino population, and to reduce the long-term socioeconomic implications of diabetes throughout the United States, Mexico, and possibly the world.

Conflicts of interest: None.

SINOPSIS

Diabetes en la población de origen latino del sudoeste de los Estados Unidos: salud fronteriza y cooperación binacional

Este análisis examina la cooperación de los cuatro estados fronterizos de los Estados Unidos de América (Arizona,

California, Nuevo México y Texas) y los socios internacionales de México con respecto a la diabetes de tipo 2 en la población de origen latino. Se destacan la cooperación binacional, la colaboración académica, las iniciativas de prevención en salud, y las actividades orientadas a mejorar el acceso a la atención de salud por parte de la población de la frontera. Este metanálisis de la bibliografía señala los factores causales del aumento de la prevalencia de la diabetes de tipo 2 en la población de origen latino de los Estados Unidos; una correlación inversa entre la diabetes y el grado de formación y el nivel socioeconómico; los factores contribuyentes, incluidas las barreras relacionadas con el idioma, el pago de la atención de salud, el transporte, y la infravaloración de las consecuencias de la diabetes; y una falta de apoyo social y ambiental para el tratamiento de la enfermedad. También se incluyen los costos médicos y los indirectos en términos socioeconómicos.

La cooperación entre los Estados Unidos y México podría ser beneficiosa para promover nuevas iniciativas de colaboración entre estas naciones y servir como modelo a otras iniciativas más amplias de cooperación dirigidas a mitigar las sustanciales consecuencias de salud pública y socioeconómicas de la diabetes de tipo 2 a escala mundial.

Palabras clave: diabetes mellitus; salud fronteriza; áreas fronterizas; México; Estados Unidos.

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