Type 2 Diabetes Among Rural Hispanics in Washington State: Perspectives From Community Stakeholders

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During February-March 2006, elicitation interviews were conducted with 23 community stakeholders in the Yakima Valley, Washington State, to examine concerns about diabetes and to obtain recommendations for how to address concerns among Hispanics in this rural community. Using a snowball approach, stakeholders were identified from organizations providing care and outreach for Hispanics with diabetes. Interviews were guided by a social ecology approach and were conducted as part of a larger parent study using principles of community-based participatory research. Audiotaped interviews were transcribed and then coded by three staff members who identified common themes independently before meeting to reach consensus. Stakeholders represented health care delivery or social service organizations, churches, or local radio stations. Diabetes was perceived as an important problem among community members, who often underwent delayed diagnosis of the disease. Lack of disease knowledge, access to appropriate information or services, health insurance, and personal responsibility were perceived as barriers. Stakeholders recommended using exiting organizations and businesses as intervention channels, promoting cultural sensitivity of health professionals and volunteers, creating and distributing appropriate information, and organizing activities to promote awareness and disease management. Recommendations have informed the design of community interventions to lessen the impact of diabetes in the Yakima Valley.

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The incidence of type 2 diabetes in the United States is high and has increased dramatically during the past decade (Mokdad et al., 2001). In 2004, more than 15 million adults in the United States reported having type 2 diabetes, yielding an age-adjusted population prevalence of 5.2% (Centers for Disease Control and Prevention [CDC], 2005a). True prevalence is believed to be higher given that an estimated 29% of true cases are undiagnosed (Grande, 2003). The death rate from diabetes has increased by 45% since 1987 (Jemal, Ward, Hao, & Thun, 2005), and in 2003, diabetes was the sixth leading cause of death in the United States (CDC, 2005b).

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There is evidence to indicate that diabetes disproportionately affects Hispanics. In 2004, the prevalence of the disease among Hispanic men was 7.0%, compared to 5.1% among non-Hispanic White men, and the prevalence among Hispanic women was 6.8%, compared to 4.3% among non-Hispanic White women (CDC, 2005a). Mexican Americans in particular have a high prevalence of diabetes (Grande, 2003) and are 1.7 times as likely to have the disease as non-Hispanic Whites (National Institutes of Health [NIH], 2005). Differences in lifestyle and genetic factors likely play a role in this disparity (Abate & Chandalia, 2003; Stern & Haffner, 1990).

Diabetes can have significant consequences and long-term adverse effects, particularly if not properly managed. Those with diabetes are at increased risk for heart disease and for suffering a stroke (Beckman, Creager, & Libby, 2002; Ho, Paultre, & Mosca, 2003; Ottenbacher, Ostir, Peer, & Markides, 2004), and Hispanics with diabetes are more likely than their non-Hispanic White counterparts to experience these and other complications (Harris, Klein, Cowie, Rowland, & Byrd-Holt, 1998; Lanting, Joung, Mackenbach, Lamberts, & Bootsma, 2005).

As an increasing number of Hispanic men, women, and children migrate to the United States, the number settling in rural geographic areas is also increasing (Kandel & Cromartie, 2004). From 1990 to 2000, the rural Hispanic population grew to more than twice that from the prior decade and, in the Northwest, rural Hispanic populations grew more rapidly than all other racial and ethnic groups (Kandel & Cromartie, 2004). Residents of rural areas face unique barriers to accessing health care and preventive services. Relatively few U.S. physicians practice in rural areas, and rural residents have further distances to travel to reach health care sites (Agency for Healthcare Research and Quality [AHRQ], 2005). Lack of health care coverage is particularly acute in rural areas, where more than half of rural Hispanics under age 65 are estimated to have gone through a period of having no insurance during the past year (AHRQ, 2005). As a consequence, rural residents are less likely than their urban counterparts to receive preventive health care services (Casey, Thiede Call, & Klingner, 2001) and more likely to suffer from chronic health conditions, including diabetes (AHRQ, 2005).

Previous qualitative research has considered the opinions and beliefs of Hispanic individuals with diabetes, including beliefs about causes of and treatments for the disease (Coronado, Thompson, Tejeda, & Godina, 2004). Although family history, poor diet, and lack of exercise have been commonly identified by Hispanics as causes of diabetes, extreme emotions such as fright (*susto*), anger (*coraje*), or sadness (*tristeza*) have also been reported as perceived causes (Adams, 2003; Coronado et al., 2004). Hispanic men and women with diabetes have also reported the use of traditional or herbal medications in addition to conventional treatments recommended by physicians (Coronado et al., 2004).

Additional work has identified barriers to diagnosis and treatment for diabetes among Hispanics, including lack of access to diabetes information that is culturally or language-appropriate (Adams, 2003; Heuer & Lausch, 2006), lack of health insurance (Aranda & Vazquez, 2004), loss of control over the course of the disease or how to manage it (Adams, 2003), as well as a sense of fatalism or belief that little can be done to change one's life course (Caban & Walker, 2006). Similarly, the lack of community resources to provide informational, educational, or disease management support to those with diabetes has been commonly identified in prior research with Hispanics as a structural barrier to diagnosis and/or treatment (Aranda & Vazquez, 2004; Punzalan et al., 2006; Mier, Medina, & Ory, 2007).

Few previous studies of diabetes have addressed the perspectives of community stakeholders, defined as individuals working for community organizations providing care, services, or outreach for Hispanic individuals with diabetes. The opinions, beliefs, and recommendations of stakeholders have been essential to the design and implementation of several other types of community intervention programs (Punzalan et al., 2006; Thompson, Coronado, Puschel, & Allen, 2001). Using qualitative data from a community-based participatory research (CBPR) project in the Lower Yakima Valley of Washington State, we examined stakeholder concerns about diabetes as well as recommendations for how to address these concerns within this rural community. Qualitative data collection for this study was conducted as a first step to identify individuals who might serve on a community advisory board (CAB) to aid in the development and implementation of diabetes interventions in their community.

METHOD

Setting

The Hispanic community in Washington State is concentrated in the predominantly agricultural region of Yakima County, where 2000 U.S. Census estimates place the number of Hispanics at 79,905 (36% of total population), nearly 87% of whom are of Mexican origin (Census, 2005). The term *Hispanic* from here forward is used to refer to a population primarily of Mexican origin.

Conceptual Framework

This report uses data from a parent study that aimed to mobilize an underserved Hispanic community to develop and implement programs to reduce the risk of type 2 diabetes. As an initial step in engaging the community, elicitation interviews were conducted with key individuals in the community who had a stake in the diabetes issue. Based on the principle of partnership, CBPR engages community members to define and find solutions for the problems faced by their community so that they will have a sense of responsibility and control over programs that can promote change (Leung, Yen, & Minkler, 2004; Thompson, Wallack, Lichtenstein, & Pechacek, 1991; Wallerstein & Duran, 2006). A key principle of community-based participatory research (CBPR) is that communities be involved in all facets of research, from defining the problem (Leung et al., 2004), to identifying solutions (Couzos, Lea, , Murray, & Culbong, 2005; Leung et al., 2004), to assisting in the research (Couzos et al., 2005; Israel et al., 2006), and to participating in the publication of results (Bryant et al., 2007; Israel et al., 2006; Mercer, DeVinney, Fine, Green, & Dougherty, 2007). As part of a project on a different issue (cancer), the problem of diabetes was defined by a number of community members.

CBPR requires a number of steps; initially, these include the development of a partnership and an assessment of the community (Rissel & Bracht, 1999). As part of the first step, the elicitation interviews described here helped to engage and empower community members to discuss and address the diabetes issue. It further helped to assess the community's resources, barriers, and other important factors related to the issue of diabetes. This work led to the development of a CAB for the diabetes project. The CAB subsequently became a collaborative and equitable partner and had authority to make funding and hiring decisions. This shared decision making between the researchers, community members, and stakeholders led to increased commitment and sense of ownership on the part of the community.

The conceptual framework guiding the parent project was a social ecology approach, which recognizes the importance of targeting behavior change strategies toward individuals and toward the social environments in which they operate. Individual behavioral change, according to the Health Belief Model (Rosenstock, Strecher, & Becker, 1988), can be promoted through skill-building, learning self-assessment and feedback, and receiving regular cues for behavior change. The social environment can be used to encourage behavior change, the components of which might include resources, health promotion campaigns, organizational support to join activities to promote health, and social norms that can influence the value placed on health checkups and screenings. The CAB lies at the heart of the social ecology approach, ensuring that community members become empowered by being involved in research projects and in the research community. The CAB that was formed subsequent to the elicitation interviews is comprised of members from diverse sectors of the community with the task of working closely with project staff to design and implement programs and interventions that will promote healthful changes.

Data Gathering

Elicitation interviews were conducted with a convenience sample of community stakeholders between February and March 2006 to examine perceived barriers to diabetes diagnosis and treatment and to obtain recommendations for how to address these barriers within their rural Hispanic community. Elicitation interviews are a type of qualitative interview used to gain a careful understanding of individuals' experiences and beliefs through guided but open-ended discussions and to learn about topics or groups of people who are not well understood (Morgan, 1998a). We limited our recruitment to individuals who worked for organizations or institutions in the Yakima Valley providing care, services, or outreach for Hispanic individuals with diabetes. We identified highly visible key organizations in the community and asked for references to additional organizations and individuals, using a snowball approach.

Prospective participants were contacted by phone and invited to participate in a 90-min discussion about diabetes. All eligible stakeholders who were invited agreed to participate. The interviews were held at the Fred Hutchinson Cancer Research Center's (FHCRC's) project office in Sunnyside or at the work site of a given participant. Interviews were led by one of three bilingual staff members, who were trained in elicitation interview techniques and briefed on the discussion topics by the principal investigator who has considerable experience in qualitative data methods. Staff members were given instructions concerning listening skills, being flexible when necessary, accepting all ideas and opinions as valid, being nonjudgmental, understanding, and being sensitive to individuals who did not want to reveal information, qualities that are thought to maximize trust of the participants.

Before the discussion, the interview facilitators explained to the participants that information gathered in the elicitation interviews would be used for research purposes and that the discussion would be audio-recorded. Participants were assured that their names would not be associated with the tapes. The Institutional Review Board at the FHCRC approved the interview questions and the methods. Written consent was obtained from all participants.

An open topic schedule was used to guide the elicitation interviews, leaving the facilitators considerable freedom to explore issues that emerged in the discussion. The following topics were addressed: How important is diabetes as a health issue in the Yakima Valley? What are special problems or obstacles, if any, that Hispanics face when it comes to diabetes? What are some of the important issues surrounding diabetes? At what stage in the disease are individuals generally diagnosed with diabetes? What types of information are available for Hispanics about diabetes prevention? What opportunities are there for people to learn about prevention and treatment of diabetes, such as diet, exercise, and monitoring blood sugar levels? What issues or concerns, if any, are there with medical care that is available to Hispanics with diabetes? What programs, if any, are available in the Yakima Valley that address diabetes? Are there any recommendations for how to address the problem of diabetes in the community? A final question queried participants about additional comments they may have about diabetes and Hispanics.

Interviews were conducted in English or in Spanish, depending on the preference of the participant. A total of 18 interviews were conducted, with a total of 23 participants. Three elicitation interviews had two participants each and one interview had three participants; the remaining interviews were conducted with one participant each. Four interviews were conducted in Spanish. Participants were predominantly female (74%) and Hispanic (65%). After conducting the qualitative data gathering, stakeholders were contacted to ascertain their interest in serving on a CAB for the parent project.

Data Analysis

Analysis of the information was based on the audiotapes and field notes taken by the note-taker and facilitator. After the elicitation interviews, transcriptions were made of the tapes and field notes. The four Spanish interviews were transcribed and translated into English. Audiotapes were shared only with the project staff and were erased after transcription to help maintain confidentiality. Information was analyzed following principles of qualitative research suggested by Morgan and Krueger (Krueger, 1998; Morgan, 1998b). In each interview, a matrix of the main topics was created. From the matrix, three staff members independently identified and coded key words and common themes that appeared throughout the interviews. The three staff members then met to review all of the themes and key words that were identified. In cases where there was disagreement about a theme or key word, the item was discussed until a consensus was reached. Saturation was reached with interview content from the 23 participants, with no additional themes being uncovered.

To maintain the richness of the information obtained during the interviews, direct quotes were translated and presented in Tables 1 and 2. Although the specific words may not have been repeated by all participants, the meaning was expressed and widely affirmed during at least one of the interviews. Where divergent opinions were expressed, they are noted in the text.

RESULTS

Of the 23 participants, nearly three fourths were female and the majority were Hispanic (results not shown). Eight individuals represented local hospitals, clinics, or long-term-care facilities, six represented social service organizations, two represented kidney centers, two represented local churches, and two represented the local radio station. The remaining three individuals

TABLE 1
Themes Identified by Community Stakeholders Regarding Diabetes Among Hispanics

Importance of diabetes as a public health problem	
Highly prevalent among Hispanics	"We don't know a single family who doesn't have one or two people in their family with diabetes." (ID 10083)
Diabetes is diagnosed in late stages (never early) once the symptoms appear	"Sometimes people can be walking around with diabetes for five, six, seven years. And then they come in here because all of a sudden they passed out . . . 'cause diabetes catches up with you if you don't catch it if you don't know you have it." (ID 10081)
Diabetes being diagnosed on a consistent basis, younger and younger	"It seems like on a consistent basis diagnosing diabetics all the time, and it seems like they're getting younger and younger." (ID 10118)
Risk increases with increasing time living in the United States	"I just read an article . . . and their [Hispanics'] percent of getting it five years after being residents in this country it's very high, it's like 18% increased." (ID 10079)
Individual barriers to diagnosis and/or treatment	
Lack of knowledge or information	"A lot of our Hispanic folks do not have education regarding diabetes, how to take care of it, what the symptoms are, what to do." (ID 10081)
Lack of access to information or services	"I think there's information available, but whether they have access to know about the information is another thing I don't think, I don't see a great concentration or an effort being made up to this point of informing people." (ID 10086)
Financial barriers	"There's financial barriers to doing that if you have to be on the job, you can't leave the job to go get the education, spend the time in the doctor's office and the expense of making payments on that medical care." (ID 10077)
Lack of personal responsibility	"It's traumatic, you have to test yourself, you have to eat three or four times a day, you have to make sure you eat something for every 2 hours. . . . I mean your whole lifestyle changes. And that's hard to accept. It was for me always. I fought it. I still fight it." (ID 10080)
Structural barriers to diagnosis and/or treatment	
Community informational events on diabetes are insufficiently advertised	"Things that you hear on public radio KDNA for example, you'll hear a program every once in a while, Farmworkers, you'll hear them having health fairs every once in a while, though I don't think they do a very good job of getting it out to the general population."(ID 10118)
Information and events offered by community organizations or hospitals are not often in Spanish and/or are not culturally or educationally appropriate	"Sometime . . . brochures . . . are only in English, they're not in Spanish, and then sometimes the language in them is way over our heads . . . a lot of our families . . . their education is very low." (ID 10082)
Exercise programs are missing	"No, no there isn't (any class about exercise). They are necessary, they are necessary." (ID 10119)
Spanish radio stations offer little to no information on diabetes	"Their use of the media is mainly television and radio and I don't think major portion listen to types of stations that would advertise or have commercials . . . regarding this diabetes." (ID 10086)
No independent presence of American Diabetes Association in the community—only serve as a contact for physicians	"I've not heard of it. To be honest with you. I always think about the diabetes association and I see ads on TV about it, so but they need to centralize, something needs to be centralized, where people can go to. I dream of that." (ID 10081)
Not enough is done in schools to inform students and parents about diabetes	"My 12-year-old is going through health class and they're talking about different aspects of health, nutrition being one of them but yet, in the hallways they have soda machines, in the lunch line they have the brownies . . . so I think the dieticians for the school districts need to change their attitude." (ID 10118)

TABLE 2
Recommendations Identified by Community Stakeholders to Address Diabetes Among Hispanics

Intervention channels	
Promote awareness through:	
Churches	"[work with] probably any church in the Valley if you can" (ID 10118)
Hospitals Food banks Retail outlets	"I think ways you could (promote awareness) would be through churches, would be a way through the hospital and the clinics, I think food bank, I think through the schools, and . . . at all major shopping places." (ID 10086)
Schools	"It should be addressed at the schools because if you go into our classrooms you'll see a lot of young kids that are overweight." (ID 10075)
Bakeries Taco trucks	"If big organizations like Farmworkers [clinic] . . . take an approach like a lot of these promoters that promote these Spanish dances, I'd tell you what, everybody would know about it . . . the promoters hit the bakeries, they hit the taco wagons, people, places where people go." (ID 10118)
Radio	"I'd use the radio . . . I don't think I know anybody, any Hispanic that doesn't always have their radio tuned to KDNA." (ID 10076)
Have a centralized location for diabetes education and monitoring (for patient referral)	"Yeah, somewhere where the community knows of I know, or even if . . . you're sitting here with me you're a diabetic client of mine. . . . I can send you to this place they specialize in diabetes education, please go there. Get your brochures, get this, get that, from them. That would be such a wonderful thing." (ID 10081)
Education and training	
Educate and train more professionals to provide outreach and education	"In reality what is needed is educators with heart, educators with patience, educators that love the profession." (ID 10119)
Promote cultural sensitivity of educators	"Language is very important . . . that is, be sensible with people . . . and the culture is something very difficult . . . you have to be sensitive, you have to have a lot of sensibilities." (ID 10119)
Recruit more Latino doctors who specialize in diabetes	"Well I'm pretty sure there are a lot of Hispanic doctors around the area, but they should be specialists in diabetes." (ID 10078)
Materials	
Make Spanish pamphlets readily available	"Now, we get some Spanish pamphlets from the drug reps . . . diabetic handouts . . . but they're expensive . . . and we're on a very, very, very fixed budget through our community clinic, and so certainly handouts, pamphlets that you can put readily available in waiting rooms, in exam rooms, would be a huge benefit." (ID 10118)
Distribute materials at appropriate reading levels with simple messages	"I think the information needs to be easily understood. . . . I think the information for them has to be very basic, very how to change their attitude, not just in the thinking but in their attitude preparing food." (ID 10079)
Create and distribute a diabetic cookbook in Spanish	"I wish they had a diabetic cookbook. In Spanish . . . with the calories and that kind of thing . . . as working mothers . . . you need to incorporate some of these things . . . my husband and I are both diabetics . . . it was really hard to try to plan a meal when you get off at 5:30." (ID 10080)
Activities	
Offer routine community meetings on the topic of diabetes (held at a centralized location)	"I think they should have regular routine community meetings on the topic, you know . . . there's always new ones coming in, so it has to be an ongoing thing . . . where they can come in and have meetings and discuss." (ID 10118)
Provide better advertisements in advance for community events on diabetes	"Farmworkers, you'll hear them having health fairs every once in a while, though I don't think they do a very good job of getting it out to the general population."(ID 10118)
Bring activities directly to the people	"One of the things is not just going to set up the information on a table, because sometimes they don't read it. But if we would go into their work. . . . So if you would take that information into the fields, where they live, or going door-to-door giving the information, it would be great." (ID 10116)
Organize grocery store shopping events to promote healthy eating	"I'd like to see more resources like . . . the shopping safaris . . . and I think if you schedule them right and you could get the family shopper in the house to go with the client, that's where they're key." (ID 10117)
Provide family-based education	"It's really important how to let the families know how important this is and how . . . it affects not just you but the whole family. And the long-term effects on it." (ID 10082)
Offer centralized glucose monitoring	"Maybe (if) there was a place that they can go that's open to the public, they can come in here you know, once a week or every other day and come and check [glucose], we'll check it for you." (ID 10082)

represented the school district, a local research project, and one was a diabetes advocate. Within these organizations, participants held the following positions: health services coordinator (n = 7), public health and health care administrator (n = 3), certified physician assistant (n = 3), religious leader (n = 2), community and consumer advocate (n = 2), Spanish radio station employee (n = 2), nutritionist (n = 1), health educator (n = 1), school official (n = 1), and other (n = 1).

Importance of Diabetes as a Public Health Problem

Diabetes was unanimously identified as a very important issue affecting Hispanics in the Yakima Valley (Table 1). Nearly all participants acknowledged that diabetes was highly prevalent among Hispanics, and most perceived that the prevalence was higher among Hispanics than non-Hispanic Whites. Overwhelmingly, the participants believed that diabetes was diagnosed only in later stages among Hispanics on the occurrence of symptoms, rather than during the early stages of disease. Many believed that the disease was being diagnosed at younger ages. One participant also stressed that the risk of developing diabetes increased with increasing time living in the United States.

Individual Barriers

Lack of knowledge or information about diabetes was a commonly cited individual-level barrier to both diagnosis and treatment. Participants reported that many Hispanics in the community simply were not aware of the symptoms, or how to manage the disease once they were diagnosed. Similarly, lack of access to information or services was cited as a barrier to diagnosis and treatment, as the Hispanic community in the Valley is largely made up of migrant farm workers who are unaware that information and services are available to them. Although participants identified several local hospitals and clinics in the community that provided care at a low cost, they indicated that there was a lack of awareness within the Hispanic community that these sources of care existed.

Financial limitations were also cited as a significant barrier to being diagnosed and treated for diabetes. Given that the farm-worker population is largely uninsured, medical coverage is limited and most individuals have to pay out of pocket for screenings or ongoing treatment and disease management. Competing responsibilities to pay for food and rent, and to provide for family members, take priority. In this vein, participants also cited that transportation difficulties and inability to take time off of work posed barriers to seeking diagnosis and treatment.

Finally, lack of personal responsibility was cited as a common barrier to diabetes diagnosis and treatment. Participants believed strongly that the reality of a diagnosis of diabetes and acknowledgment that one's lifestyle must necessarily change to deal with the disease, would serve as a deterrent for individuals to seek diagnosis, and once diagnosed, would foster denial of the condition and prohibit taking appropriate steps to manage the disease.

Additional individual barriers were identified by participants, unique to either diagnosis or treatment of diabetes. Fear was highlighted as a barrier specific to diabetes diagnosis. Participants believed that individuals who had witnessed friends or relatives experience or die from the disease would be frightened about being diagnosed themselves. For those already diagnosed, cultural differences including nutritional or dietary issues were cited by participants as potential barriers to proper management of the disease. For example, the traditional Mexican diet includes many foods high in carbohydrates, and appropriate disease management might require drastic changes to such a diet.

Structural Barriers

The term *structural barriers* refers to constructs at the community or organizational level that pose difficulties for individuals to obtain diagnosis and/or treatment for diabetes. Several participants expressed that although there were periodic community informational events held on diabetes, such events were insufficiently advertised. Importantly, the information and events offered by community organizations or hospitals were not often in Spanish or were not culturally or educationally appropriate. Other participants identified a lack of community exercise programs and stressed that such programs were badly needed to help individuals manage their disease and to help at-risk individuals reduce their risk. Several participants reported that the Spanish radio stations did not provide enough—or in some cases any—information on diabetes diagnosis and treatment. None of the participants were aware of any active presence in the community of the American Diabetes Association, other than its existence as a source of information for physicians. Finally, many participants believed strongly that not enough was being done in schools to inform students and parents about the warning signs and symptoms of diabetes or how to reduce their risk for developing the disease.

Recommendations

Intervention channels. A major theme that emerged from the discussions was the need for heightened awareness among Hispanics in the community about diabetes symptoms and appropriate treatment, as well as risk factors for the disease. Participants believed that churches, hospitals, food banks, and retail outlets represented key avenues for intervention (Table 2). Several participants stressed the need for education and awareness to begin in schools and emphasized that the schools should set examples of good nutrition. Others identified well-frequented public eateries such as bakeries and taco trucks as ideal locations to deliver education and awareness campaigns about diabetes. Radio was identified as one of the most effective intervention channels given the number of Hispanics who regularly listen to Spanish radio stations (such as KDNA) that are broadcast to the community. Finally, several participants stressed the need for a centralized location for diabetes education and monitoring where high-risk or already diagnosed individuals with diabetes could be referred for diagnosis or treatment.

Education. To enhance awareness of the disease in the community, appropriate education and training of health professionals, community volunteers, and health educators was called for. In particular, participants identified a need to educate a greater number of professionals to provide outreach and education. Coupled with this recommendation was a suggestion to enhance the cultural sensitivity of current and future diabetes educators, and to recruit more Latino physicians who specialize in care for patients with diabetes.

Materials. A subsequent recommendation made by participants was to create and enhance existing materials that provide information for Hispanics about diabetes. In particular, a need for Spanish pamphlets was identified along with a need to make these pamphlets readily available to clinics and to individuals at no cost. In addition, participants believed that more of an effort should be made to ensure that all distributed materials be written at an appropriate reading level and provide simple messages for symptoms, disease management, and risk reduction. One participant emphasized the need for a diabetic cookbook to be developed for the local community.

Activities. Participants suggested a variety of activities that could be undertaken to promote awareness of diabetes in the community, including the offering of routine community meetings on the topic of diabetes, held at a centralized location. The offering of centralized glucose monitoring was also recommended. It was suggested that better advertisements were needed in advance of community events on diabetes to draw a larger turnout. Recommendations were also made by some that activities should be brought directly to those unable to travel to a central location, and that an increased number of organized grocery shopping events to promote healthy eating and responsible food choices should be offered. Many participants stressed the impact of the disease on a patient's entire family and therefore called for a family-based educational approach when communicating information about diabetes. It was believed that family members must be made aware of the seriousness of the condition, the impact it will have on their daily lives, and the long-term effects if not managed appropriately.

DISCUSSION

Appropriate control of diabetes among Hispanics is particularly important given the increasing size of the Hispanic population in the United States, in general, as well as in rural geographic areas in the Northwest (Kandel & Cromartie, 2004) and the rising rate of the disease within this population. Rural Hispanics in the United States have become increasingly susceptible to diabetes given a tendency toward poor diet, sedentary lifestyle, and lack of access to preventive services (Casey et al., 2001). Various factors likely contribute to the sedentary lifestyle commonly seen among Hispanics living in rural areas and include limited availability of exercise facilities within these communities (Mier et al., 2007), limited financial means to access available facilities (Amesty, 2003), lack of transportation and/or child care further preventing access (Mier et al., 2007), lack of time due to work or family responsibilities (Amesty, 2003; Mier et al., 2007), and feelings of social isolation after recent immigration to the United States given that social support can be a crucial motivator for individuals to engage in physical activity (Amesty, 2003).

Given the long-term consequences of diabetes, often leading to significant morbidity or death (Ottenbacher et al., 2004), it is imperative to gain a better understanding of how community structures and organizations might be engaged to deliver services and encourage diabetes prevention and appropriate disease management. Given the scarcity of health care, preventive, and other services available to rural populations in the United States (Casey et al., 2001), recommendations made by community stakeholders are particularly useful to direct first efforts in this area. Based on a social ecology approach and guided by the partnership principle of CBPR, results from our research serve to highlight barriers to care and suggest culturally appropriate recommendations that will be useful for addressing diabetes within this rural Hispanic community.

Stakeholders in our study identified several individual-level barriers faced by Hispanics within their communities in dealing with the diagnosis and treatment of diabetes, many of which have been identified in previous research with Hispanics who are themselves directly affected by the disease. These barriers include lack of knowledge or information about diabetes, including lack of recognition of symptoms, or how to manage the disease once diagnosed (Adams, 2003; Heuer & Lausch, 2006). Similarly, a lack of access to information or services, particularly culturally appropriate information or services available in English, has been reported in prior literature involving Hispanics (Aranda & Vazquez, 2004).

Financial difficulties, including lack of health insurance, have also been commonly reported as barriers to seeking diagnosis and/or treatment (Aranda & Vazquez, 2004) in addition to transportation difficulties and financial consequences of missing work (Heuer & Lausch, 2006). A sense of losing control over the disease has been commonly reported among individuals with diabetes (Adams, 2003) and likely results from a profound sadness that one's diet and food choices must permanently change (Adams, 2003), coupled with fear of long-term disease complications (Heuer & Lausch, 2006). Although prior research has also identified fatalism as a barrier unique to Hispanics when facing diagnosis or treatment of diabetes (Larkey, Hecht, Miller, & Alatorre, 2001; Punzalan et al., 2006), stakeholders interviewed for this study did not identify it as such.

The stakeholder interviews identified common structural barriers surrounding diabetes and Hispanics in the community, including insufficient advertisements for community events about diabetes, and the lack of culturally, educationally, or language-appropriate information or events offered by community organizations or hospitals and these issues that have been noted in previous reports (Aranda & Vazquez, 2004). Our interviews with stakeholders also identified a lack of exercise programs for Hispanics as a barrier against diabetes management as well as prevention, a finding that has been highlighted in prior research with Hispanic women from disadvantaged communities (Mier et al., 2007; Punzalan et al., 2006). As previously discussed, gym memberships may be costly or unavailable in some communities. Stakeholders also strongly believed that schools ought to provide diabetes education for students and families, an opinion that has not often been cited by other researchers.

Although our findings are consistent with prior research conducted with Hispanic men and women who have been directly affected by diabetes, the opinions of community stakeholders have not been extensively addressed in prior diabetes research. As one exception, Brown and Hanis (1999) developed a culturally competent diabetes education program for Mexican Americans in a Texas border town. The study relied on community assessment of health professionals to inform the intervention design. Health professionals suggested that an appropriate intervention should involve family members, focus on dietary changes, recognize limited personal resources of individuals in the community, and involve local religious organizations (Brown & Hanis, 1999). Our interviews with stakeholders in the Yakima Valley revealed several recommendations that were consistent with those from Brown and Hanis, including development of more appropriate educational materials to be distributed to the community at large, organization of centralized glucose monitoring because of prohibitive costs for personal monitoring equipment, involvement of family members, promotion of dietary changes, and utilizing churches as a channel for program delivery.

Our interviews also identified recommendations not highlighted by Brown and Hanis (1999), including use of additional community organizations and businesses, such as hospitals, retail outlets, schools, local restaurants, and radio stations, as potential channels through which to disseminate information about diabetes diagnosis and treatment and to educate at-risk individuals about prevention. In addition, stakeholders believed that training of health professionals and community volunteers needed enhancement, particularly with regard to cultural sensitivity and awareness. In general, primary care providers in rural areas are in limited supply (Casey et al., 2001), and Latino diabetes specialists in rural areas are likely even fewer. In addition, various community-sponsored activities were suggested by participants in response to the lack of, or poorly advertised, programs or events in the Yakima Valley.

Culturally appropriate educational interventions targeted at Hispanics with diabetes have yielded successful outcomes (Brown, Becker, Garcia, Barton, & Hanis, 2002; Brown et al., 2005; Brown, Garcia, Kouzekanani, & Hanis, 2002). The success of such interventions emphasizes the need for future diabetes interventions to be targeted toward specific racial and ethnic groups, to be culturally competent, and to contain various outreach components that are appropriate for whichever group is being targeted, as unique challenges are faced by different racial and ethnic groups. Similarly, previous successes with targeted interventions suggest that eliciting the opinions and recommendations of community members and stakeholders can serve as a crucial first step for developing interventions that will be accepted within the community.

CONCLUSION

Existing community organizations and establishments were identified by stakeholders as potential channels through which to disseminate information about diabetes prevention and control. Designation of a diabetes education and monitoring site at a centralized location for at-risk or already diagnosed patients was recommended as was enhanced education for health professionals and community volunteers in regards to cultural sensitivity and awareness. These recommendations will have a direct bearing on the design of future interventions to lessen the impact of diabetes in the Yakima Valley. With the support of a National Institutes of Health–funded grant, our team is currently carrying out an intervention to educate this community about diabetes and to improve disease management practices among individuals with diabetes in the Yakima Valley. The qualitative findings presented here have informed the design and implementation of this intervention and community stakeholders, as members of a CAB, have been instrumental in the delivery of these services.

Although all of the issues around diabetes identified by stakeholders in this rural Hispanic community might not be relevant for other populations, the framework within which this research was carried out can provide guidance for how the issue of diabetes might be approached and addressed within other communities. The components of our research process may be applicable for other groups as they illustrate a way in which researchers might engage and involve community stakeholders in addressing the issues that are most salient for their particular community. By applying the principles of CBPR as used in our work, future research with other communities can help community members and stakeholders to arrive at the most culturally appropriate solutions.

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