The impact of diabetes is devastating for the estimated 7.5 million adults who reside in the U.S.-Mexico border region (62.5 miles north and south of the international boundary).¹,² Health officials estimate that 1.2 million adult border residents have type 2 diabetes mellitus.³ The majority (700,000) of these residents live on the U.S. side of the border and are predominantly (70%) Hispanic.¹,⁴

The diabetes prevalence rate in the border region (15.7%) exceeds the national averages in both the U.S. (13.9%) and Mexico (14.9%).¹ Hispanics who reside in the U.S.-Mexico border region are twice as likely to have diabetes and have higher rates of diabetic nephropathy, retinopathy, and peripheral vascular disease as non-Hispanic whites.⁵,⁶

At the U.S. national level, the age-adjusted diabetes prevalence among U.S. Hispanics (Mexican-Americans comprise the largest subgroup) is twice that of non-Hispanic whites (9.8% versus 5.0%).⁵ Approximately 2.5 million (9.5%) Hispanics age 20 or older have been diagnosed with diabetes.⁵ Type 2 diabetes mellitus is most common among middle-aged Hispanics; about 20% to 30% of Hispanics age 50 or older have either diagnosed or undiagnosed diabetes.⁵

Contributing factors to the rapidly increasing prevalence of diabetes in Hispanics include genetic and environmental factors leading to obesity and insulin resistance.⁷

The purpose of this article is to describe the healthcare management challenges for NPs who provide care in the border region for Mexican-American adults with type 2 diabetes. Hispanic is a U.S. Census term that provides an umbrella for individuals who trace their ancestry to Mexico, Puerto Rico, Cuba, Spanish-speaking Central and South America, or other Spanish cultures.⁸ For the purposes of this article, the term Mexican-American refers to persons living...
on the U.S. side of the U.S.-Mexico border who identify themselves as being of Mexican origin.

**U.S.-Mexico border region**

The 2,000-mile U.S.-Mexico border region (hereafter referred to as the border region) stretches across four U.S. states: California, Arizona, New Mexico, and Texas as well as six Mexican states: Baja California, Sonora, Chihuahua, Coahuila, Nuevo Leon, and Tamaulipas. These 10 U.S.-Mexico border states are geographically remote from the core of both nations. The border population is estimated to be about 12 million and is projected to double by the year 2025.

The population on the U.S. side of the border increased 316% between 1950 and 2000, and is now estimated at 6,312,253 (2.9% increase/year). An even larger population shift occurred on the Mexican side of the border region during this same time period—a 577% increase, or an average growth rate of 3.9% per year. Urban areas, especially those with large border-crossings or manufacturing industries have grown faster than rural counties.

**Poverty**

Poverty in the border region is insidious. The unemployment rate along the Texas border region is 250% to 300% higher than in the rest of the United States. Five of the seven poorest U.S. counties are located in the border region. Twenty-one of the 44 border counties have been designated as economically distressed areas. In Cameron County, Tex., 35% of all Hispanic families live below the poverty level. This is similar to poverty rates found in the border counties of Santa Cruz County, Ariz. (21%) and Imperial County, Calif. (16%). The state poverty level rate in these three states is 14%, 11%, and 9.7% respectively.

Poverty, a rapidly increasing population, and a lack of environmental controls have contributed to the development of colonias (unincorporated settlements of land that lack infrastructure for providing electricity, water, sewage disposal, paved roads, and safe sanitary housing) in the United States.

Approximately 432,000 people live in 1,200 colonias located in the Texas and New Mexico regions of the border. NPs whose patients live in colonias must be knowledgeable about this unique environmental context and the challenges it presents for successfully managing type 2 diabetes.

**Border culture**

The historic economic interdependence and shared cultural norms, values, and beliefs of the border region have played a fundamental role in creating a culture that is uniquely different yet often marginalized from the mainstream societies of each nation. Characteristics of the border region require a unique perspective of acculturation, the process by which members of one cultural group adopt the beliefs and behaviors of another group. Persons of Mexican origin who are living on the U.S. side of the border are separated politically from Mexico, yet the physical proximity tethers them to their cultural and social roots. Bridging two cul-
Cultural support infrastructure

Understanding the role that family plays in decision making is critical for providing healthcare to Mexican-American patients with diabetes. Culturally competent approaches to Hispanic healthcare that incorporate the cultural value of family, or *familismo*, are more effective than conventional ways of addressing diabetes in this population. The primary importance of *familismo* has been well documented in the Hispanic culture. Among Mexican-Americans, *familismo* is expressed through a strong attachment to the nuclear family, which includes obligations to help other family members. Healthcare decisions for many Mexican-Americans are made in the context of family. The primary importance of *familismo* for Mexican-Americans with diabetes is illustrated in the findings from a study in which higher levels of perceived family support were associated with higher reported levels of self-management behaviors specific to diet and exercise. Mexican-Americans with type 2 diabetes in the Texas border region reported they relied on the advice of family, friends, and neighbors to provide them with guidance in their diabetes self-management.21

*Personalismo* is another important cultural characteristic to consider when providing care to Mexican-Americans in the border region. *Personalismo*, characterized by a warm, trusting relationship or formal friendliness, has been identified as an important cultural component in patient and healthcare provider interactions.22

When *personalismo* is present in these interactions, any reluctance on the part of the patient to share important concerns or details about their diabetes self-management may be eased.21,22 Findings from these studies suggest that NPs caring for Mexican-Americans in the border region consider the influence of acculturation, *familismo*, and *personalismo* as well as include persons who may be providing diabetes care advice to the patient whenever discussing care requirements. Additionally, exploring how these individuals might help the patient meet daily diabetes self-management requirements would be a culturally congruent intervention.

Diabetes care management

The established American Diabetes Association (ADA) goal for glycemic control for persons with diabetes is glycosylated hemoglobin (A1C) less than 7%. Current national data suggest that less than half of U.S. adults with diabetes have an A1C level less than 7%. It is well established that a reduction of 1% in A1C was associated with decreased microvascular complications and risk of diabetes-related complication.

National guidelines for screening, diagnosing, and managing type 2 diabetes recommend lifestyle modifications, such as a low-fat diet and increased physical activity resulting in modest weight loss to improve glycemic control as foundational to diabetes care. However, in most patients, use of multiple medications will be required to achieve adequate blood glucose and A1C levels.

Obesity, a marker for patients at risk for type 2 diabetes, is a major health concern in the U.S.-Mexico border region. Weight loss is recommended for all overweight and obese adults with type 2 diabetes. Moderate weight loss of 5% to 7% of initial body weight has been shown to decrease insulin resistance and improve glycemic control. Body mass index (BMI) and waist circumference are two easily obtainable measures of obesity that can assist in identifying individuals at high risk for type 2 diabetes.

According to the International Obesity Task Force, being overweight is defined as having a BMI of 25.0 to 29.9 kg/m² and obesity is a BMI of 30.0 kg/m² or greater. Waist circumference greater than 35 inches in women and 40 inches in men indicates higher visceral adiposity and is associated with insulin resistance, a major characteristic of type 2 diabetes. Because of the prevalence of obesity in persons who live in the border region, waist circumference is an important assessment parameter to use to evaluate the overweight individual for diabetes risk.

The majority of individuals with type 2 diabetes will require medication, usually oral antidiabetic agents, to maintain disease control. Standard diabetes management also includes monitoring and control of hypertension and cholesterol. However, self-management education is the cornerstone of any diabetes therapeutic plan to improve health outcomes and quality of life.

A focus on healthy eating, active lifestyles, and glucose control are central elements of diabetes management. Ideally, the individual with type 2 diabetes will collaborate with their NP to gain self-management skills for problem solving and coping with their disease. Such a collaborative process should be culturally congruent and situated within the border environment in which the patient goes about living their daily life. While NPs who practice in
the border region apply culturally relevant strategies for increasing the self-management capacity of their patients, the diabetes management standards and outcomes that guide their practice remain the same as those used with other populations.

The American Academy of Nurse Practitioner care priorities emphasizes self-care, patient/family education, and community resource referral. These priorities are consistent with ADA medical standards and the American Association of Diabetes Educators (AADE) recommendations for diabetes education. Furthermore, an emphasis on patient/family education and community resources facilitates capacity for self-management of diabetes in the border region.

NPs must consider the unique issues of the border population when educating and managing patients with type 2 diabetes. While assessment and treatment of patients in the border region is the same as in any other region, identifying and treating complications is especially important because the border population has a higher risk for diabetes-related complications.

## Self-management behavior

Considerable evidence demonstrates that diabetes self-management behaviors that optimize glucose control, reduce cardiovascular risk factors, and detect complications at an early and treatable stage can help to prevent or delay morbidity associated with type 2 diabetes. However, successfully integrating the recommended diabetes self-management behaviors into everyday life is more challenging for Hispanics in the border region compared with other U.S. Hispanics. This is due to higher poverty, lower literacy levels, barriers to accessing care, and a critical shortage of certified diabetes educators (CDEs).

The AADE has identified seven behaviors that are essential for diabetes self-management:

- healthy eating
- being physically active
- daily self-monitoring of blood glucose
- taking medications
- problem solving
- risk reduction
- healthy coping.

These essential behaviors are addressed in ADA-recognized diabetes self-management education programs. Healthy eating and being physically active are major challenges for Mexican-American adults with type 2 diabetes living in the border region. The ADA diabetes food pyramid provides a guideline for healthy eating by grouping foods and recommending servings per day:

- vegetables (3 to 5 servings)
- fruits (2 to 4 servings)
- milk (2 to 3 servings)
- meat (4 to 6 ounces)
- fats, sweets, and alcohol (keep servings small and save for special treats).

The American Dietetic Association and the ADA recommend that healthcare providers working with Mexican-Americans: (1) assess the level of acculturation to mainstream American dietary practices, (2) emphasize positive food practices related to traditional health beliefs and dietary customs, (3) encourage the consumption of a variety of healthy foods, particularly those that are culturally acceptable, and (4) dispel misconceptions and myths about dietary recommendations.

Physical activity is foundational to the treatment of type 2 diabetes. Regular physical activity improves insulin sensitivity and glycemic control. Initial physical activity recommendations should be modest and based on the participant’s ability and willingness. The frequency and duration should be gradually increased to 150 minutes of moderated aerobic activity at least 3 days/week with no more than 2 consecutive days without activity.

Daily self-monitoring of blood glucose provides essential information for determining how food, physical activity, and medications influence blood glucose levels. Patients will need to be informed about required equipment and procedures to monitor their blood glucose.

Medication management for patients with type 2 diabetes demands a fine balance between achieving optimal glucose control, preventing and managing hypoglycemia, and managing adverse reactions (for example, weight gain and water retention). Referring patients to a CDE can support patient education and management that has been provided by the NP.

Critical to the care of patients with type 2 diabetes is assessment for diabetes-related distress and depression. In a study conducted with Mexican-Americans with type 2 diabetes in the Arizona border region, diabetes-related distress included feelings of hopelessness, anxiety, and decreased participation in self-management particularly for persons who were socially isolated.

In a second study in this region of the border, Mexican-American women with type 2 diabetes reported that life stressors related to work and family often competed with and were prioritized over diabetes self-management. The NP who practices in the border region might consider using assessment tools for early identification of diabetes-related distress or depression and informing patients of culturally relevant community resources that offer ongoing social support for diabetes self-management.
Implications for practice

NPs in the border region face myriad challenges in providing care to patients with type 2 diabetes. The high rate of poverty in this area may make it difficult for patients to be able to obtain needed medications. Purchasing newer, more effective and expensive medications may not be feasible. Additionally, poverty, dietary preferences, and low levels of physical activity contribute to the problem of obesity. Unless obesity can be prevented or treated effectively, both obesity and type 2 diabetes rates and their consequences will continue to escalate. However, both cost and accessibility of healthful foods may present insurmountable challenges for people living in the border region. Engaging in regular physical activity may be problematic as many neighborhoods are unsafe for walking with poor lighting and no animal control. NPs can address these challenges by being knowledgeable and creative in helping people to identify alternative strategies for engaging in self-management behaviors. NPs can be strong advocates for the needs of this population and effect change by participating in community action and policy development that strengthen community capacity for diabetes self-management.

In addition to healthful eating and physical activity, self-glucose monitoring is foundational to achieving good glycemic control. However, poverty and low-literacy levels may make this difficult. While healthcare providers may often be able to obtain free glucose monitors for patients, testing strips may be too expensive for many patients. Low literacy in persons with diabetes represents a significant barrier to successfully engaging in the complex daily self-management regimen. Low literacy is associated with poor diabetes-related knowledge. An assessment of literacy is essential for the NP to be able to tailor diabetes information and for assisting the patient with problem solving.

Patients and their families manage the majority of their daily diabetes care; therefore, they must have the knowledge and skills for success. In providing self-management education to patients in the border region, NPs must take into account the language and cultural perspective of their patients. However, patients and their family members must have both the knowledge and skills for success.

NPs who are bilingual in Spanish and English and knowledgeable and comfortable with the cultural concepts of familismo and personalismo are likely to be more effective in assisting people in achieving adequate self-management behaviors. In addition, using Spanish language and low-literacy materials and infusing culturally appropriate self-management information into patient education may result in improved patient outcomes. Including family members in all aspects of patient education has been demonstrated to enhance the likelihood of a patient making lasting lifestyle changes.

REFERENCES


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