

**PROMOTORES-FOCUSED SCREENING AND
EDUCATION TO IMPROVE DIABETES AWARENESS
AND SELF-CARE IN LOW-INCOME LATINO
INTERGENERATIONAL FAMILIES**

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ABSTRACT

Project ALTO-D (Alert Latinos To Overcome Diabetes), a 3-year capacity building and demonstration project, targeted low-income Latino American and Latino immigrant adults and intergenerational families at high-risk for or living with type 2 diabetes. The project took place in a 9-square-mile medium-high density urban area with a population of about 300,000 in the northeast San Fernando Valley of Los Angeles, California. Project ALTO-D screened anyone 18 and older voluntarily presenting at screening venues (churches, parent centers at area elementary schools, and parks). *Promotores de Salud* (“health promoters”) provided post-screening assistance and invited those screened to participate in the primary intervention: Project ALTO-D screened 2,240 participants for diabetes and *Promotores* provided accompanied referral and case management assistance to 537 (70%) of 765 participants found by the screening to have non-fasting blood glucose levels of 120 and above. A total of 737 persons participated in the Project-developed and -sponsored 16-hour *Estilo de Vida Saludable con Diabetes* (EVS) (“Healthier Lifestyles with Diabetes”) course. Of those 265 persons completing 12 hours

or more in the EVS course, self-reported blood glucose levels averaged 42% lower than when they joined the class. Forty-five percent of course participants reported adopting two or more healthy-lifestyle changes as a result of participation. Education and coaching are keys to addressing the enormous gap in knowledge about the mechanisms of diabetes prevention and self-care within the target population, including accessing appropriate medical care. Although we had planned to follow-up all participants completing 12-16 hours of the EVS class to track changes in blood glucose levels and adoption of one or more lifestyle changes for 12 months, the reality was that budget constraints limited follow-up to 30% of them. Follow-up consisted of monthly telephone interviews, in-home visiting and small group meetings. Because persons receiving follow-up were self-selected, the follow-up population was not entirely representative of the project population. Follow-up contacts with individual participants by telephone or in person ranged from 4-14 times.

INTRODUCTION

The medical complications of type 2 diabetes impacts twice as many low income and medically indigent Latino Americans and African Americans as other population groups in the United States. Overall, 12% of Americans live with type 2 diabetes and its medical consequences today. However, within low-very-low income Latino American and African American communities, the rate of type 2 diabetes now exceeds 22% in adults. Projections are for continued growth in the number of type 2 diabetic persons in the project target community described herein and in similar urban communities nationwide. In recent years, type 2 diabetes, once characterized as “adult onset” diabetes, is being diagnosed in large numbers of school age children, many as young as 10 years of age. The consequences of this unchecked disease are profound for individual, family, and community health and quality of life.

For the majority of white non-Latino Americans, type 2 diabetes starts in their 50s, while for the majority of Latino Americans diabetes begins a decade or more earlier. Screening for diabetes is appropriate with high-risk populations such as the target community because early identification reduces the burden of the disease. Time is of the essence in treating the medical complications of diabetes. Left unchecked, the disease progressively disables and universally results in premature death. While acknowledging the severity and life-threatening nature of diabetes and its complications, many Latinos hold health beliefs that may be incongruent with scientific medicine (Coronado, Thompson, Tejada, & Godina, 2004).

Because so many low-income minority persons lack private or government health insurance, the ability to pay out-of-pocket for care, and for those with problematic immigration status the fear of the legal consequences of presenting to a government facility, they defer medical care as long as possible. Deferring

care makes those with the least resources the most likely to enter the health system later rather than earlier. When they do, diabetes-related medical complications become more serious with leg amputation from advanced vascular disease, kidney disease and failure, vision loss/blindness, heart disease, and stroke much more likely than for the general population. Cultural factors compound the challenge and make informed effective self-care for diabetes imperative but difficult to initiate with advanced disease. Health care professionals have begun to recognize the need for culturally and linguistically appropriate outreach, screening, and health literacy education invaluable in promoting diabetes self-care in high-risk populations (Brown, Dougherty, Garcia, Kouzekanani, & Hanis, 2002; Brown, Garcia, & Winchell, 2002; Caban & Walker, 2006; Liebman, Hoffernan, & Sarvela, 2007; Lujan, Ostwald, & Ortiz, 2007; Millan-Ferro & Caballero, 2007; Sarkisian, Brown, Norris, Wintz, Managione, et al., 2003; Vincent, Pasvogel, & Barrera, 2007; Whittemore, 2007).

Project Service Model and Goals

Project ALTO-D (**A**lert **L**atinos **T**o **O**vercome **D**ibetes) was designed to minimize the most intractable health challenge low-income Latino American communities face: type 2 diabetes. An estimated 60,000 adults (20% of the population in the target community) have diabetes and thousands more have pre-diabetic medical challenges such as obesity. Project ALTO-D targeted two populations: (1) adults (or families) previously *diagnosed* with types 1 or 2 or gestational diabetes but *not* adequately able to manage their disease; and (2) adults with types 1 or 2 or gestational diabetes previously undiagnosed but identified by project-sponsored diabetes screening.¹ Project ALTO-D used culturally and linguistically appropriate outreach, screening, post-screening self-care educational tools, peer exercise and peer coaching to achieve three goals. The goals were:

¹ *Type 1* diabetes sometimes referred to as juvenile diabetes is usually diagnosed in children and young adults. In type 1 diabetes, the body does not produce insulin—the hormone needed to convert sugar (glucose), starches and other food into energy. *Type 2* diabetes is the most common form of diabetes. In type 2 diabetes, either the body does not produce enough insulin or the cells ignore the insulin. Insulin is necessary for the body to be able to use glucose for energy. Insulin takes the sugar from the blood into the cells. When glucose builds up in the blood instead of going into cells it can cause eye, kidney, cardio-vascular, nervous system, oral health and other serious chronic disease. *It is a major cause of death in the nation and most dangerous to the elderly, low income medically indigent persons as well to persons with genetic pre-disposition for the disease: Latino American, African American, Native American and Asian American/Pacific Islander populations. Gestational* diabetes impacts pregnant women who have never had diabetes before but who have high blood sugar (glucose) levels during pregnancy. This disease begins with insulin resistance that blocks the body from making and using all the insulin it needs in pregnancy. Left undiagnosed and untreated it can create serious long-term damage to mother and fetus. American Diabetes Association, <http://www.diabetes.org>

1. to improve family health literacy and encourage healthy lifestyle choices that reduce the risk of and slow the progression of the medical complications resulting from inadequate self-care for diabetes;
2. to recognize and overcome historic disparities in access to primary care and chronic disease prevention in the target community by making access to quality-of-life-enhancing dental, vision and foot wound services available;
3. to demonstrate a decrease in blood glucose (BG) levels by screening participants prior to, during and three months following their enrollment in a project-sponsored 8-week course. The course was conducted in monolingual Spanish and English-Spanish.

Project Phases

Project ALTO-D was conducted in two phases: Pilot and Intervention. Pilot phase activities included:

- Survey and selection of a validated, culturally appropriate diabetes prevention and self-care curriculum
- Curriculum modifications as needed and development of educational materials
- Design of the evaluation plan
- Recruitment and training of staff
- Establishment of the Project-ALTO-D Community Advisory Council
- Development of community linkages with the active involvement of influential community members
- Demonstration at six pilot sites of the screening procedure (including BG testing) to assure cultural appropriateness of the procedure for use with monolingual Spanish and bilingual Spanish/English speakers.²

Pilot phase activity and outcomes were assessed by project management and by an independent university-based evaluator who compared proposed project goals and objectives with actual outcomes. Their feedback was used to design and re-design project activities as needed, including: educational materials used in the screening process and talking points and back up materials for use in collateral “micro-presentations” conducted during screening; outreach; data collection procedures and forms; procedures for data assessment; storage and documentation for use in the *Intervention* phase. A total of 260 target community residents (participants) were screened in the *pilot* phase, which was completed during the first project year.

Intervention phase activity took place during second and third project years. A total of 1,980 out of 2,640 target community residents visiting the screening

² Project ALTO does not distinguish sub-populations within the overall Latino American population in the target community. Latino Americans therefore include citizens, legal residents, as well as legal and undocumented immigrants. The vast majority is of Mexican ancestry.

site were screened, provided post-screening assistance by *Promotores de Salud* (“health promoters”) and invited to participate in the primary intervention: the 8-week, 16-hour *Estilo de Vida Saludable con Diabetes (EVS)* (“Healthier Lifestyles with Diabetes”) course. *Promotores* are specially trained community residents. Alternative titles mirroring the *Promotores*’ role include patient navigators, patient advocates or community health workers.

Promotores de Salud (Health Promoters)

In the United States, the community health worker (*Promotores*) role is not new. It was prominent in certain of the New Deal programs of the 1930s and in the Great Society programs of the 1960s (National Center for Chronic Disease Prevention and Health Promotion, 2007). Every culture has a lay health system made up of natural helpers, such as *Promotores*, that neighbors look to for advice and guidance (Leninger, 1991).

The *Promotores*’ role varies from program to program. They may be paid or volunteer and work part- or full-time. They also conduct outreach in various appropriate community settings such as schools, parks, community centers, clinics, hospitals, schools, worksites, overnight shelters, and at Project ALTO-D education sites (Pew Health Professions Commission, 1994; Richter, Bengen, Alsup, Bruun, Kilcoyne, & Challenor, 1974).

In most community health programs, the majority of *Promotores* are (a) women, (b) residents of the community targeted by the project, and (c) in the case of Project ALTO-D, bilingual English-Spanish speakers. Their role also can include bridging and promoting health consumer-provider relationships in order to overcome barriers to access to care and to promote health among traditionally underserved groups (Walters & Simoni, 2002; Wilson, Brownstein & Blanton, 1998; Witmer, 1995). Because of the recognition they receive in their communities, *Promotores* are in a unique position to help reduce health care and individual costs even as they contribute to improved overall community health (Witmer, 1995).

A total of seven volunteers completed *Promotores* training in the project’s first year of operation. Of these, six were offered the navigation assignment and accepted. Criteria for selection included (a) residency in the target community, (b) age 30+, (c) prior experience in community-based health and human services, (d) demonstrated bilingual English-Spanish speaking, reading/writing skills, and (e) interest in and ability to learn necessary methods. During the course of their service, two *Promotores* resigned for personal reasons and one was asked to resign. Of six *Promotores* recruited during the 3-year project, five were women.

Promotores completed 12 hours of pre-service training and met as a group with other project staff 2 hours weekly for in-service training, program development, and quality assurance. *Promotores* were trained to (a) use standardized protocols in outreach to potential project beneficiaries, (b) explain screening procedures to

lay persons, (c) collect data, and (d) transport or accompany project participants in immediate need of medical care (BG levels above 200 for example), to assure access to local physicians, hospital emergency departments, and other community health resources. *Promotores*, employed an average of 15 hours weekly, were also involved in continuous program improvement meetings.

Promotores responsibility involved all or partial aspects of these roles:

- Bridging cultural mediation between communities and the health care system
- Providing culturally appropriate and accessible health education and information, often by using popular education methods
- Assuring that people get the services they need
- Providing informal counseling and social support
- Advocating for individuals and communities within the health and social service systems
- Providing direct services (such as basic first aid) and administering health screening tests
- Building individual and community capacity (Wiggins & Borbón, 1998)
- Initiating communication with persons referred to the project by primary care physicians or other health care professionals
- Identifying participant logistical, emotional, family, and other barriers to care
- Guiding project participants through the healthcare system
- Providing health education to participants and their families
- Using bilingual Spanish-English language skills to enable individuals to learn to effectively access care (Steinberg, Fremont, Khan, Huang, Knapp, et al., 2006).

Target Community

Project ALTO-D served an urban area with a population estimated as 300,000 in 2006. The area includes part or all of ten contiguous low-to-very-low income neighborhoods.³ Targeted neighborhoods are ringed by freeways and bisected by a north-south railroad right-of-way. Arterial streets are served by the public bus system but transportation throughout is problematic for anyone without a car. The target community has among the highest crime, substance abuse, assault and gun death rates in Los Angeles. The Los Angeles Police Department estimates 75 active Latino, African American, and Asian gangs in and adjacent to the target community.

The area is characterized by mixed-use development. Commercial, industrial/warehouse, light manufacturing and strip-malls and housing are interspersed throughout. Some neighborhoods are high-density with apartment buildings,

³ Arleta, North Hollywood, Pacoima, Panorama City, Sepulveda, Sunland, Sun Valley, Sylmar, Van Nuys, and Mission Hills.

public housing complexes, and single-family homes occupied by multigenerational and extended families, multiple unrelated families, and/or adult strangers. While a census of those in sub-standard housing remains to be taken, estimates are that 8-15% of residents live in garages and commercial buildings illegally used for housing. Transients, unrelated adults, and families with young children inhabit many of these dwellings.

Five of ten target community neighborhoods are designated by the federal government as Medically Underserved Areas (MUA) and Health Professions Shortage Area (HPSA) reflecting inadequate opportunity for access to primary medical and dental care.

Although residents are predominantly from Mexico and Central America, the area is home to immigrants from Armenia, Russia, the Middle East, and East and South Asia as well. Every year, public schools reported student enrollments from nearly 100 different nations of origin. Half of the area's population reported speaking a language other than English at home.

More than 90% of students enrolled in grades K-12 in the area were eligible for free or reduced cost school lunch, the criterion the Los Angeles Unified School District uses to define poverty. In 2006, median income, about \$33,000 annually, was well below the \$44,000 annual median income for the City of Los Angeles as a whole. Median household income of \$67,000 in the area in 2006 reflected several working adults living under the same roof. Approximately 60% of children enrolled in area schools were Limited English Proficient (LEP) and although 40% of adults were high school graduates, less than 20 percent of 2006 graduates from area high schools were projected to graduate from a community college or its equivalent. Overall, school dropout rates ranged from 50-70%.

Throughout the area, residents shared important health behavior risk factors such as a traditional high-fat diet, genetic propensity for diabetes, sedentary lifestyle, excess use of alcohol, cultural acceptance of overweight or obesity as robustness, and a lifetime of disparity in access to consistent primary medical care. The area's eight licensed private non-profit and government primary care clinics operated at capacity during the project period. All had multi-month waiting lists for service to new adult patients. The greater prevalence of type 2 diabetes and of co-morbid conditions such as hypertension and obesity in these communities is linked to a number of varied factors (Cannistra, 2002). Rates of childhood asthma, heart disease, stroke, type 2 diabetes, obesity, and kidney disease are typical of other low-income and resource poor urban communities. Families are also among those countywide with highest food insecurity (lack of access to fresh fruit, vegetables, and lean protein-rich foods) and over-dependence on foods high in fat, starch, and sugar.⁴

⁴Los Angeles County Department of Public Health, Office of Health Assessment and Epidemiology, Key indicators of Health by Service Planning Area; June 2009.

The project design assumed that: (a) the family is the strongest social unit in urban low-income intergenerational Latino communities in the United States and (b) family involvement is fundamental to building support for community health initiatives.

The needs, barriers to healthcare, and service delivery challenges typical of the target community are quite similar to those of low-income urban Latino communities nationwide. The vast majority of residents (70-98%) living in targeted communities served by Project ALTO-D self-identified as Latino American. Monolingual Spanish speakers made up about 30% of participants. Approximately 50% of households in the area had family incomes below 200% of the federal poverty level and 50% of adults between the ages of 19-65 and 20% of children and teens lacked private health insurance or an entitlement, such as Medicare, Medicaid, or State Children's Health Insurance Program (CHIP) coverage.

Project Interventions

With permission of the Latin American Health Institute, Boston, MA, Project ALTO-D used the Institute's Community-Based Public Health strategy to improve community health. The strategy is designed to save lives and resources, enhance community well-being and reduce individual suffering.⁵

Inclusion Criteria

Participants targeted by Project ALTO-D met these inclusion criteria: (a) Latino, (b) age 18 or older, (c) resident of target community, (d) monolingual in Spanish, English speaker, or limited English speaker; (e) low and very low household income (below 200% of federal poverty level criterion); (f) family history of diabetes or other diabetes risk factors such as overweight or obesity; (g) unaware of their risk for or from inadequately managed diabetes (individuals who say they do not know of risk when asked; and/or individuals previously diagnosed with diabetes).

Project ALTO-D had four core interventions; the core interventions and their interrelationships are summarized in Figure 1.

Intervention #1—Outreach/Case Finding: The project focused *Promotores'* outreach to individuals meeting project inclusion criteria through churches, schools, parent centers at local elementary schools, community clinics, and community health fairs. The project's specially trained *Promotores* visited these organizations speaking informally with staff and volunteers, as well as directly to individuals and groups meeting project inclusion criteria. Collaborating organizations agreed to co-sponsor and co-promote Intervention #2 activities.

⁵ Information can be obtained from Latin American Health Institute website: www.lhi.org/lhi/viewPage.cfm?pageID=179

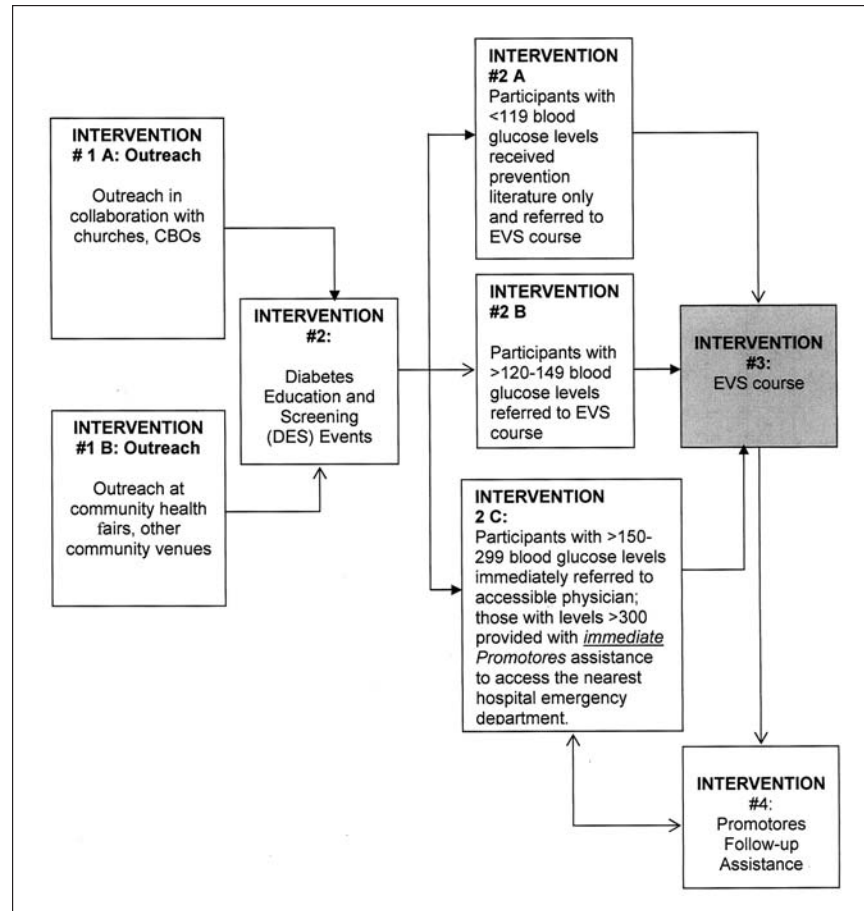


Figure 1. Outreach, screening, and intervention steps.

Intervention #2—Diabetes Education and Screening Events (DES Event): The project co-sponsored 6 DES-Events in the pilot phase and 45 in the intervention phase. DES-Events were usually held on Saturdays from 10 A.M.-3 P.M. and attracted 80-160 adult walk-ins at each event. Children and other family members often accompanied adult walk-ins. The screening activity was held in a large classroom or large tent at the DES-Event site. Screening involved a brief interview to determine participant suitability for the BG test and their awareness, if any, of whether they were ever diagnosed for diabetes. Participants were asked to review and sign a “hold-harmless” agreement. *Promotores* staffed the DES-Events and interacted informally with participants. All potential participants were screened for diabetes using the finger stick method and a computerized blood glucose meter.

Prevention “micro education” presentations were held in the same facility as the screening event or adjacent to the screening site, depending on site layout and suitability. The preventions were facilitated by *Promotores* and staffed by the project’s health educator, consulting dietician, and consulting recreation therapist. These 10-15 minute micro-presentations were open to anyone interested, screened or not. Topics covered in these overview presentations included (a) differences between types 1 and 2 diabetes and gestational diabetes, (b) importance of food, nutrition and exercise in diabetes self-care, and (c) serious medical consequences of inadequate self-care.

During the intervention phase, core Project ALTO-D activity included: (a) outreach to prospective participants, (b) finger-stick BG testing administered by the project’s *Promotores* to screen prospective participants for diabetes, (c) information about screening findings and referral to community health resources for participants completing screening, (d) patient navigator assistance delivered by specially trained local residents serving as *Promotores*, (e) initiation of project evaluation, (f) collection and evaluation of process and impact data, and (g) reporting to the sponsor and funder: The California Endowment (a private philanthropic foundation) and dissemination of results to the health and human services community.

The finger stick method was used to screen for BG levels in presumably healthy, asymptomatic individuals who visited the screening site. In 2009, an additional finger stick sample taken to assess cholesterol was added to the screening procedure. Some people, especially those with an established “medical home,” know whether they are pre-diabetic or diabetic. In the target community and throughout our nation, the vast majority of persons living with or at risk for type 2 diabetes do not. BG level screening is particularly important to persons at high-risk for developing diabetes such as those with a family history of the disease, persons overweight or obese, and more than 40 years old.

Screening is a first-step indicator of pre-diabetes or diabetes. Project ALTO-D screened anyone 18 and older voluntarily presenting at the screening site and screened younger family members if requested by parents or guardians. Because they sought screening on a random basis all were considered non-fasting participants. A non-fasting BG level of 70-120 is generally regarded as normal. Levels of 121-199 suggest pre-diabetes. BG levels greater than 200 are indicative of diabetes. A fasting BG level, on the other hand, should be no higher than 126. Anything above is considered diabetes.

The “walk-in” non-fasting screenings were held in the project’s pilot and intervention phases at community venues such as churches, parent centers at area elementary schools, and parks. A total of 260 persons were screened in the pilot phase and, 1980 in the intervention phase. Since the target populations in both phases were comparable and in the same venues, BG levels were combined. They are reported in Table 1.

Table 1. Blood Glucose Levels of Persons Screened in Pilot Phase and Intervention Phase

Blood Glucose levels of participants	70-120 Normal	121-199 Pre-diabetic needs to modify health behavior	200-300 Diabetic needs physicians attention soon	> 300 Diabetic needs immediate medical attention
Blood glucose levels of 2240 participants	1475 (66%)	607 (27%)	102 (5%)	56 (2%)

Participants were informed about the results of the BG test immediately. Non-fasting BG levels, <120, were interpreted for participants as normal; those with levels from >121-199 were characterized as pre-diabetic and at high risk for diabetes; while those with levels above 200 were told that they likely have diabetes and should seek medical advice immediately. *Promotores* also referred those in the 121-199 range to their physician for medical follow-up and, for the many medically indigent, referrals were to nonprofit Federally Qualified Health Center (FQHC) clinics or Los Angeles County public health clinics. Persons with non-fasting levels of >200 were sometimes accompanied to their physician, hospital emergency department, or to the nearest public clinic by *Promotores* to overcome barriers to medical access. Because they were at high-risk for life-threatening conditions, such as stroke or heart attack, participants with levels >300 were always assisted to access medical treatment. *Promotores* made arrangements, including transportation as needed for the respondent's immediate visit to the nearest hospital emergency department to assure their access to care. *Promotores* also made follow-up telephone calls or home visits to persons referred or accompanied to medical care in the days immediately following their access to medical treatment.

Participants identified at the screening event as pre-diabetic or diabetic were assigned to individual *Promotores* who acted as patient navigators. In that role they (a) sought to assure participants and their family access to medical care and transportation as individually indicated, (b) enrolled them in a scheduled EVS course as soon as possible and as close to the respondent's home as possible, (c) explained local health resources and how the health system works, (d) facilitated access to health insurance or entitlement, (e) provided patient advocacy as individually indicated, and (f) acted as health coaches. *Promotores* carried short-term caseloads, usually of less than 3 weeks. Their caseloads averaged three participants during both the pilot and intervention phases. *Promotores* staffed all screening events and provided follow-up assistance such as accompanying

individual participants to medical care and co-facilitating the project's 16-hour EVS course.

In the intervention phase of the project; the *Promotores'* role was expanded to include (a) outreach through church health ministries serving homebound persons, (b) presentations in English and Spanish about the etiology of diabetes and prevention practices to consumers, counselors, clinical staff, and volunteers at community-based health and human services organizations, and (c) diabetes self-management coaching to individual participants and families.

Intervention #3—EVS Course: The project's primary intervention, the EVS course, was developed during the pilot phase and initiated in the intervention phase. The 8-week EVS diabetes awareness and self-care courses were organized and staffed by Project ALTO-D and held at collaborating churches and community organizations.

Each EVS course was presented in a 2-hour class format weekly for 8 consecutive weeks (total 16 hours). Attendance averaged 20 per course. Participants enrolled in the EVS course were screened for BG levels at the beginning of each class meeting.

The EVS course was primarily taught in Spanish. It was designed to encourage (a) changes in eating habits (type of food, how food is prepared, and serving size); (b) reduced alcohol, tobacco, and street-drug use; and to (c) introduce the efficacy of moderate walking: 30-45 minutes daily/3 days weekly. The course was based on the *Project Dulce* curriculum⁶ as well as American Diabetes Association bilingual materials.⁷ With *Project Dulce* permission, course content was modified to fit the Project ALTO-D model. It was taught using informal Socratic methods, small sub-groups with tasks, large group brainstorming, informal lectures with questions/answers, role-play, demonstrations, and case studies.

As each 8-week class proceeded, the design of the classes changed to more semi-structured format, facilitated by the health educator or *Promotora* frequently included "healthy" potluck meals prepared to project protocols. After two or three class meetings, the EVS class groups tended to take on the characteristics of a peer support group. During the class sessions, the facilitator encouraged contributions from participants regarding their own life situations, and elicited supportive remarks from peers.

A total of 34 such courses, attended by 737 participants, often accompanied by family members, were held during the 2-year intervention period. Of 737 participants enrolled in an EVS course, 265 (36%) completed a minimum of 12

⁶ Curricula developed by PROJECT DULCE™, a program of the Scripps Whittier Diabetes Institute, La Jolla, California 92037. For information about Project Dulce or inquiries related to collaborative programs, contact: Chris Walker [mailto:walker.chris@scrippshealth.org].

⁷ Supplemental materials for EVS classes were obtained from the American Diabetes Association website: www.diabetes.org/espanol

hours of the 16-hour, 8-week program (see Table 2) and 60% completed half or more of the course.

EVS course attendees were intergenerational. About 30% brought their children and a majority brought extended family members or friends with them to the EVS classes on an occasional basis. Table 3 depicts the age and gender distribution of course participants. Males constituted 40% of course attendees and more older males over age 65 attended than any other male age group; among the 60% female attendees, the modal age group was 41-65 years.

Exit interviews were conducted with as many participants attending 12 hours or more of the EVS course as possible. About 60% of enrollees completed exit interviews in person or by telephone; all interviews were conducted by *Promotores*. Follow-up interviews inquired about the extent to which participants practiced prevention techniques presented in the EVS course. *Promotores* also responded to participant requests for referrals to community health and family resources.

Intervention #4—Promotores Assistance: *Promotores* assisted participants to successfully access a “permanent medical home” (community provider willing to provide care regardless of consumer ability to pay) as needed, and referred and personally accompanied participants as needed to a collaborating community clinic, community physician, or other health provider. *Promotores* also assisted participants a) at immediate health risk (BG levels above 300) to access area

Table 2. EVS Course Attendance for 737 Participants

Hours completed	< 4 hours	5-8	9-11	12-16 hours
Number of participants	106	188	178	265
Percent of total	14%	26%	24%	36%

Table 3. Age Distribution/Gender Distribution of EVS Course Participants

Age	< 12	13-18	19-40	41-65	> 65
Males 298 (100%)	6 (2%)	5 (2%)	26 (9%)	127 (42%)	134 (45%)
Females 439 (100%)	9 (2%)	11 (2%)	34 (8%)	229 (52%)	156 (36%)
Total 737 (100%)	15 (2%)	16 (2%)	60 (8%)	356 (48%)	290 (40%)

hospital emergency departments, b) to obtain health insurance coverage or entitlement, such as Medicaid, and c) to access other community resources, such as nonprofit legal aid services.⁸

Findings

During the intervention phase a total of 1,980 participants presented for screening. Of these, 1,286 (65%) had BG rates of >120. A total of 49 (2.5%) were found with levels of >300. As during the pilot phase, these participants received immediate and individualized assistance by *Promotores* to access the nearest hospital emergency department. We found a somewhat anomalous difference between the percentage of participants with >120 scores during the pilot and intervention phases: 73% vs. 65% respectively, though the percentage of participants with > 300 scores (2.6%) remained relatively constant. We attribute the difference to the random nature of site and participant selection.

The distribution of participant BG levels for the entire project period (pilot and intervention) was depicted in Table 1. Of the 2,240 participants screened, the project provided *Promotores*-accompanied referral and case management assistance to 537 (70%) of the 765 participants identified with non-fasting BG levels of 120 and above. Of the 56 participants with BG levels of 300 and above, *Promotores* arranged for and accompanied these participants to the nearest hospital emergency room for medical treatment to assure access.

Table 4 depicts BG levels of persons at the time of their initial enrollment in the EVS Course. Sixty-nine percent entered the course with BG levels indicative of either pre-diabetes or diabetes, with another 7% exhibiting BG levels of >300.

Since participants BG levels were screened at the beginning of each EVS course meeting, BG level changes associated with the number of class meetings participants completed could be tracked. We found what appears to be a relationship between the number of EVS class meetings participants completed and changes in their BG levels. *For those completing 12 or more hours of the 16-hour course, an average decline of 42% was noted in BG level.* For those completing less than 8 hours of the course, the decline was much less, though some of those participants did self-report lifestyle changes linked to their new knowledge.

Of those completing 12-16 hours of the EVS course, 100% reported adoption of two or more lifestyle changes by themselves and/or others in their household. In addition, 65 other participants who completed less than 12 hours reported at least two lifestyle changes. Changes ranged from replacing the respondent's

⁸ Project ALTO-D offices and community teaching room are at the Mission Community Hospital (MCH) campus in the City San Fernando. Other services located at that facility were the MCH-UCLA Dental Teaching Clinic and the MCH-Southern California College of Optometry Vision Teaching Clinic. A foot wound clinic was planned for the facility in collaboration with the California School of Podiatric Medicine. Although the Podiatric Teaching Clinic did not open during the project period, ALTO-D participants were given a list of area podiatrists for self-referral.

Table 4. Blood Glucose Levels of Participants at Initial Enrollment in EVS Course

Blood glucose levels of participants at initial enrollment	70-120 Normal	121-199 Pre-diabetic needs to modify health behavior	200-300 Diabetic: needs physicians attention soon	> 300 Diabetic needs immediate medical attention
Blood glucose levels of 737 participants	77 (10%)	290 (39%)	321 (44%)	49 (7%)

normal diet with the project-recommended diet; walking for 30 minutes or more at least 3 days weekly; checking their BG levels themselves weekly; reducing alcohol consumption; weighing themselves and recording weight; diet and BG in daily log; and most importantly, communicating more effectively with their physicians and other caregivers about changes in their health (see Table 5).

Consequently, *Promotores*, have become “health coaches.” They prepared case plans for every individual client attending 12 or more hours of the 16-hour EVS course. We intended to follow-up with all participants. However, the reality was that because of budget constraints we were understaffed and unable to maintain systematic contact with only about 30%. Follow-up consisted of monthly telephone contact, some in-home visiting, and some small group meetings with participant cohorts from the same class. Because persons receiving follow-up were self-selected, the population was not entirely representative of the project population. Follow-up participants were volunteers. The number of follow-up contacts by telephone or in person with individual participants ranged from 4-14.

Promotores serving as health coaches represent a move toward extending information to the target population. The intent was to enable participants to navigate the impersonality of the health system and the considerable barriers caused by lack of non-Spanish speaking providers. In accompanying those with high BG levels to their first and sometimes second post-screening visits to their medical provider, the *Promotores*’ presence gave participants the courage to do so. This was an invaluable contribution to patient self-care because the experience and what they learned about the health system in their community emboldened them to explore the system on their own.

Table 5. Number of Participants Self-Reporting Lifestyle Change as a Result of Participation in Part or All of the EVS Course

Hours Completed	< 4 Hours	5-8	9-11	12-16 Hours	Total
0 Lifestyle change	71 (67%)	100 (53%)	28 (16%)	0	199 (27%)
1 Lifestyle change	35 (33%)	78 (42%)	95 (53%)	0	208 (28%)
2 Lifestyle changes	0	10 (5%)	35 (20%)	115 (43%)	160 (22%)
3 Lifestyle changes	0	0	17 (9%)	95 (36%)	112 (15%)
4 Lifestyle changes	0	0	3 (2%)	45 (17%)	48 (7%)
5 Lifestyle changes	0	0	0	10 (4%)	10 (1%)
Total	106 (14%)	188 (26%)	178 (24%)	265 (36%)	737 (100%)

Limitations and Unintended Outcomes

Project ALTO-D demonstrated a process for increasing target community resident awareness of diabetes, diabetes prevention, and for expanding the number of persons successfully practicing diabetes self-care. A vexing unresolved challenge was how to continue to provide disease self-management information, health coaching, and cross-cultural navigation beyond the 8-week EVS course.

After more than 12 months following their completion of the course, many continued to practice a wellness diet, walk for exercise, make scheduled visits to their medical provider, and routinely monitor their BG level themselves. However, we also know that many ceased doing these and other self-care activities within a relatively short time after the course ended.

The project had three major limitations. *First*, there was a lack of other types of educational intervention in addition to the EVS course. *Second*, the EVS course curriculum, although based on a core process and materials validated nationally, needed modification and was not ready for use until the end of the first project year and when it was initiated at multiple sites in the target community during the intervention phase, modes of instruction were inconsistent from one administration to the next, primarily because various *Promotores* led the different groups. Compounding the inconsistency was the need to replace the project's initial health educator who moved out of town unexpectedly in mid-year 2. The personality and skill-set of the health educator was very important to learning impact and carryover. In addition to teaching the EVS course, the health educator also supervised the *Promotores*. The two health educators—the initial health educator and her replacement—held different beliefs about adult education and course content that influenced how they conducted the classes. *Third*, we knew from the literature and from prior experience about the efficacy of using

Promotores to educate community individuals to successfully navigate the health system. A total of six *Promotores* were employed during the 3-year project. Generally, all *Promotores* received the same amount and type of content in pre-service and in-service training albeit at different times during the project's evolution. Consistency and quality assurance were difficult to achieve with turnover in the health educator managers.

DISCUSSION

Project ALTO-D began in 2005 as a 3-year project with grant support from The California Endowment. Since inception, Project ALTO-D has screened 2,240 participants for diabetes and provided accompanied referral and case management assistance to 70% of the 765 participants found by the screening to have non-fasting BG levels of 120 and above. Of the 737 adult participants in the EVS course, 265 (36%) self-reported BG levels averaged 42% lower and 330 reported adopting two or more healthy-lifestyle changes.

We know that the project saved lives. Without Project ALTO-D interventions, 158 participants with BG numbers greater than 200 were on a trajectory for serious medical challenges and possibly early death. The most significant reduction in BG levels was a 364-point drop from 540 to 176 experienced by a 37-year-old woman. Whether participants continue to monitor their BG levels and follow the healthy lifestyle changes they reported remains to be studied. We believe that ongoing, facilitated support groups organized around self-help, community health, and family well-being would reinforce the diabetes prevention and self-care message the project introduced. In the rural Mexican and Latin American societies that are places of origin for the majority of project participants, the intergenerational family is an important influence on health behaviors.

The difficulties of resistance and denial associated with any patient education encounters, either individually or in group settings, are exacerbated when there are language and cultural barriers. These obstacles often affect the kinds of responses that patients choose to verbalize to clinic staff, including patient educators. To be effective, clinicians and health educators will need to be cognizant of patients' culturally prescribed modes of expressing attitudes toward illness, stigma, and help-seeking. One important cultural factor is "familism," the idea that individuals are encapsulated within a close-knit kinship network. The immigrant, second or third generation, low income Latino family in the United States functions not just as a biological unit, but also as a natural support system: an employment referral network, an income support device, a child care system, old age support unit, and an emotional support group. This pattern of intense family involvement is frequently cited as the key mediator in illness behavior and the pathway to care for Latino patients. A person will consult close relatives for help in understanding the meaning of symptoms (Schreiber & Homiak, 1981). Group consultation is the preferred mode of evaluating the

severity of symptoms and the degree to which they interfere with everyday activities and familial responsibilities. The family, rather than the individual, is thus central to the initial diagnosis and the decision to seek treatment. For many recent immigrants, there is the additional burden of living within a split “transnational family” with one spouse living in the home country, and the other in the United States (Chavez, 1992; Hayes-Bautista, Schink, & Chapa, 1988). The situation contributes to the sense of loss, isolation and emotional abandonment felt by many recent immigrants.

In view of these circumstances, Project ALTO-D activities fully involved families in diabetes prevention. We knew from the literature and our prior experience in low-income, medically underserved or medically indigent urban Latino communities, that family cohesion has a significant impact on health behavior. This is especially the case in multigenerational and immigrant families. We learned that adults accompanied by their children and other family members during diabetes screening and post-screening diabetes prevention/management education, are more likely to complete referrals for medical care and more likely to complete post-screening education than participants not accompanied by children and/or members of their extended family.

Latinos may feel uncomfortable discussing personal issues with strangers in a group setting since the dominant cultural framework for problem-solving in Latin American societies is dyadic and private. We believe that most participants are or grew up in the Catholic faith. Catholic religious tenets hold that prayer to a transcendent deity and confession, to a male priest in the privacy of the chapel, are the acceptable modes of resolving personal conflicts. Then there is the belief that suffering is natural. This “tragic sense of life,” in the words of philosopher Miguel de Unamuno, is represented in images of the suffering Christ and in pastoral homilies entreating the laity to “bear their cross” in silence. Both constructs reinforce acceptance of earthly suffering as part of the bargain of life. The poet Octavio Paz (1961) laments over his fellow Mexicans’ sense of isolation and powerlessness in the expression, “our silence and apathy, our reticence and gloom.” This “labyrinth of solitude” will often inhibit dialogues and objectification of personal conflicts in a group or classroom situation. Because life is a “veil of tears” and the world outside the home a “sphere of distrust, questionable loyalties, conflict and violence,” many people turn to supernatural beings to intercede on their behalf (Wolf & Hansen, 1972, pp. 115-116). Individuals, households, and communities have patron saints to which they offer goods and devotions in return for help with financial, health, and personal problems. These payments are regarded as a way of reciprocating supernatural intercessors for their ongoing protection from the darker aspects of the human condition. Such hierarchically sanctioned modes of problem solving are clearly dissonant with group process and Western scientific thought, and pose significant challenges to health care providers focusing on the psychosocial needs of chronically ill Latino immigrant clients.

A number of individuals in the target community are likely to be undocumented immigrants with questionable legal status. This population lives in fear of interaction with authorities. Some may avoid doctors, clinics, and other providers of medical and social services out of anxiety about their immigration status. In light of these ethnic, cultural, and situational concerns, increasing access to health and social services for recent immigrants has emerged as an arena for the negotiation of cultural citizenship in Latino communities. Strategic activities have focused on outreach and health promotion, using culturally appropriate messages and familiar styles of communication (Kleinman, 1980). Faith-based outreach is one way to gain access to Latino immigrant families frequently “overlooked” by traditional health and social services safety net providers. Latino members of Protestant churches tend to be poorer and have a lower level of acculturation than their Catholic counterparts, suggesting greater resource deficits and a relatively higher need for outreach services for members of the smaller Protestant congregations (Castro, Elder, Coe, Tafoya-Barraza, Moratto, & Campbell, 1995).

Project ALTO-D outreached to high-risk persons and families through Catholic, Protestant, and Pentecostal congregations of faith, since, in traditional Latino populations, the church is one of the most highly regarded community institutions. Through faith-based outreach, the project has established a resource network for access to non-deferrable care, access to essential quality-of-life health services, nutrition and foods preparation, safe food coaching, and health literacy education.

Project ALTO-D also used a secular approach to outreach, namely through the parent centers at local elementary schools. This outreach strategy reached younger individuals more engaged in the local community because of their school-age children. A lay approach trains indigenous community residents, who have been selected because they are charismatic and able to communicate and display leadership qualities, to engage in health education as *Promotores de Salud* (Ramos, May, & Ramos, 2001; Williams, 2001). They typically conduct outreach for neighborhood medical clinics, welcome families at the clinic sites, and assist with paperwork. *Promotores* trained in the new regulations around health care eligibility have informed families and facilitated their enrollment in health insurance programs. Through these indigenous arbitrators, coaches, and mediators, recent immigrants have been able to understand socially marginalizing legal and administrative barriers to accessing public services, and have begun to negotiate services for themselves and their families (Hayes-Bautista, 1979).

The project was successful in large part because only local participants of Mexican or Latin American heritage and bilingual in English and Spanish were assigned to project clinical and education roles. The project’s two health educators were both women and both graduates of medical schools in Mexico. Each was knowledgeable and easily gained the respect of the community participants in project-sponsored events. The cultural congruity of the health educators was

the key to melding participants in the EVS classes into a “family,” usually after the third class meeting. They shared cultural, linguistic, and similar immigrant experiences beginning in the first class meeting. In this way, the ongoing group supportive activity and access to *Promotores*’ advocacy and advice considerably strengthens self-care practice.

An ongoing challenge to the Project ALTO-D approach continues to be the target population’s enormous gap in knowledge about the mechanisms of diabetes prevention and self-care. Lack of appropriately designed information and a lack of communication between health providers and patients is creating a diabetes epidemic in the target community. Self-empowerment through education is seen to be key to addressing the enormous gap in knowledge about the mechanisms of diabetes prevention and self-care within the target population, including accessing appropriate medical care.

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