DIABETES IN LATINAS: DEPRESSION, METABOLIC CONTROL AND
THE ROLES OF ACCULTURATION AND SOCIAL SUPPORT

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DEDICATION

To Ana María Gómez de Pineda

1914-1987

Whose end was the result of undiagnosed diabetes

ACKNOWLEDGEMENTS

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DIABETES IN LATINAS: DEPRESSION, METABOLIC CONTROL AND
THE ROLES OF ACCULTURATION AND SOCIAL SUPPORT

by

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Diabetes is steadily becoming an epidemic among Latinos. This study sought to more fully

understand the rarely studied population of Latinas with diabetes and the associations

between and among diabetes, depression, social support, metabolic control and acculturation.

Ninety-six participants from a large publicly funded teaching hospital's community clinic

took part in a brief interview that involved demographic questions, a depression screening

toll, a measure for Latino and non-Latino acculturation, and a measure to assess perceived

social support. The participants agreed to share their most recent metabolic blood sugar

reading. The results demonstrated high levels of depression in the urban Latina with

diabetes. A high number of the participants met the criteria for likely depression (32.3%). A one-tailed Pearson correlation yielded a strong significant relationship between perceived social support and depression ($r = -0.63$, p = 0.00). Additionally, CES-D and a recent HbA_{1c} reading (within six months of the interview) were determined to be significantly related (r(N = 80) = 0.20, p = .03). Exposure to U.S. culture measured in years correlated significantly with diagnosis of depression by a medical professional ($r_s = 0.22$, p = 0.04). There was an additional finding that years of living with diabetes was significantly correlated with being considered depressed (CES-D score $\geq$ 24; [$r_s = 0.23$, p = 0.03]). These and other findings support possible interventions to improve the quality of health for Latinas at an urban publicly funded clinic.

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BAS – Bicultural Acculturation Scale for Hispanics

CES-D – Center for Epidemiological Studies-Depression Scale

DHHS – Department of Health and Human Services

HbA_{1c}– Hemoglobin A_{1c}

ISEL-SF – Interpersonal Support Evaluation List – Short Form

NDEP – National Diabetes Education Program

U.S. – United States of America

CHAPTER 1
Introduction

The purpose of this pilot study is to understand how acculturation might affect the presence of depression in Hispanic diabetic females. As the literature will demonstrate, diabetes and depression have a strong link with each other and often one condition affects the other. The added stress of being a minority female in United States of America (U.S.) society possibly raises the risk that these individuals experience depression. Most previous research has demonstrated that U.S. Latinas who are more acculturated to American life (based on a one dimensional view of acculturation) also have higher indices of depression. However, conflicted findings in regards to one's acculturation level and depressive symptoms prompts this investigation to see if and how acculturation affects Latinas with diabetes mellitus type 2. By collecting data, I hope to understand how Latinas experience diabetes so that more information is gained on this growing segment of the population. In turn, medical professionals can obtain a more complete understanding of what life is like for these women and take appropriate action to ensure these patients receive adequate care. Also, that patients themselves can be more empowered and take more responsibility for their health care, both physical and emotional. Each topic will be covered in depth to assure a full understanding of the various topics that come together to make this study.

CHAPTER II
LITERATURE REVIEW

HISPANIC DEMOGRAPHICS

Hispanics are a diverse group of people that reside in the United States and compose the fastest growing minority in this country. Hispanics may also be labeled as *Latinos* or by their country of origin. Both labels will be used interchangeably in this study. Hispanics comprise of 37.4 million of the U.S. inhabitants (U.S. Census, 2003). Hispanics/Latinos are Spanish-speaking immigrants and their descendants from Mexico, Central America, South America, and the Caribbean. Two of every 5 Hispanics in the United States are foreign born and 50.1 percent of the foreign-born Hispanics entered the country between 1990 and 2002 (Ramirez & de la Cruz, 2002). Mexicans and Mexican-Americans represent the largest portion of the Hispanic population in the United States with over 66 percent. (Ramirez & de la Cruz, 2002). These immigrants usually migrate to the United States for better economic opportunities or as political refugees (a result of political persecution, repression, and civil wars). Texas has the second highest percentage of U.S. Hispanics, with an estimated 7.5 million that composes 34.2 percent of the state's inhabitants (US Census, 2003). The fact that the numbers of Latinos in the United States and Texas are steadily increasing alone is a cause to better understand this population through research. Not until the last two decades has more culturally-minded research been dedicated to understanding Latino behavior. A widely debated topic is health care in the United States and any research that may better understand Latino health is heavily warranted.

Common stressors for Hispanics

Hispanics statistacally as a group face various stressors. Hispanic immigrants and those already residing in the United States encounter many financial problems. Most Hispanics maintain working class jobs with approximately 14.2 percent occupying managerial and professional status (Ramirez & de la Cruz, 2002). Latinos of Mexican origin were the least likely to work in managerial or professional occupations with 11.9 % compared to higher percentages for Cubans, Puerto Ricans, Central/South Americans, and other Latinos (Ramirez & de la Cruz, 2002). The other percentage maintains positions in lower blue-collar service, low white-collar service, and agricultural labor. In order to make ends meet, members of a household may have more than one job or be very resourceful. It is estimated that as many as a fourth of Hispanics in the Southwest United States suffer stress and trauma from the effects of poverty and differential treatment (Vélez-Ibáñez & Parra, 1999). Twenty-one and four tenth percent of all Hispanics live below the U.S. poverty level and 22.8% of Mexicans do so as well (Ramirez & de la Cruz, 2002).

When considering low education rates, Hispanics over 25 only graduated high school 57 percent of the time with Hispanics of Mexican origin with a lower percentage of 50.6. Of all Hispanics only 11.1 percent graduated from college (Ramirez & de la Cruz, 2002). Again, this number is lower for Hispanics of Mexican origin with 7.6% having attained a Bachelor's degree or higher. Twenty-seven percent of Hispanics have less than a 9th grade education (Ramirez & de la Cruz, 2002). The women in the present study often only have a third grade education and a few of them have never been to school.

Many Latinas are able to obtain employment in the United States, which may have been very difficult to do in their home countries. This ability to help provide for the family entails new adjustments. Culture impacts Latinas as they enter the labor force; their participation provides them with several roles and resources, some outside the traditional family and roles expected that normally wouldn't within the culture (Baezconde-Garbanati, Portillo, & Garbananti, 1999). The four authors (1999) stated that this new form of support for the Latino family along with the Latina's ability to contribute financially to the family, may raise her self-esteem and provide "additional emotional and instrumental resources and support to obtain needed goods, services, and health-related information beneficial to her and her family." (p. 306)

In a different aspect, the individual may feel stress from being involved in the work environment, her culture may be unwilling to support taking on the new responsibilities of this new role as wage earner. For example, Salgado de Snyder (1987a) documented that women in Mexico are assigned to very traditional sex roles and these roles are very different in comparison to Mexican men even though women's opportunities in education and professions have increased over the years. As these Mexican women migrate to the United States they bring with them their beliefs, traditions, and culture and may find that these change when confronted with the new culture (Salgado de Snyder, 1987a). Most women that immigrate do so in a whole family or as the partners of males who have already immigrated. Latinas less occasionally make the final decision whether to immigrate or not. In Baezconde-Garbanati et al., 1999, Latinas' living situation is mainly composed of a nuclear family; Latino households defined as a couple with children was 41.3% in 1990, compared to 21.7%

among non-Latino whites. In fact, Hispanics often have families that extend beyond the nuclear family living together in the same household. Or several generations may live in close proximity. This situation often adds more duties to the female.

In addition, some immigrants bring with them the memories of traumatic experiences. Central Americans, Salvadorans in particular, experienced the unique stress of a civil war with myriad human rights violations and either personal or relational ties to violence (Plante, Manuel, Menendez, & Marcotte, 1995). The mentioned stressors associated with being Hispanic/Latino in the United States can add to the chances that a person from this culture cannot adequately take care of their health or fall victim to depression. In addition, the acculturation process can be stressful and adds to the complexity of the Latino's adjustment to living in the United States.

Latino health

Another problem for Latinos is adequate health care. Hispanics in the United States do not attend health centers for appropriate treatment or for help for psychological stressors or problems for various reasons. According to available research, Hispanics have less access to health care and are more likely to receive lower quality health services than white Americans (Aguilar-Gaxiola, Zelezny, Garcia, Edmondson, Alejo-Garcia, & Vega, 2002). The Centers for Disease Control and Prevention reported in 1998 that Latinas are among the underserved population for medical services in the United States (Oomen Owen, & Suggs, 1999). They experience higher rates of disease, receive less preventive care, and have less access to health services and education than non-Hispanic whites (Oomen et al, 1999). In addition, a study by Kingston and Smith (1997) documented that those patients with lower

socioeconomic status, such as Hispanic women which are more likely to have lower incomes than Caucasians, often have poorer outcomes once a chronic disease, such as diabetes, develops because of reduced access to health care, a later diagnosis, and a lower quality of available health services. Being diagnosed with diabetes can only add to the health-care nightmare that the underserved populations have. In fact rates of diabetes are 100% to 120% higher among Hispanics than non-Hispanic whites (Oomen, et al., 1999). Mental health often problems, such as depression, often accompany chronic medical conditions (more in-depth coverage will be mentioned later. For the diabetic Latina there are many researched odds stacked against her favor if she also has depressive symptoms.

Hispanic Mental health

Within the Hispanic community itself, there are differences in utilization of mental health services. Four and sixth-tenths of a percent of immigrant respondents with a mental disorder within the past year reported receiving care from a health specialist compared to 11.9 percent of native-born Mexican Americans in a study by Aguilar-Gaxiola et al. (2002). The rate of visits to medical providers for a mental health problem within the last year was 11 percent among immigrants and 24 percent among U.S-born Mexican Americans (Aguilar-Gaxiola et al., 2002). There may be a cultural stigma in Latin culture that a person shouldn't go outside the family to seek help for problems or the stigma that they will be labeled or seen as "crazy." However, the demonstrated results of social support on depression and/or diabetes make researching this area important. Investigating perceived social support Latinas have in particular would impact the study.

In a study by Alegría, et al. (2002) five factors possibly explained the disparity in Hispanics for not using mental health services. These factors also support and add on the findings of other studies. 1) *Language fluency* is a factor; 2) cultural differences such as *self-reliance* (self-reliance is highly esteemed among Hispanics) (Alegría et al., 2002); 3) *access problems* to Medicaid specialty services in Hispanic neighborhoods may explain why some Hispanics may not be able to access mental health services (Alegría et al., 2002); (4) differences in recognition of mental health problems; and 5) lower quality of mental health care (Alegría et al., 2002). These reasons for Hispanics having problems with mental health services were also supported with a study from Aguilar-Gaxiola et al. (2002). In their report, the most commonly reported hindrances to mental health care were: lack of knowledge regarding where to get treatment; transportation problems; treatment centers not being conveniently located; and lack of Spanish-speaking practitioners. In addition, psychiatric patients with limited English proficiency underutilized specialist outpatient services and that those who did receive such services were less likely to participate in psychotherapy than fluent English speakers (Alegría et al., 2002). Hispanics may not know exactly what a mental health problem is or if their reactions are normal since a mental health problem may "just be a part of life and one deals with it." In the study by Aguilar-Gaxiola et al. (2002), 58 percent of all respondents preferred Spanish as the language they would like to receive treatment. Only 29 Hispanic mental health workers exist for every 100,000 Hispanics in the United States; this number is extremely low when in comparison to the Caucasian rate of 173 Caucasian providers for every 100,000 whites (Department of Health and Human Services [DHHS], 2001). This is a major deterrent to seeking counseling due to the lack of Spanish-

speaking practitioners or ethnically similar practitioners. Even though Latinos do not always utilize mental health services to their full capacity, there is overwhelming evidence that there is a need for care in this population and that more Latinos would seek services if they were nearby and provided them with culturally competent, appropriate care.

Although there have been several studies that have examined depression in Latinos and Mexican-Americans in particular, most studies have compared depressive symptoms for Mexican-Americans or Hispanics with non-Hispanic Whites, whereas other studies compare Hispanic groups and/or other minorities (Cuellar & Roberts, 1997). In general, findings suggest that Mexican Americans and/or Hispanics is that Mexican Americans of varying ages, tend to report a higher number of depressive symptoms than non-Hispanic Whites (Jackson-Triche, Sullivan, Wells, Rogers, Camp, & Mazel., 2000; Golding & Burnam, 1990; Moscicki, Locke, Rae, & Boyd, 1989; Quesada, Spears, & Ramos, 1978; Vernon & Roberts, 1982; Frerichs, Aneshensel, & Clark, 1981). For example, in comparison to African-Americans, Hispanics are more likely to experience higher levels of depressive symptoms at some time in their lives (Heilemann, Lee, & Kury, 2002). In a study by Vega, Kolody, Valle, and Hough (1986), Mexican immigrant women had a high prevalence of depressive symptoms (41.5%); this finding was twice the average reported in previous studies with this population. The population under study in the current research was described by Fisher, Chesla, Mullan, Skaff, & Kanter (2001) in the following way:

> patients who are women, are ethnic minorities, are of low education or income, are unemployed, are single, have many comorbidities or complications, have poor quality of life, have little social support, have many functional deficits, and/or experience negative life events or other chronic stresses have higher rates of depression than patients without these characteristics (p. 1751).

There are mixed findings on this topic however, since some studies showed little or no difference in reporting depressive symptoms by Hispanics in comparison to non-Hispanic Whites (Anthony & Petronis, 1991; Vega, Kolody, & Warheit, 1985). Other studies demonstrated that Mexican immigrants do not have higher rates of psychiatric disorders than non-immigrants (Burnam, Hough., Karno, Escobar, & Telles, 1987; Moscicki et al., 1989; Vega, Kolody, Valle & Weir, 1991).

DIABETES

Another condition that affects health maintenance is diabetes which many Hispanics are diagnosed with every year. In fact, diabetes in Hispanics is reaching epidemic proportions in the United States. Diabetes, diabetes mellitus, is a group of chronic diseases characterized by high levels of glucose in the blood (National Diabetes Education Program [NDEP], 2005). Diabetes results from defects in insulin secretion, insulin action, or both. Type 1 diabetes occurs as a result of little to no production of insulin by the pancreas, leading to hyperglycemia and is treated with insulin injections (Macrodimitris & Endler, 2001). Type 2 diabetes is the type that 90-95% of people with diabetes have and is caused by inadequate use of insulin by the body (NDEP, 2005). This type of diabetes usually develops in adults (although there are rising numbers in children) and is caused by the body's resistance to the action of insulin and to impaired insulin secretion. Most Latinos with diabetes have type 2 diabetes (NDEP, 2005). Insulin is vital for the body to be able to use sugar and if the sugar remains in the blood instead of being distributed to other parts of the body, cells will be starved for energy. Additionally, the build up of glucose causes complications (American

Diabetes Association [ADA], 2005). Such serious complications are cerebrovascular disease, renal disease, vision loss, amputations and premature death. Women are disproportionately affected by Type 2 diabetes with respect to onset and death due to diabetes (Whitttemore, Melkus, & Grey, 2004). Risk factors for developing diabetes is genetic and by lifestyle. Being overweight or physically inactive are major risk factors, as well as having high blood pressure and abnormal cholesterol levels and Hispanic Americans have high rates in both these areas (NDEP, 2005). Type 2 diabetes can be treated with diet adjustments, exercise, medication, and/or insulin injections. However, people with diabetes can take measures to reduce the likelihood of diabetic complications by adhering to a healthy lifestyle of a sensible diet and daily exercise. If a diabetic person can control their blood glucose levels, significant risks can be avoided. For example for every one point reduction in HbA_{1c}, the risk for developing eye, kidney, and nerve disease decreased by up to 40% (ADA, 2005). However, Hispanics have usually poor control of their diabetes as shown by glycemic control (Harris, Eastman, Cowie, Flegal, & Eberhardt, 1999).

Risk for diabetes in Hispanics

Diabetes affects different ethnic groups disproportionately, such as African Americans, Native Americans, and Hispanics. Diabetes among Hispanics varies according to nationality. Compared with non-Hispanic whites, rates of diabetes (diagnosed and undiagnosed) are 50-60% higher in Cuban Americans and 150% higher in Mexican Americans and Puerto Rican Americans (Finn, 1998; ADA, 2005). However, estimates of the percentage of Latinos with diabetes ranges from 8.2% to 9.5% (ADA, 2005; NDEP, 2005 respectively). In Hispanic Americans 20 years and older, 2.5 million have been diagnosed

with diabetes (NDEP, 2005). This number does not include the new face of diabetes

diagnosis: children. Frightening results of clinic-based reports and regional studies indicate

that type 2 diabetes is becoming more common among Latino children and adolescents

(ADA, 2005). Hispanic females that live in the United States have higher diabetes morbidity

and mortality when compared to their non-Hispanic white counterparts and Mexican

nationals (Baezconde-Garbanati et al, 1999). Research in the disparity of health by

Beazconde-Garbanati et al. (1999) of California Latinas found that Latinas in two areas of

California have a much higher prevalence rate of diabetes compared to Non-Latino Whites

(16.5 vs 4.3; 17.9 vs 4.9). However, Latinas in California had lower levels of diabetes than

their counterparts in Mexico (Castro, Gómez-Dantés, Negrete-Sánchez, & Tapia-Conyer,

1996). Additionally, there are many Latinos with undiagnosed cases of type 2 diabetes.

Diabetes treatment factors/barriers for Latinas

Hispanic women rarely have a doctor that supports them to adapt to the new lifestyle

of a person with diabetes (Oomen et al, 1999). Often when patient education is provided for

diabetes treatment, it often lacks cultural sensitivity. Most diabetic instructions given to

Latinas center around an individualistic approach to self-care with having to maintain a

personal routine, including exercise and weight management, a diet to live by and glucose

monitoring (Oomen et al., 1999). Recommendations such as these may be not be in line with

cultural tendencies in areas such as self-efficacy, internal locus of control, and perceived

health value. They may be even culturally inappropriate for Hispanics, especially Hispanic

women, as well as other collectivist populations that emphasize cooperation rather than

competition and family rather than self (Oomen et al., 1999). In addition, the traditional role

that many Latinas adhere to may hinder them from reaching an optimal health goal since

monitoring health requires focusing on the self, or autonomy, and may be in conflict with

their cultural norms (Adams, 2003). Hispanic mothers put themselves as last priority and

often deny themselves. Caudle (1993) discovered that the Hispanic vision of motherhood

(with children being a prime concern) among Puerto Ricans remained unchanged despite

one's acculturation or education levels. This demonstrates that even with exposure to the

United States culture, strong beliefs (such as the role of a mother) run deep and can have

serious implications on many Latinas and their health. One example of how this cultural

belief affects the health of a diabetic Latina is that she sees her need to buy appropriate foods

for her diabetic diet is selfish since no one else in the family may like or eat them and

continues to eat foods that increase glucose levels (Oomen et al., 1999). The fact that the

family is a large portion of a Latina's identity and other cultural tenets are often overlooked

in diabetes care for the Hispanic woman (Oomen et al., 1999). Studies have been performed

that investigated how Latinos viewed their diabetes treatment and the positive effects of

culturally sensitive treatment (Oomen et al., 1999). Knowledge of the Hispanic female's role

in her culture gives insight into her health care conceptions. Additionally, living in the United

States may entail new stressors that could possibly affect a Latina's health in negative ways.

Diabetes and stress

Health conditions are complicated since stress and diabetes have a strong link. One

often affects another. There may be a physical reaction occurring in a person who

experiences stress and the body's physical reactions can make maintaining healthy glucose

levels more difficult. Type 2 diabetes has been associated with increased levels of cytokines,

proteins whose numbers increase with a stress response, the acute phase response (APR). The APR is one of the body's immunologic reactions to stress and also occurs naturally in response to physical injury, but has also has been believed to be involved in the onset of type 2 diabetes. Major stress is thought to induce an APR and thus may induce or further complicate a diabetic condition (Black, Markides, & Ray, 2003). One study reported that a type of macrophage migration inhibitory factor is elevated during stress and may affect insulin secretion in the body (Waeber, Calandra, Bonny, & Bucala, 1999). Thus, stress affects a diabetic's health more negatively than other individuals. Likewise, diabetes may be causing additional stress on an individual.

Research has shown that being diagnosed and needing to comply with strict treatment regimens such as diet guidelines and monitoring blood glucose are sources of stress in addition to the symptomatic stress (Macrodimitris & Endler, 2001; Fisher et al., 2001; Ludman, Katon, Russo, Von Korff, Simon, Ciechanowski et al., 2004). In fact, women have more difficulty with diabetes regimens, have poorer glycemic control and have poorer outcomes such as quality of life, reported daily stressors, and level of anxiety in comparison to men Whittemore et al., 2004). Researchers demonstrated that diabetes intrusiveness had both a direct effect on depressive symptoms and an indirect effect mediated by a person's personal control of their disease (Talbot, Nouwen, Gingras, Belanger, & Audet, 1999). Illness intrusiveness in this study was closely related (.63) to depressive symptoms in participants with type 2 diabetes. Those patients that had been diagnosed with diabetes for a longer time reported more complications. In addition, participants who reported that they had been affected by major life events perceived higher levels of diabetes intrusiveness in their

lives (Talbot et al., 1999). Stewart, Lee, Waller, Hughes, Low, Kennard, et al. (2003) found

that when examined, patients who demonstrated difficulty in managing diabetes were found

to also have emotional problems.

Diabetic stressors for Latinos

A link has been demonstrated between stress and depression levels and the presence

of type 2 diabetes. Some studies have examined general stress and the quality of life within

the Latino diabetic population. In Fisher, Chesla, Skaff, Gilliss, Mullan, Bartz et al. (2000),

both Latino and European-American patients experienced stress due to low education,

functional impact of diabetes, and financial stress and these stressors were predictive of

depression. In addition, the researchers discovered that rates of likely depression were found

to be 31.6% in the Latino diabetic population as compared to 17.2% among White diabetic

patients. Most likely, Latino patients experience the stress of financial problems, have low

levels of education and thus as a group are more likely to be prone to depression and its

effects.

Since there are few studies on diabetes and depression in Latinos, the summary of a

qualitative study is included to add to the literature on the subject and to give insight to what

may be some of the reasons Latinos experience depression more often than other diabetics.

A qualitative study by Adams (2003) documented the meaning of the experiences of

Latinas diagnosed with Type 2 diabetes by interview method. The investigator's concern was

what it meant to the participants to live with the chronic illness. This author found several

underlying themes that were often repeated by the participants. For example, they attributed

their diagnosis of diabetes to a stressful event that had occurred within a year of the

diagnosis; they were more motivated to adhere to regimens when appropriate resources were available and when the patients had a respectful and trustful relationship with their providers; the women experienced depression, a lack of energy, and hunger which in turn made them feel less in control of the situation; they were overly concerned with food since there were several conflicts with preferred cultural foods; family and friends of the women often focused on their disease rather than on them as a person; and a resource for them was their religion (Adams, 2003). In addition, the Latinas saw the control of their disease as being external, which was consistent with Latino cultural and religious beliefs (Adams, 2003). The participants also described that they disliked the scolding or scare tactics they experienced from their provider in regard to their diabetes education and/or treatment; instead, they stated that they often reacted positively to a provider who demonstrated care and stated that this was more important than the ethnicity of the provider (Adams, 2003). In addition, the Latinas stated that they especially missed their cultural foods around holidays or at a family gathering:

> 'its' extremely difficult to have diabetes as a Latina. You, we Puerto Ricans, love our *pasteles* (meat pies), rice, beans, chicken, other meats. But, look, the diabetic can't eat any of that.' '*En casa a mi hijo le gusta su comida muy bien hecha.* (At home, my son likes to have his foods cooked a certain way.) So from time to time, he gets irritated and I have to remind him that I'm diabetic. It's important to have peace in the house.' (p. 261)

COMORBIDITY OF DIABETES AND DEPRESSION

Conceptualization

The relation between diabetes and depression has been labeled as comorbidity. This definition of comorbidity can take place in several ways (Schulberg, McClelland, & Burns, 1987). Ban, Gay, & Wilson (1983) and Dietch & Zetin (1983) speculated several methods on

how the two are related: 1) depression may mimic a recognized medical disorder; 2) depressive symptoms may be indicative of an underlying medical disorder; 3) depressive symptoms may occur as a reaction to the impairment created by a medical disorder; or 4) a depression may occur at the same time with an unrelated medical disorder. However the two are related, and there are many studies demonstrating that diabetes and depression do have a strong relationship.

Studies have shown that comorbid depressive symptoms are particularly prevalent among adults with diabetes (Black, 1999). Depression has been shown to negatively affect the quality of life in individuals to the effect that it is along the same lines as the effect of insulin-dependent diabetes on the quality of life (Gaynes, Burns, Tweed, & Erickson, 2002). The occurrence of depression among diabetics is almost two to three times higher than in people not living with a chronic illness such as diabetes (Culpepper, 2002; Anderson, Freedland, Clouse & Lustman, 2001). Throughout psychology is it a widely known fact that depression itself is almost twice as common in women than in men. Griffith and Lustman (1997) made the conclusion that women with diabetes are at a greater risk of developing depression than men with diabetes or women without diabetes. The health risks associated with the combination of these two conditions may be greater than the effects of either one.

Depression effects on people with diabetes

Diabetes and depression are linked, but what are the effects of having both conditions? Depression may make healthy behaviors, such as checking glucose and exercising, more difficult for patients with diabetes. In addition to the findings that diabetes and depression are related, other studies have gone more in depth to see what symptoms were

affected or more prevalent in the adult diabetic with depression. Depressive symptoms have been shown to be associated with poor glucose control, increased diabetic symptoms, unfavorable treatment adherence, and increased likelihood of the emergence of diabetic complications (Black, 1999; Culpepper, 2002; Ciechanowski, Katon, Russo, & Hirsch, 2003; Lustman, Anderson, Freedland, De Groot, Carney, & Clouse, 2000). In addition, depression occasionally leads to increased consumption of food and often to a lack of desire to exercise in addition to decreased libido; these behaviors may make the living with diabetes even more difficult (Finn, 1998).

The higher Body Mass Indexes (BMIs) of depressed individuals with diabetes in comparison to nondepressed diabetics is also a risk factor for cardiovascular complication due to the nature of diabetes. The depression itself may even lead to diabetes in some individuals since higher BMIs, (as a result of poor eating habits and nonexistent exercise) can be a risk factor for the chronic condition (Finn, 1998). For women, having symptoms of either diabetes or depression of the combination of the two may involve feelings of fear, anger and hopelessness (Finn, 1998). A study by Whittemore et al. (2004) of women with diabetes focused or reported depressive symptoms. The women in their study reported moderate diabetes-related distress, yet fairly high support and confidence in living with diabetes (Whittemore et al., 2004). However, the mental and physical health scores for the sample on various measures were below United States population averages (Whittemore et al., 2004). In addition, 44% of their sample reported having a depressed mood "a lot or some" of the time. A history of depression was reported by 34% of women in the sample and 94% of this group were taking medication for depression at the time of the study

(Whittemore et al., 2004). Depression may make symptoms of diabetes less tolerable and may lower the threshold for reporting diabetic symptoms (Lustman, Griffith, Clouse, & Cryer , 1986).

A meta-analysis by Lustman et al. (2000) demonstrated larger effect sizes for studies that used standardized interviews and criteria based diagnoses rather than self-report measure for depression. The authors believed that the relationship may be stronger in patients with clinical levels of depression (Lustman et al., 2000). In various studies, the high scores on a depression measure were associated with various diabetic symptoms of hyperglycemia and hypoglycemia, thus indicating poor glucose control (Vand der Does et al., 1996; Lustman et al., 2000; Ciechanowski et al., 2003; Anderson et al., 2001). In a study by Ludman et al. (2004), patients with major depression had significantly more diabetes symptoms than participants without major depression after adjusting for age, gender, marital status, education, racial ethnicity, clinic, physiological measures, number of diabetes complications, medical comorbidity, length of time living with diabetes, type of diabetes, and diabetes treatment intensity (Ludman et al., 2004). Even after controlling for the confounding variables, the patients with major depression were almost two to five times more likely to report the ten symptoms of diabetes the researches assessed in the large population-based sample (Ludman et al., 2004). They also demonstrated that the overall number of diabetic symptoms was related to the number of depressive symptoms (Ludman et al., 2004).

In Ciechanowski, Katon & Russo (2000), depressive symptoms were associated with decreased adherence to diet and more lapses in refills of oral hypoglycemic medications. Often depressive symptoms will return and the period of psychopathology may be longer. In

addition, complications from diabetes such as neuropathy, retinopathy, and nephropathy have all been associated with increased rate of depression (Culpepper, 2002). In Leedom, Meehan, Procci, & Zeidler (1991), 74% of patients with diabetic complications scored within a clinical range of depression while 35% of those patients with complications score within the range of severe depression. Diabetic individuals with depression experience a more continuous course of psychological distress. In Gaynes et al. (2002), depression amplified the feelings of less than adequate performance in life's roles for non-insulin dependent diabetic patients. Diabetic individuals who experience clinical depression or high levels of depressive symptoms are at considerable risk for relapse and recurrence of depressive symptoms (Black, 1999; Culpepper, 2002).

Anderson et al (2001) Meta-analysis

A meta-analysis by Anderson, Freedland, Clouse, & Lustman (2001) of 42 studies demonstrated that the odds of depression were significantly higher for Type 1 and Type 2 diabetics than for the nondiabetic participants in ten controlled studies. In addition, seven controlled studies in their analysis focused on prevalence of depression in women and men with those that had diabetes (women and men) having significantly higher levels of depression than controls with no diabetes (Anderson et al., 2001). The researchers also evaluated eighteen studies that checked for environmental differences. The participants who had diabetes in studies in clinical and community environments also had significantly higher rates of depression than those individuals that did not have diabetes (Anderson et al., 2001). Eighteen controlled studies were also examined on how depression was measured (clinician interviews and diagnostic criteria or self-report measures with threshold scores). Findings

were that the odds of depression were significantly elevated in patients with diabetes over

controls regardless of the method to rate depression. This finding is controversial to the

finding in Ludman et al. (2004). It is interesting that in this meta-analysis the researchers

commented that using diagnostic interviews may be excluding clinically relevant data since

the self-report measures are also able to identify subclinical levels of depression or general

distress. The researchers also noted that the incremental increases in the odds of depression

did not differ as a function of type of diabetes, sex, subject source, or method of depression

assessment (Anderson et al., 2001). Women had an increased prevalence of depression in

comparison to men (as similar to in the nondiabetic population); the combined prevalence

was significantly higher in women with diabetes than in men with diabetes when data was

combined from the controlled and uncontrolled studies (Anderson et al., 2001). Almost one

in three diabetic participants in the clinical studies of the meta-analysis had depression at a

level that impaired function and quality of life, adherence to medical treatment and glycemic

control, and increased the risk of diabetes complications (Anderson et al., 2001). The

researchers came to the conclusion that "diabetes doubles the odds of depression" (Anderson

et al., 2001 p. 1074). In addition, the researchers commented on the fact that ethnicity was

not documented in many of the studies, which in most of them, Caucasians were participants.

Treatment

There are few studies that examined how to treat people with diabetes and depression.

One study that investigated the treatment effects of depression on people with diabetes

demonstrated significant results. In Lustman, Griffith, Clouse, Freedland, Eisen, Rubin et al.

(1997) diabetic patients with depression that received anti-depressant medication had

significant cases of remitting depression and that with the improvement there was also a short-term improvement in glycemic control. Another study was performed that examined the course of depression in the participants of this study. In Lustman, Griffith, Freedland & Clouse (1997), 92% of the participants had at least one episode of major depression during the follow-up interval. An average of one episode of clinical depression per year was demonstrated by the participants (Lustman, Griffith, Freedland et al., 1997). When the authors conducted their study, 64% of the patients were diagnosed with major depression and the glycemic control was significantly worse in this group compared to those patients without depression (Lustman, Griffith, Freedland et al., 1997). An interesting study would be a treatment study that focused on women.

Diabetes & Quality of Life

Other studies have focused on the patient's quality of life rather than a diagnosis of depression. This preference may be that the quality of life is one way to measure depressive features and their effect on a person's daily life or how they view their quality of life. The extent to which diabetes and its ramifications make's one's life more taxing is likely to serve as an important factor for mental health (Talbot et al., 1999). One study by Robles García, Cortázar, Sánchez-Sosa, Páez Agraz, & Nicolini Sánchez (2003) focused on the applicability of a measure on the quality of life in Mexican national type 2 diabetics. The authors also gave a translated version on the BDI and the Beck Anxiety Inventory (BAI) to correlate with the Diabetes Quality Of Life scale (DQOL) (Robles Garcia et al., 2003). They discovered significant differences regarding quality of life on a subscale of "preoccupation for future Diabetes events" between women and men, with women demonstrating a poorer quality of

life (Robles Garcia et al., 2003). In addition, several subscales of the DQOL and the total

scare were significantly correlated with the BDI and the BAI (Robles Garcia et al., 2003).

The authors hypothesized that the depression and anxiety measures were related with the

deterioration of the quality of life in patients with diabetes.

Depressive symptoms in Hispanic diabetics

Very few studies have looked at diabetes in Hispanics in regards to depressive

symptoms. In a study by Black (1999), older diabetic and nondiabetic Mexican Americans

were assessed for depressive symptoms by the Center for Epidemiologic Studies of

Depression (CES-D) in addition to obtaining information about their health status and

diabetes-related complications. The results demonstrated there was a significant difference in

depression score between diabetic and non-diabetic with 31.1% and 24.9% respectively

(Black, 1999). Rates of comorbid chronic health conditions for diabetic participants were

more common and more prevalent among those with high levels of depressive symptoms

(Black, 1999). These researchers believed that the stress associated with diabetes and

depression may be greater among Mexican American adults (Black, 1999) than non-Mexican

Americans. In addition, the diabetic group had more U.S. born participants (59.8%) than the

non-diabetic group (54.3%). With regards to place of birth having an effect, the rates of

depressive symptoms were significantly higher for U.S.-born diabetic individuals in

comparison to the non-diabetic group. Differences in depressive symptoms among Latinos

based on demographic factors such as place of birth will be discussed later in acculturation.

Later in a study by Black, et al. (2003), the investigators used data from the Hispanic

Established Population for the Epidemiologic Study of the Elderly (EPESE) Survey to

examine diabetes and depressive symptoms with the CES-D and the Composite International Diagnostic Interview for diagnoses of depression. Forty-seven percent of the Mexican-American subjects had diabetes with minimal depressive symptoms while 13.1% had diabetes with minimal depression and 6.6% had diabetes and minor depression; only 2.8% of subjects had diabetes without depressive symptoms (Black et al., 2003). Further analyses lead to the conclusion that the risk of unfavorable outcomes (such as increased mortality, complications and disability) increases with the severity of depression present in a diabetic person (Black et al., 2003). The researchers believed that the depression could affect the diabetic patient in a couple of ways. One was that the depression decreases an individual's motivation to maintain healthy behaviors that are meant to prevent the worsening of diabetes (Black et al., 2003). Another way that depression was thought to affect a person with diabetes was that the nuerohormonal or neurotransmitter abnormalities present in a depressed person may lead to increase in vulnerability to diabetes (Black et al., 2003). Another postulation by this group was that depression and diabetes may share common pathogenesis.

Fisher et al. (2001) wanted to investigate if having a different culture lead to any differences in reports of depressive symptoms by American Caucasian and Latino diabetic participants. It was found that Caucasians were less depressed and less anxious than Latinos (Fisher et al., 2001). In fact, 31.6 % of Latino diabetic patients reached the criterion for likely depression. In their study, they also discovered that there were no gender differences in rates of likely depression across and within ethnic groups (Fisher et al., 2001). The correlation between depression and anxiety was .80 for Latinos with diabetes and .73 for Caucasians with diabetes (Fisher et al., 2001). In addition, confounding variables did not significantly

predict depression or anxiety for Latino or Caucasian diabetics (Fisher et al., 2001). In addition, the Caucasians with diabetes were older, had higher levels of education, and more income than the Latino participants with diabetes. They found that patient education, functional impact of diabetes, and financial troubles independently predicted CES-D scores for both ethnic groups, thus demonstrating a cultural difference (Fisher et al., 2001). It was interesting to note that neither HbA_{1c} or BMI significantly predicted depression for the Latino or European American patients (Fisher et al., 2001).

These studies add much to the literature on diabetes and depression in Latinos, but focus on differences between groups based on ethnicity or diagnosis of diabetes. Within-group differences of Latino diabetics would be interesting to investigate. The added fact that the literature demonstrates higher rates of depression in women led to the impetus to study this population.

A recent study by Gross, Olfson, Gameroff, Carasquillo, Shea, Feder et al. (2005) focused depressive symptoms and glycemic in Hispanic patients. They assigned the participants, based on their depressive measure score, to a no depression, minimal to mild depression, or moderate to severe depression groups. In their study, 33.5% of the Latino patients had scored within the moderate to severe depression range of a depression screening tool. The characteristics of this group of depressed individuals were mostly women with a low income and more likely to live alone (Gross et al., 2005). Additionally the researchers found that the more depressed participants were more likely to have poor control over their diabetes when compared to participants that did not have a score indicating depression and that this finding was specific to the Latino participants. This finding reflects associations

between depressive symptoms and poor glucose control (Lustman et al., 2000; Anderson et al., 2001) However, no such finding existed in Ciechanowski et al., (2000).

Social support for diabetics

With depression comes the desire for wanting to talk to someone, and many people, including those with diabetes, rely on existing social networks. One study by Connell, Davis, Gallant, & Sharpe (1994) wanted to examine how social support and cognitive appraisal affected depression in individuals with diabetes. The researchers hypothesized a model that showed direct and indirect relationship between general and diabetes-specific social support, social cognitive variables, the perceived threat of diabetes, depression, and demographic and health background variables (Connell et al., 1994). They were assessed for the extent of how their health interfered with vigorous and moderate activities, self-efficacy, outcome expectancies, threat of diabetes, perceived availability of social support, diabetes-specific support received, and depression. Participants that had better physical functioning perceived a greater availability of support, experienced less threat from the disease, and had less depressive symptoms (Connell et al., 1994). Participants that perceived they had support were less likely to be depressed or be threatened by their disease (Connell et al., 1994). In the study, self-efficacy and diabetes-specific support were not significantly associated with depression when tested in the full model (Connell et al., 1994). One would think that self-efficacy and diabetes-specific support would help prevent an individual from falling prone to depression or alleviate symptoms of depression. This finding is contradictory to another study (Stewart et al., 2003) that emphasizes that self-efficacy has an impact on diabetes control and depression.

ACCULTURATION

Definition and Conceptualization

When an immigrant arrives to the United States from a Latin American country, he/she realizes that the United States has different customs, beliefs, and traditions in combination with a different language. Acculturation is the process of cognitive and behavioral change a person undergoes who lives in a multicultural society or who come in contact with a new culture due to immigration, colonization or other important political changes (Marín, 1992). Acculturation can be viewed as a societal process or an individual process. In psychology, acculturation entails the individual changes of attitudes, beliefs, and behavior when an individual has contact with one or more different cultural groups (Marín, 1992). He suggested that the acculturation process can take place at different levels. The most superficial would be memory of historical facts about the mother country such as names of important heros and the words to the national anthem. Preference for media and food have been suggested to occur at the superficial level. For example, an acculturating Hispanic would eat less often *tamales, menudo,* and *pozole* and begin to eat foods such as hamburgers or deli-style sandwiches. The second level would involve language preference and use. Other indicators would be ethnicity of social networks such as neighbors, friends, and coworkers. The third most significant level of the acculturation process involves changes in a person's belief system such as their values and norms, i.e. the importance of family unity. The acculturation process can be stressful and is included in this literature review since every Latino person in the U.S. has some level of each culture. The stress and differences based on

acculturation level have been researched and linked to depression, which is a major focus of this current study.

A person of Hispanic/Latino descent either arrived or had a member of their lineage arrive to the United States, whether they be first, second, third, or fourth, generation. Whatever the generation, acculturation had and continues to have an impact. This process has been defined in different ways. 1) Acculturation involves the social and psychological exchanges when there is continuous exposure and interaction between people from different cultures (Berry, 1997; Ryder, Alden, & Paulhus, 2000). Some researchers believe that acculturation 2) occurs when one culture comes into contact with a host culture and is affected on several domains (attitudes, values, behaviors, and identity) while having no impact on the host culture (Cabassa, 2003). This definition suggests a single continuum with the poles representing the native and host culture, thus there is a loss in one area as a person acculturates by moving toward the other area (Cabassa, 2003). This view assumes that individuals are expected to conform to the new group (Marín, 1992). However, researchers who adapt this model and use this when collecting data may not be aware that an individual may be capable of balancing two separate domains during the acculturation process (Cabassa, 2003). Results from studies that based acculturation on this model could be interpreted as invalid since they used proxies or instruments for acculturation that did not take the bidimensional framework into account. How acculturation is defined and how it is measured may have affected the findings to see if acculturation has an impact on depression in some manner.

Since some researchers have identified the limitation of a unidimensional model, there has been postulated a bidimensional model or process of acculturation. In this view, acculturation has two independent dimensions: the maintenance of the culture of origin and adherence to the host culture (Cabassa, 2003). This has been labeled integration by Berry & Sam (1997) or biculturalism by other researchers. This is a newer way of viewing the acculturation process. In this framework, the individual makes choices and/or is acted upon how they will relate with their mother culture and the new culture. A bidimensional model postulated by Berry & Sam (1997) consists of four different acculturation strategies: assimilation, separation, integration, & marginalization. Assimilation is when a person does not want to associate with their mother culture and instead chooses to highly adapt the host culture. Separation is when an individual chooses to highly identify with their culture of origin while rejecting the host culture. Integration, or biculturalism, is when an individual highly identifies with their culture of origin as well as with the new host or dominant culture. Marginalization is a category for those that do not want to associate or are excluded by force with either their mother culture or the new host culture (Cabassa, 2003; Berry & Sam, 1997). It has been noted that the bicultural acculturation strategy appears to be the most optimal (Berry & Sam, 1997).

In addition, some researchers believe cultural changes occur differently within people from different generations. Younger immigrants appear to take on the traditions and language of the host country faster than older relatives, possibly due to the fact that children and adolescents are at a stage where absorption of new material is faster and longer-lasting (Marín, Sabogal, Van Oss-Marín, Otero-Sabogal, & Pérez-Stable, 1987).

There are three patterns to acculturation in regards to generational differences; the first is *accommodation* where Hispanics acquire attributes of non-Hispanics (Triandis, 1994). Then there are cases of "overshooting" (Hispanics become even more extreme on some trait than non-Hispanics) (Triandis, 1994, p. 38). *Ethnic affirmation*, the last pattern, is when Hispanics that have been in United States for several years become more like their culture of origin on some traits than some Hispanics who have recently immigrated (Triandis, 1994). An example of this may be that the children of immigrants (second generation) are quick to disassociate with their mother culture yet adapt to the culture of local children in order to gain acceptance. However, their children (third generation) may be comfortable with their ethnic heritage and even affirm it or try to find out more and learn their "lost" language (Triandis, 1994; Cabassa, 2003).

Gender differences affect the acculturation process as well. Women seem to have more negative attitudes toward assimilation and assimilate slower than men. This may be apparent as traditional female roles mandate the maintaining the traditional culture in the education of their children or may be due to the isolated nature of some immigrant women from the host society (Ward, 2001).

Measures

Two measures are currently available for a bidimensional assessment of acculturation: the Acculturation Rating Scale for Mexican Americans-II (ARSMA-II; Cuéllar, Arnold, & Maldonado, 1995) and the Bidimensional Acculturation Scale (BAS; Marín & Gamba, 1996). Marín (1992*)* highlights the fact that most measures for acculturation only assess changes at the superficial or intermediate level without evaluating

values and norm. However, most researchers that measured differences based on ethnicity or acculturation mentioned in this study used demographic variables to correlate with acculturation. Also Hispanics were often clumped together in one group and were made homogenous in many studies were in-group differences may have affected results. Methods of approximating acculturation rates can be based on place of birth and number of years living in the United States (DHHS, 2001) since most measures correlate with time in U.S.. Length of time in the United States, place of birth, and language have often been proxy measures for acculturation (Heilemann et al., 2002).

Differences in health based on acculturation

The findings in differences in health and depression based on acculturation are noteworthy and interesting, and applicable to the current study. A study by Finch, Hummer, Kolody, & Vega (2001) measured acculturative stress in Mexican-origin adults who live in California. Their findings demonstrated that a foreign country of birth (Mexico) was associated with lower levels of reported chronic health conditions. In the study, the researchers measured acculturative stress and level of acculturation with a unidimensional model and also compared subjects by country of birth in regards to social support and depressive symptoms (Finch et al., 2001). Acculturation and two forms of acculturative stress (legal status and language conflicts) demonstrated no effect on chronic health condition (Finch et al., 2001). However, discrimination was related with poor physical health. In addition, instrumental support was significantly associated with less occurring chronic health conditions while emotional support was not related (Finch et al., 2001). Participants who had

chronic health problems and depressive symptoms were more likely to have reported being

discriminated against and have lower ratings of health (Finch et al., 2001).

In one study, immigrant Hispanic women showed lower rates of health problems,

such as smoking, alcohol abuse, and infant mortality, than U.S.-born Hispanic women,

African Americans, and non-Hispanic Whites (Baezconde-Garbanati et al., 1999). However,

U.S.-born Latinas in California have lower rates in diabetes than women in Mexico

(Baezconde-Garbanati et al., 1999).

The effects of acculturation on health appear to have various conclusions since there

may be a possible interaction of acculturation with age. In one study, middle-aged Latinas

had higher health risks associated with acculturation than older Latinas (65 years and older);

it was discovered that the middle-aged, more acculturated Latinas engaged in less

preventative health measures than their immigrant, less acculturated, counterparts (Cantero,

Richardson, Baezconde-Garbanati, & Marks, 1999). In a mental health study by Vega,

Kolody, Aguilar-Gaxiola, Alderete, Catalano, & Caraveo-Anduaga (1998), Mexican

immigrants in rural and urban settings had one half the total DSM-IIIR psychiatric disorders

when compared to their more acculturated, U.S. born counterparts.

Looking at health differences based on acculturation has had mixed results. Many of

the studies that looked for differences based on acculturation, assumed level of acculturation

based on nation of birth or years living in the United States (Hovey & King, 1997; Salgado

de Snyder, 1987a; Vega et al., 1991; Baezconde et al., 1999; Heileman et al., 2002; Burnam

et al., 1987; Golding, Karno, & Rutter, 1990; Sorenson, Rutter, & Aneshensel, 1991;

Alderete, Vega, Kolody, & Aguilar-Gaxiola, 1999). Or researchers viewed acculturation as a

one-dimensional scale. For example, if a person becomes more acculturated (to their new host culture) they then lose part of their parent culture (Alderete, et al., 1999; Finch et al., 2001; Golding & Burnam, 1990; Hovey & Magana, 2002; Masten, Penland, & Nayani, 1994; Miranda & Umhoefer, 1998; Smart & Smart, 1995; Valentine, 2001). A different conceptualization of the process of acculturation is two-dimensional. *Few studies have used this two dimensional framework in their studies.* One study used this newer approach that developed after 1995 to assess differences in depression based on acculturation (Cuellar & Roberts, 1997).

Acculturation & depression

In addition to the forementioned stressors for Latinos, being in an environment where there are people with Hispanic heritage that may discriminate against them may be even more stressful since this could be confusing. Such a thought may be, "These people look like me, yet they reject me for my language/accent or place of birth, why?" Differences in acculturation rates or levels may cause Hispanics to view one another differently within their own group. As in all areas of society, there is discrimination within the Latino population. For example, more acculturated individuals will want to exclude those that do not have the same cultural tenets and may assign derogatory names to this group, and those that have recently arrived and do not wish to assimilate may dislike the more assimilated United States Hispanics (often referring to them as "Chicanos"). Life in the United States has been described by some Hispanics as more difficult than life in the native country because they encounter different problems and dealing with new problems (such as these) may cause them stress.

Higher levels of depression in acculturated Latinos

Research with Mexican-Americans demonstrates that those who are born in the United States experience higher levels of depressive symptoms and when diagnosed with clinical depression, their episodes are usually longer (Heilemann et al., 2002). In the same study, those immigrants that have been in the United States for thirteen years or more have been associated with major depressive episodes. Findings from a 1987 study by Burnam et al. demonstrated that Mexican-Americans born in the United States had a higher prevalence of depressive orders than immigrant Mexican Americans. In addition, Golding & Burnam (1990) found that U.S.-born Mexican Americans, reported more depressive symptoms than immigrant Mexican Americans despite the fact that the Mexico-born participants had lower incomes and reported more stress and less social support. Statistical analyses of their data suggested that the United States-born Mexican Americans were more vulnerable to the effects of low acculturation (based on a unidimensional scale) than were Mexican Americans of Mexican birth. One study by Alderete, et al. (1999) studied depressive symptoms in Mexican migrant farmworkers. They found that a disrupted marriage, lower age, medium to low levels of support, high acculturation, and high discrimination, language conflicts, and legal status problems were factors that yielded an elevated depression score (Alderete et al., 1999). Participants with high levels of acculturation (as indicated by a unidimensional measure) had more than six times the risk of reaching CES-D caseness (Alderete et al., 1999). Time in the United States did not increase the risk of depressive symptoms. However, Alderete et al. (1999) used a migrant worker sample which may explain why this difference was not present as was in previous studies since migrant workers often come and go

depending on crop seasons. The CES-D caseness rate was 20.4% in the entire sample yet there were no gender differences in their sample (Alderete et al., 1999).

It seems that U.S. birth also affects Hispanic women in regard to depression. Higher levels of depressive symptoms were found in women of Mexican descent who had been born in the United States than in Mexico-born women (Golding, Karno, & Rutter, 1990; Sorenson et al, 1991). Immigrant Latinas in California were found to have lower rates of depression in comparison to U.S.-born Latinas and in comparison to African Americans and non-Hispanic Whites (Baezconde-Garbanati, 1994; Vega et al., 1998).

Researchers of Heilemann et al. (2002) hypothesized that location during particular stages of a Latina's life might explain the relationship between depressive symptoms and length of time in the United States and country of birth. In an earlier work by Heilemann (1996), Latinas reported in interviews that exposure to daily life in the United States during their childhood influenced their ways of coping with various difficulties and stressors. The women reported stressors for them were traumatic events, family relationships, conflicting cultural expectations, and shifting values. This introduction to U.S culture at specific age groups or development levels is similar to what Cantero et al., (1999) postulated. Their study found that middle-aged Latinas had higher health risks associated with acculturation than Latinas 65 and older (Cantero et al., 1999). In Heilemann et al. (2002) the main objective of the study was to describe the level of depressive symptoms in a sample of low income, urban women of Mexican descent in relation to acculturation. The majority of their sample scored high enough on the CES-D indicating they were at risk for depression. More women in their sample reported depressive symptoms than had been documented in previous studies with

Latinas in the U.S. (Vega et al., 1986; Moscicki et al., 1989; Golding & Burnam, 1990). The

majority reported depressive symptoms at a level that suggested risk while over a quarter

were at very high risk for depression (Heilemann et al., 2002).

There were no significant differences in depression scores when the Latinas were

compared by place of birth or language preference. In the study, women who had reported

moving to the United States during childhood had significantly higher depressive symptoms

than those who were not (Heilemann et al., 2002). Although these women were more likely

to report depressive symptoms, they were more likely to speak English and had significantly

higher income compared to Latinas who had not experienced life in the US during childhood

(Heilemann, 2002). The authors postulated that "women with no exposure to the US in

childhood may report a higher sense of satisfaction with life because, unlike other women,

they accomplished what may be considered a very important goal of immigrating to the US."

(Heilemann et al., 2002, p.179). Crosby's theory of *relative deprivation* as mentioned in

Golding & Burnam, (1990) stated that the focus of social comparison for women who

immigrate to the US as adults may be counterparts in Mexico, while Hispanic women raised

in the US during childhood may be more likely to compare themselves with all U.S. citizens.

Therefore those women raised in the United States may view themselves or their situation as

disadvantaged compared with other American women. This feeling may contribute to a lower

satisfaction with life and an increased number of depressive symptoms (Heilemann et al.,

2002). However, findings of Heilemann et al. (2002) reports that differences due to

acculturation were measured by a proxy variable of time in the United States, which

according to the authors, demonstrated the individuals being acculturated to the United States

without measuring the participants' individual acculturation based on a scale. The authors did not present information as a unidimensional or bidimensional process on how they postulated individuals could react when being exposed to a new culture.

Ways Hispanic women react to the acculturative process are varied and often stressful. Some researchers believe that Hispanic women may be at a greater risk for depression during the actual acculturation process since women may be expected by males or older females to maintain the native country's traditions, customs, and language in the family (Masten, Penland, & Nayani, 1994). The researchers believed that psychological impacts from acculturation could be viewed in two ways, a unidimensional version or a bidimensional/bicultural version. Those individuals that would remain in their native culture when confronted by a new culture (unidimensional process) may experience more psychological distress (Masten et al., 1994). The authors felt that people who were bicultural would have healthier adjustment to life in the U.S. since they could keep their culture while also being able to identify with U.S. culture. In Masten et al. (1994), Mexican-American participants from South Texas and Kansas City samples were assessed for generational status, depressive symptoms and acculturation level by a one-dimensional scale. Results demonstrated that third generation Mexican-Americans had significantly higher acculturation scores than other generational levels (Masten et al., 1994). Also, the South Texas sample, an overall more educated and higher income group, demonstrated no significant correlations of scores on depression and acculturation, although they had a higher mean CES-D depression score (16.7) than the Kansas City group. In the Kansas City group, the mean CES-D depression score was 15.6, although this group had more participants who earned less than

$14,000 a year and were overall less educated and had higher acculturation scores (more

Anglo oriented) than the South Texas group (Masten et al., 1994) For the more northern

group with the higher acculturation scores, depression and acculturation were inversely

related (Masten et al., 1994). Also demonstrated in the study was that individuals in the

South Texas group who had higher income levels reported higher acculturation scores

(Masten et al., 1994). The findings of their study suggest conflicting descriptions on the

relation between acculturation and depression. The two groups were compared but were not

analyzed as one whole group to see if there was a relationship between acculturation and

depression. In addition, the fact that the two groups were in environments with different

ethnic compositions may have affected the participants' acculturation level. The South Texas

group was in an area populated with more Mexican-Americans and therefore would probably

not feel the need to identify with a more Anglo orientation if their environment is one heavily

imposed on by the Mexican culture. In that manner, the Kansas City group may have been

more compelled to identify with an Anglo orientation since the influence of Mexico was not

as prevalent and they were mainly surrounded by Caucasian and African-American groups.

Therefore, this would fall in line with the results the authors obtained from the Kansas City

group, if one was not more Anglo oriented, they would feel some psychological distress.

Higher levels of depression in Latinos that are less acculturated to US

     A small number of studies suggest that those Latinos that are more acculturated have

lower levels of depressive symptoms and those with low levels of acculturation have more

depressive symptoms. A study by Cuéllar & Roberts (1997) involving Mexican Americans

from South Texas found that there was a gender difference in depression scores. Their study

also focused on differences in depressive symptoms due to acculturation levels. However, their study used a bidimensional scale for acculturation and concluded that the most acculturated group (assimilated) had significantly lower depressive symptoms (Cuéllar & Roberts, 1997). The participants' chosen ethnic status label and acculturation were found to be less impactful than SES or gender on the depression scores, with a lower SES to be correlated with higher depression scores (Cuéllar & Roberts, 1997). The location of the study may have had an impact on results as in Masten et al. (1994).

Salgado de Snyder (1987a) found that English proficiency was related to depressive symptoms. A lack of verbal proficiency in English was strongly correlated with higher levels of depressive symptomatology. Salgado de Snyder (1987b) also found evidence that low acculturation (based on loyalty to the Mexican nation) obtained higher scores on acculturative stress.

Valentine (2001) described acculturation in a linear fashion and used a corresponding measure to see if there were differences in participants' self-esteem. Self-esteem can be seen as a demographic variable comparably similar to not having depression since people with higher levels of self-esteem do not usually have depression. In Valentine (2001) the findings were that the participants who had high self-esteem tended to be acculturated. He concluded that "Hispanics perceive greater self-worth the longer they are exposed to mainstream Anglo values and behaviors" (p.464). However, the participants were college students and probably had some relatively higher levels of self-esteem if they were able to attend college than an overall young Latino population. However, Valentine's study did note that since the acculturation measure used was one-dimensional, it limited the ability to assess how self-

esteem, acculturation to the Anglo culture, and varying levels of preservation of the Latino culture interact.

A study by Miranda & Umhoefer (1998) of Latinos from various nations hypothesized that bicultural Latinos would have optimal mental health when compared to subjects with high and low levels of acculturation. Acculturation in this study was based on a unidimensional scale that was later categorized into the three groups. The bicultural Latinos (defined as the middle group) obtained significantly lower scores on depression and higher scores on social interest when compared to participants with high or low acculturation scores (Miranda & Umhoefer, 1998). The researchers, who worked with the conceptualization of acculturation being on a single-scale continuum, felt this level of acculturation is the ideal since these individuals can assume some of both worlds.

Acculturation not related to depression

There are studies, however, that have shown no relationship between acculturation (with varying definitions) and depressive symptoms (Burnam, Timbers, & Hough, 1984; Moscicki et al., 1989). In a study by Alderete, Vega, Kolody, Aguilar-Gaxiola (2000), similar lifetime prevalence rates of psychiatric disorders was found for residents of Mexico City, recent Mexican immigrants, and migrant workers that lived in the United States.

A study by Vega, Kolody, & Warheit (1985) demonstrated that acculturation did not have an effect on depressive symptoms. The researchers tried to specify differences in symptom and CES-D caseness levels associated with acculturation and nativity the Mexican American respondents by language preferences. When demographic variables were adjusted, there were no significant differences in symptom levels among the three groups (Other

Whites, English-speaking Mexican Americans, and Spanish-speaking Mexican Americans) (Vega et al., 1985). However, the researchers noted that the English-speaking Mexican Americans had symptom and caseness rates that more closely resembled Whites rather than the slightly higher symptom and caseness rates of Spanish-speaking Mexican Americans. The researchers believed that their data suggested that low education levels were the determining factor in depressive symptomology among immigrants who had minimal acculturation (Vega et al., 1985). This finding is significant since it demonstrates that a demographic factor, education, may be a determining factor for predicting depression.

HISPANIC SOCIAL SUPPORT

Latinos often utilize the family as a major support in times of need. Hispanics feel very strong ties to their family and even help each other adjust and survive in difficult situations (Smart & Smart, 1995; DHHS, 2001; Triandis, 1994). Familial goals are important for most Hispanics, however, American culture emphasizes the importance of individual goals. As shown in a study by Hovey & Magana (2002), often higher levels of family discord/dysfunction are related to elevated levels of depressive symptoms in Mexican-Americans.

Mexican immigrants have smaller interaction networks than subsequent generations and are more likely to rely on family for emotional support when confronted with change and with stress (Vega et al., 1991). Mexican migrant farm workers in a study by Hovey & Magana (2002) that perceived ineffective social support reported more symptoms of depression, which emphasized the effectiveness of social networks to prevent psychological distress. Ward (2001) describes how social support of others from the same mother country

often alleviates symptoms of stress and fosters a sense of community and likeness that often contrasts life in a new country. Additionally support of individuals from the new country also make life more comfortable for immigrants.

In Fisher et al. (2000), family organization had an effect on diabetes management in Hispanic patients while family organization did not have an effect on European American patients. Hispanic families who were described as: 1) well organized with clear traditional sex roles, 2) having optimistic beliefs, 3) husband and wife able to reconcile difference in opinion regarding diabetes care had patients who possessed a better overall management of diabetes (Fisher et al., 2000).

Results from a study by Vega et al. (1991), demonstrated that family support was one of the best predictors for low depression scores in immigrant Mexican women while the frequency of contacts was not correlated with depression. Hispanics' emphasis on family help was also demonstrated in a study by Keefe (1981). Mexican-Americans believed that emotional problems are best treated with self-help, family, friends or a physician; however, for more serious problems (as denoted as mental problems), people should seek help from a psychotherapist (Keefe, 1981).

IMPORTANCE FOR CURRENT RESEARCH

The high rates of comorbidity between depression and diabetes underline the need for increased attention to these conditions in patients by medical providers (Gaynes et al., 2002). The high numbers of diabetes in Latinos also show need to look for depressive symptoms. Several studies have demonstrated that recognition of diabetes in depressed individuals (and depression in diabetic individuals) is crucial for the lessening of psychological distress, and

that appropriate treatment for depression can improve glycemic control, a key preventive

measure for complications (Black, 1999; Black et al., 2003).

If depression is recognized and treated, it will undoubtedly improve one's quality of

life. Treatment for depression can also lead to weight reduction (Black et al., 2003). Even

mild or subsyndromal cases of depression can have a negative impact on the psychological

and physical health of diabetic adults. Approximately 30-50% of depressed patients in

primary-care settings are not recognized as such by their providers (Culpepper, 2002; Gaynes

et al., 2002).

Initial treatment for physiological depressive symptoms that occur at the same time as

elevated diabetic measures might also lead to improved diabetic control and would allow for

the patient to be subsequently reassessed and treated for depression (Culpepper, 2002). One

form of treatment other than medicinal for depression that has shown significant results is

cognitive behavioral therapy (Culpepper, 2002). In one study, only 18% of diabetic women

with depressive symptoms who were receiving medication were also concurrently attending

therapy sessions with a mental health provider (Whittemore et al., 2004).

Treatment for the adult with diabetes involves patient education, discussion about

compliance issues, motivation for physical activation, and the need for long-term treatment

(Culpepper, 2002). All of these issues need to be constantly monitored in the patient with

diabetes and depression since depression can affect noncompliance. Another reason why

diabetics need to be constantly monitored for depression is that depression can enter into the

clinical picture or wane and return at any point during a patient's care. Prevention of

complications due to noncompliance can avoid unnecessary visits to primary care as well as

emergency services and/or hospital treatment. Ciechanowski et al., (2000) found evidence

that diabetic patients with higher levels of depressive symptoms had significantly higher

costs than did patients without depression even when data was adjusted for diabetes severity

and medical comorbidity. Also, patients that have depression and a chronic illness such as

diabetes are more aware and may focus on symptoms of their condition and other physical

symptoms associated with other body organ systems (Katon, 2003). A patient who receives

treatment for depression and diabetes may be more at ease and less likely to seek costly

medical care for common minor bodily sensations she would otherwise be fearful of.

López (2002) states "studying a Latinos' social world has important practical

implications." (p. 1571). This statement is demonstrated in the review of the literature in

regards to mental health for Hispanics. Learning more about the Hispanic culture may gain

insight onto the effects the culture has on health behaviors. Oomen et al. (1999) documented

that there were no culturally appropriate models that addressed treatment adherence in female

Hispanics with Type 2 diabetes. The researchers suggested some culturally sensitive methods

for increasing treatment adherence for Latinas with Type 2 diabetes:

> determine the patient's level of acculturation; identify key family members and involve these members in the education and decision-making process; use culturally sensitive and language-appropriate educational materials; identify economic, social, familial, and religious barriers to treatment and adherence; access individual, familial, community, and cultural supports and include them in the treatment plan; identify the patient's perceptions of diabetes and treatment; determine whether the patient is using any alternative forms of care (e.g. folk medicine); maintain open communication with patient and family; ask direct questions on follow-up visits about treatment adherence, barriers to compliance, and possible solutions. (p. 224)

A model such as this would also allow a professional to assess any psychological stress. In

addition to maintaining a patient's physical health, a professional who encounters a Latina

with diabetes can also assess her psychological health by understanding where the patient might be in relation to the acculturation process, since her *cultura* (culture) may impact her treatment and/or adherence.

The focus of my research will combine the previously listed topics: Latinas, depression, diabetes, acculturation, and perceived social support. There has not been a published study that has encompassed all of these topics yet to date. To me this is surprising since Hispanic population numbers are steadily increasing as well as diagnoses of diabetes in Hispanics. Additionally, the data that has shown that Hispanics or Mexican-Americans are widely succeptible to depression and the fact that diabetes and depression usually coexist are further reasons for research in this population. Studies focusing on Latina diabetics are almost nonexistent. The focus on Latinas with diabetes is in this study is to understand more about this understudied population. In the current study, it is of interest to see how these topics interact to better understand their mental health and hopefully give insights into how to improve medical care for this at-risk population (Figure 1).

Hypotheses

H1: Latinas with diabetes will have high instances of depression (CES-D $\geq 20,24$) if their

HbA$_{1c}$ level is in the uncontrolled range

H2: Latinas with diabetes that have extreme levels of acculturation (in the traditional or

assimilated groups) will have higher levels of depressive symptoms or have more depression

diagnoses than a bicultural Latina.

H3: Latinas with diabetes with low amounts of perceived social support will have higher

levels of depressive symptoms than Latinas with higher amounts of perceived social support.

H4: Latinas with diabetes that have low amounts of perceived social support will have higher

HbA$_{1c}$ levels than those Latinas with higher amounts of perceived social support.

CHAPTER III

Methodology

STUDY DESIGN

Setting:

The study was carried out in a publicly funded small community clinic of the

Parkland Health and Hospital System (PHHS) that serves the Southwest Dallas area. This site

has a large Hispanic population with more of a variety in the generational status of the

patients than other clinics in the Dallas area (Galindo, personal communication, July 2004).

The common patient in this clinic is a middle-aged immigrant Hispanic woman who often

has a third grade education and does not speak English (Galindo, personal communication,

July 2004).

Participants

All participants were selected from the DeHaro-Saldivar Community Oriented

Primary Care (COPC) Clinic. Requirements for participation were: a women self-identifying

as Hispanic, age between 18-65 years, diagnosis of Type 2 diabetes; and free from diabetes-

related major complications (amputations or complete blindness). Only Latina participants

were allowed to participate in this research as this study focuses on intragroup differences.

Measures

Depressive Symptoms

The Center for Epidemiological Studies -Depression (CES-D) is a 20-item scale designed to be used in community surveys to measure frequency of depressive symptoms in the general population (Radloff, 1977). This measure has been validated in both English and Spanish. Responses are indicated how the respondent felt during the past week by a series of Likert (0-3 Scale) Questions, 0: Rarely or non of the time (less than one day), 1: Some or a little of the time (1-2) days, 2: Occasionally or moderate amount of time (3-4) days, and 3: Most of all of the time (5-7) days (Bohannon, Maljanian, & Goethe, 2003). It has been used in many epidemiological studies since it avoids possible confounds by removing items associated with somatization. Reliability has been demonstrated for this measure for people with a chronic illness (Devins, Orme & Costello, 1988); for people of Mexican descent in English and Spanish (Roberts, 1980); and for Mexican immigrant women (Vega et al., 1986). A study by Posner, Stewart, Marín, & Pérez-Stable (2001) stated that the CES-D did not measure the constructs in Latino men and women. However, errors produced by the measure are minimized since the measure is only being used with Latina women. Generally a cut-off score of 16 indicates a high-risk for depression but other studies have suggested using 19 for patients with a chronic health condition (Martens, Parker, Smarr, Hewett, Slaughter, & Walker, 2003), 20 for Hispanic outpatients (Bohannon et al., 2003) or 24 for Mexican immigrant women (Vega et al., 1986) as a cut-off score. For the current study, scores on the measure will be evaluated as a continuous variable and defined "depressed" by cut-off scores of 16, 20 and 24 and will additionally perform statistical tests with these three levels.

Control of Diabetes

The participant's most recent HbA_{1c} level will be viewed as the variable to assess their metabolic control. The value for controlled was $HbA_{1c} < 7\%$ and uncontrolled was defined as $HbA_{1c} \geq 7\%$ as suggested by the NDEP (2005). This variable will also be regarded as a continuous variable.

Acculturation

Bidimensional Acculturation Scale for Hispanics (BAS, Marín & Gamba, 1996) This measure is based on a two dimensional framework of the acculturation process. There can be a high or low score on the Hispanic domain and a high or low score on the non-Hispanic domain. High internal consistency was found on for each of the domains: $\alpha = .90$ for Hispanic domain and $\alpha = .96$ for non-Hispanic domain (Marín & Gamba, 1995). Additionally high validity coefficients were found for the scale with different measures of acculturation (Marín & Gamba, 1995). The cutoff for the scores on the two domains is 2.5 (Marín & Gamba, 1995). In the current study, a score above 2.5 on the Hispanic domain and a score below 2.5 on the non-Hispanic domain is the Traditional acculturation category. A score above 2.5 on the non-Hispanic domain and a score below 2.5 on the Hispanic domain is the Assimilated acculturation category. A score above 2.5 on both domains is the Bicultural acculturation category and a score below 2.5 on both domains is the Marginalized category.

The researchers tested the validity and reliability of the measure with English and Spanish speakers of a community sample of varying educational levels. There are 24 items divided into three subscales: Language Use, Linguistic Proficiency, and Electronic Media. Although all the questions are related to language, the developers of the scale had originally tried to incorporate items that would assess values, such as ethnicity of dates, social events or

celebrations, but those items failed to correlate with other measures of validation. The score

for the Hispanic and non-Hispanic domain will be utilized in addition to groupings based on

cutoff scores.

Perceived Social Support

Interpersonal Support Evaluation List – Short Form (ISEL-SF) (Pierce, Frone,

Russell & Cooper, 1996) This measure is a shortened version of the 40 item Interpersonal

Support Evaluation List (Cohen, Mermelstein, Kamarck, & Hoberman, 1985). The best five

statements for each subscale were chosen based on factor analyses by Cohen et al. (1985). It

has 15 items on three scales: tangible support, appraisal support, and belonging support. The

fifteen items were based on previous factor analyses and were found to be the best 5 items

for each subscale (Pierce et al., 1996). Wording of items was changed to accommodate the

varying education levels of participants in the Pierce et al. (1996) study. Their random

sample of New York residents with varying degrees of education reflect this study's sample

of participants with varying degrees of education. This measure has not been translated until

the current study. In a recent literature search, there were no concise (short-form) validated

measures of social support in Spanish. Therefore, the ISEL-SF was chosen for its brevity, the

broad support from others that it assesses, and its validation from a community sample.

<u>Procedure</u>

Potential participants were notified of the study by a member of their treatment team.

The staff member asked the patient if they would like to be further informed about the study.

If the participant agreed, the bilingual investigator began to explain in detail the study and

obtained informed consent and a HIPAA waiver to obtain information from the participant's

medical records. Information obtained from the patient's chart included diagnoses of diabetes and depression, the most recent HbA$_{1c}$ level and a phone number. The participant was notified that they could participate in person while they wait in the exam room for their medical professional, participate after the visit to the medical professional in a private area or could participate by telephone. The participant chose to be interviewed in English or Spanish. The interview contained demographic questions and three measures. Time to complete the interview was usually 15-20 minutes. Questions included demographic information: age, country of origin, age when came to the United States (if applicable), generation level, educational level, socioeconomic status, family size in dwelling, year of diagnosis with diabetes and type of, diabetes treatment (insulin, medication, diet & exercise, or combination of treatments), presence of any other medical conditions, if they have been diagnosed for depression and if so, if taking medication currently or in the past for depression. Measures were given to assess: presence of depressive symptoms, acculturation level, and perceived social support.

If the participant indicated a high level of depressive symptoms, the interviewer further assessed for suicidal ideation and then made referrals accordingly to the social worker if the participant agreed. Information about calling to set an initial appointment with the psychologist at the clinic was also discussed with those participants that had a high number of depressive symptoms. Additionally, a handout was given that listed resources for bilingual psychological services in the Dallas-Ft. Worth area.

Statistical Design

Due to the various cutoff scores and methods in documenting depression (by history and by CES-D) and methods for measuring acculturation, data were examined in many instances as continuous and categorical variables to provide more possibilities for capturing a definition of the terms. Chi-square analyses and Pearson and Spearman correlations were used to assess the links between depression and acculturation. Additionally, Pearson and Spearman correlations were utilized to demonstrate a link between perceived social support and depression. Additionally, chi-square analyses and Pearson and Spearman correlations were used to assess relationships between metabolic control (HbA_{1c}) and other variables. Stepwise linear and logistic regressions were performed to assess for any possible confounds caused by demographic variables. Since a study has not focused on intragroup differences in Latinas with diabetes, I was interested in the following questions:

1. What is the rate of depressive symptoms in Latinas with diabetes at the study site?

2. Does acculturation, defined by demographic variables, have a significant effect on reported level of depression by Hispanic females with diabetes?

3. Does acculturation, defined by a measure, have a significant effect on reported level of depression by Hispanic females with diabetes?

4. Does a participant's perceived support from others have an effect on reported depressive symptoms?

5. Does perceived support predict the participant's control of diabetes?

6. Does a participant's HbA_{1c} level predict their CES-D score?

CHAPTER IV
Results

Data was entered in Microsoft Excel and then transferred to SPSS (version 13.0,

Chicago, IL).

One hundred and nine Latinas who met the inclusion criteria agreed to participate and

were enrolled in the study. Two participants partially completed the interview and 96

participants completed the full interview. There were no statistical differences in documented

HbA_{1c} levels between the participants who completed the interview and those that did not. Of

all enrolled participants in the study, 89 had a recent (within at least six months) HbA_{1c}

reading. There were 80 participants that completed the study and had recent HbA_{1c} readings;

additionally no differences in HBA1c were found in the groups of completers and

noncompleters.

Sample characteristics

The following data presented will represent the 96 participants who completed the

study. The mean age for the participants was 51.82 and the range was from 26 to 65 (SD =

8.73). Other data such as years of residence in the U.S., years of education, income, and

household size are listed in Table 1. Seventy-eight and one-tenths percent chose to take the

interview in Spanish with the remainder preferring English. However, a few of the

participants used both languages in the interview. Most participants completed the interview

in person (86.5%), 11.5% completed the interview over the phone and 1.0% completed the

interview in person and over the phone. HbA_{1c} was found to be significantly higher in the

participants who completed the interview over the phone, however, 55% who did the

interview by phone were recruited from a diabetes educational class that was to help newly

diagnosed patients or help those patients that demonstrated they were not educated and had

poor control which led to the telephone interview group having higher HbA_{1c} levels.

Subsequent analyses did not differentiate between phone and in person interviews because of

this fact. Nation of birth frequencies and percentages are represented in Table 2.

Additionally generational levels are represented in Table 3. The largest percentage of the

participants were married with 47.9%, followed by Divorced/Separated (33.3%), Widowed

(9.4%), Single (6.3%), Living with Partner (2.1%), and one participant stated she was

divorced and living with her current partner (Figure 2).

Depression

The mean CES-D score was 16.71 (SD = 13.82). Of the 96 participants, 36 had been

diagnosed by a medical professional with depression (at another clinic or at DeHaro)

currently or in the past. Depressive symptoms at the time of the interview assessed by the

CES-D demonstrated that 37.5% of the participants met the criteria for being depressed

(CES-D $\geq$ 20). When the criterion for depressed was increased (CES-D $\geq$ 24) 32.3% still met

the criterion for likely depression. The combination of either being diagnosed with

depression by a medical professional or meeting the criteria for likely depression (CES-D $\geq$

16) revealed that 59.4% of the Latinas with diabetes had either current likely depression or

had a history of depression. Of those that had been diagnosed with depression by a

professional, 52.8% went to or were in therapy with the remaining percentage never

attending therapy.

Culture

Culture was examined with demographic variables such as if participant was immigrant/nonimmigrant, years in US, if participant was exposed to US as a child/adolescent. Results were also examined with scores on the BAS Hispanic domain and BAS non-Hispanic domain scales as a continuous variable and with a cutoff score of 2.5 on each scale. Seventy-six percent of the participants were immigrants and 37.5 % were exposed to U.S. culture as a child or adolescent. When the BAS was given and participants were grouped according to their scores on the two domains, 68.8% of the participants were in the Traditional group, 26% were in the Bicultural group, and 5.2% were in the Assimilated group.

Metabolic Control

Mean years of living with diabetes for the sample was 7.64 (SD = 6.30). Only participants with recent HbA$_{1c}$ levels were included in these analyses so the results would be valid. The mean HbA$_{1c}$ level for the participant that had a HbA$_{1c}$ reading within the last six months (N = 80) was 8.34 (SD = 2.31). The percentage of these 80 participants who had a reading that represented uncontrolled diabetes was 67.5%.

Social Support

The mean score on the ISEL-SF for the sample was 48.25 (SD = 9.84). The mean scores on the Tangible Support, Appraisal Support, and Belonging Support subscales were 17.17 (SD = 3.66), 15.44 (SD = 4.35), and 15.56 (SD = 4.32) respectively.

Answers to questions of study

Question 1: *What is the rate of depressive symptoms in Latinas with diabetes at the study site?*

There is a high rate of depressive symptoms in Latinas at DeHaro-Saldivar clinic with 32.3% meeting the criteria for likely depression at the time of the interview and 37.5% having been diagnosed with depression at some time by a medical professional.

Question 2: *Does acculturation, defined by demographic variables, have a significant effect on reported level of depression by Hispanic females with diabetes?*

The only statistical test that yielded a significant result was a two-tailed Spearman rank correlation coefficient that demonstrated years living in U.S. correlated with a diagnosis of depression ($r_s = 0.22$, p = 0.04). Therefore, the answer is yes for one variable, years living in U.S.

Question 3: *Does acculturation, defined by a measure, have a significant effect on reported level of depression by Hispanic females with diabetes?*

No, the scores on the BAS did not relate significantly with indices of depression for the sample.

Question 4: *Does a participant's perceived support from others have an effect on reported depressive symptoms?*

Yes, significant one-tailed Pearson correlations were demonstrated in the study between perceived social support (ISEL-SF) and score on the CES-D. CES-D and ISEL-SF were significantly correlated ($r = -0.63$, p = 0.00). Additionally the subscales were significantly correlated to scores on the CES-D: Tangible Support: $r = -0.35$ (p = 0.00); Appraisal Support: $r = -0.54$ (p = 0.00); Belonging Support: $r = -0.61$ (p = 0.00).

Question 5: *Does perceived support predict the participant's control of diabetes?*

No, there were no tests that demonstrated a link between perceived social support and control of diabetes in the 80 participants that had a recent HbA_{1c}.

Question 6: *Does a participant's HBA1c level predict their CES-D score?*

Yes, a one-tailed correlation demonstrated scores on the CES-D were significantly related to a participant's HbA_{1c} level r(N = 80) = 0.20, p = .03). (Figure 4)

Study Hypotheses

Hypothesis 1: *Latinas with diabetes will have high instances of depression (CES-D $\geq$ 20,24) if their HbA_{1c} level is in the uncontrolled range*

A Chi-square analysis based on the cutoff scores for depression and metabolic control did not yield significant results. However, the hypothesis was supported with a one-tailed Pearson correlation for CES-D score and HbA_{1c} (r[N = 80] = 0.20, p = 0.03), demonstrating that Latinas with higher HbA_{1c} scores also have higher depression scores.

Hypothesis 2: *Latinas with diabetes that have extreme levels of acculturation (in the traditional or assimilated groups) will have higher levels of depressive symptoms or have more depression diagnoses than a bicultural Latina*

This hypothesis was not supported with chi-square analyses, Pearson correlations, or Spearman correlations (variables included the BAS score, CES-D scores, and if diagnosed with depression by a medical professional).

Hypothesis 3: *Latinas with diabetes with low amounts of perceived social support will have higher levels of depressive symptoms than Latinas with higher amounts of perceived social support*

Hypothesis 3 was supported and demonstrated a strong link between social support and depression. The CES-D and ISEL-SF were significantly correlated ($r = -0.63$, $p = 0.00$).

Hypothesis 4: *Latinas with diabetes that have low amounts of perceived social support will have higher HbA$_{1c}$ levels than those Latinas with higher amounts of perceived social support*

This hypothesis was not supported since there were no tests that yielded significant results for a link between perceived social support and control of diabetes in the 80 participants that had a recent HbA$_{1c}$.

Additional findings

A two-tailed Spearman rank correlation coefficient showed that years of living with diabetes was significantly related to being considered depressed (CES-D ≥ 20) at the time of the interview ($r_s = 0.23$, $p = 0.02$). Additionally when the cutoff score for the depressed criterion was raised to 24, the same test yielded significant results ($r_s = 0.23$, $p = 0.03$)

When various demographic factors were entered into a stepwise Linear Regression for CES-D, years of living with diabetes was a significant predicting factor (R = 0.262, $p = 0.03$), Table 4. Additionally when factors were viewed in a Logistic Regression for discriminatory data between depressed and nondepressed participants (CES-D ≥ 20), years of living with diabetes was also a predicting factor.

A Logistic Regression was performed to look at the predicting factors of controlled and uncontrolled diabetes in the 80 participants with recent HbA$_{1c}$ levels. Again, years living with diabetes was a significant variable in the equation ($p = 0.01$).

A surprisingly result was yielded for relationship between age and metabolic control. A significant one-tailed Pearson correlation was found between Age and HbA$_{1c}$ level

(r[N=80] = -0.22, p = 0.03). This was still found to be significant after controlling for years

of living with diabetes.

CHAPTER V
Conclusions and Recommendations

In the study, two of the four hypotheses were supported. The ISEL-SF and CES-D scores proved to be significantly inversely related, with those participants who had high levels of perceived social support having lower depression scores and vice versa. Additionally, CES-D and HbA_{1c} scores were significantly correlated. The Latinas that had poorer metabolic control (higher HbA_{1c} scores) had more depressive symptoms. However, statistical tests demonstrated there was no link between metabolic control and perceived social support, as hypothesized. Acculturation, defined by scores on the BAS, did not predict the Latinas' depression scores. However, acculturation defined by a years of living in the U.S. proved to be related to depression in some manner.

Depression

In the present study with this sample of Latinas with diabetes, there were high percentages of diagnoses of depression and CES-D scores representing likely cases of depression. No studies previously published have focus on rates of depression in Latinas with diabetes. However, in comparison to the results of the 2002 study by Heilemann et al. with the 24% of women of Mexican descent having likely depression, the current sample of Latinas with diabetes demonstrates a higher percentage of 32.3% that met the same criterion for likely depression. This discrepancy possibly demonstrates that living with diabetes puts an extra strain on this minority group. In Whittemore et al. (2004) 34% of women with diabetes (only 11% were Hispanic) reported a history of depression, whereas in this sample of Latinas with diabetes, 37.5% had stated they were diagnosed with depression by a medical

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professional. The measure of depressed mood in their study was indicated with responses of having depressed mood "a lot or some" of the time and "a little or none of the time" and is therefore hard to match with scores on the CES-D.

Some demographic factors, such as income, did not have significant effects, which compared to other studies, usually does. However, to qualify under Parkland's insurance health plans, one already has to be of low income, and most patients are on one of Parkland's plans. The women in this study met qualifications and therefore are as a group, are of low income. Analyses with income were difficult to do since there were many participants that did not know how much money their household earns either because they lived with a relative, usually a child; or they did not know how much their spouse earned. This lack of knowledge demonstrates that many of these women are not in financial control nor have any input into that matter.

Metabolic Control

Age demonstrated a significant factor in determining metabolic control, with older women having lower HbA_{1c} levels. A possibility for this is that older women may have less tasks/duties to attend to and can dedicate more time to taking care of themselves such as setting aside time for exercise and eating according to a prescribed diet. Younger women may have the family or children as their priorities and as a result cannot follow the same regimens.

Metabolic control was also found to be significantly related with depression. Latinas that are more depressed are more likely not adhering to a treatment regimen such as taking

medicine as specific times or having the motivation to continue daily exercise. This draws attention to the fact that depression can be even more devastating to the person with diabetes.

Living with Diabetes

The correlation of years of living with diabetes and being depressed (CES-D cutoff 24) shows the toll diabetes takes on the women. Some comments made by the women while answering the CES-D were that their symptoms of depression (statements on CES-D) were due to their "disease," e.g. that they didn't feel like doing anything or that irritability was an issue.

Acculturation

It was demonstrated in this study that when years of residence in U.S. was viewed as a form of acculturation (more years equals more U.S. acculturation) those women that were more acculturated were more likely to have been diagnosed with depression by a medical professional. More correctly, this can be seen as more exposure to U.S. style of life, values, customs, etc., whether they adapt to these values or not (e.g. are English speaking). An example of this phenomenon is those women who have lived here for over 15 years but cannot or dare not speak enough English to be understood. However, most of the diagnoses of depression came from U.S. doctors with only few diagnoses coming from a doctor in another country. Also, the women that spent less time in the U.S. may not have had a similar amount of access to medical care in other countries.

However, it is interesting to note that the longer a Latina woman was here in the U.S. regardless if she was born here or an immigrant, she was more likely to be diagnosed with depression. Many of the women described that some of their depressive symptoms were due

to an "empty nest" feeling or due to their life in the United States characterized by loneliness, isolation, feeling foreign, etc. An example that was stated was that their children did not care for them like they would if they were in Mexico, "Everyone here (U.S.) shuts their doors," "Each relative has their own problems."

However, no significant results were demonstrated using a measure for acculturation. A possible explanation may be due to the low numbers of U.S. acculturated Latinas that frequent this clinic. It would be interesting to see if this phenomenon is still true if sampling errors were corrected by recruitment of more Latinas who would perhaps reflect a higher U.S. acculturation.

Perceived Social Support

Social support (ISEL-SF) was strongly negatively correlated with scores on the CES-D. Those women that had more support were more likely to have less depressive symptoms. When the subscales of the ISEL-SF were examined to see what type of support had the most difference, all three subscales were still significantly negatively correlated to CES-D score. However, the strongest correlation of the three subscales was -.61 of the belonging support subscale, followed by the Appraisal support subscale (-.54) and the Tangible Support subscale (-.35). This shows that a sense of belonging (*I often feel left out by my circle of friends; I regularly meet or talk with my friends or members of my family; I am usually invited to do things with others*) is more important than physical demonstrations of support (*If I needed help moving, I would be able to find someone to help me; If I were sick and needed someone to drive me to the doctor, I would have trouble finding someone*).

This would be a good basis to provide care for patients. A diabetic support group with the purposes of creating an atmosphere of belonging and to encourage social ties to other Latinas, serve as a place to reveal and work on personal problems could help reduce the level of depressive symptoms. Additionally the need for this patient care implication is further supported with the finding that higher HbA_{1c} readings correlated with a higher score on the measure for depressive symptoms, thus demonstrating poorer control in more depressed individuals. This support group would be benefit the patients involved and would be novel way to see the effects of such an intervention. Would depressive symptoms go down? Would HbA_{1c} levels lower?

Possible provider shortcomings

According to the NDEP (2005) patients should check their HBA1c levels twice a year. However, many patients did not have a HbA_{1c} reading within six months of their enrollment/participation in the study. The procedure at the COPC clinics is to check a patient's HbA_{1c} level every three months. Some of the patients were instructed to go to the lab to have this reading be done but did not; however, many patients were not instructed to go to the lab for this reading when it was within the time frame to do so. As an observer, there seemed to be some doctors that were not following procedure regarding lab orders for HbA_{1c}.

The patients that were diagnosed with depression and prescribed anti-depressant medication often were not recommended or went to therapy. A meta-analysis by Ismail, Winkley, & Rabe-Hesketh (2004) demonstrated that patients' glycemic control improved when they were involved in psychological therapies. The need for these women to be

encouraged to be involved in some form of talk therapy is further supported by the findings of Lustman, Griffith, Clouse et al. (1997) & Lustman, Griffith, Freedland et al. (1997) in regards to psychological interventions.

Often the patients were not revealing their psychological situation to their doctor: "She is always so busy", "He doesn't pay attention to me", "I don't tell her". A few occasions the patient had suicidal ideation where the investigator and social worker worked together to resolve the crisis. The doctor often had no idea what was going on and in one case a participant was unsure if she would act upon her desires to hurt herself.

Latina common psychosocial stressors and attitudes towards counseling

Many patients were instructed to seek help either through the psychologist at the clinic or at the local Metrocare if urgency was an issue. When the participants revealed what their problems were, they were often related to financial stresses or a family situation such as domestic violence, husband infidelity, or problems with children. However some of the patients who could have benefited from counseling stated that they didn't want to bring up the past, or that money was a concern, or stated that they felt they just didn't need it. There is a definite need in this population for more psychological help/staffing of Spanish speaking counselors/psychologists at clinics with a large Latina population.

Limitations of the current study and future recommendations

The use of the instruments in the current study needs to be evaluated for future use. In regards to the measures, the CES-D was a little confusing for a few of the participants. The BAS wording was tricky. For example "*How often do you think in English?*" is not the same as "*¿Con que frecuencia piensa usted en inglés*?" That question is worded as "*How often do*

*you think **about** English?*" I had to clarify and rephrase this question for the Spanish

interview. The ISEL-SF Spanish version was difficult for most participants. Instead of using

the scale of *Completely true, partially true, partially false, completely false*, they replied with

a yes, no, and sometimes. They seldom gave a partially true/false. Due to this, I asked

additional questions to determine the score for the "sometimes" answer. The wording on the

ISEL-SF needs to be changed especially since translating the instrument on reverse score

items yields double negative wording, which made giving the ISEL-SF difficult. The role of

perceived social support in predicting depression may have been overly emphasized since

Latino culture emphasizes on family and collective unity. This would have been an

interesting area to compare with non-Latinos with diabetes. Additionally, this study did not

use a control group of Latinas without diabetes nor Caucasian or African-American women

with diabetes group. Further analyses and conclusions could be made if there was

information collected for one of these groups and compared with this study's data set.

SUMMARY

The present study undertaken and designed with the aid of several psychologists was an attempt to more fully understand a rarely studied population that is increasingly becoming important to research due to the epidemic nature of diabetes. The results demonstrated the high levels of depression in the urban Latina with diabetes. Although acculturation was not a strong predictor of depressive symptoms or metabolic control, exposure to U.S. culture measured in years correlated significantly with diagnosis of depression by a medical professional. Additionally the emphasis on social support, especially in the areas of appraisal and belonging, and its effects on psychological health was also demonstrated in this study. The important link between metabolic control and depressive symptoms was demonstrated. These findings support possible interventions to improve the quality of health for Latinas at an urban publicly funded clinic.
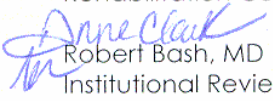
CHAPTER VI

APPENDICES

APPENDIX A
IRB MATERIALS

Institutional Review Board

TO: Anna Olvera, BA
         Rehabilitation Counseling - 9088

FROM: Robert Bash, MD
         Institutional Review Board 2 Chairperson
         IRB - 8843

DATE: October 3, 2005

RE: **Expedited Approval of Protocol and Consent Form**
         Acknowledgment of HIPAA Authorization
         IRB Number: 092005-033
         Title: <u>Diabetes in Latinas: Depression, Metabolic Control and the Roles of</u>
         <u>Acculturation and Perceived Social Support</u>

The Institutional Review Board (IRB) at the University of Texas Southwestern Medical Center has determined that this research is eligible for expedited review in accordance with 45 CFR 46.110(a)-(b)(1), 63 FR 60364, and 63 FR 60353. The IRB Chairman approved the protocol and informed consent document(s) on <u>September 29, 2005</u>. IRB approval of this research lasts until <u>September 28, 2006</u>. If the research continues beyond twelve months, you must apply for updated approval of the protocol one month before the date of expiration noted above. DHHS regulations permit oral presentation of informed consent information in conjunction with a short form written consent document (stating that the elements of consent have been presented orally) and a written summary of what is presented orally. A witness to the oral presentation is required, and the subject must be given copies of the short form document and the summary. **Your approved subject sample size is 200 subjects.**

Important Note: You must use a photocopy of the attached IRB-approved and stamped consent form(s). Use of a copy of any consent form on which the IRB-stamped approval and expiration dates are replaced by typescript or handwriting is prohibited.

When this procedure is used with subjects who do not speak or read English, (1) the oral presentation and the short form written document should be in a language understandable to the subject; (2) the IRB-approved English language informed consent document may serve as the summary; and (3) the witness should be fluent in both English and the language of the subject.

At the time of consent, (1) the short form document should be signed by the subject (or the subject's legally authorized representative); (2) the summary (i.e., the English language informed consent document) should be signed by the person obtaining consent as authorized under the protocol; and (3) the short form document and the summary should be signed by the witness. When the person obtaining consent is assisted by a translator, the translator may serve as the witness.

The IRB requires that you report to the Board any unexpected adverse events that occur during the study. In the future, if you require a modification to the protocol, obtain review and approval by the Board prior to implementing any changes except when prompt changes are necessary to eliminate apparent immediate hazards to a subject.

The IRB requires that all personnel who interact with research subjects or who have access to research data identified with the names of subjects receive a copy of the Federal Wide Assurance on file with the Department of Health and Human Services. Document their agreement to comply with the statements therein. Such documentation should be kept with other records of the research, which are subject to review by the IRB. Copies of the Federal Wide Assurance and the Federal regulations governing the participation of human subjects in research (45 CFR 46) are available on the IRB website:
(http://www8.utsouthwestern.edu/utsw/cda/dept31018/files/41623.html)
or from Jan Harrell at irb@utsouthwestern.edu.

If applicable, approval by the appropriate authority at a collaborating facility is required before subjects may be enrolled on this study.

If you have any questions related to this approval or the IRB, you may telephone Jan Harrell at 214.648.9453.

Enc: Consent Form(s)
       HIPAA Authorization
       Project Summary
       NR1-Exp copy

RB/iw

The University of Texas Southwestern Medical Center at Dallas
Parkland COPC: DeHaro, East Dallas, & Garland Health Centers

CONSENT TO PARTICIPATE IN RESEARCH

Title of Research: Diabetes in Latinas

Sponsor:

Investigators: Anna Olvera, BA   214-648-1750   214-336-5153
                                                  (regular office hours)   (other times)

Sunita Stewart, PhD   214-648- 4304   214-680-4833
Linda Galindo, PhD   214-266-0514   214-769-9145

PURPOSE: The purpose of this research is to know about conditions that might affect the management of diabetes among Latinas. This research is being done because diabetes is a difficult disease that affects many Latinos. It is of interest to know which factors might contribute to better (versus worse) management of this disease.

PROCEDURES: When you agree to participate, the interviewer will ask you questions in an interview format in a private area near your doctor's waiting area. The interview lasts approximately 15-20 minutes. There you will answer questions in your preferred language (English or Spanish) about your situation, how you have felt in the last week, and about support you receive. No identifying information (Name, id numbers, clinic id) will be associated with the responses you give. You can also participate if you like by telephone interview. After answering the questions, you will receive a list of resources in the area and if you feel depressed, the investigator can help you obtain an appointment with the social worker at the clinic.

POSSIBLE RISK(S): You may feel slightly uncomfortable answering some of the questions. The questions do not touch on very personal subjects. You are not required to respond to any question that you do not wish to answer, and you may end the interview at any time you like.

POSSIBLE BENEFITS

The benefit of participating in the study is that you will have the opportunity to tell your experience with diabetes and talk a bit about yourself.

Benefit to others: The information you provide may benefit other Latinas with diabetes so that medical society can know more about you and can improve the quality of care.

ALTERNATIVES TO PARTICIPATION IN THIS RESEARCH: Not participate.

COSTS TO YOU: No cost to participate.

VOLUNTARY PARTICIPATION IN RESEARCH: You have the right to agree or refuse to participate in this research. If you decide to participate and later change your mind, you are free to discontinue participation in the research at any time.

Refusal to participate will involve no penalty or loss of benefits to which you are otherwise entitled. Refusal to participate will not affect your legal rights or the quality of health care that you receive at this center.

RECORDS OF YOUR PARTICIPATION IN THIS RESEARCH: You have the right to privacy. Any information about you that is collected for this research will remain confidential as required by law. In addition to this consent form, you will be asked to sign an "Authorization for Use and Disclosure of Protected Health Information for Research Purposes," which will contain more specific information about who is authorized to review, use, and/or receive your protected health information for the purposes of this study.

YOUR QUESTIONS: Anna Olvera is available to answer your questions about this research at (214-648-1750). The Chairman of the IRB is available to answer questions about your rights as a participant in research. You may telephone the Chairman of the IRB during regular office hours at 214-648-3060.

YOU WILL HAVE A COPY OF THIS CONSENT FORM TO KEEP.

Your signature below certifies the following:

- You have read (or been read) the information provided above.
- You have received answers to all of your questions.
- You have freely decided to participate in this research.
- You understand that you are not giving up any of your legal rights.

_____
Participant's Name (printed)

_____   _____
Participant's Signature   Date

_____
Legally authorized representative's name (printed)
(if applicable)

_____   _____
Legally authorized representative's Signature   Date

_____
Name (printed) of person obtaining Consent

_____   _____
Signature of person obtaining consent   Date

CONSENTIMIENTO PARA PARTICIPAR EN INVESTIGACION

Título de la Investigación: Diabetes en las Latinas

Patrocinador:

Investigadoras: Anna Olvera, BA *(habla español)*	214-648-1750 (horario de oficina)	Telephone No. (otras horas)
Sunita Stewart, PhD	214-648- 4304	214-680-4833
Linda Galindo, PhD *(habla español)*	214-266-0514	214-769-9145

PROPOSITO: El propósito de esta investigación es conocer las condiciones que pueden afectar el manejo de la diabetes entre las Latinas. Esta investigación se esta llevando a cabo debido a que la diabetes es una enfermedad difícil que afecta a muchos Latinos. Es de interés conocer qué factores pueden contribuir a mejorar (en lugar de empeorar) el manejo de esta enfermedad.

PROCEDIMIENTOS: Una vez que ha accedido a participar, se le formularán preguntas en un formato de entrevista en un área privada cercana a la sala de espera de su doctor. La entrevista dura aproximamente de 15 a 20 minutos. Ahí contestará preguntas en su idioma preferido (inglés o español) sobre su situación, cómo se ha sentido la semana pasada y el apoyo que recibe. Ninguna información de identificación (nombre, números de identificación, identificación de la clínica) estará relacionada con sus respuestas. Usted tambien puede participar en la entrevista teléfonicamente si así lo prefiere. Después de contestar las preguntas, usted recibirá una lista de recursos en el área y si se siente deprimida, la investigadora le puede ayudar a concertar una cita con la trabajadora social de la clínica.

POSIBLE(S) RIESGO(S): Tal vez se sienta un poco incómoda en las respuestas a ciertas preguntas. Las preguntas no tocan temas muy personales. No es necesario que responda a ninguna pregunta que no desee contestar y puede dar por terminada la entrevista en cualquier momento.

BENEFICIOS POSIBLES

El beneficio de participar en este estudio es que tendrá la oportunidad de narrar su experiencia con la diabetes y hablar un poco acerca de usted.

Beneficios para otras personas: La información que proporcione puede beneficiar a otras mujeres Latinas con diabetes para que la sociedad médica pueda conocer más acerca de usted(es) y pueda mejorar la calidad del servicio.

ALTERNATIVAS A LA PARTICIPACION EN ESTA INVESTIGACION: No participar.

COSTO PARA USTED: Ninguno.

PARTICIPACION VOLUNTARIA EN INVESTIGACION: Usted tiene el derecho de aceptar o rechazar su participar en esta investigación. Si usted decide participar y después cambia de opinión, puede dejar de participar en la investigación en el momento en el que así lo decida.

Si usted se rehusa a participar, ello no le afectará o implicará pérdida alguna de los beneficios a los que usted tiene derecho. El rehusarse a participar no afectará sus derechos legales o la calidad de la atención médica que usted reciba en este centro.

LOS DOCUMENTOS DE SU PARTICIPACION EN ESTA INVESTIGACIÓN: Usted tiene derecho a la privacidad. Cualquier informacion suya que se obtenga para esta investigación se mantendrá confidencial conforme lo requiere la ley. Además de la forma de consentimiento, usted necesitará firmar la forma "Autorizacion para el uso y divulgacion de información médica de tipo confidencial en investigaciones científicas."

SUS PREGUNTAS: Anna Olvera está a su disposición para contestar sus preguntas sobre este estudio de investigación en el teléfono (214-648-1750). El Presidente del IRB esta a su disposición para contestar preguntas acerca de sus derechos como participante en esta investigación. Usted puede llamar al Presidente del IRB durante el horario de oficina al teléfono 214-648-3060.

USTED CONSERVARA UNA COPIA DE ESTE ACUERDO

Su firma al calce hace constar lo siguiente:

- Que usted ha leído (o se le ha leído) la información proporcionada en los párrafos anteriores.
- Que se han contestado todas sus dudas y preguntas.
- Que usted ha decidido libremente participar en esta investigación
- Que usted entiende que no ha renunciado a ninguno de sus derechos legales.

_____
Nombre del Participante (en letra de molde)

_____   _____
Firma del Participante   Fecha

_____
Nombre del representante legalmente autorizado
 (en letra de molde) (si procede)

_____   _____
Firma del representante legalmente autorizado   Fecha

_____
Nombre (en letra de molde) de la persona que obtiene el consentimiento

_____   _____
Firma de la Persona que obtiene el consentimiento   Fecha

The University of Texas Southwestern Medical Center at Dallas
Children's Medical Center, Parkland Health & Hospital System

Authorization for Use and Disclosure of
Health Information for Research Purposes

NAME OF RESEARCH PARTICIPANT: _____

1.   You agree to let **Parkland Community Oriented Primary Care Clinic: DeHaro, East Dallas, or Garland** share your health information with **_Anna Olvera_** and his or her staff at the University of Texas Southwestern Medical Center at Dallas ("Researchers") for the purpose of the following research study: **_[Diabetes in Latinas; depression and the role of acculturation_** _I_RB#_____ ("Research Project").

2. You agree to let the Researchers use your health information for this Research Project.   You also agree to let the Researchers share your health information with others who may be working with the Researchers on the Research Project ("Recipients") as follows.

- _[Parkland Health & Hospital System._ These are other research facilities that are working with UT Southwestern on the Research Project.

- The UT Southwestern Institutional Review Board (IRB). This is a group of people who are responsible for assuring that the rights of participants in research are respected. Members and staff of the IRB at UT Southwestern may review the records of your participation in this research. A representative of the IRB may contact you for information about your experience with this research. If you do not want to answer their questions, you may refuse to do so.

- Representatives of the Office of Human Research Protections (OHRP). The OHRP may oversee the Research Project to confirm compliance with laws, regulations and ethical standards.

3. Whenever possible your health information will be kept confidential. Federal privacy laws may not apply to some institutions outside of UT Southwestern.   There is a risk that the Recipients could share your information with others without your permission. UT Southwestern cannot guarantee the confidentiality of your health information after it has been shared with the Recipients.

4.   You agree to permit the Researchers to use and share your health information as listed below:
   Diagnoses of diabetes and forms of depression, Blood glucose levels within the past six months and phone number if you want to be interviewed by phone.

5.   The Researchers may use your health information to create research data that does not identify you. Research data that does not identify you may be used and shared by the Researchers (for example, in a publication about the results of the Research Project); it may also be used and shared by the Researchers and Recipients for other research purposes not related to the Research Project.

6.   This authorization is voluntary. Your health care providers must continue to provide you with health care services even if you choose not to sign this authorization. However, if you choose not to sign this authorization, you cannot take part in this Research Project.

7. This Authorization has no expiration date.

8.   If you change your mind and do not want us to collect or share your health information, you may cancel this authorization at any time. If you decide to cancel this authorization, you will no longer be able to take part in the Research Project. The Researchers may still use and share the health information that they have already collected before you canceled the authorization.   To cancel this authorization, you must make this request in writing to: *Anna Olvera, Dept of Rehabilitation Counseling Psychology, 5323 Harry Hines Blvd., Dallas, TX 75235-9088 214-648-1750.*

9.   A copy of this authorization form will be provided to you.

_____   _____
Signature of Research Participant   Date

For Legal Representatives of Research Participants (if applicable):

Printed Name of Legal Representative: _____
Relationship to Research Participant: _____
I certify that I have the legal authority under applicable law to make this Authorization on behalf of the Research Participant identified above. The basis for this   legal   authority   is:
_____
_____.
(e.g. parent, legal guardian, person with legal power of attorney, etc.)

_____   _____
Signature of Legal Representative   Date

The University of Texas Southwestern Medical Center at Dallas

Children's Medical Center, Parkland Health & Hospital System
Retina Foundation of the Southwest, Texas Scottish Rite Hospital for Children
The University of Texas Southwestern Moncrief Cancer Center

Autorización para Usar y Revelar Información sobre Salud
con Propósitos de Investigación Medica

NOMBRE DEL PARTICIPANTE EN INVESTIGACIÓN:
_____

1. Usted esta de acuerdo en permitir que **Clínica <<Parkland Community Oriented Primary Care>> DeHaro, East Dallas, o Garland** comparta información sobre su salud con **Anna Olvera** y su personal (Investigadores) en la University of Texas Southwestern Medical Center at Dallas con el propósito de realizar el siguiente estudio de investigación [Diabetes entre las Latinas; depresión y el papel del culturación, IRB# _____ ("Proyecto de Investigación")]

2. Esta de acuerdo en permitir que los investigadores usen información sobre la salud de usted en este Proyecto de Investigación. Usted también esta de acuerdo en permitir que los investigadores compartan la información de su salud con otras personas que pueden estar trabajando con los investigadores en el Proyecto de Investigación ("Receptores") como sigue:

*   *[Parkland Health & Hospital System]* El patrocinador incluye a cualquier persona, entidad o compañía que trabaja con o para el patrocinador o que es propiedad del patrocinador. El patrocinador recibirá reportes escritos sobre su participación en la investigación. El patrocinador podrá ver la información sobre su salud para asegurar la calidad de la información que se usas en la investigación.

*   El Consejo de Revisión Institucional (IRB) de UT Southwestern. Este es un grupo de personas responsables de asegurar que se respetan los derechos de los participantes en investigación. Miembros o personal del IRB en este centro medico pueden revisar los archivos de su participación en esta investigación. Un representante del Consejo lo podrá contactar para pedirle información sobre sus experiencias en esta investigación. Si usted así lo desea, puede rehusarse a contesta sus preguntas.

*   Representantes de la Oficina de Protección de Investigación Humana (OHRP). El OHRP podrá supervisar el Proyecto de Investigación para confirmar cumplimiento con las leyes, reglamentos y estándares éticos.

3. Hasta cuando sea posible se mantendrá su información confidencial. Las leyes Federales de Privacia pueden no ser aplicables a algunas instituciones fuera de UT Southwestern. Hay un riesgo que los Receptores puedan sin su permiso compartir

información sobre usted con otros. UT Southwestern no puede garantizar la confidencialidad de su información de salud después de que se ha compartido con los Receptores.

4.   Usted esta de acuerdo en permitir que los Investigadores usen y compartan información sobre su salud como se indica a continuación: [Diagnosis de la diabetes y formas de depresión, niveles de azucar en las sangre entre los últimos seis meses pasados, y número telefónico si quere ser entrevistado por teléfono.

5.   Los Investigadores podrán usar la información sobre su salud para crear datos de investigación que no lo identifican a usted. Datos de Investigación que no le identifica a usted podrán ser usados y compartidos con Investigadores (por ejemplo, en una publicación sobre el los resultados de este Proyecto de Investigación); podría también ser usado y compartido entre los Investigadores y los Receptores para otros propósitos de investigación no relacionados con el Proyecto de Investigación.

6.   Esta autorización es voluntaria. Su proveedor de servicios de salud debe continuar proporcionándole los servicios de salud aun cuando usted decida no firmar esta autorización. Sin embargo, si usted decide no firmar esta autorización, usted no podrá participar en el Proyecto de Investigación.

7.   Esta autorización no tiene fecha de caducidad.

8.   Si usted cambia de opinión y no quiere que nosotros colectemos y compartamos información de su salud, en cualquier momento puede cancelar esta autorización. Si usted decide cancelar esta autorización, no podrá participar en el Proyecto de Investigación. Los Investigadores podrán usar y compartir la información de salud que ya habían colectado antes de que usted cancelara la autorización. Para cancelar esta autorización, usted debe hacer la solicitud por escrito a *Anna Olvera, Dept. of Rehabilitation Counseling Psychology, 5323 Harry Hines Blvd., Dallas TX, 75235-9088; 214-648-1750]*

9.   Una copia de esta autorización se le proporcionara a usted.

_____   _____
Firma del Participante en Investigación   Fecha

Para Representantes Legales de los Participantes en Investigación (si se aplica):

Nombre impreso del Representante Legal: _____

Relación con el Participante en Investigación: _____

Certifico tener la autoridad legal, aplicables bajo la ley para dar esta autorización a nombre del Participante en Investigación identificado anteriormente. La base de la autoridad legal es:

_____

_____.
(e.g. padre o madre, patria potestad, carta poder, etc.)

_____   _____
Firma del Representante Legal   Fecha

APPENDIX B
Interview Materials

Demographic questions –English

1. Age   _____

2. Country of birth   _____

      a. If applicable, year of immigration   _____

3. Generation status that applies to you
         1st – you were born in another country
         2nd – you were born in USA and one of your parents came from another country
         3rd- you were born in USA, both parents born in USA and all grandparents born in
         another country
         4th – You and your parents born in USA and at least one grandparent born in
         another country with remainder born in the USA
         5th – You and your parents born in the USA and all grandparents born in the USA

4. Educational level: highest grade in school completed (Circle)
No school   Kinder 1 2 3 4 5 6 7 8 9 10 11 12 College degree

5. What is the level of income your household makes in a year? (Round to nearest thousand)
                                             _____

6. How many people live in your home (include yourself)?   _____

7. Marital status: (Circle)

Single   Married   Divorced/Separated   Living with Partner

8. What year were you diagnosed with diabetes?   _____

9. Type of diabetes? (Circle)
Type 1   Type 2

10. How do you treat the diabetes? (Circle)
Diet and exercise   Oral medication   Insulin injections   Combination (circle all
appropriate)

11. Do you have other significant medical conditions? Yes or no   _____

      a. If yes, please list:(Hypertension,asthma,etc.)_____

12. Have you ever been diagnosed with depression? Yes or no   _____

13. Are you currently taking or have taken medication for depression? Yes or no_____

        a. Currently or Have taken (Circle)

        b. Which medicine(s)? List _____

14. Have you been in therapy to talk about depression? Yes or No   _____

Demographic Questions - Spanish

No. de identificación _____

1. Edad   _____

2. País de nacimiento   _____
       Si es su caso, año en que inmigró   _____

3.   La generación que le corresponda
       1. Nació en otro país
       2. Nació en EUA y uno de sus padres vino de otro país
       3. Nació en EUA, ambos padres nacieron en EUA y todos los abuelos nacieron en otro país
       4. Usted y sus padres nacieron en los EUA y por lo menos uno de sus abuelos nació en otro país con el resto que hubo nacido en EUA
       5. Usted, sus padres y sus abuelos nacieron en los EUA

4.   Nivel educacional: grado escolar más alto alcanzado (ponga un círculo)
       Sin escolaridad Kinder 1 2 3 4 5 6 7 8 9 10 11 12 Título universitario

5.   ¿Cuál es el nivel de ingresos anual en su hogar? (Redondee al milésimo mas cercano)

6.   ¿Cuantas personas viven en su casa (incluyéndose usted)?   _____

7.   Estado civil (ponga un círculo):
       Soltera   Casada   Divorciada/Separada   Viviendo con pareja

8.   ¿En qué año se le diagnosticó la diabetes?   _____

9.   Tipo de diabetes (ponga un círculo):
       Tipo 1   Tipo 2

10.   ¿De qué manera trata usted su diabetes? (ponga un círculo)
        Régimen de dieta y ejercicio Medicamento oral   Inyecciones de Insulina
                                                             Combinación
        (ponga un círculo en las opciones que procedan)

11.   ¿Tiene usted otras condiciones médicas de importancia? Sí o nó   _____

        En caso afirmativo, favor de listar (hipertensión, asma, etc.): _____
12.   ¿Ha sido diagnosticada alguna vez con depresión? Sí o nó   _____

13.   ¿Está actualmente tomando o ha tomado medicamentos para depresión? Sí o nó   _____

      a.   Actualmente o He tomado (ponga un círculo)

      ▪ ¿Cuales medicamento(s)? Liste_____

14.   ¿Ha participado en terapia para hablar acerca de su depresión? Sí o nó   _____

CES-D English

Below is a list of the ways you might have felt or behaved. Please tell me how often you have felt this way during the past week.

Rarely or none of the time, Less than one day (0); Some or a Little of the time, 1-2 days (1); Occasionally or a moderate amount of time, 3-4 days (2); Most or all of the time, 5-7 days (3)

During the past week:

1. I was bothered by things that usually don't bother me.
2. I did not feel like eating; my appetite was poor.
3. I felt that I could not shake off the blues even with help from my family or friends.
4. I felt that I was just as good as other people.
5. I had trouble keeping my mind on what I was doing.
6. I felt depressed.
7. I felt that everything I did was an effort.
8. I felt hopeful about the future.
9. I thought my life had been a failure.
10. I felt fearful.
11. My sleep was restless.
12. I was happy.
13. I talked less than usual.
14. I felt lonely.
15. People were unfriendly.
16. I enjoyed life
17. I had crying spells.
18. I felt sad.
19. I felt that people dislike me.
20. I could not get "going."

CES-D Spanish

Lea las frases que describen cómo pudo haberse sentido o comportado. Por favor marque el número que representa con qué frecuencia se ha sentido de esta manera.

Raramente o ninguna vez, Menos de un dia (0); Algo o parte del timepo, 1-2 dias (1); Ocasionalmente o por tiempo moderado, 3-4 dias (2); La mayor parte del tiempo, 5-7 dias (3)

1. Me molestaron cosas que usualmente no me molestan.
2. No me sentia con ganas de comer; no tenía apetito.
3. Me sentía que no podia quitarme de encima la tristeza aún con la ayuda de mi familia.
4. Sentía que yo era tan bueno(a) como cualquier persona.
5. Tenía dificultad en mantener mi mente en lo que hacía.
6. Me sentía deprimido(a).
7. Sentía que todo lo que hacía era un esfuerzo.
8. Me sentía con esperanza sobre el futuro.
9. Pensé que mi vida había sido un fracaso.
10. Me sentía con miedo.
11. Mi sueño era inquieto.
12. Estaba contento(a).
13. Hablé menos de lo usual.
14. Me sentí solo(a).
15. La gente no era amistosa.
16. Disfruté de la vida.
17. Pasé ratos llorando.
18. Me sentí triste.
19. Sentía que yo no le caía bien (gustaba) a la gente.
20. No tenia ganas de hacer nada.

BAS English
(4) Almost always; (3) often; (2) sometimes; (1) almost never
Language use subscale
1. How often do you speak English?
2. How often do you speak in English with your friends?
3. How often do you think in English?
4. How often do you speak Spanish?
5. How often do you speak in Spanish with your friends?
6. How often do you think in Spanish?

(4) Very well; (3) well; (2) poorly; (1) very poorly
Linguistic proficiency subscale
7. How well do you speak English?
8. How well do you read in English?
9. How well do you understand television programs in English?
10. How well do you understand radio programs in English?
11. How well do you write in English?
12. How well do you understand music in English?
13. How well do you speak Spanish?
14. How well do you read in Spanish?
15. How well do you understand television programs in Spanish?
16. How well do you understand radio programs in Spanish?
17. How well do you write in Spanish?
18. How well do you understand music in Spanish?

(4) Almost always; (3) often; (2) sometimes; (1) almost never
Electronic media subscale
19. How often do you watch television programs in English?
20. How often do you listen to radio programs in English?
21. How often do you listen to music in English?
22. How often do you watch television programs in Spanish?
23. How often do you listen to radio programs in Spanish?
24. How often do you listen to music in Spanish?

BAS Spanish
(4) Casi siempre; (3) frecuentemente; (2) algunas veces; (1) casi nunca
Subescala Uso de lenguaje
1. ¿Con qué frecuencia habla usted inglés?
2. ¿Con qué frecuencia habla usted en inglés con sus amigos?
3. ¿Con qué frecuencia piensa usted en inglés?
4. ¿Con qué frecuencia habla usted español?
5. ¿Con qué frecuencia habla usted en español con sus amigos?
6. ¿Con qué frecuencia piensa usted en español?

(4) Muy bien; (3) bien; (2) no muy bien; (1) muy mal
Subescala Linguística
7. ¿Qué tan bien habla usted inglés?
8. ¿Qué tan bien lee usted en inglés?
9. ¿Qué tan bien entiende usted los programas de televisión en inglés?
10. ¿Qué tan bien entiende usted los programas de radio en inglés?
11. ¿Qué tan bien escribe usted en inglés?
12. ¿Qué tan bien entiende usted música en inglés?
13. ¿Qué tan bien habla usted español?
14. ¿Qué tan bien lee usted en español?
15. ¿Qué tan bien entiende usted los programas de televisión en español?
16. ¿Qué tan bien entiende usted los programas de radio en español?
17. ¿Qué tan bien escribe usted en español?
18. ¿Qué tan bien entiende usted música en español?

(4) Casi siempre; (3) frecuentemente; (2) algunas veces; (1) casi nunca
Subescala Media Electrónica
19. ¿Con qué frecuencia ve usted programas de televisión en inglés?
20. ¿Con qué frecuencia escucha usted programas de radio en inglés?
21. ¿Con qué frecuencia escucha usted música en inglés?
22. ¿Con qué frecuencia ve usted programas de televisión en español?
23. ¿Con qué frecuencia escucha usted programas de radio en español?
24. ¿Con qué frecuencia escucha usted música en español?

ISEL-SF English
(4) Completely True; (3) Somewhat true; (2) Somewhat false; (1) Completely False
Tangible Support
1. If I had to go out of town for a few weeks, someone I know would look after my home, such as watering the plants or taking care of the pets.
2. If I were sick and needed someone to drive me to the doctor, I would have trouble finding someone.
3. If I were sick, I would have trouble finding someone to help me with my daily chores.
4. If I needed help moving, I would be able to find someone to help me.
5. If I needed a place to stay for a week because of an emergency, such as the water or electricity being out in my home, I could easily find someone who would put me up.

Appraisal Support
1. There is at least one person I know whose advice I really trust.
2. There is no one I know who will tell me honestly how I am handling my problems.
3. When I need suggestions about how to deal with a personal problem, I know there is someone I can turn to.
4. There isn't anyone I feel comfortable talking to about intimate personal problems.
5. There is no one I trust to give me good advice about money matters.

Belonging Support
1. I am usually invited to do things with others.
2. When I feel lonely, there are several people I could talk to.
3. I regularly meet or talk with my friends or members of my family.
4. I often feel left out by my circle of friends.
5. There are several different people I enjoy spending time with.

ISEL-SF Spanish

(4) Completamente verdadera; (3) Parcialmente verdadera; (2) Parcialmente falsa; (1) Completamente falsa

Apoyo Tangible

1. Si tuviera que salir de la ciudad por algunos días, alguien que conozco se encargaría de cuidarme la casa, como ponerle agua a las plantas y atender a mis mascotas.

2. Si estuviera enfermo(a) y necesitara que alguien me llevara al doctor, yo tendría problemas para encontrar a alguien.

3. Si estuviera enfermo(a), tendría problemas para encontrar a alguien que me ayudara con mis quehaceres diarios.

4. Si necesitara ayuda para cambiarme, podría encontrar a alguien que me ayudara.

5. Si necesitara quedarme en algún lugar por una semana por razón de una emergencia, como si no tuviera agua o luz en mi casa, podría encontrar fácilmente a alguien con quien quedarme.

Apoyo estimativo

1. Hay por lo menos una persona que conozco en cuya opinión realmente confío.

2. No conozco a nadie que me diga con sinceridad cómo estoy manejando mis problemas.

3. Cuando necesito sugerencias acerca de cómo tratar con un asunto personal, conozco a alguien con quien hablar.

4. No hay nadie con quien me sienta a gusto con quien hablar acerca de asuntos personales.

5. No tengo a nadie en quien confíe para darme buenos consejos sobre asuntos de dinero.

Apoyo de pertenencia

1. A menudo se me invita a que haga cosas con otras personas.

2. Cuando me siento solo(a), hay personas con las cuales puedo hablar.

3. Me reúno o hablo con frecuencia con mis amistades o miembros de mi familia.

4. Con frecuencia me siento aislado(a) de mi círculo de amistades.

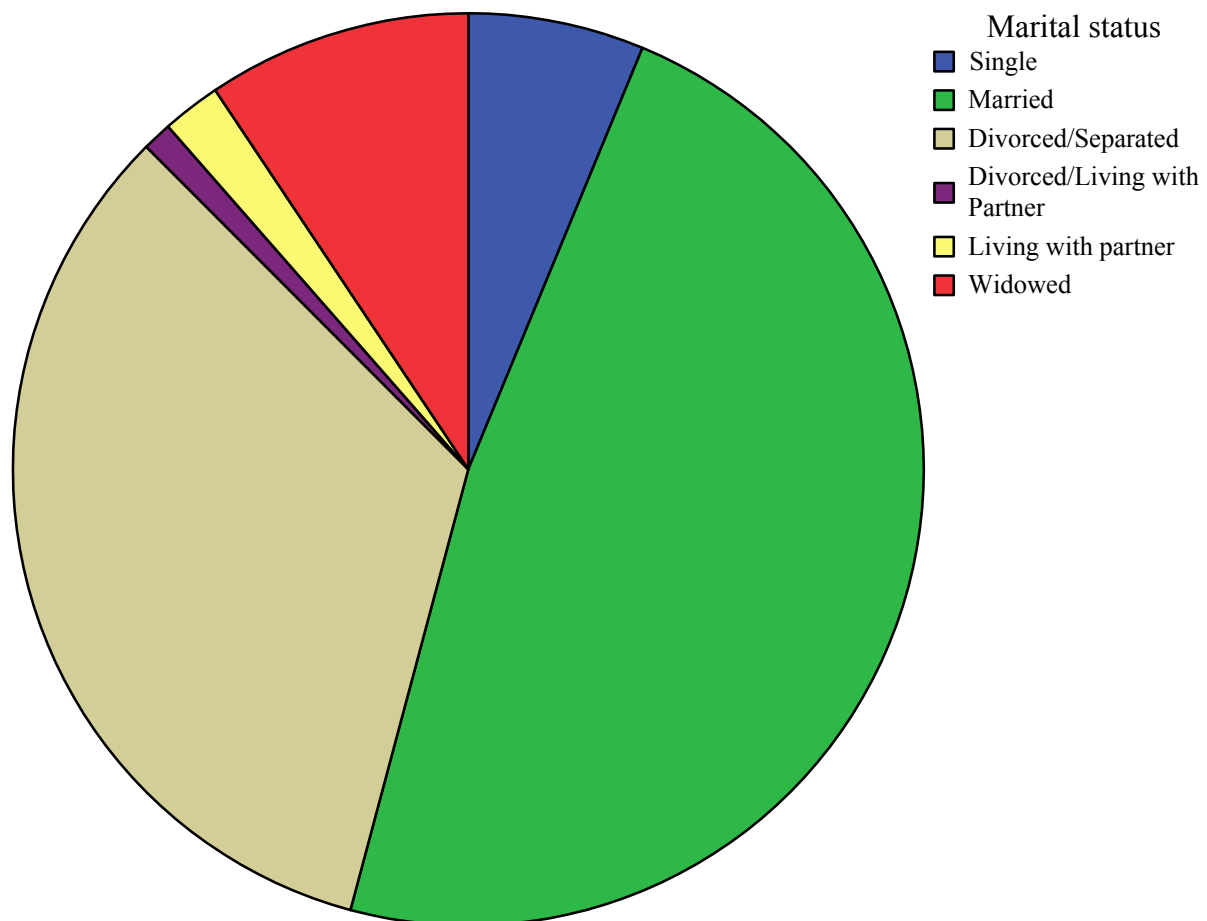5.   Existen diferentes personas con las cuales disfruto el tiempo.
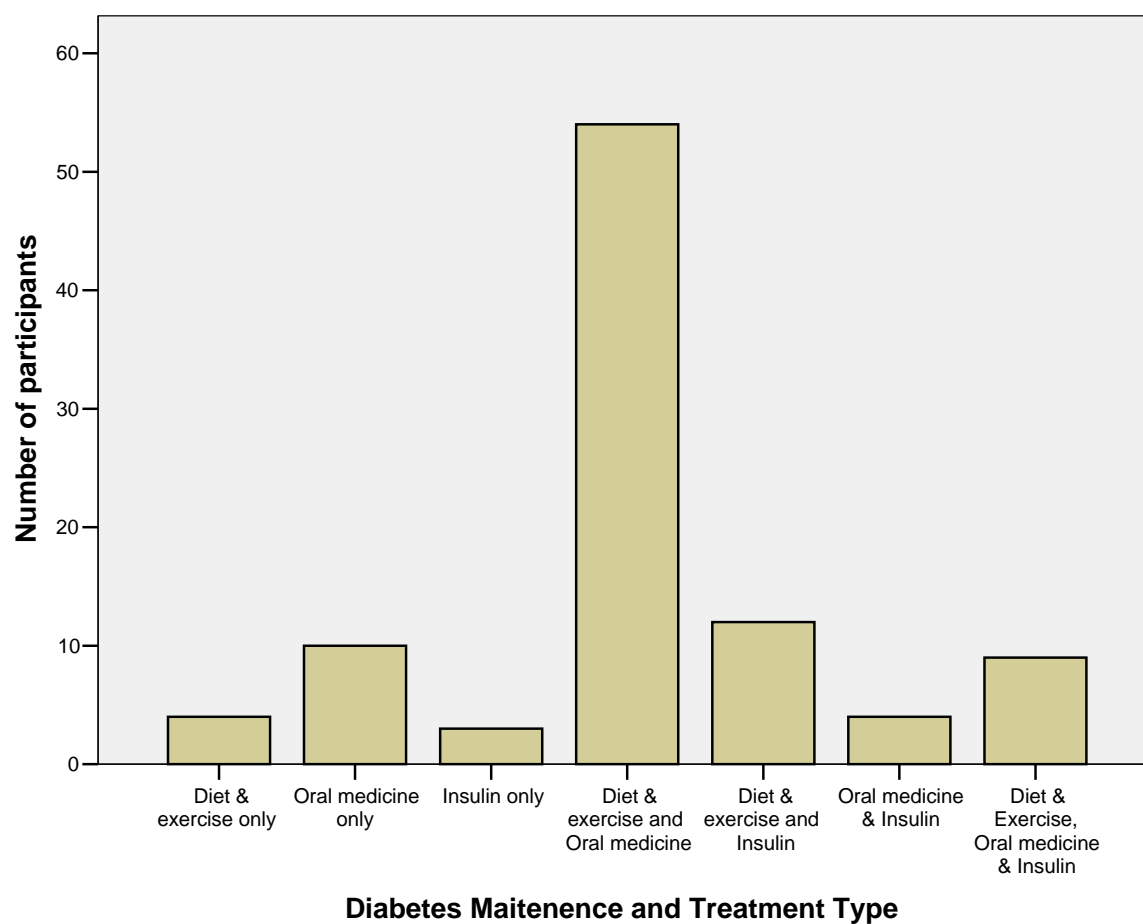
APPENDIX C
Figures
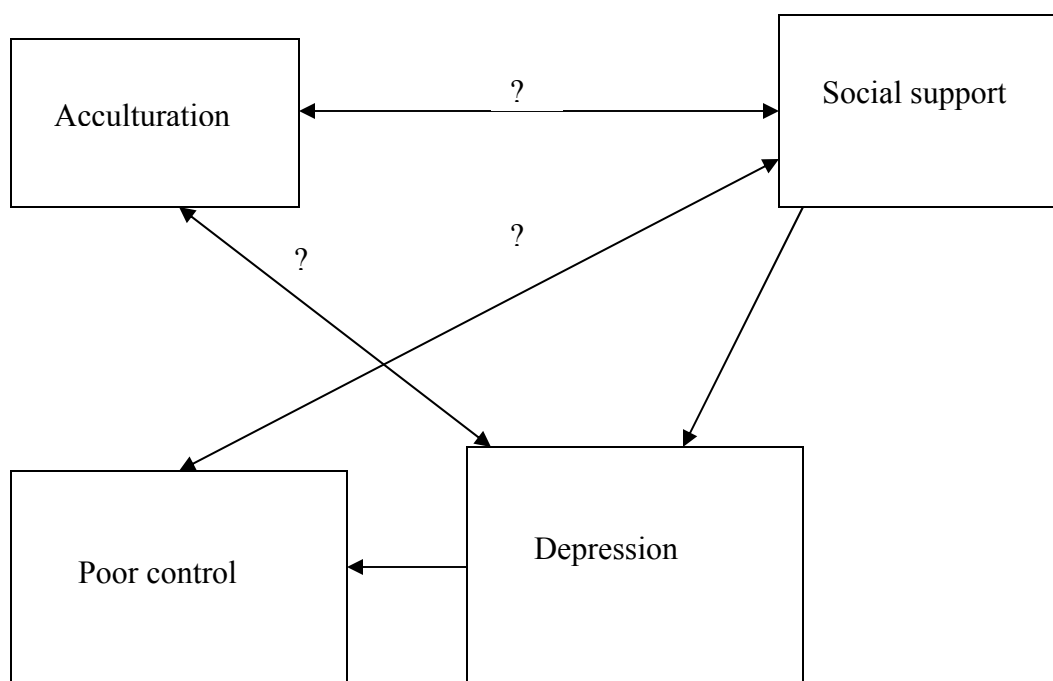
Figure 1. Visual aid for study hypotheses on how variables may interact in Latinas with diabetes partially based on previous studies with question marks indicating few studies or controversial findings

Figure 2

<u>Marital Status of Participants</u>

Figure 3. Diabetes maintenance/treatment types used by the participants in the study
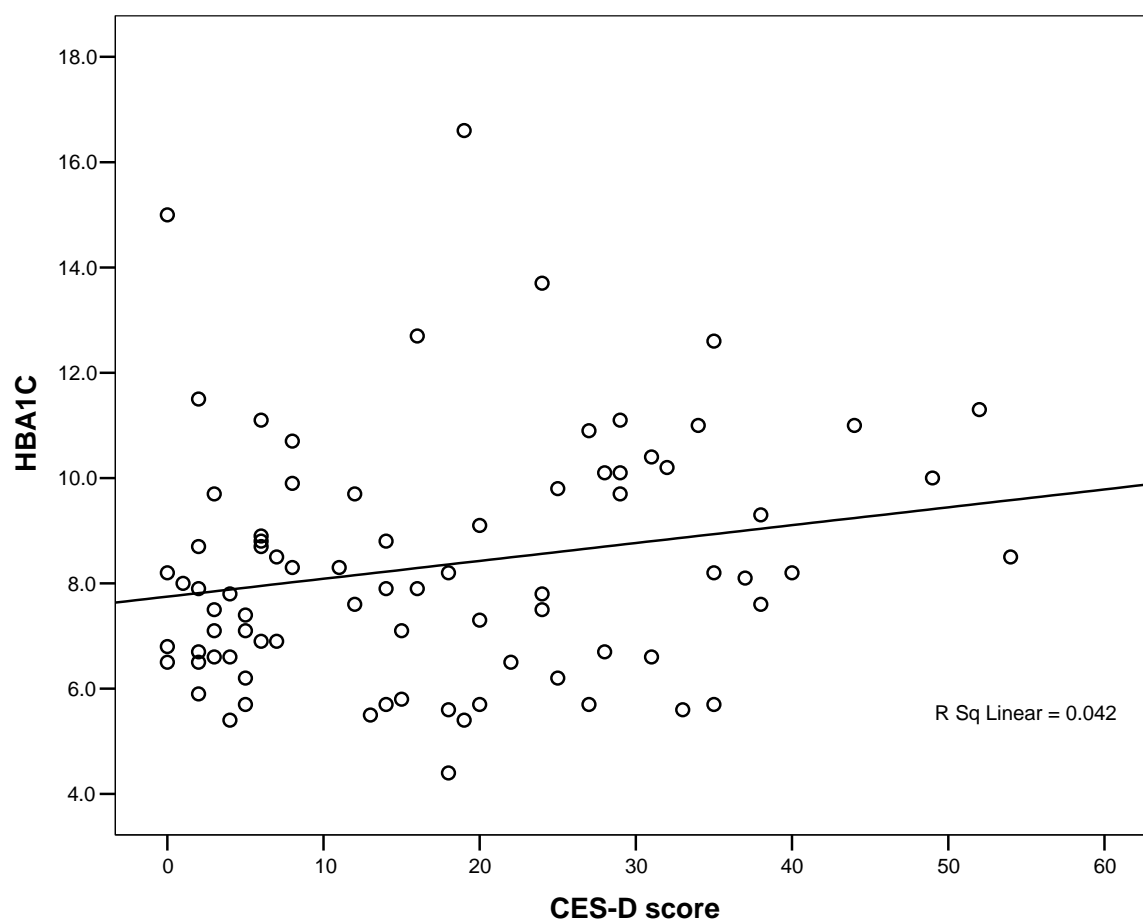
Figure 4. Correlation between CES-D scores and recent HbA$_{1c}$ levels with best-fit line

APPENDIX D
Tables

Table 1

<u>Demographic Data</u>

_____

Demographic Variable	Range	Mean	Standard Deviation
Age	26-65	51.82	8.73
Years living in U.S.	2-65	26.93	18.22
Years of education	0-16	6.54	3.93
Yearly household income	$0-40,000	$12,957	$7,385
Household size	1-10	3.55	2.07
Years living with diabetes	0.1-25	7.64	6.30

Table 2

<u>Country of birth</u>

_____

Country	Frequency	Percent
México	66	68.8%
U.S.A.	23	24%
Guatemala	2	2.1%
Nicaragua	2	2.1%
Argentina	1	1.0%
El Salvador	1	1.0%
Honduras	1	1.0%

Table 3

Generational representation

_____

Generation	Frequency	Percent
First generation (Born in another country)	74	77.1%
Second generation (Born in U.S. and one of the parents born in another country)	6	6.3%
Third generation (Born in U.S., both parent born in U.S. and all grandparents born in another country)	4	4.2%
Fourth generation (Born in U.S. as well as parents and at least one grandparent born in another country with remainder born in U.S.)	5	5.2%
Fifth generation (Born in U.S. as well as parents and all grandparents)	6	6.3%
Unknown	1	1.0%

Table 4

Analysis of Variance for Years of diabetes predictor in Linear Regression for CES-D

Model	Sum of Squares	df	Mean Square	F	Significance
Regression	932.001	1	932.001	5.169	0.26
Residual	12622.148	70	180.316		
Total	13554.149	71			

CHAPTER VII
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VITAE

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