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Community Health Center Provider and Staff's Spanish Language Ability and Cultural Awareness

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Abstract

Many community health center providers and staff care for Latinos with diabetes, but their Spanish language ability and awareness of Latino culture are unknown. We surveyed 512 Midwestern health center providers and staff who managed Latino patients with diabetes. Few respondents had high Spanish language (13%) or cultural awareness scores (22%). Of respondents who self-reported 76–100% of their patients were Latino, 48% had moderate/low Spanish language and 49% had moderate/low cultural competency scores. Among these respondents, 3% lacked access to interpreters and 27% had neither received cultural competency training nor had access to training. Among all respondents, Spanish skills and Latino cultural awareness were low. Respondents who saw a significant number of Latinos had good access to interpretation services but not cultural competency training. Improved Spanish-language skills and increased access to cultural competency training and Latino cultural knowledge are needed to provide linguistically and culturally tailored care to Latino patients.

Keywords

Spanish; cultural competency; health centers; diabetes

The Latino population is the largest and fastest growing ethnic minority in the United States.¹ By 2050, Latinos are predicted to be one-third of the U.S. population.² The health care system must be prepared to care for this population and its disproportionate burden of diabetes.³ Latinos are almost twice as likely to have a diagnosis of diabetes, have higher rates of complications, and have a 65% higher diabetes-related mortality rate than non-Hispanic Whites.^{4, 5}

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Managing Latino patients with diabetes requires cross-cultural understanding, adequate patient-provider communication, and knowledge of patients' barriers to care.⁶ Barriers, such as poor communication, language discordance, lack of trust in the health care system, and lack of cultural competence on the part of providers adversely affect Latino patient satisfaction.⁷ In contrast, good-quality patient-provider communication and trust in physicians are associated with less perceived emotional burden of diabetes and better glycemic control.^{8, 9} Therefore, it is important that providers offer interpretation services or language concordant care to patients who need it and tailor diabetes management plans to fit their patients' cultural beliefs.^{10, 11} Recognizing the importance of linguistically appropriate services and cross-cultural understanding, the U.S. Department of Health and Human Services, Liaison Committee on Medical Education, Association of American Medical Colleges, and Institute of Medicine have introduced standards for access to interpretation services for patients and training in cultural competency for health care providers.¹¹⁻¹⁴

Community health center providers care for many Latinos who are uninsured or live in medically underserved settings.¹⁵ As more people have access to health insurance through the implementation of the Affordable Care Act, health center providers may see an increase in their Latino patient population.¹⁶ Previous studies have assessed the need for cross-cultural training among physicians and perceived preparedness to care for ethnic minorities, but few have assessed these skills among community health center providers or staff.^{17, 18} Assessing providers' and staff's Spanish language skills and awareness of Latino cultural beliefs is necessary so centers can identify areas where they must provide additional training and resources.

Additionally, many Latinos are moving to the Midwest.¹ The Latino population grew by 49% between 2000 and 2010 in the Midwest.¹ In 2011, of the 4.8 million Hispanics in the Midwest, 75% were of Mexican origin, and of those of Mexican origin, 37% were foreign born.¹⁹ Furthermore, between 2% and 9% of the total population in Midwestern states is estimated to have limited English proficiency (LEP).²⁰ Moreover, the LEP population in the Midwest is growing rapidly.²⁰ Although LEP populations and Spanish-speaking populations make up smaller percentages of the population in Midwestern states than in the West, Southwest, and East, some community health centers in the Midwest have reported serving primarily LEP populations.^{21, 22} A 2007 survey of health centers conducted by the National Association of Community Health Centers found that 68% of respondents reported more than 10% of their patients spoke Spanish.²²

Considering that the Midwest has become a new destination for Latinos, many of whom may be limited-English proficient, and that community health centers care for a large proportion of these patients, it is critical to assess the skills of providers working in this region since they will likely see an increase in their Latino patient population.^{1, 23} Many community health center providers and staff care for Latinos with diabetes, but their Spanish language ability and awareness of Latino culture are unknown. This study aims to assess Midwestern health center providers' and staff's Spanish language skills, perceived knowledge of Latino cultural beliefs, and access to interpreters and cultural competency training. We surveyed community health center providers and staff who manage or treat patients with diabetes to assess their: 1) Spanish language ability; 2) awareness of Latino

culture; and 3) access to interpretation services and cultural competency training. We also assessed how these skills and services varied across providers managing differing proportions of Latino patients.

Methods

This study was carried out by the MidWest Clinicians' Network (MWCN) Research Committee, which is comprised of investigators from MWCN, the University of Chicago, North Dakota State University, and University of Evansville. The MWCN is a nonprofit organization that supports community health centers, primary care associations, and individual providers in community-based primary health care settings across 10 Midwestern states: Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, Ohio, and Wisconsin.

Between August 2010 and November 2010, we mailed a survey to 1,471 eligible providers at 97 health center sites affiliated with MWCN across 10 states. Eligible providers currently treated or managed patients with diabetes at MWCN affiliated health center sites. Providers included certified physicians, advanced practice nurses, physician assistants, registered nurses, licensed practical nurses, diabetes educators, dietitians, health educators, social workers, medical assistants and case managers. We excluded dental health professionals (dentists and dental hygienists), mental health and behavioral health professionals, administrative personnel, and other personnel who did not have direct contact with patients or did not manage diabetes directly (such as radiologists and opticians). Participants received a printed copy of the survey and a postage-paid return envelope. A \$2 token of appreciation was enclosed with the survey. Participants gave informed consent by returning the completed survey. The study received human subject approval from the University of Chicago Institutional Review Board.

Measures

A 28-item questionnaire included multiple-choice questions on participant demographic characteristics, workplace characteristics, and health center resources. The research team designed the survey based on a literature review of diabetes interventions for Latino patients and the team's experience working in health centers and with Latino patients. To ensure content validity, we identified and sampled domains that were found to be relevant to Latino cultural and health beliefs from the literature review.^{6, 24–26} We pilot-tested the instrument with a multidisciplinary group of diabetes researchers and clinicians and made changes based on their feedback to increase the face validity of the instrument.

Provider characteristics—Providers were asked their current position at the health center, year of birth, gender, race and ethnicity, and number of years in practice.

Health center characteristics—Providers were asked where their center was located (city, suburban, or rural), percent of their Latino patients who were uninsured, and the percent of their patients with diabetes who were Latino.

Spanish language ability—A variety of scales have been used in studies to assess health care providers' language fluency; however, no validated measure currently exists.^{27, 28} To ensure content validity, we designed our Spanish language ability scale based on a literature review we conducted that suggests relevant domains of language fluency include ability to speak and understand, as well as to read and write.^{27, 28} We also assessed internal consistency reliability using Cronbach's alpha (0.959). The Spanish language ability scale is available online.²⁹ We asked respondents to self-report their ability in: a) speaking, b) understanding, c) reading, and d) writing Spanish using a five-point scale for each question (1 point - not at all, 2 points - a little bit, 3 points - moderately well, 4 points - very well, and 5 points - fluently). The responses for each of the four parts of Spanish language ability were then summed to determine each respondent's composite language score, with scores ranging from 4 (least ability) to 20 (highest ability). The composite language ability score was divided into terciles (4–8, 9–14, 15–20). The top tercile was labeled as “high” for greater Spanish language proficiency and the other two terciles were combined into “moderate/low” ability since moderate and low speakers have similar needs for interpretation services in clinical settings.³⁰

Cultural awareness—Many definitions of cultural competency exist; however, key components include providers being self-aware of their personal biases, possessing knowledge and awareness of patients' cultural background and health beliefs, having respect for different cultural perspectives, and having skills and being able to use them effectively in cross-cultural situations.^{31–33} In our study of providers who manage Latino patients, we examined one component of cultural competency: cultural awareness. The research team designed the cultural awareness scale based on a literature review and the team's experience working with Latino patients.^{34–36} To ensure content validity, we identified and sampled domains that were found to be relevant to Latino cultural and health beliefs from a literature review. We assessed internal consistency reliability using Cronbach's alpha (0.962). The cultural awareness scale is available online.²⁹ Providers and staff used a four-point scale (no knowledge, a little knowledge, some knowledge, and a lot of knowledge) to rate their awareness of eight different Latino cultural domains as they related to the diabetes management of their Latino patients: role of family, religious beliefs, folk remedies, traditional diet modifications, variations among different Latino cultures, patient-doctor interactions, health barriers for seasonal workers, and culturally tailored care. The composite cultural awareness score ranged from 8 (least aware) to 32 (most aware). The composite cultural awareness score was divided into terciles (8–15, 16–23, 24–32). The top tercile was labeled as “high” for greater awareness and the other two terciles were combined into “moderate/low.”

Access to interpretation services—Participants who reported seeing Latino patients with diabetes also described their access to on-site professional interpreters and telephone-based interpretation services (defined as available 50% or >50% of the time when needed).

Receipt of cultural competency training—To assess if participants had ever received cultural competency training, they were asked, “How recently have you received cultural competency training?: (1) never, (2) more than 5 years ago, (3) in the last 1–5 years, (4)

within the last year.” Those who answered “never” were labeled as “never having received training” and the others were labeled as “having had training.”

Access to cultural competency training—To assess access to cultural competency training, participants were asked from a list of resources, “Please indicate which resources your health center utilizes.” One of the response choices was “cultural competency training” for which participants could choose either “yes” or “no.” Those who answered yes were labeled as “having access to cultural competency training” and the rest as “not having access.”

Analysis

We examined descriptive statistics of participants’ individual and workplace characteristics, access to interpretation services and cultural competency training, receipt of cultural competency training, Spanish language ability, and awareness of Latino culture. We used a generalized linear mixed model with dependent variables for language and cultural awareness score to assess associations between the scores and respondent and health center characteristics. Each model included random effects for each of the sites to account for site-level clustering. For the subgroups of providers with moderate/low language and cultural awareness scores who reported seeing Latino patients, we used a generalized linear mixed model with random effects to assess how interpretation services and cultural competency training varied by percentage of Latino diabetes patients seen by the provider. The analyses were performed using SAS 9.2. (Cary, NC, 2009).

Results

A total of 620 of 1,471 eligible providers responded to the survey, for an adjusted response rate of 47%.³⁷ Female providers were more likely to return the survey than male providers (46% vs. 39%, $p=.04$). The physician response rate was lower than that of advanced practice nurses and physician assistants (35%, 50%, and 42%, respectively, $p<.001$). Respondents were from 85 sites representing all 10 states. There was an average of six respondents per site.

After calculating Cronbach’s alpha scores for the Spanish language ability and Latino cultural awareness measures using responses from all 620 participants, those respondents who did not report the percentage of patients they see who are Latino ($n=11$); selected multiple options for the question ($n=1$); or who reported seeing no Latino patients ($n=96$) were dropped from our analyses. Thus, our analyses only include respondents who reported seeing Latino patients ($n=512$).

Participants who were excluded from the analyses because they saw no Latino patients were less likely to be of Latino ethnicity ($p=.02$), less likely to work in a health center in an urban setting ($p=.01$), and more likely to work in a rural setting ($p<.001$) than respondents who stated they saw Latino patients. Those who saw no Latino patients were less likely to be medical assistants ($p=.04$) and more likely to be physicians ($p=.003$). Those who reported not seeing Latino patients were less likely to have received cultural competency training ($p=.02$).

Provider characteristics

Table 1 describes the respondent demographic characteristics and their workplace characteristics. One-third of the respondents were physicians (37%) and a majority was female (73%). Only 8% of providers reported their ethnicity as Latino. Most providers worked in urban locations (67%) and 64% reported that more than half of the Latino patients at their center lacked health insurance. Almost half of providers reported that more than 25% of their patients with diabetes were Latino. The majority of providers had access to on-site professional interpreters (71%). A quarter of providers had never received cultural competency training nor had access to this training.

Spanish language ability

Overall, 13% of providers had high Spanish language scores, 19% had moderate scores, and 68% had low scores. Table 2 describes providers' scores by ability to read, write, speak and understand Spanish.

Latino cultural awareness

Overall, 22% of providers had high cultural awareness scores, 44% had moderate scores, and 34% had low scores. Table 2 also describes providers' scores across the eight cultural domains. Providers knew the least about traditional/folk remedies for diabetes, differences between cultures within Latino communities, and differences between patient-doctor interactions in Latin America and the United States.

Predictors of Spanish ability and cultural awareness

Table 3 describes characteristics of providers by Spanish language and cultural awareness scores. Language ability did not differ across gender or number of years in practice but respondents with high fluency in Spanish had a younger mean age (42.8 ± 11 years) compared with low/moderate speakers (46.1 ± 12 years, $p=.04$) There was a trend for advanced practice nurses and registered nurses to have less fluency in Spanish than physicians, although the finding was not statistically significant.

Providers reporting Latino ethnicity and those working in urban centers were more likely to have high Spanish language scores. Providers who reported that 51–75% or 76–100% of their diabetes patients were Latino were more likely to have high Spanish language scores than providers who saw 1–25% Latino patients.

Latino providers and providers who had received cultural competency training had high cultural awareness scores. As the proportion of Latino patients increased, providers were more likely to have high cultural awareness scores.

Access to interpretation services

Table 4 describes the association between percentage of Latino patients with diabetes seen and access to interpretation services for providers with moderate/low Spanish language scores. Only 3% of providers with moderate/low language scores and who saw more than 75% Latino patients reported lacking access to either professional on-site interpreters or

telephone interpreters. As providers reported seeing more Latino patients with diabetes, their access to on-site interpreters increased.

Receipt of cultural competency training

Table 4 also describes the association between percentage of Latino patients with diabetes seen and receipt of cultural competency training for providers with moderate/low Latino cultural awareness scores. Providers who reported that 26–50% of their diabetes patients were Latino were more likely to have received cultural competency training (78% vs. 63%) as those who reported that less than 25% of their diabetes patients were Latino ($p=.01$). Providers who reported that 51% to 100% of their diabetes patients were Latino were as likely to have access to cultural competency training as those who reported less than 25% of their diabetes patients were Latino.

Access to cultural competency training

Providers who reported that 25% to 75% of their diabetes patients were Latino were more likely to have access to cultural competency training as those who reported less than 25% of their diabetes patients were Latino. Providers who reported that 76–100% of their diabetes patients were Latino were as likely to have access to training (53% vs. 37%) as those who reported that less than 25% of their diabetes patients were Latino ($p=.10$).

Receipt of and access to training

Of providers who noted that 76–100% of their diabetes patients were Latino, 27% had never received cultural competency training nor had access to training.

Discussion

Health center providers' language skills and cultural awareness must keep pace with the increasing population of Latino patients with diabetes. However, we found that most community health center providers and staff in the Midwestern clinics who responded to our survey had limited Spanish language ability and awareness of Latino cultural beliefs. Of the providers and staff who reported that more than three-quarters of their diabetes patients were Latino, only half had high Spanish language scores, although nearly all had access to interpretation services. More than a quarter of providers and staff who reported that more than three-quarters of their diabetes patients were Latino had never received cultural competency training nor had access to training. Providers and staff also had very limited knowledge of the use of folk medicines by their Latino patients with diabetes and cultural differences between Latino subgroups.

Our study is the first to assess Spanish language ability of community health center providers and staff across a region of the United States.^{38, 39} Few studies have assessed the language ability of health care providers from other regions.^{38, 39} One study in 2010 of physicians in California found that 24% percent of primary care physicians reported fluency in Spanish.³⁸ However, we found that few physician respondents reported fluency in Spanish. Non-physician providers, such as physician assistants and nurse practitioners, and staff, such as medical assistants and licensed practical nurses, also lacked fluency in

Spanish. There was a trend for advanced practice nurses and registered nurses to report less Spanish fluency than physicians. Since community health center patients with diabetes receive care from many types of providers and staff through a team-based approach, the lack of Spanish ability among non-physician providers and staff introduces additional barriers to care for Latinos. Fortunately, we found that almost all providers had access to professional interpreters. Studies have shown that interpretation services improve patient satisfaction with doctor communication and receipt of important clinical information.^{22, 38, 40} However, even when interpreters are readily available, some providers “get by” using their own Spanish skills without the assistance of an interpreter, even in very complex discussions.^{41, 42} Additional studies are needed to assess how access to interpreters and provider use of their own language skills affects diabetes outcomes among Latinos.⁴³ Moreover, further studies are needed that assess Spanish language ability among physician and non-physician providers in a variety of health care settings and regions of the United States.^{38, 39, 41}

Some studies have found that language concordance improves diabetes outcomes and interpersonal processes of diabetes care.^{44–46} Understanding the impending need to communicate in Spanish, some medical schools are highly recommending that applicants take Spanish in their undergraduate years and are offering medical Spanish classes in their curricula.^{47, 48} Nursing associations are also promoting the training of bilingual nurses.⁴⁹ Some studies have reported that Spanish language interventions may improve patient satisfaction and provider Spanish language fluency.^{50, 51} Well-designed interventions must include training on how language barriers affect health disparities, how to overcome language barriers, how to work effectively with interpreters, and how to appropriately use one’s own limited non-English language skills.⁵²

Physicians in safety-net clinics acknowledge that many cultural factors affect the quality of diabetes care their patients receive.^{36, 53} However, we found that providers were not aware of many of the cultural or health beliefs common among Latino patients. While providers seeing many Latino patients were more likely to have high cultural awareness scores, more than a quarter of respondents with moderate/low scores and who reported that more than 75% of their diabetes patients were Latino had never received training nor had access to training. This finding was surprising since many organizations call for health care providers to be trained in cultural competency.^{12, 49} Providers working with many Latino patients may believe they have a better understanding of their patients’ cultural beliefs, but others have demonstrated that working with Latino patients does not always ensure cultural competency.⁵⁴

Fortunately, in our study, providers who had received cultural competency training were more likely to have higher cultural awareness scores versus those who never received training. Previous studies have found that providers are interested in receiving training and that cross-cultural care skills training is associated with increased self-perceived preparedness to care for diverse patient populations.^{17, 18} Responding to this need, physician organizations have set forth curricula on teaching about health disparities and cultural competency.⁵⁵ Others have designed and tested cultural competency training programs and have demonstrated that these interventions can improve providers’ overall knowledge and

confidence in Latino cultural beliefs.^{10, 56, 57} However, knowledge about Mexican American culture and beliefs may not directly facilitate culturally competent care.⁵⁴ Cultural competency training may increase cultural awareness and improve care for patients, but data on its effect on clinical outcomes are limited.^{58–60}

Providers and staff in our study knew the least about traditional and folk remedies for diabetes and differences between cultures within Latino subgroups. An understanding of folk remedies may be important since many Latinos use alternative therapies in managing chronic diseases, and use herbs as a supplement to medical treatments.^{61–63} The lack of knowledge regarding different cultural subgroups may not be as surprising since most studies are focused on Mexican Americans and little is known about the unique health beliefs of different Hispanic subgroups.⁶¹

We also found that Latino providers did not always score high in language ability or cultural awareness. Less than three-quarters of Latino providers had high Spanish language scores and only half had high cultural awareness. These findings highlight the risk of assuming that all providers of Latino origin have the necessary language skills and cultural awareness to provide language concordance and culturally competent care.⁵⁴ Native speakers may have difficulty expressing medical issues in their native language.⁵⁴ Similarly, they may have an understanding of their cultural upbringing but may not understand differences between subgroups and how cultural beliefs affect health behavior. Latino providers in our survey may also have been highly attuned to their lack of knowledge and may have been more likely to state they have limited knowledge regarding certain cultural factors. Our findings suggest that Latino providers also may need further support and training to deliver linguistically concordant and culturally competent care to their Latino patients.

Our study underscores a broader question: what types of skills and resources are necessary for providers who see differing proportions of Latino patients?⁶⁴ While provider-patient language concordance has its advantages, providers who are not fluent in Spanish are mandated to utilize professional interpreters when communicating with monolingual Spanish speaking patients.¹¹ The regulation does not mandate the type of interpretation services that must be offered; thus, centers that see a minimal number of non-English speaking patients have different options to choose from, such as in-person or telephone based interpretation services.^{65–67}

The amount of cultural competency awareness and training needed to manage Latino patients is perhaps more variable. We found that providers who saw almost all Latino patients in their practice did not necessarily have better access to training or more likelihood of having received training. Moreover, of the providers who had received training, only a quarter had high cultural awareness scores, perhaps highlighting the need for better cultural competency training programs or a lack of focus on Latino cultural and health beliefs. Many agencies mandate cultural competency training for all health care providers.^{12, 48} However, one purpose of cultural competency training is to help providers become more aware of their own biases, identify potential areas of tension or conflict, and determine where additional resources may be needed. Thus, depending on the cultural competency training received, such training may not necessarily confer additional skill in communicating with specific

populations or cultures.⁶⁸ Our study may point to the need for further analyses as to why providers who see many Latino patients do not necessarily have better access to training and how we best prepare providers to provide culturally appropriate care.

Limitations

Our study has some limitations. Since our data are cross-sectional, we cannot make any inferences regarding causal effect. Furthermore, we only surveyed staff and providers from community health centers affiliated with the MWCN and studied mostly perceptions. Similar studies should be undertaken in other health care settings with providers and staff to assess the generalizability of our findings. Given the one-time administration of the survey instrument, we did not assess test-retest reliability of our language and cultural awareness scales. We had a lower survey response rate from physicians, although our overall response rate was high considering the time pressures of community health center providers.⁶⁹ Different roles may require different types of interactions with Latino patients; however, our survey did not assess the types and levels of interaction with Latino patients by provider type. We were also unable to account for financial resources available to the sites that may have affected the types of services and programs available to their providers. Lastly, while Latinos make up the majority of the LEP persons in the U.S., we did not directly ask if the Latino patients seen by the providers and staff were limited English proficient. Thus, the degree to which language skills and interpretation services are needed at these CHCs is not clear.

Conclusions

The U.S. patient population is becoming more diverse and the prevalence of diabetes is rising at unprecedented rates. Health care providers' skills need to keep pace with the growing diversity of the patient population so they may deliver culturally-tailored care to patients from a range of cultural and linguistic backgrounds, especially to Latinos. Unfortunately, our study found that many providers lacked skills in Spanish language and awareness of important cultural health beliefs of Latino patients. A multifaceted approach that provides resources and training to current providers and that actively hires bilingual, bicultural providers and staff will be needed to deliver care to the growing Latino patient population. Further studies need to test the feasibility of these approaches and their ultimate impact on patient outcomes.

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Table 1

Characteristics of Respondents (N=620)*

Provider and staff characteristics	n	%
Type of provider and staff		
Physicians	238	39
Advanced Practice Nurses	127	21
Physician Assistants	59	10
Registered Nurses	48	8
Medical Assistants	42	7
Licensed Practical Nurses	24	4
Dietitians	5	1
Case managers	4	1
Certified Diabetes Educators	2	0.3
Health educators	1	0.2
Other	65	11
Age (Mean \pm SD), years	45.9 (12)	
Female	448	73
Latino ethnicity	39	6
Years practicing (Mean \pm SD)	13.8 (10)	
Workplace characteristics		
Site locale		
Urban	398	65
Suburban	58	9
Rural	160	26
>50% Latino patients at center are uninsured	339	60
Percentage of provider's diabetes patients who are Latino		
0%	96	16
<=25%	263	43
26–50%	121	20
51–75%	61	10
76–100%	67	11
Cultural competency training[†]		
Have received cultural competency training	436	71
Have access to cultural competency training [‡]	237	48
Have not received training and do not have access to cultural competency training [‡]	118	24
Interpretation services^{†‡}		
Have access to on-site professional interpreters a majority of the time	359	71
Have access to telephone-based interpreters a majority of the time	298	60
Never have access to either	43	9

* Due to rounding, not all percentages add up to 100.

[†] Categories are not mutually exclusive.

[‡]Question only asked of providers who reported seeing Latino patients (n=512)

Table 2

Provider and Staff's Self-Reported Spanish Language Ability and Level of Latino Cultural Awareness (N=620)*

	Self-reported Spanish Language Ability			
	Not at all	A little bit	Moderately well	Very well Fluently
How well are you able to do the following:	<i>% of respondents</i>			
Read materials written in Spanish	46	30	11	6 7
Write notes for patients in Spanish	59	22	8	5 6
Speak to patients in Spanish	41	34	10	7 8
Understand Spanish-speaking patients	32	39	13	7 9
	Self-reported Level of Cultural Awareness			
	No knowledge	A little knowledge	Some knowledge	A lot of knowledge
Please rate your level of knowledge regarding the following issues:	<i>% of respondents</i>			
The role of family in diabetes management	14	28	44	15
The role of religion in diabetes management	33	29	30	8
Traditional/folk remedies for diabetes	47	30	19	4
Modifications of traditional Hispanic diets to fit a diabetic lifestyle	25	34	31	10
Differences between cultures within the Latino community	34	35	25	7
Differences between patient-doctor interaction in Latin America and the United States	35	33	25	8
Barriers to diabetes care faced by patients who are migrant or seasonal workers	15	30	39	17
Providing culturally tailored diabetes care to Latino patients	24	38	27	11

* Due to rounding, not all percentages across rows add up to 100.

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Table 3
 Characteristics of Providers and Staff by Spanish Language and Cultural Awareness Scores (N=620) *

	Spanish language score				Cultural awareness score					
	High	Moderate or low	n	%	High	Moderate or low	n	%		
All Respondents	73	12	536	88	118	20	487	81		
Respondent characteristics										
Type of provider and staff [†]									0.32	
Physicians	32	14	203	86	44	19	189	81		
Advanced Practice Nurses	9	7	115	93	28	23	95	77		
Physician Assistants	9	16	49	84	14	24	45	76		
Registered Nurses	1	2	46	98	8	17	38	83		
Medical Assistants	4	10	38	90	4	10	38	90		
Licensed Practical Nurses	1	4	23	96	2	8	22	92		
Age (Mean ± SD), years	43.2(11)	46.1(12)	46.1(12)	0.05	46.8(10)	45.5(12)			0.29	
Gender				0.93					0.51	
Male	19	12	140	88	33	21	124	79		
Female	54	12	388	88	82	19	359	81		
Ethnicity				<.0001					<.0001	
Non-Latino	44	8	520	92	94	17	467	83		
Latino	29	74	10	26	21	54	18	46		
Years practicing (Mean ± SD)	12.8(10)	13.8(11)	13.8(11)	0.46	13.9(10)	13.7(11)			0.92	
Workplace characteristics										
Site locale										
Urban	58	15	333	85	0.007	74	19	313	81	0.15
Suburban	6	11	51	89	0.24	5	9	53	91	0.02
Rural	9	6	149	94	ref	39	25	118	75	ref
Percentage of provider and staff's diabetes patients who are Latino										
0%	3	3	93	97	ref	4	4	88	96	ref

	Spanish language score				Cultural awareness score				p-value
	High n	%	Moderate or low n	%	High n	%	Moderate or low n	%	
All Respondents	73	12	536	88	118	20	487	81	
<=25%	11	4	249	96	33	13	229	87	0.04
26-50%	11	9	107	91	23	20	93	80	0.003
51-75%	12	20	48	80	24	40	36	60	<.0001
76-100%	34	52	31	48	33	51	32	49	<.0001
Cultural competency training and access									
Cultural competency training									0.0001
Have received training	-	-	-	-	102	24	324	76	
Have never received training	-	-	-	-	15	9	161	91	
Access to cultural competency training [‡]									0.006
Have access to training	-	-	-	-	66	28	167	72	
Do not have access to training	-	-	-	-	43	17	207	83	

P-values were calculated using a generalized linear mixed model to adjust for clustering by site

* Due to rounding, not all percentages add up to 100.

[‡]The bivariate analysis by provider/staff type was only conducted for top six types of providers/staff (n=538). Others were dropped because of missing job title data (n=5) or the inability to assess differences using the model due to few respondents (n=77).

[‡] Question only asked of providers who reported seeing Latino patients (n=512)

