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Hispanic Acculturation, Psychosocial Functioning, and Routine Support for Diabetes Self-Management

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With 40% of the population projected to be from racial/ethnic minority groups by the year 2030¹, it is imperative that contributing factors to disparities in diabetes care and outcomes be explored. Diabetes affects at least 8% of all Hispanic Americans over the age of 20 years. Within Hispanic subgroups, research shows that 26% of Puerto Rican and 16% of Cuban individuals aged 45–74 years have diabetes². In spite of the significant diabetes prevalence across multiple Hispanic subgroups, information on the ways in which people of Hispanic descent in America cope with diabetes currently relates mostly to Mexican Americans, with little information emerging on those with Caribbean ancestry^{3,4}. The purpose of this study was to quantitatively estimate the effects of themes that were uncovered during focus group interviews in a previous study on coping with diabetes in urban people of Hispanic-Caribbean ancestry (the *Los Caminos: Developing Culturally Sensitive Paths to Diabetes Self-Management Study*).

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Diabetes Self-Management Barriers for Urban Hispanics

Barriers to diabetes self-management in Hispanic populations has largely been linked to coping with medical co-morbidities, language barriers, socioeconomic/financial barriers, limited social support, and limited physical functioning due to disabilities^{5,6,7}. Other, themes emerging from the Los Caminos focus groups include intergenerational issues having an impact on participants' beliefs about diabetes, the need for help from family, perceptions of discrimination and discontinuity in health care, links between depression and diabetes, and sexual health issues for both men and women⁸. All of these themes represent important considerations for designing interventions to eliminate health disparities and to improve health-related quality of life for all those living in America⁹.

Social Support, Health, and Hispanic Cultural Factors

The findings of the Los Caminos focus groups for English-speaking participants showed a struggle between the need for "help" from family and the family member being too busy. For Spanish-speaking participants more social support from family was perceived. Diversity in themes emerged in the focus groups based on language spoken⁸. The notion that help from others in the routine management of diabetes is important is further supported in the literature. Gee et al. (2006) found in a non-Hispanic sample, tangible social support serves as a buffer for perceived discrimination on health conditions¹⁰. The need for culturally and linguistically sensitive help with diabetes¹¹ may have particular significance for quality of life. One's agency for self-care may be further impaired by poor mental coping resulting in further limiting physical function especially in older adults¹². Interestingly, an important moderator of the relationship between social support and self-rated physical health of Hispanics has been identified as acculturative stress¹³. Additionally, language barriers may lead to disparities in diabetes care for Hispanic individuals, given that 1 in 4 Hispanics (unspecified ethnic origin or immigration status) are living in linguistically isolated households in America¹. Meanwhile, low socioeconomic status and lack of health insurance may impact Hispanics' ability to obtain adequate routine help with diabetes-related healthcare¹⁴.

Acculturation has been described as a process of prolonged intergroup contact between cultural groups and the changes it brings in those from each culture (i.e., integration of minority and majority cultural values¹⁵). However, common use of the term *acculturation* refers to a simultaneous endorsement of dominant and minority cultures, one in which the acculturated individual manages to adopt certain valuable aspects of the dominant culture while retaining important aspects of one's native culture¹⁶. This functional interaction with mainstream society that also preserves values from one's culture of origin has been linked to a reduction in diabetes prevalence in Mexican Americans more so than higher socioeconomic status¹⁷.

Familism, or reliance on family for social support with decision-making, is a recognized characteristic of Hispanic culture that has been identified as being important to diabetes care¹⁸. Familism may act as a buffer to depression and sub-optimal quality of life for Hispanics with cardiac disease, the most common complication of diabetes¹⁹. Family is an

important source of culturally and linguistically sensitive instrumental help that may be particularly important in a context of coping with the impact of diabetes on quality of life.

Psychosocial Coping with Diabetes

Approximately 25% of patients with diabetes experience depression²⁰ significant enough to be associated with poor health outcomes^{20,21}. Generally, depressed individuals with diabetes have poorer glycemic control and higher health care utilization compared to patients with diabetes who do not have depressed moods^{22,23}. Diabetes-specific quality of life has been defined as patient perceptions of having energy, mobility, sexual functioning, and diabetes control as well as of being free of anxiety, worry, and social burdens²⁴. Quality of life represents the cumulative effects of physical and mental functioning. Both depression and quality of life are important determinants of psychosocial coping with diabetes.

The purpose of this study is to describe the relationship between Spanish language-based acculturation, psychosocial coping with diabetes, and perception of social support obtainment for the routine daily management of diabetes. Hypotheses were developed based on emerging themes likely to be associated with depression and quality of life and tested based on cross-sectional data collected on a sample of urban low income Hispanics with diabetes. Figure 1 depicts a conceptual model depicting hypotheses generated from the previous Los Caminos focus group study and the preceding literature review. The following hypotheses were tested:

- I. Spanish language-based acculturation will be associated with depressed mood and the psychosocial components of the impact of diabetes on quality of life (anxiety and worry and social burden), such that those with who are less acculturated will be more likely to be negatively affected by the psychosocial implications of coping with diabetes (ie. be more depressed, anxious and worried about diabetes, perceive more social burden).
- II. Getting help with diabetes care, a proxy for social support will be negatively associated with depressed mood and the psychosocial components of the impact of diabetes on quality of life such that those experiencing negative psychosocial implications of coping with diabetes will report obtaining less help with the routine daily management of diabetes. Those who are less acculturated will obtain more help for their diabetes, controlling for psychosocial coping.

Methods

Research Design

This is a report on data collected as part of a larger descriptive study not reported on here that assessed views of healthcare discrimination and its impact on coping with diabetes. The study involved a cross-sectional comparison of Hispanic versus non-Hispanic residents of Bronx, New York, in terms of their responses to structured telephone surveys conducted in English or Spanish by experienced interviewers who were also health educators. The current study was approved by the Committee on Clinical Investigations, the institutional review

board of the Albert Einstein College of Medicine, Bronx, New York. Eligibility was determined and informed consent obtained by phone prior to survey administration.

Data Collection Procedures

Participants were offered the option of conversing with the interviewer in English or Spanish. The telephone surveys were mailed to participants in advance of the phone call to provide them with the opportunity to see the questions during the call if needed. Instructions that they should wait for the telephone call to complete the survey were included. Approximately 20 minutes were required for administration of the survey. All survey responses were placed on TeleForms™ (Elite scanning software, version 8.1) by the telephone interviewer and double checked for accuracy. The scannable forms were carefully examined for readability. A follow-up call was also made to all participants to verify the accuracy of the survey responses and to confirm addresses for mailing the token of appreciation (\$20/participant).

Measures

Surveys assessing Spanish language-based acculturation, depression, and the impact of diabetes on quality of life, were administered by telephone in both English and Spanish by trained health educators. All surveys were forward- and back-translated for Spanish and were tested for internal consistency reliability on the current sample.

Diabetes-related Quality of Life—The Diabetes-39, an instrument developed by Boyer and Earp (1997) intended to measure the impact of diabetes on quality of life was administered. The survey has been shown to reliably assess five reliable constructs, with Cronbach's alpha ranging from .81–.92. The construct subscales are as follows: energy and mobility (15 items), sexual functioning (3 items), diabetes control (12 items), anxiety and worry (4 items), and social burden (5 items)²⁴. Cronbach's alphas calculated on the English/Spanish versions on this sample were consistent with the survey developer's validity findings. Lower scores represent little impact on quality of life, and higher scores indicate high perceived impact, or poorer quality of life. Two single items are included: (a) an overall rating of the impact of diabetes on quality of life and (b) "How severe do you think your diabetes is?" on the same 1–7 scale.

Depressed Mood—Participants answered the nine-item Patient Health Questionnaire-Depression (PHQ-8) survey, which was developed for use in primary care assessed depressed mood over the previous 2 weeks. The items are scored *not at all* (0) to *nearly every day* (3). For clinical trials where no intervention for depression is used, the one item assessing suicide risk can be eliminated from the original 9-item measure²⁶. For this sample, the Cronbach's alphas on the eight-item assessment were as follows: English version, .85, and Spanish version, .89. Higher scores indicate more depressed mood.

Spanish language-based acculturation—The Short Acculturation Scale for Hispanics—a 12-item scale with three subscales tapping language use, media, and ethnic social relations—was also administered. Acculturation for this measure consists of language (i.e., usually speak Spanish or English), media type (i.e., Spanish language radio, books), and

social interactions (i.e., with those who are Hispanic versus non-Hispanic). The three factors reportedly explain 67.6% of the total variance of generation, length of residence in the United States, age at arrival in the United States, and ethnic self-identification for Hispanics²⁷. The alpha level for the 12-item scale was .92 with good subscale reliability as follows: Language (.90), Media (.86), and Ethnic and Social Relations (.78).

Social Support Item—A single item question was used as a proxy for social support to assess perceived adequacy of obtaining help with the routine management of diabetes. “Is there anyone helping you most days of the week to take care of your diabetes?” was included. This global social support statement was generated from previous study data in the *Los Camino* focus groups⁸ where participants emphasized the importance of getting help for their diabetes on a regular basis. Demographic characteristic information was also collected.

Data Analysis

The data were imported to Stata v. 10 MP for analysis. After assessing the internal consistency reliability of the English and Spanish versions by calculating Cronbach’s alpha levels, contrasts for scale scores by language were examined for English versus Spanish comparisons among Hispanic respondents. Frequencies were calculated for nominal variables, and descriptive statistics and composite scores were calculated using the mean of non-missing responses for the survey subscales. Missing scale items, therefore, did not lead to exclusion from analysis as long as scale scores could be computed. Missing responses to demographic information led to exclusion from analyses involving the missing variable. Data were evaluated for normality, and assumptions of parametric analysis were tested. Group comparisons were made using the non-parametric Mann-Whitney U test, ordinary least squares regression were made using Huber-White robust standard error calculations, or logistic regression analysis were made using Huber-White robust variance estimators. Models were built to adjust for gender, race (Black, White, all other), marital status (married or living together vs. divorced, widowed, separated, single, or never married), household size (alone, 1 other person, or 2 or more other persons), severity of diabetes (rated on 1–7 scale, treated as a single ordinal variable), having children to care for, and depression.

GPOWER was used to estimate the sample size²⁸. A sample size of 85 would be adequate to provide 80% power to detect medium effects (.15) of up to three predictors on the value of F to detect changes in the outcome variables at an alpha of .05. A sample size of 50 per group, $N = 100$, provides 80% power to detect medium to large effects (.50–.80) for differences between groups at an alpha of .05 and using a one-tailed test.

Results

Participants

Participants were recruited from a pool of patients ($N = 598$) who had completed participation in another randomized controlled trial and gave permission to be contacted for future research projects. The patients in that study received bilingual telephone health education for a targeted intervention to promote retinopathy screening²⁵. Those completing this survey study had not participated in the *Los Caminos* focus groups for which the

hypotheses were generated for the current study. Study participants ($N = 209$, mean age = 58 years) were mostly female ($n = 133$) with 52% of the sample reporting being non-Hispanic (42% Black, 10% non-Hispanic White) ($n = 101$). Hispanic participants described themselves, more specifically, as Puerto Rican (75%), Dominican (12%), or other (14%). About 27% of the sample chose to complete the survey in Spanish. Of the total sample, about 55% ($n = 114$) were born in the United States with the remaining sample living in the United States on average 32.8 years ($SD = 15.2$).

Reported income for the entire sample was below \$51,000 or not reported with 42% of the Hispanic sample reporting income below \$15,000. About 34% of the Hispanic sample had education between 9th–12th grade compared to 42% of the non-Hispanic sample. Those with less than 8th grade education were represented by 32% of the His[panic sample compared to only 12% of the non-Hispanic sample. and 46% of the Hispanic sample was employed compared to 43% of the non-Hispanic sample. Both language versions of the survey were contrasted to estimate if there were differences in the responses of Hispanics who selected Spanish versus English for the phone interview, since there were no non-Hispanic Spanish-preferred respondents. No differences were detected by language version for any of the measures except the acculturation scale where the differences were significant ($p = .0000$). The mean score for non-Hispanics was: Depression 5.9 ($SD=5.1$, $N=108$); Anxiety/Worry 41.1 ($SD=25.2$, $N=107$); social burden 24.3 ($SD=19.9$, $N=107$) and for Hispanics was: Depression 7.0 ($SD=6.2$, $N=10$); Anxiety/Worry 50.1 ($SD=24.8$, $N=101$); Social Burden 21 ($SD=28.4$, $N=101$).

Results of Hypothesis Test I—Spanish language-based acculturation will be associated with depressed mood and the psychosocial components of the impact of diabetes on quality of life (anxiety and worry and social burden), such that those with who are less acculturated will be more likely to be negatively affected by the psychosocial implications of coping with diabetes (ie. be more depressed, anxious and worried about diabetes, perceive more social burden).

The percentage of variance accounted for in receiving help with diabetes care by language-based acculturation and the likelihood of depressed mood and the impact of diabetes on quality of life was estimated. Initially, acculturation scores were regressed on scores from the depression and quality of life scores. Subsequently, report of the number of days per week of getting help with diabetes management was regressed on scores on language-based acculturation (language use, media, and/or ethnic social relations) and the diabetes quality of life constructs anxiety/worry and social burden.

Initially acculturation was regressed onto depression, anxiety/worry, and social burden components of the quality of life scale to determine first if those who experience negative psychosocial implications of coping with diabetes are less acculturated, answering the question does psychosocial vulnerability prevent one from acculturating in mainstream society. In other words are those who experience negative psychosocial implications of coping with diabetes more likely to insulate themselves within their cultural group via language affiliation. Acculturation alone is not strongly associated with depressed mood, anxiety/worry, or social burden of having diabetes.

Next planned analyses included building a regression model that would direct acculturation as predicting psychosocial implications of diabetes. First, age (in tertiles), gender, race, marital status, insulin usage, and severity of diabetes were entered into the regression model with the acculturation variable showing that 28.8% variance in depression scores ($F(11, 77) = 3.24, p = .001$) was explained. Variance in the social burden of diabetes was also explained, by 36.7% ($F(11, 77) = 6.00, p = .001$). In this case however, severity of diabetes contributed unique variance ($\beta = 0.57, p = .01$) along with media acculturation ($\beta = -0.32, p = .05$) uniquely explaining variance in the social burden of diabetes. This indicates that Spanish language-based acculturation is relevant when considered in combination with contextual variables, such as gender, family structure, and disease severity with treatment complexity. Disease severity along with media acculturation (preferring English language media) in combination may create more awareness of diabetes impact on others (ie. stigma). It is also possible that individuals who are immersed more into mainstream media are less socially engaged with other family members who are not, removing exposure to a source of diabetes-related social support.

Results of Hypothesis Test II—Getting help with diabetes care, a proxy for social support will be negatively associated with depressed mood and the psychosocial components of the impact of diabetes on quality of life such that those experiencing negative psychosocial implications of coping with diabetes will report obtaining less help with the routine daily management of diabetes. Those who are less acculturated will obtain more help for their diabetes, controlling for psychosocial coping.

When the social support item “Getting help with diabetes care” was regressed on the acculturation subscales, no significant association was detected. This indicates that those who are less acculturated into the mainstream society via language as a proxy were not necessarily receiving more help. However, once gender, race, marital status, household size, severity of diabetes, child-care provision, and depression were included in the model, a significant association was detected $\chi^2(14) = 25.2, (p = .03)$. This indicates that acculturation alone is less relevant than the combination of the competing demands of diabetes, such as disease severity, negative psychosocial implications, and family responsibility in understanding who is obtaining help with the routine management of diabetes. Those with more complexity in competing demands are also obtaining more help.

When “Getting help with diabetes care” was regressed on all of the impact of diabetes on quality of life components (diabetes control, anxiety/worry, social burden, and sexual functioning), significant associations were found for sexual functioning ($p = .002$), diabetes control ($p = .004$), anxiety/worry ($p = .03$), and social burden ($p = .0003$). This may indicate that indeed those whose diabetes poses a greater impact on quality of life are likely to be receiving more help with the routine management of diabetes. No significant associations were found when controlling for gender or marital status. It is likely that it is not lack of acculturation into mainstream society that facilitates receipt of help and support with diabetes, but the disease severity and impact on psychosocial coping and direct impact on quality of life specific to functioning physically and mentally with diabetes that secures help for Hispanic people. This makes sense when one considers the Hispanic values relevant to family life.

Discussion

Language-based acculturation explained little about who is likely to be getting help with diabetes. Getting help with diabetes care was more likely to be the result of the degree to which diabetes impacted quality of life, especially in terms of anxiety and worry, and, social burden. One possible explanation for this relationship is that those who report having routine help from family are also more likely to confront issues relevant to mental and physical functioning in daily life, which may paradoxically stir anxiety and worry. Nonetheless, one may seek help when faced with anxiety and worry as well. Likewise, those who do not have routine help with diabetes care may have more self-efficacy for diabetes self-management, be more independent, and perceive that diabetes impacts their quality of life less so. Significant associations with multidimensional acculturation and psychological distress in Hispanic individuals have been documented elsewhere²⁹, consistent with the notion that depression is due to external factors such as social stressors³⁰. In this study, language-based acculturation did not explain a significant portion of the variance in likelihood of depressed mood, anxiety and worry, or social burden.

Limitations of this study include the strong reliance on language as a proxy for the acculturation measure. Although this measure appeared to be an appropriate fit given that the Los Caminos focus group differences appeared to be language-based, more multidimensional assessments are available, such as the Abbreviated Multidimensional Acculturation Scale by Zea, Asner-Self, Birman, and Buki (2003)³¹. The acculturation scale we used did not differentiate between assimilation and acculturation³². Additionally, we did not specifically ask participants their immigration status, which would be useful for developing a composite combined with race and ethnicity³³ and/or language-based acculturation²⁷. The sample size prevented complete analyses to estimate differences between groups based on racial/ethnic categories (i.e., Hispanic Blacks, Hispanic Whites, non-Hispanic Blacks, non-Hispanic Whites). Thus, we completed three-way comparisons of non-Hispanic Blacks, non-Hispanic Whites, and Hispanics.

The discrepancy in the internal consistency reliability of the English and Spanish versions of the anxiety and worry scale of the Diabetes-39 may have limited our ability to detect effects. All three acculturation subscales showed significant differences between English- and Spanish-speaking respondents. This may be due to the reliance on language as the proxy for acculturation in these scales. Future studies that utilize this scale with large enough samples may benefit from incorporating factor analytic methods to assess the survey validity across languages.

The question about getting help with diabetes care is limited by both the ordinal nature of the response set, it being a single item as opposed to a scale, and the non-specificity of the type of help or its source (i.e., instrumental, emotional, informational, companionship, or validation³⁵). Incorporating questions about how much and what kind of help one needs may expand our inferences about the associations. A more specific measure to assess emotional and instrumental social support would be ideal.

Conclusion

Assessing social support sources and psychosocial adjustment to diabetes is part of the standards of diabetes self-management education³⁵. Results of this study suggest that Hispanic people who have psychosocial implications of coping with diabetes tend to have help with their diabetes most days of the week, irrespective of the degree to which they have acculturated into English-speaking American society. Family members likely step in when they see family members have trouble coping. Although it is possible that some individuals are instrumental in securing assistance, when individuals have depression, they are less likely to engage in problem-solving and tend to be more isolated, lending support for the cultural values of familism. In other words, cultural values benefit those with diabetes irrespective of language-based needs. Diabetes educators may want to ask patients specific questions about the quality of help they receive for diabetes without necessarily targeting interventions based on language preference or proficiency. Those with poor psychosocial functioning who lack family support would benefit from social service agency linkage and support groups may offer an option to improve the impact of diabetes on quality of life. When patients have a high demand load in their personal lives and perceived disease severity and treatment complexity (ie. poor diabetes control, and insulin treatment), more risk of impaired psychosocial functioning may exist. In patients with poor psychosocial functioning, acculturation may have a small influence on the ability to get help with the routine management of diabetes, but by and large it is psychosocial functioning that seems most relevant to whether or not individuals obtain social support with their diabetes.

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Figure 1.
Conceptual Model of interrelationship between acculturation, psychosocial coping, and routine diabetes self-management support