Fall 10-4-2011

Social Ecology of Adherence to Hypertension Treatment in Latino Migrant and Seasonal Farmworkers

Eleanor M. Hall
Byrdine F. Lewis School of Nursing

ACCEPTANCE

This dissertation, SOCIAL ECOLOGY OF ADHERENCE TO HYPERTENSION TREATMENT IN LATINO MIGRANT/SEASONAL FARMWORKERS by Eleanor B. Hall was prepared under the direction of the candidate's dissertation committee. It is accepted by the committee members in partial fulfillment of the requirements for the degree of Doctor of Philosophy in Nursing in the Byrdine F. Lewis School of Nursing and Health Professions, Georgia State University.

Shih-Yu Lee, PhD, RNC
Committee Chairperson

Patricia Clark, PhD, RN, FAHA, FAAN
Committee Member

Julia Perilla, PhD
Committee Member

10/4/2011
Date

This dissertation meets the format and style requirements established by the Byrdine F. Lewis School of Nursing and Health Professions. It is acceptable for binding, for placement in the University Library and Archives, and for reproduction and distribution to the scholarly and lay community by University Microfilms International.

Joan Cranford, EdD, RN
Assistant Dean for Nursing
Byrdine F. Lewis School of Nursing and Health Professions

Cecelia M. Grindel, PhD, RN, FAAN
Professor & Interim Dean
Byrdine F. Lewis School of Nursing and Health Professions

AUTHOR'S STATEMENT

In presenting this dissertation as a partial fulfillment of the requirements for an advanced degree from Georgia State University, I agree that the Library of the University shall make it available for inspection and circulation in accordance with its regulations governing materials of this type. I agree that permission to quote from, to copy from, or to publish this dissertation may be granted by the author or, in his/her absence, by the professor under whose direction it was written, or in his/her absence, by the Associate Director for Graduate Programs in Nursing, Byrdine F. Lewis School of Nursing and Health Professions. Such quoting, copying, or publishing must be solely for scholarly purposes and will not involve potential financial gain. It is understood that any copying from or publication of this dissertation which involves potential financial gain will not be allowed without written permission from the author.

Eleanor B. Hall

NOTICE TO BORROWERS

All dissertations deposited in the Georgia State University Library must be used in accordance with the stipulations prescribed by the author in the preceding statement.

The author of this dissertation is:

Eleanor B. Hall
126 Greenleaf Lane
Thomasville, GA 31757

The director of this dissertation is:

Dr. Shih-Yu Sylvia Lee
Assistant Professor
Byrdine F. Lewis School of Nursing and Health Professions
Georgia State University
P.O. Box 4019
Atlanta, GA 30302-4019

Users of this dissertation not regularly enrolled as students at Georgia State University are required to attest acceptance of the preceding stipulations by signing below. Libraries borrowing this dissertation for the use of their patrons are required to see that each user records here the information requested.

NAME OF USER	ADDRESS	DATE	TYPE OF USE (EXAMINATION ONLY OR COPYING)

VITA

Eleanor Bell Hall

ADDRESS: 126 Greenleaf Lane
Thomasville, Georgia 31757

EDUCATION

Ph.D.	2011	Georgia State University Atlanta, Georgia
M.S.N.	2002	Vanderbilt University Nashville, Tennessee
Diploma in Nursing	1992	Baptist College of Health Sciences Memphis, Tennessee
B.S.	1985	Vanderbilt University Nashville, Tennessee

PROFESSIONAL EXPERIECE

2006 – Present	Assistant Professor, Thomas University
2004-2006	Clinical Instructor, Southwest Georgia Technical College
2004-2006	Healthcare Science Technology Program Teacher/Coordinator, County Central High School
2000-2004	Clinical Educator, John D. Archbold Memorial Hospital
1992-2000	Staff and Charge Nurse, John D. Archbold Memorial Hospital
1988-1991	Research Assistant, Memphis VA Medical Center
1986-1988	Research Assistant, St. Jude Children's Research Hospital

PROFESSIONAL MEMBERSHIPS

2007 –Present	Southern Nursing Research Society
2009- Present	Georgia Association for Nursing Education

PRESENTATIONS

- Southern Nursing Research Society Conference February 2009-Poster Presentation: *Perceptions of Latino Migrant Farmworkers' Health and Health Needs in Southwest Georgia*

- Midwest Stream Migrant Farmworker Forum November 2008-2 Presentations
  Session 1: *Perceptions of Latino Migrant Farmworkers' Health and Health Needs in Southwest Georgia*
  Session 2: *The Application of Bronfenbrenner's Ecology Systems Theory to Self-Management of Hypertension in the Latino Migrant Farmworker Population*

- College English Association 2008 on "Passages: Development of the course, Medical Literature and the Art of Healing"

GRANT-SUPPORT AND AWARDS

2010 Sigma Theta Tau, Epsilon Alpha Chapter, Research Award

2010 Kaiser Permanente Evidence Based Research Award

PUBLICATIONS

Brawley, S., & Bell, E. (1987). Partial activation of Fucus Eggs with calcium I

ionophores and low-sodium seawater. *Developmental Biology*, *122*, 217-226.

ABSTRACT

SOCIAL ECOLOGY OF ADHERENCE TO HYPERTENSION TREATMENT IN LATINO MIGRANT/SEASONAL FARMWORKERS

by

ELEANOR B. Hall

The prevalence of hypertension (HTN) is high in Latinos (Latino/Latina) Americans due to social and ecological factors. Increased migration of Latino migrant/seasonal farmworkers (MSFW) to the U.S. augments the social, economic, environmental, and psychosocial factors associated with health and illness. Bronfenbrenner's Ecological Systems Theory was used to guide this study. The purposes of this cross-sectional, correlational study were to explore Latino MSFWs' adherence to HTN treatment (medication adherence, blood pressure [BP] self-care, and BP control) and to examine the influence of BP knowledge, perceived stress, acculturation, health literacy, and health care access (HCA) on adherence to HTN treatment.

A total of 45 Latino (mean age 45 $\pm$ 9) MSFWs receiving HTN treatment participated in this study. Spanish and English questionnaires were available for participants to measure adherence to HTN treatment and the five independent variables. Analysis included correlations, t-tests, hierarchical multiple regression, and hierarchical logistic regression.

The majority of MSFWs were from Mexico, female (55.6%), had less than a 6^{th} grade education. Most (82%) of the MSFWs had uncontrolled BP, and were not adherent

to medications (42%), even with high BP knowledge scores (M = 6.5 ±1.3). MSFWs perceived a high level of stress (M = 16 $\pm$ 6.9), low acculturation level (Anglo orientation: M = 2.9 $\pm$ 0.9), and no employer-provided health insurance for personal illnesses or injuries (93%). Blood pressure knowledge, perceived stress, acculturation, health literacy, and HCA accounted for 49% of the variance in the BP self-care; however, only higher BP knowledge was a significant predictor of better BP self-care ($p < .001$). Furthermore, acculturation was a significant predictor of BP control ($p < .01$).

This study explored select determinants of adherence to HTN treatment in Latino MSFWs in a culturally informed way. Although BP self-care behaviors appeared to be a consequence of BP knowledge, this study found low medication adherence in Latino MSFWs and uncontrolled BP explained by the two predictors, acculturation and health literacy. Perceived stress and health care access did not influence the adherence to HTN treatment. MSFWs had poor BP control and HTN treatment adherence. A culturally appropriate educational program is needed to help the MSFWs adherence to HTN treatment.

ACKNOWLEDGEMENTS

"The human element is the element of change. It gives us our footing to stand fearlessly and face the future . . .a way of seeing that gives us a way of touching issues, ambitions, lives: The human element. Nothing is more fundamental. Nothing more elemental."

--Dow Chemical Company

Indeed like the periodic table of elements in which the chemical elements are each arranged in a unique order that recognizes their value and contribution to the make-up of the earth, so it can be said of the human element that has made my dissertation possible.

First, deep gratitude goes to Dr. Lee, who took on my dissertation proposal midstream, and gave generously of her knowledge and expertise to gently mentor me through this process. Like Ping from *The story about Ping*, I sometimes needed a firm tap to redirect me, but I trusted you every step of the way. You have been a blessing to me. To my committee members, Dr. Patricia Clark and Dr. Julia Perilla, your feedback, expertise, and time are also deeply appreciated, and I thank you.

To Thomas University and the Division of Nursing for the opportunity to pursue my doctorate, I am tremendously grateful as I could not have done this without their support. I am further grateful to Leslie and Sally, and you must know that you are gifts from above. Much of this would not be possible with the talented translators who assisted with the transtaion of some of the instruments. Thank you for your contribution and sharing of your knowledge. Thank you to my two interpreters, Linda and Carolina, who dedicated themselves to this dissertation and allowed themselves to be voices for the migrant/seasonal farmworkers. To the employees in the migrant farmworker clinics and

to the clients, I am very grateful for your help, time, patience, and support. I would like to acknowledge that each individual participant in this study has made this possible, and each gave of their time and humbly shared their experiences, and I honor you. In addition, as the deadline approached, I was humbled by the beautiful ladies from my Sunday school class who poured out their love and grace to ease my stress so that I could reach this goal.

Finally none of this would be possible without my incredible family. I am so very grateful for your encouragement, patience, and love. Grace and Abigail, my precious daughters, and sweet Lilly Kate, my granddaughter, you mean so much to me. Suzanne, my dearest friend, I want to publically thank you for your support and listening ear over these years. To my best friend, my mother, to my wonderful father, and my step-father and step-mother, I am indebted to you for your encouragement and for believing in me. An eternal thank you goes to my wonderful husband, Jim. You have patiently and lovingly supported me during this process, and I love you dearly.

SOCIAL ECOLOGY OF ADHERENCE TO HYPERTENSION TREATMENT

IN LATIO MIGRANT/SEASONAL FARMWORKERS

by

ELEANOR B. HALL

A DISSERTATION

Presented in Partial Fulfillment of Requirements for the
Degree of Doctor of Philosophy in Nursing in the Byrdine F. Lewis School of Nursing
and Health Professions
Georgia State University

Atlanta, Georgia

2011

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF ABBREVIATIONS

AA	African American
AHA	American Heart Association
AOS	Anglo Oriented Scale
ARSMA-II	Acculturation Rating Scale for Mexican Americans-II
BP	Blood Pressure
BPC	Blood Pressure control
BPKS	Blood Pressure Knowledge Scale
BPSC	Blood Pressure Self-care Scale
BRFSS	Behavior Risk Factor Surveillance Study
CDC	Center for Disease Control
CES-D	Center for Epidemiologic Studies-Depression Scale
CHIPS	Cohen-Hoberman Inventory of Physical Symptoms
CVD	Cardiovascular Disease
DBP	Diastolic Blood Pressure
HCA	Health Care Access
HCP	Health Care Practitioner
HRSA	Health Resources and Services Administration
HTN	Hypertension
LEP	Limited English Proficiency
MMAS	Morisky Medication Adherence Scale
MOS	Mexican Oriented Scale
MSFW	Migrant Seasonal Farmworker

NAAL	National Assessment of Adult Literacy
NAWS	National Agricultural Workers Survey
NCMHD	National Center on Minority Health and Disparities
NHANES	National Health and Nutrition Examination Survey
NHLBI	National Heart, Lung, and Blood Institute
PI	Principle Investigator
PRWORA	Personal Responsibility and Work Opportunity Reconciliation Act
PSS	Perceived Stress Scale
SAHLSA-50	Short Assessment of Health Literacy for Spanish-speaking Adults-50
SBP	Systolic Blood Pressure
SES	Socioeconomic Status
TOFHLA	Test of Functional Health Literacy in Adults
U.S.	United States

CHAPTER I

INTRODUCTION

This chapter will provide an overview of the significance of hypertension (HTN), the prevalence rate, awareness, and treatment in the U.S. population in general. A specific focus will be on the Latino migrant and seasonal farmworker (MSFW), who's social and environmental conditions are believed to contribute to barriers to adherence to HTN treatment. A description of the MSFW and the importance of cultural pluralism in the treatment of HTN will be discussed. Bronfenbrenner's Social Ecology (Bronfenbrenner, 1979) Theory was used to guide this study because of the systems approach in this theory and the focus on individual development as influenced by the interactions within the society.

Overview of Hypertension and the Latino Migrant and Seasonal Farmworker

Significance of Hypertension

Despite the knowledge of HTN as a modifiable risk factor of cardiovascular disease (CVD), the prevalence of this public health issue continues to increase. Researchers advocate further evaluation of obstacles in CVD prevention and management associated with socioeconomic and psychosocial factors (Angell et al., 2008; Ong, Cheung, Man, Lau, & Lam, 2007; Sarafidis & Bakris, 2008). Estimated medical expenditures for CVD are $448.5 billion annually while the long-term consequences of poorly managed or uncontrolled blood pressure (BP) results in a cumulative cost of $73.4 billion (Rosamond et al., 2008; American Heart Association [AHA], 2009). More than 68 million

individuals in the United States (U.S.) have HTN, and between 1999 and 2006 the prevalence rate increased from 28% to 30% (AHA, 2009; Gillespie Kuklina, Briss, Blair, & Hong, 2011; Ostchega, Yoon, Hughes, & Louis, 2008). Disparities remain in the prevalence, treatment, and control of HTN across race/ethnicity with African Americans (AA) remaining at greatest risk (44.1%), followed by Whites (32.2%), and Hispanics (27%) (AHA, 2009; Angell et al., 2008; Izzo, Giles, & Materson, 2008). An analysis of National Health and Nutrition Examination Survey (NHANES) III 1986-1994 and NHANES 1999-2004 (Cutler et al., 2008) data showed an 18% prevalence increase in HTN among Non-Hispanic Whites, Non-Hispanic Blacks, and Mexican Americans. More recent analysis of the NHANES from 1988 to 2008 demonstrates an improvement in BP control rates from 69% to 81% among those being treated (Egan & Laken, 2011). However, in regards to the prevalence of treatment of HTN, individuals between 18 and 39 (37.4%) and Mexican Americans (56.1%) received substandard treatment and the prevalence of control of HTN among these groups were equally unsatisfactory such that 37% of Mexican Americans and 31 % of individuals age 18 to 39 years experienced poor BP control (Gillespie et al., 2011; Egan & Laken, 2011).

Another factor with poor treatment and control of HTN was found among those who did not have consistent medical care (12%) or lacked health insurance altogether (29%) (Gillespie et al., 2011). Lack of health insurance is a predominant factor associated with sporadic health care use, and barriers to health care access (HCA). Geographic location in the U.S. also appears to contribute to the prevalence of HTN such that HTN is higher in the south and southeast, which is also known as the stroke belt because of the high mortality rate (Rosamond et al., 2008). The risk for stroke in this

region is associated with socioeconomic status, ethnicity, prevalence of overweight and obesity, and the presence of chronic diseases such as diabetes, HTN, and heart disease (Liao, Greenlaund, Croft, Keenan, & Giles, 2009). In this region, both HTN and stroke are almost twice as high than in the Midwest, and approximately four times as high as in the West and North (Rosamond et al., 2008; Izzo, Giles, & Materson, 2008; Pleis & Lethbridge-Çejku, 2007).

Hypertension and the Migrant and Seasonal Farmworker

Research on HTN among immigrants to the U.S. from Latin countries varies and defining the ethnic groups is often bound by culture or country of origin, such as Mexican, Puerto Rican, Guatemalan, Honduran, Salvadoran, Cuban, or Chilean. Marin and Marin (1991) advised a careful understanding of the parameters of ethnic labeling and operationalization of the Hispanic population in research; thus, "Latino" was used in this study to refer to people who are of Latin origin or Latin American. In cases where specific studies are cited, the ethnic terms used in those studies were used.

The most recent findings from the NHANES with regards to the prevalence, treatment, and control of HTN among individuals aged18 years and above illustrates that specific populations are at greater risk of inadequate BP treatment and control (Gillespie et al., 2011). Not only are specific minority groups at greater risk of inadequate BP treatment and control, but also individuals whose social environment reflects a cumulative exposure to social deprivation brought on by social and economic poverty, cultural changes due to migration and modernization as well as negative effects of psychosocial stressors (Krieger, 2001; Dressler, 2004). Latinos represent the largest

minority group in the U.S. (50.5 million), and 37% are foreign-born from Latin countries, and 22% represent the unauthorized population (Ennis, Ríos-Vargas, & Albert, 2011; Passel, Cohn, & Lopez, 2011; Passel & Cohn, 2011). Latino immigrants are at increased risk for disease due to disparities brought on by social environmental stressors such as lower education levels, employment in low-paying jobs, living in sub-standard housing, discrimination, language barriers, and legal status (Elder, Ayala, Parra-Medina, & Talavera, 2009).

In addition, the transition from one culture to a different culture may influence socioeconomic (SES) and social environmental conditions as individuals attempt to live in accordance with new norms associated with lifestyles (Livingston, Minushkin, & Cohn, 2008; Williams, Costa, Odunlami, & Mohammed, 2008; Adler & Ostrove, 1999). Dressler, Balieiro, Riberio, and Dos Santos (2007) refined the concept of culture stating that "culture is an environment of shared meaning and understanding that enables individuals to construct interpretations of events and circumstances around them" (p. 196). Berry (2006) emphasizes the notion of cultural pluralism in which diverse cultural or ethnic communities share a social and political framework. The risks of disease as a due to the intercultural contact cannot be viewed in a vacuum, but should consider the context of individuals of different cultural backgrounds interacting, and the cultural and psychological changes that occur (Sam, 2006; Leininger, 1988). In a study examining risk factors for cardiovascular disease and the cultural facets of SES in an African American community, Dressler, Bindon, and Neggers (1998) found that failure to live in accordance with lifestyle norms of the accepted community and SES deprivation had a greater risk of HTN. Understanding the contributions that differences in culture make on

individual health is an important component in managing diseases.

The subgroup Latino immigrant who is most vulnerable to health disparities in the U.S. is migrant/seasonal farmworkers (MSFWs). Due to the environmental and occupational hazards associated with agricultural work, poor housing, migratory habits, and geographic boundaries they experience a disruption of family relationships, an increase in depression, poverty, and poor health maintenance and health care access (Grzywacz, et al., 2010b; Quandt, Preisser, & Arcury, 2002; Grzywacz, et al., 2010a; Conner, Layne, & Thomisee, 2010). The MSFW is defined as one who works in the agricultural industry, who may move from one geographic location to another for the purposes of agricultural employment, or one who may not move, but whose primary employment is in seasonal farm work (Zuvekas, 2002). Accordingly, the MSFW population is predominately male (80%), less than 35 years old, Spanish-only speakers (84%), and married and possibly parents (50%) (Carroll, Samardick, Bernard, Gabbard, & Hernandez, 2005). Latino MSFWs' average individual income ranges from $10,000-$12,499 per year and the total family income between $15,000 and $17,499; both of which were below the federal poverty level (Rosenbaum & Shin, 2005; Carroll, et al. 2005).

The hardships MSFWs experience lead to the adoption of unhealthy lifestyles and a host of other health issues associated with their social and work environments (Lara, Gamboa, Kahramanian, Morales, & Bautista, 2005; Larson, 2001). Addressing the health issues of MSFWs through health care policies has been less of a priority for the U.S. government than overall national health care policy. However, the Health Resources and Services Administration has been providing quality care community health centers for the

medically underserved for more than 40 years through the Health Disparities Collaboratives initiative, which served almost 865,000 MSFWs and their families in 2009 (Health Resources and Services Administration [HRSA], n.d.; Landon et al., 2007). At one time U.S. grappled with how to manage the social and environmental health issues among MSFWs, but the recent passage of the Affordable Care Act with its focus on primary care and prevention through the Community Health Center Trust Fund is aimed at diminishing the health care disparities among minorities, uninsured, and under-severed (Marshall, Urrutia-Rojas, Mas, & Coggin, 2005; Hawkins & Groves, 2011).

Although health care is now positioned to improve the health of MSFWs, an array of factors influencing Latino MSFWs' health extends beyond conventional disparities associated with SES to include BP knowledge, perceived stress, acculturation levels, health literacy, as well as gaps in health care access (Krieger, 2001; DeWalt, Berkman, Sheridan, Lohr, & Pignone, 2004; Dohrenwend, 2000; Coe & Laudenslager, 2007; Elder, Ayala, Parra-Medina, &Talavera, 2009; Cunningham, Banker, Artiga, &Tolbert, 2006). Understanding how these factors are associated with adherence to HTN treatment as defined by medication adherence, BP self-care, and blood pressure control (BPC) might elucidate pathways to which social and individual factors interact to influence illness and health within the context of the Latino MSFW's world (Link &Phelan, 1995).

Statement of the Problem

The Institute of Medicine's landmark publication "Unequal treatment: Confronting racial and ethnic disparities in health care" exposed health care disparities experienced by ethnic and racial minorities and represents a framework for the obstacles to reducing the prevalence and incidence of HTN (Smedley, Stith, & Nelson, 2003). Racial and ethnic

health care disparities are closely linked to SES, environmental deprivation, discrimination, and access to health care (Smedley, Stith, & Nelson, 2003; Krieger, 2001; Marshall, Urrutia-Rojas, Mas, & Coggin, 2005). In other words, the notion of "social epidemiology" conveys the idea that social determinants of health and disease are inextricably linked with societal conditions such as poverty, lower education level, web of relationships and social networks, unhealthy lifestyle choices, under or unemployment, discrimination, and culture beginning at the microsystem level and extending to the macrosystem level (Krieger, 2001; Anderson et al., 2003; Wallenstein, Yen, & Syme, 2011). Link and Phelan (1995) emphasize that historically, research mainly focused on understanding relationships between the proximal risk factors (e.g. decreased exercise, inadequate diet, high cholesterol, or high blood sugar) and diseases such as HTN, while neglecting the role of social factors, known as "fundamental causes of disease" or social conditions (availability of resources, relationships, and social support) on health because of their distal nature. The gaps in the perceived distal nature of social conditions make establishing causal links with illness more difficult and may produce flawed understanding as well as an underrated value of the impact of social factors on illness and health (Link & Phelan, 1995). Furthermore, the National Center on Minority Health and Disparities (NCMHD) supports the exploration into the cultural and social determinates of minority health in diminishing health care disparities (NCMHD, n.d.).

Although the knowledge and treatment of HTN is improving with 81% of individuals aware of their HTN, 72.5% receiving treatment for HTN and 69 % under control, problems with BP control remain among the more than 41 million Americans (Egan & Laken, 2011; Viera, Cohen, Mitchell, & Sloane, 2008). Furthermore, among

Healthy Peoples' 2020 goals for heart disease and stroke is to achieve a goal of 61.2% of adults 18 years of age and older with controlled BP, which is goal of a 17% increase over the current baseline of 43.2% (U.S. Department of Health and Human Services, 2011). According to the data from NHANES 1998 to 2004, the level of awareness of HTN did not have a statistically significant change for Mexican Americans, and they also have less HTN control (35.2%) compared to non-Hispanic Whites (46.1%) or Non-Hispanic Blacks (46.5%) (Ostchega et al., 2008). The HTN control rate was only 19% for older Mexican American women (≥ 70 years old) and 16% for younger Mexican American males (ages 18-49 years) (Cutler et al., 2008). Over the next twenty years, CVD is predicted to increase among this population. HTN is one of the main risk factors for CVD; therefore, examining the factors that impact HTN control becomes very important (Crespo & Garcia-Palmieri, 2008).

Addressing adherence to HTN treatment among hypertensive Latino MSFWs requires an exploration of the complex interactions and multidimensional relationships among social conditions such as acculturation and health care access along with individual issues such as knowledge of HTN, perceived stress, and health literacy. More research is needed to tailor culturally-appropriate and effective interventions to improve health-care for Latino MSFW (Arcury & Quandt, 2007).

Significance of Study

The Hispanic population growth over the last decade represented one-half (56%) of the growth in the U.S and is the largest minority group in this country (Humes, Jones, & Ramirez, 2011; Passel, Cohn, & Lopez, 2011). Latinos account for 27% of the U.S. population with HTN but make up only 16.3% of the total U.S. population (Humes,

Jones, & Ramirez, 2011; Passel, Cohn, & Lopez, 2011). Researchers found that Mexican Americans had higher mortality risks associated with cardiovascular and coronary heart disease than non-Hispanic Whites due to higher incidence of obesity, diabetes, lower SES, and obstacles to health care (AHA, 2009; Hunt et al., 2003). The prevalence of disease among different populations is indisputably influenced by race/ethnicity, culture, SES factors, gender, and geographic region with evidence of a linear health-gradient evident between chronic disease and SES (Dressler et al., 2007; Adler & Ostrove, 1999). Since America is becoming a pluralistic culture system, understanding health outcomes as related to SES should include the influence of cultural changes that occur with migration and modernization (Dressler, 2004). Moreover, these cultural changes, reflected in the phenomenon of acculturation or the adapting to and adoption of values, beliefs, behaviors, language, attitudes, and practices of another country are important in understanding the risk of disease among cultures (Redfield, Linton, & Herskovits, 1936; Trimble, 2003; Dressler, 2004).

The association between SES and health outcomes found by increasing numbers of studies, is often described as the SES-health gradient. This gradient refers to the fact that, in contrast with marginalized populations, those who are more advantaged tend to have better health outcomes due to higher income, higher education attainment, and better occupations (Adler & Ostrove, 1999; Gallo et al., 2009). Pleis and Lethbridge-Cejku (2006) found that 20.3% of MSFW reported having HTN, and of all those who reported HTN, 26.8% were below the poverty level. Research exploring the level of education as a factor within the SES-health gradient demonstrates a strong correlation with health outcomes and has a powerful influence on health behaviors (Kimbro, Bzostek, Goldman,

& Rodríguez, 2008). The National Health Interview Survey 2009 found an inverse relationship among education and hypertension, heart disease, and stroke such that as educations levels increased in adults the rates of those conditions decreased (Pleis, Ward, & Lucas, 2010). Other evidence demonstrated that Mexican Americans with less than a high school education tend to be obese, and obesity is a major risk factor for CVD (Mensah, Mokdad, Ford, Greenlund, & Croft, 2005). In an examination of the Healthy People 2010 public health goals for five racial and ethnic groups, Keppel (2007) found that the lack of continuous/consistent sources of health care was identified sixth and failure to complete high school ranked eighth among the ten largest health disparities among Hispanics. Within the U.S. health care system, which is comprised of predominantly traditional Western values, the Latino MSFW may not be familiar with how to access health care due to their health-related cultural background.

Another factor considered to have a powerful influence on ethnic or cultural groups is acculturation, or the process of learning a culture, in which beliefs and values change with increased exposure to the mainstream or dominant culture (Marin & Gamba, 2003; Hunt, Schneider, & Comer, 2004). Embedded in the concept of acculturation is the notion of social or behavioral change within an ethnic or cultural group and potentially the modification of central values (Berry, 2006: Hunt, Schneider, & Comer, 2004). A number of studies demonstrated that with increased acculturation into the U.S., Latinos' diet conforms to the Western diet comprised of fatty, high salt processed foods as well as convenience foods (Castellanos, Connell, & Lee, 2011; Akresh, 2007; Cordain et al., 2005; Duffey, Gordon-Larsen, Ayala, & Popkin, 2008; Montez & Eschbach, 2008). Subsequently, the adoption of Western patterns of eating leads to an increase in chronic

diseases associated with unhealthy dietary patterns. With the process of acculturation, Latinos attempt to maintain vestiges of the original culture while adopting attributes of the dominant society, which may result in social and environmental incorporation of unhealthy habits (Trimble, 2003).

Agricultural labor is considered the second most dangerous occupation due to the hazards of working with large farm equipment, exposure to pesticides, and exposure to numerous environmental elements (Carroll et al., 2005). However, additional health issues are emerging from the interactions of the work environment, social and cultural barriers, and poor HCA within the Latino MSFW (Myers & Hard, 1995; Arcury & Quandt, 1998). More specifically, this unpredictable socio-environment increases their risks for poor management of HTN, a precursor to a number of conditions associated with CVD (Giles, et al., 2005). Additionally daily struggles with stressful life events may worsen their cardiovascular function through psychoneuroimmunological pathway (Coe & Laudenslager, 2007). Although research on Latino health is on the rise, knowledge of the health dynamics on MSFW, especially those who are a marginalized population due to their unauthorized status in the U.S. remains sparse. Exploring the link between physio-psycho-social influences on the hypertensive Latino MSFW's adherence to HTN treatment through acculturation, blood pressure knowledge and self-care, perceived stress, health literacy, and health care access might provide insight into methods to reduce health disparities associated with poor BP control within the Latino MSFW population.

Specific Aims of the Study

The purpose of this study was to explore the relationships between specific social ecological variables and adherence to HTN treatment in the hypertensive Latino MSFW. Understanding the association between the social conditions within the Latino MSFW's environment and adherence to HTN treatment might set the foundation for tailored-made social environmental interventions to improve health outcomes (Anderson et al., 2003).

The specific aims for this cross-sectional, correlational study were:

1. To describe hypertensive Latino MSFWs' experiences with adherence to HTN treatment (medication adherence, BP self-care, and BPC).
2. To examine the influence of BP knowledge, perceived stress, acculturation, and health literacy, and health care access on adherence to HTN treatment (medication adherence, BP self-care, and BPC) in hypertensive Latino MSFWs.

The research questions for this proposed study were:

In a sample of Latino MSFWs:

1. A. What is the level of adherence to HTN treatment?

   B. What are the relationships among medication adherence, BP self-care, and BPC?
2. To what extent is medication adherence explained by an individual's level of BP knowledge, perceived stress, acculturation, health literacy, and health care access?
3. To what extent is BP self-care explained by an individual's level of BP knowledge, perceived stress, acculturation health literacy, and health care access?
4. How much of the variance in BPC is explained by an individual's level of

acculturation, perceived stress, BP knowledge, health literacy, and health care access?

Assumptions

The assumptions for this study were:

1. From a system perspective, social, cultural, and environmental factors in the largest system impact the individual within the smallest system.
2. For the individual introduced to a new culture, a bidirectional interaction has psychosocial and biological influences on personal health.

Theoretical Framework

Ecology models have been used most to explore health promotion by focusing on the interactions among the environment, behavior, and social policy and individual health outcomes (Ayoola, Nettleman, & Brewer, 2007; Barrow, Armstrong, Vargo, & Boothroyd, 2007; Fleury & Lee, 2006; Jones, Heflinger, & Saunders 2007; & Quinn, Thompson, & Ott, 2005). According to Bronfenbrenner's (2005) Ecology Systems Theory, the ecology of human development is a process in which the individual is the product as well as the partial producer of one's development. Human behavior could only be understood by observing individuals and their interactions among different settings that surround the individual (Bronfenbrenner, 1979). In other words, human development was a consequence of the interconnections between the individual and the social milieu and how those interactions' influence the development of the individual.

Bronfenbrenner (1979) describes the ecological environment, the Social Ecology Model, as nested structures containing each level upon the next such that each environmental level moves from proximal to distal and the interaction of each level

instigates human development. These nested structures or levels are as follows: 1) a microsystem, 2) a mesosystem, 3) an exosystem, and 4) a macrosystem. Individual characteristics, activities, events, and/or relationships within one system influence the course or transition across to the other systems. For example, illness in an individual at the microsystem level propels him into the mesosystem level in which health care delivery exists. By engaging in health care seeking, the individual has transitioned from one domain to another. Therefore, in this model, the domains are carefully differentiated in such a way so as to allow for testing within and among each of the levels.

Microsystem

According to Bronfenbrenner (1979) the microsystem represents the complex relationship between the individual and the environment in the immediate setting. He defines the setting as "a place with particular physical features in which the participants engage in particular activities and roles (e.g., daughter, parent, employee, etc) for particular periods of time" (p.514). The microsystem is further developed "to include reference to social, physical, and symbolic aspects of the immediate setting that invite, permit, or inhibit, engagement in sustained, progressively more complex interaction with and activity in the immediate environment" such as that which is evident in an immigrants level of acculturation (Bronfenbrenner, 2005, p. 100).

Based upon the premise Bronfenbrenner posits about human development, the Latino MSFW might experience an adaptation within his or her human development as s/he comes to an unfamiliar ecosocial environment (Krieger, 2001). Developmental adaptation result in opportunities for new sources of information, new relationships, and influential socioenvironmental and psychosocial perspectives that might affect behavioral

choices, rate of acculturation, the body's response to social stressors, the capacity to establish and maintain relationships, and interactions within the community. Within the microsystem the hypertensive Latino MSFW's ability to adhere to HTN treatment may be influenced by the BP knowledge and self-care, acculturation level, perception of stress, and health literacy.

Mesosystem

The lack of an individual's activity with regards to health management is possibly what launches the entrance into the second level of ecology systems model, the mesosystem. Bronfenbrenner (1979) states that the mesosystem is comprised of microsystems, but stresses that the influence of "ecological transitions" or how the individual moves from one setting to another is important. The mesosystem is the "set of interrelations between two or more settings in which the developing person becomes an active participant" (Bronfenbrenner, 1979, p. 209). For the Latino MSFW in the mesosystem, the interrelation may come in the form of the relationships developed working on a farm and the interactions with the employer, and the accessibility to the health care system.

The premise of the nested model is that positive relationships and supportive environments in the microsystem level encourage continued development of the individual which allows beneficial interaction in the mesosystem. Bronfenbrenner (1979) hypothesized that the potential for development of a setting within the mesosystem is best achieved if the individual's transition is made in the company of another individual with whom he interacts within other settings. Whether or not Latino MSFWs migrate from crop to crop or remain within a small radius, the potential for development for Latino

MSFWs is possibly related to the social networks, presence or absence of family, housing type (dormitory, trailer/mobile home, single family home, or apartment) that contribute to the socioenvironmental conditions.

Exosystem

The exosystem represents the domain in which the individual does not have to exist but the reverberation of events in the microsystem or vice versa affect development (Bronfenbrenner, 1979). According to Bronfenbrenner (1979), the developing individual is not an active participant in the exosystem, but the social structures and events within this domain impinge upon the developing individual. These social structures include the world of work, informal or formal social networks, educational system, legal services, extended family, neighbors, communication systems, and other activities that influence when, how, and with whom individuals spend their time (Bronfenbrenner, 1979). Although the social structures within this domain might influence the ability for the Latino MSFW to adhere to HTN treatment, exploration of the variables within the exosystem will not occur in this study due to very limited information in the subtype population, and more fundamental information is needed before we can further explore relationships with the larger systems.

Macrosystem

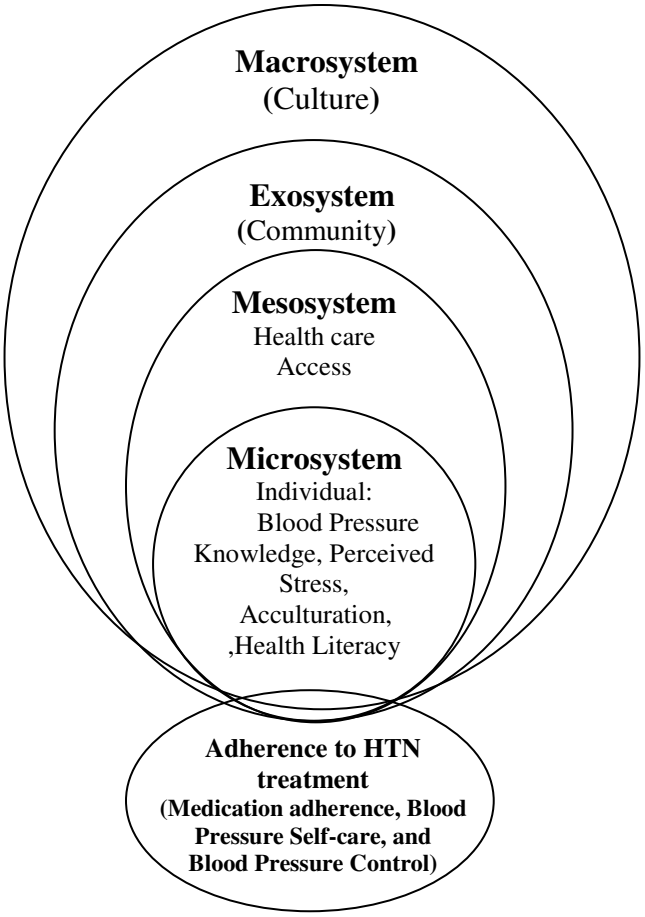
The last domain is the macrosystem, which encases the micro-, meso-, and exosystems. At this level, Bronfenbrenner (1979) theorizes that social change should occur since within this domain reside the societal values, cultural values and beliefs, and economic constituents, which influence the other three domains. Potential development of the individual is delimited by prospects existing within a culture or subculture, or a

broader social structure (Bronfenbrenner, 2005). Because at the macrosystem level the overarching framework of the ideologies and institutional characteristics profoundly impact cultures and subcultures, it is possible to conceive that the Hispanic and American cultures either interconnect or collide to affect the individual in the microsystem level. According to Cushman (1990), "culture is not indigenous clothing that covers the universal human; it infuses individuals, fundamentally shaping and forming them and how they conceive of themselves and the world, how they see others, how they make choices in the everyday world" (p. 601). When an individual from another culture settles in the U.S., the dominant culture with all of its policies, laws, economic pressure, and social expectations require some level of integration of the individual (Kottak, 2006). Whether overtly forced by the dominant society or mutual in nature, cultural influences transcend from the macrosystem to the microsystem of the new ethnic group to result in some degree of acculturation.

In summary, Bronfenbrenner's Ecology Systems Theory is complex; however, understanding the effects of all the systems on human health outcomes is beneficial to the development of health promotion strategies (Stokols, Grzywacz, McMahan, & Phillips 2003). As reflected in the model (Figure 1), this study will explore the relationship of the ecological and social interactions that affect adherence to HTN treatment (medication adherence, BP self-care, and BP control) at the microsystem level (the individual's knowledge of BP, perceived stress, acculturation level, and health literacy) and the mesosystem level (access to health care) within the Latino MSFW population. In the current study only the microsystem and mesosystem were examined. Although many variables could be considered at the exosystem and macrosystem levels, this study did not

seek to explore those potential variables because the variables of interest seemed more centrally located at the individual level.

Figure 1. Ecological Systems Model



Conceptual Definition of Terms

1. *Latino migrant/seasonal farmworker* (MSFW) was conceptualized as the Latino who works in the agricultural industry, who might move from one geographic location to another for the purposes of agricultural employment, or one who may not move, but whose primary employment is in seasonal farm work.
2. *Social ecology* was comprised of studying how the social, environmental, and psychosocial processes influence human development; an examination of not only how the individual shapes the environment, but also how the environment shapes the individual.
3. *Adherence to HTN treatment* was defined as it is consistently defined in the literature as the degree to which the patient follows the regimen or takes antihypertensive medication, incorporates lifestyle changes and dietary changes as prescribed by the health care provider (Frishman, 2007; Munger, Van Tassell, & LaFleur, 2007; Osterberg & Blaschke, 2005).
4. *Blood pressure control* was defined by the JNC-7 as an acceptable control rate of systolic blood pressure (SBP) < 140 mm Hg and diastolic blood pressure (DPB) <90 mm Hg or a BP < 130/80 mm Hg is recommended for individuals with diabetes or renal disease and HTN (U.S. Department of Health and Human Services, National Heart, Lung, and Blood Institute [NHLBI], 2004).
5. *Acculturation* was conceptualized as a phenomenon that occurs when cultures come in continuous contact with each other. The individual adapts to or adopts values, beliefs, behaviors, language, attitudes, and practices (Redfield, Linton, & Herskovits, 1936; Berry, 2006).

6. *Perceived stress* refers to an individual's perception of the situations in one's life are appraised as stressful (Cohen, Kamarck, & Mermelstein, 1983).
7. *Blood pressure knowledge* was defined as the degree of understanding of HTN, which includes: a.) knowing the symptoms; b) understanding the treatment, which includes medication adherence, adherence to follow-up appointments, and diet and exercise changes; c.) meaning of having controlled BP; and d.) understanding the consequences of poorly controlled HTN (Peters &Templin, 2008).
8. *Blood pressure self-care* entailed the management of high BP through lifestyle management such as maintaining a healthy weight, reducing salt intake, modifying diet, increasing exercise, and medication aderence (Lichtenstein et al., 2006; Peters & Templin, 2008).
9. *Health literacy* was defined consistent with Healthy People 2010 as "the degree to which individuals have the capacity to obtain, process, and understand basic health information and services needed to make appropriate health decisions." (U.S. Department of Health and Human Services, 2000).
10. *Health care access* was defined by whether or not the MSFW had health care coverage (Livingston, Minushkin, & Cohn, 2008).

CHAPTER II

LITERATURE REVIEW

The following is a selective review of literature pertinent to this study. Literature selected for review included research related to an overview of social ecology and health outcomes, HTN and risks among Latinos. Adherence to HTN treatment will be discussed in terms of issues with medication adherence, BP self-care, and BP control. In addition the literature review will explore the role of BP knowledge, stress, acculturation, health literacy and health care access in the Latino MSFW's ability to adhere to HTN treatment. The literature review extrapolates from what is known about HTN and the difficulties inherently associated with being a MSFW. The purpose is to understand the potential causal factors associated with adherence to HTN treatment. This chapter synthesizes the major strengths and limitations of current research along with a discussion of the research methods for Latinos.

Social Ecology and Health Outcomes

Health promotion activities such as smoking cessation programs, dietary and exercise programs are limited because they focus on individual behavior (Stokols, 1992). Health promotion strategies should concentrate on the dynamic interaction between individuals and the environment, a social-ecological approach, which focuses on the individual and the environment to improve health outcomes (Stokols, 1992). This social ecological perspective of health and illness allows for a panoramic view of the interdependence between individuals and the environment (Stokols, 1996). The premises of theory include 1) a mutual link between well-being and multiple aspects of the

sociophysical environment, 2) well-being within the individual and community relies upon the various environmental dimensions, 3) conditions within the environment or the individual wield an unbalanced degree of influence on individual health, and 4) a thorough understanding of health is achieved by employing a multidisciplinary approach (Grzywacz & Fuqua, 2000). Stokols (1992) recommended research that focuses on health promotion in respect to the environmental dimensions by exploring the mechanisms of influence of the geographic, sociocultural, and architectural-technological factors on health and illness. Using a socioecological perspective might provide insight into interdependent and interactional factors associated with adherence to HTN treatment and health care access among hypertensive Latino MSFW from a multidimensional view.

Hypertension and Risks Among Latinos

The standard clinical parameters for of HTN are established in the JNC-7 (U.S. Department of Health and Human Services, NHLBI, 2004). In order to reduce complications associated with CVD, individuals must maintain an acceptable control rate for HTN (American Diabetes Association, 2003; National Kidney Foundation Guidelines, 2002; U.S. Department of Health and Human Services U.S. Department of Health and Human Services, NHLBI, 2004). Hypertension is a risk factor for metabolic syndrome, which is comprised of a cluster of metabolic risk factors (cigarette smoking, diabetes, hypercholesterolemia, hypertension, obesity) that contribute to the development of CVD (Gundry, 2007). Even though great strides in reducing the prevalence of HTN have occurred through education and treatment, findings from the recent NAHNES 2007-2008 revealed HTN for those who are receiving treatment (31%), and 45% of those who are uncontrolled continue to have a minimum SBP of 140 mmHg and/or a DBP of 90 mmHg (Egan & Laken, 2011). The consistently high prevalence rate of HTN is most

evident among individuals influenced by lower social and environmental conditions, such as poverty, health-related cultural barriers, literacy, stressful and hazardous work environments, and lack of access to resources (AHA, 2009; Ostchega, Yoon, Hughes, & Louis, 2008). One fourth of the U.S. population is considered hypertensive and half pre-hypertensive (SBP ranging from 120-139 mmHg and DBP ranging from 80-89 mmHg), which indicate the need to respond to this health concern (U.S. Department of Health and Human Services, NHLBI, 2004). The hemodynamic impact of HTN results in peripheral resistance causing modification of the vasculature, large and small vessel hypertrophy, left ventricular hypertrophy, heart failure, myocardial infarction, transient ischemic attacks, stroke, renal failure, and peripheral vascular disease (Cushman, 2003).

The development of HTN is significantly associated with age and various pathological factors, such as overweight/obesity and with a cluster of metabolic diseases (Giles, et al., 2005; Izzo, Giles, & Materson, 2008; Rosamond et al., 2008). The age-related increase in SBP affects half of the individuals 60-69 years old to an estimated three-fourths in individuals greater than 70 years of age indicating that HTN is the result of a combination of factors related to life-style, the environment, and genetic make-up (Chobanian et al., 2003; Franklin et al., 1997; Vasan & Kannel, 2009). Since aging is a natural process, early HTN prevention or better HTN management could benefit an individual's well-being and quality of life. In addition, a number of studies demonstrate a relationship between elevated BP and perceived stress, which suggests that perceived stress should be evaluated when caring for the hypertensive patient (Adler & Snibbe, 2003; McCabe, 2000; Pickering, 1997; Sparrenberger et al., 2009).

Finally, according to the JNC-7, HCPs should articulate the importance of the five recommendations for non-pharmacologic therapy to help improve HTN control. These

include 1) a healthy body weight, 2) incorporating physical activity, 3) adopting a heart-healthy diet, salt reduction, and increasing potassium intake, 4) smoking cessation, and 5) managing stress (U.S. Department of Health and Human Services, NHLBI, 2004).

Hypertension Risks of the Latino Migrant Seasonal Farmworker

For Latinos living in the U. S., 37 % do not have a health care provider they see regularly and 59% of undocumented workers lack health insurance (Livingston, 2009). With the lack of insurance and no regular health care provider, both authorized and unauthorized Latino MSFWs are vulnerable to various acute and chronic health problems. Improper use of medical services by the uninsured leads to inappropriate and excessive expenditures to manage illness (Trapp, 2007). The presence of MSWFs without insurance adds to the burden of the U.S. health care system that attempts to effectively manage their health care needs in spite of cultural and language barriers, and lower SES (Dubard & Massing, 2008; Goldman, Smith, & Sood, 2006; Hernandez & Arroyo, 2007; Trapp, 2007).

A plethora of research demonstrates that SES (e.g. education, income), is a powerful indicator of racial/ethnic morbidity and mortality inequities (Fiscella, Franks, Gold, & Clancy, 2000; Krieger et al., 2008; Sorlie, Backlund, & Keller, 1995). For example, according to the findings from National Agricultural Workers Survey (NAWS), the average education level for farmworkers was seventh grade with a median of sixth grade (Carroll et al., 2005). To obtain a perspective of what this means, Santibañez, Vernez, and Razquin (2005) delineated the educational system in Mexico as comprised of four levels that include preschool (K1-K3), enforced basic education (grades 1-9), and secondary education consisting of grades 10-12. Of those students enrolled in first grade, 68% complete nine years of basic education. Enrollment in grades 10-12 is estimated at

51%. For those ages 15 and older, the average years of education are 7.9 years. For U.S. farmworkers born in Mexico, 68% could not read English, 57% of them could not speak English, and 32% could speak a little English, while 24% could read a little English (Carroll et al., 2005). Of those surveyed 81% could speak Spanish. Additionally, language barriers and different health-related cultural beliefs can negatively affect the MSFW's ability to access care and health care utilization (DuBard & Gizlice, 2008; Paashe-Orlow & Wolf, 2007). Low health literacy levels among Latino MSFWs may contribute to an increased risk for misunderstanding how to manage HTN as well as how to implement self-care changes, such as diet and exercise, required for appropriate HTN management.

Important to the discussion regarding HTN is the complex relationship HTN has with those risk determinants for CVD, which include diabetes, overweight, and obesity. Among the Hispanic population the age-adjusted prevalence of diabetes is higher (9.8%) as compared with non-Hispanic Whites (5.5%) and the prevalence of overweight and obesity combined is 37.9% for Hispanic men and women ages 20 and older (Flegal, Carroll, Ogden, & Curtin, 2010). The leading cause of death among Hispanics is heart disease (23.9%) and the fourth leading cause of death among Hispanics is stroke (5.7%) (Center for Disease Control [CDC], 2008). The AHA (2008) and the further substantiates the increasing prevalence of HTN in Mexican Americans with 45% of males and 44% females ages 35-74 have a diagnosis of HTN. Mexican Americans have a higher incidence of subarachnoid and intracerebral hemorrhage than non-Hispanic whites as well as a higher incidence of ischemic stroke at younger ages, which is often due to uncontrolled HTN (Rosamond et al, 2008).

Among the Latino populations, two specific subgroups, Mexican American and foreign-born Mexican MSFW are particularly vulnerable due to their health disparities; however, debate exists on the lower prevalence of chronic diseases among the Hispanic population due to the concept known as the "Hispanic paradox" (Lian et al., 1998; Urquia & Gagnon, 2011). The paradox is found in that despite lower levels of education, income, and health care access some migrant groups demonstrate better health than the average population, which is reflected in lower mortality, better birth weights, and better mental health (Maher, Lurie, Trafton, & Dozier, 2011; Rosenberg, Raggio, & Chiasson, 2005; Urquia & Gagnon, 2011). This paradox results in a cultural "buffering" or a restraint in risky behavior despite lower SES, which may sometimes off set the strong relationship between low SES and poor health outcomes (Cho, Frisbie, & Rogers, 2004; Crimmins, Kim, Alley, Karlamangia, & Seeman, 2007; Palloni & Arias, 2004). The inference is that health among Hispanic immigrants is similar to non-Hispanic Whites, but researchers hypothesize that this situation is due to the migration of healthy individuals into the U.S. as opposed to some biological protection (Crimmins et al., 2007). In addition, another possible factor resides in the culture and lifestyle within the country of origin before immigrating to the U.S. The influence of customs and the socioenvironmental impact of the dominant culture on lifestyle over a period of time might result in poorer health outcomes. However, Hunt et al. (2003) dismissed the notion of the "Hispanic paradox," finding that Mexican Americans have a greater risk for cardiovascular mortality and coronary heart disease than non-Hispanic Whites. Finally, Mensah et al. (2005) emphasized the environmental and social determinants of cardiovascular morbidity and mortality among Hispanic/Mexican who live within the southeastern United States. However, among foreign-born Hispanics $\geq$ 18 years of age,

the length of time in the U.S. influences the percentage of those with HTN from 13.4 % for less than five years to 19.8% for those in the U.S. more than five years (Rosamond et al., 2008). In respect to the influence of their presence in the U.S., the longer time period foreign-born Hispanics remain in the U.S., the greater the development of health risks that lead to HTN.

Medication and BP Treatment Adherence

Failure to following medical recommendations of medication adherence and dietary requirements results in inadequate BP control (Osterberg & Blaschke, 2005). Adherence to a prescribed medication regimen has consistently been described in the literature as the degree to which the patient follows the regimen as prescribed by the HCP (Frishman, 2007; Munger, Van Tassell, & LaFleur, 2007). In the NHANES 1999-2002 study, compared to the other ethnic groups Mexican American men received less BP treatment and poorer BP control (Giles et al., 2007). Other research also found that Hispanics are less likely to use antihypertensive medication (52.5%) than non-Hispanic Whites (63.6%) and Blacks (72.6%) after controlling for health status, insurance coverage, SES, or other health risks such as smoking (Sudano & Baker, 2001). Data collected from the NHANES 2007-2008 demonstrated low rates of BP treatment in Mexican American (56.1%) with 30% of individuals who are not being treated with antihypertensive medication (Gillespie et al., 2011).

Obstacles associated with poor adherence to HTN treatment include lack of knowledge of treatment regimens/risk factors and the importance of adherence to these regimens, barriers to health care access, lack of insurance, and cultural barriers (Kountz, 2004; Mochari, Ferris, Adigopula, Henry, & Mosca, 2007). Mochari et al. (2007) found a lack of knowledge of the seriousness and risk factors of CVD, low awareness of

elevated BP or high cholesterol, barriers to prevention of CVD in minority status especially among those who were younger and lacked health insurance, use of home remedies, and barriers to modifying lifestyle due to environmental and stress-related factors. Kountz (2004) emphasized that among the Hispanic population, specific health-related behaviors are culturally influenced leading to inadequate treatment of HTN or poor BP control. Cultural and health-related behaviors that may affect adherence include lack of a primary care physician and inappropriate use of emergency department for care. Deeply imbedded in the Latino culture is belief in *machismo*, in which men are obliged to exhibit manliness and masculinity, which can affect symptom interpretation of diseases and the motivation to act upon health or illness concerns (Sobralske, 2006). In keeping with the cultural concept of *machismo*, Hispanic men's admission of a disease or acceptance of a diagnosis is considered a sign of weakness; therefore, they may refuse to receive treatment (Kountz, 2004).

Another cultural and health-related behavior includes the idea of family support, *la familia*, in which family relationships can contribute to successful disease management and adherence to lifestyle changes (Clark, Vincent, Zimmer, & Sanchez, 2009). The cultural concept of *la familia* articulates the importance of connectedness and unconditional support Latino families have for one another so as to influence decisions about health care and illness management (Clark, Vincent, Zimmer, & Sanchez, 2009; Losada et al., 2006). In addition, limited English proficiency and language barriers influence non-English-speaking patients' health care experience and are associated with limited knowledge of stroke symptoms and heart attack recognition (Dubard, Garrett, & Gizlice, 2006; Perez-Stable, Napoles-Springer, & Miranmontes, 1997). Research suggests a relationship between the Spanish language spoken in the home and number of

years in the U.S. among Hispanic individuals who had HTN, diabetes, or hypercholesterolemia and found those who spoke Spanish in the home had suboptimal control of risk factors for CVD (Eamranond et al., 2009). In addition, researchers found that screening for cardiovascular disease occurred less often for Spanish-speaking Mexican Americans than English-speaking Mexican Americans (Eamranond et al., 2009).

Poor adherence to prescribed antihypertensive therapies is likely a strong contributor to inadequate BP control (Chobanian et al., 2003; Hawkshead & Krousel-Wood, 2007). A number of techniques to measure medication adherence have been evaluated that include indirect methods such as electronic adherence monitors, self-reports, pill counts, and pharmacy refill rates. Other methods used to measure adherence include direct methods such as, laboratory detection of biomarkers or even direct observation of the individual taking the medication (Hawkshead & Krousel-Wood, 2007). Hawkshead and Krousel-Wood (2007) analyzed the various methods employed to measure adherence to medication to determine the advantages and limitations of the methods currently available. The simplest form of determining medication adherence is with self-reporting such as patient diaries, interviews, and questionnaires. In a study to evaluate the concordance of the 8-item patient self-report, the Morisky Medication Adherence Scale (MMAS) researchers found that the MMAS demonstrated statistically significant agreement with pharmacy fill rates (Krousel-Wood et al., 2009). In addition identification of individuals with low antihypertensive medication adherence through the use of the MMAS appeared strong (Krousel-Wood et al., 2009). The advantages of these methods are that they are economical and easy to use, and the diary and questionnaires have demonstrated good concordance with other more direct methods of adherence.

Electronic medication monitoring devices such as the medication event monitor (MEMS) have high reliability; however, the potential for reactivity bias, costs associated with these devices, and patient tampering are limitations to their use (Hawkshead & Krousel-Wood, 2007). Pharmacy fill rates and pill counts are other methods to monitor medication adherence, but limitations to these methods include lag time with pharmacy dispensing, potential for medication purchasing through the mail, use of free samples, masking of non-adherence, and impractical in identifying non-adherence in the outpatient setting. Finally, the more direct method of laboratory biomarkers of medication is effective in determining the presence of medication blood levels, problems associated with this method include fluctuations in compliance and often represents proof that the individual took the medication recently (Hawkshead & Krousel-Wood, 2007).

The self-report method was used in this study using the MMAS (Krousel-Wood, Islam, Webber, Re, Morsiky, & Muntner, 2009; Morisky, Green, & Levine, 1986) not only because it is economical and easy to use, but also because of the other potential limitations associated with the other methods in the Latino MSFW population. Of MSFW migration behavior, 42% traveled 75 miles to obtain work, 35% traveled to and from a foreign country, and 26% migrated within the U.S. only (Carroll et al., 2005). Therefore, feasibility of the MEMS or performing laboratory biomarkers in this population is limited by potential migration behavior in the Latino MSFW population.

Blood Pressure Self-care

Treatment of HTN entails more than prescribing anti-hypertensive and requires follow-ups throughout one's lifetime. Instead, the facets of treatment and BP control include not only the global etiology of the disease and medication regimens, but also lifestyle modification and behavioral changes. According to the JNC-7, lifestyle or

behavioral factors that contribute to the development of HTN include decreased physical activity, excess body weight, too much salt intake, too little intake of vegetables, fruits, and potassium, and excess alcohol consumption (U.S. Department of Health and Human Services, NHLBI, 2004). Current analysis of the 2007-2008 NHANES on overweight and obesity reveals that 34% of adults are overweight and almost 34% are obese (Chobanian et al., 2003). Mexican American men demonstrated a 12% increase in the prevalence of obesity from the 1988-1994 NHANES to 2007-2008, while Mexican American women had an increased prevalence of 10% (Chobanian et al., 2003). In addition to the growing prevalence of overweight and obesity, a diet high in salt is a behavioral practice, which can be changed. The ubiquitous presence of salt in diets among culturally different populations, excessive sodium intake's relationship with HTN, and the longer-term impact of excessive salt intake on the vascular system reinforce the need to employ effective methods to reduce BP (Alderman, 2002). Studies demonstrate that culturally isolated populations possess lower BPs while as the social and ecological gradient moves toward more industrialized countries, the increase in BP, as well as the prevalence of HTN (Alderman, 2002; Carvalho et al., 1989). In an INTERSALT study among four remote, isolated populations where habitual salt intake remained low, results indicated an absence of HTN and no increase in BP with age as compared with 48 INTERSALT centers in which a positive association with high BP and high salt intake existed (Carvalho et al., 1989). The implication is that a health advantage exists among culturally isolated populations and that the process of acculturation is a possible determinant of unhealthy behavioral choices. According to Pérez-Escamilla (2010), the interactions of the social and environmental conditions such as poverty, poor education, food insecurity (limited access to adequate food due to lack of money and other resources

[Nord, Coleman-Jensen, Andrews, & Carlson, 2010]) lack of access to health care, and low social capital among Latinos fortify barriers to practicing healthy behaviors.

Knowledge of Hypertension

Although improvements in management of HTN continue, problems with awareness and adherence to blood pressure management continue. BP knowledge is the degree of understanding of HTN, which includes: a.) knowing the symptoms; b) understanding the treatment, such as medication adherence, adherence to follow-up appointments, and diet and exercise changes; c.) meaning of having controlled BP; and d.) consequences of poorly controlled HTN. According to the Behavioral Risk Factor Surveillance Study (BRFSS), among patients with HTN only 27.5 % adults were aware that they had HTN, and Viera et al., (2008) found a gap in individuals who continue to misunderstand that HTN is curable, which results in poor medication adherence. Egan, Lackland, and Cutler (2003) surveyed 1503 adults 50 years and older regarding awareness, knowledge, and attitudes about high BP. The survey revealed that 30% of adults whose SBP was 140 mm Hg or higher did not report that they had high BP, which indicated a failure to recognize of HTN among this group. Moreover, 68% of adults did not believe HTN was a serious health concern, 60% did not believe that taking antihypertensive medication alone could control high BP, but 75% agreed that lifestyle changes influenced BP (Egan, Lackland, & Cutler, 2003). Viera et al. (2008) emphasized that 41 million adults have uncontrolled BP, which is in part due to lack of knowledge associated with diverse aspects of high blood pressure. Evidence suggests that lower knowledge of HTN leads to poorer control and the risk factors associated with lower SES (Viera et al., 2008). Researchers found a disparity between awareness and control of HTN among adult Latinos (Angell et al., 2008). Furthermore, awareness of HTN status

for Mexican Americans was less when compared to Blacks or Whites, which was due to lack of access to health care and less programs directed toward Hispanics regarding HTN (Giles et al., 2007). Finally, lack of proficiency in English was found to be a barrier for Latinos to obtain knowledge about heart attack and stroke symptoms for Latinos (DuBard, Garrett, & Gizlice 2006). Despite education on HTN, which has led to greater public awareness, social factor barriers within subgroups to control HTN still exist.

Stress and Hypertension

Research that explores specific factors, such as genetic, lifestyle/behavioral, or environmental factors is associated with the occurrence of HTN to improve understanding of causal relationships between each factor and HTN's development (Pickering, 1997). However, with little change in the prevalence of HTN and poor blood pressure control rates in Latinos, specifically the Latino MSFW, a close examination of the role of stress from life events and psychosocial conflicts might contribute to understanding the mechanisms by which obstacles to adherence to HTN treatment occur.

Attempts to define the concept of stress remain a challenge because of the vagueness of the term, but the attributes that contribute to stress stem from the physiological response to aversive socioenvironmental demands on an individual and depend upon the duration of the exposure (Aneshensel, 1992; Kemeny, 2003). The socioenvironmental demands are rooted in the unequal distribution of opportunities and resources associated with the proxies to acute or chronic stress such as age, gender, ethnicity/race, and social position (Aneshensel, 1992; Pearlin, 1998). Kemeny (2003) adds to the concept of stress with the term, *stressor*, which is described as life experiences that promulgate barriers to achieving goals or weaken one's ability to maintain physical integrity. Perpetual, recurrent interactions with noxious stimuli further

result in distress or a psychological response resulting in both affective and cognitive states such as helplessness, anxiety, frustration, emotional paralysis, or sadness (Kemeny, 2003).

The collective attributes of stress, as evidenced psychologically, is only part of how the body responds, but the surreptitious physiological consequences are manifested in a variety of illness such as HTN. The internal response of the body to environmental challenges is exhibited in a cascade of neuroendocrine responses producing what McEwen (2008) identified as "allostasis" or, the ability to "maintain stability through change" (p. 175), in which the body experiences deterioration due to recurrent cycles of allostaisis, known as "allostatic load." Based upon the individual's ability to cope with the challenges as well as the experiential (life experiences), developmental, and genetic factors, allostatic load is set in motion. The price the body pays for the cyclical adaptation to the process of allostatic load is cumulative and results in physiological changes in the brain and the immune system (McEwen, 2008). Therefore, individuals experience continued cardiovascular insults during stressful events (McEwen, 2008).

One of the most famous studies that compared stressful psychosocial and environmental forces was done by Timio et al. (1988). In this longitudinal study, Italian nuns living exclusively in a monastery were followed for 20 years along with a control group of women living in an average westernized society. The research found that the systolic blood pressure (SBP) in the nuns was 30 mmHg lower than the controls'. Common factors thought to contribute to HTN such as age, race, ethnicity, body weight, diet, and menarche did not explain why differences existed in SBP between the two groups. The researchers made the inference that because the environment in which the nuns lived was free of conflict, pressure to live like others in the society, and hostility,

that the stress-free environment prevented an increase in blood pressure (Timio et al., 1988). Additional studies support the premise that societal stressors associated with lower SES, lower education, acculturation, additional chronic, noxious psychosocial stimuli, and the perception of negative stimuli as unpleasant are risk factors for CVD (Dohrenwend, 2000; Diez Roux et al., 2005; Gallo et al. 2009; Kaplan & Keil, 1993; Lynch, Kaplan, Salonen, Cohen, & Salonen, 1995; McCabe, 2000; Stewart et al., 2009).

A number of studies illuminate the difficulties associated with life as a MSFW (Carroll et al., 2005; Crowley, Lichter, & Qian, 2006; Hovey, 2000; Kim-Godwin & Bechtel, 2004; Perilla, Wilson, Wold, & Spencer, 1998). The environment in which Latino MSFWs live is comprised of psychosocial stressors, such as discrimination, working long hours in harsh conditions, uncertainty of regular employment, cultural conflict, poor housing, and living far away from family (Arcury & Quandt, 2007; Krieger, 2001; Ku & Waidmann, 2003). Thus, global stress perception may contribute to the degree to which Latino MSFWs adhere to HTN treatment and have controlled BP.

Acculturation and Health Outcomes

Multiple factors within the Latino MSFWs' environment interact with each other directly and indirectly to influence the ability for Latino MSFWs to achieve and maintain healthy lives. However, the process of acculturation may result in negative health outcomes for the Latino MSFW. The classic definition of acculturation is a comprehension of "those phenomena which result when groups of individuals having different cultures come into continuous first-hand contact, with subsequent changes in the original cultural patterns of either or both groups" (Redfield, Linton, & Herskovits, 1936, p. 149). The process of acculturation is often subtle in that the new cultural group embraces certain aspects of the dominant society such as adopting different food choices,

ways of dressing, or social behaviors. Trimble (2003) emphasizes that cultural groups attempt to maintain vestiges of their traditions, which has a positive effect on their lives. However, the first-hand contact with the dominant or mainstream population may result in negative change and become disruptive and stressful. Acquisition of more obvious aspects of a dominant society might be reflected in attempting to communicate in the language of the adopted culture. Other more subtle forms of acculturation take on the form of behavioral choices or lifestyle changes as evident in dietary choices (Trimble, 2003). While some individuals reject certain behaviors due to cultural beliefs, others chose to participate in certain behaviors, and with either choice, their health is affected (Kimbro, Bzostek, Goldman, &Rodríguez, 2008).

A number of studies demonstrate prolonged time in Western society is associated with an increase in BP due to a combination of psychosocial factors (Stefen, Smith, Larson, & Butler, 2006; Vaeth & Willet, 2005; Finch & Vega, 2003). For example, Vaeth and Willett (2005) found that higher acculturated Hispanics had an increased risk of HTN as compared with Hispanics who were less acculturated, which could result from the social ecology effects. Furthermore, Diez-Roux et al. (2005) investigated the influence of acculturation and SES on the presence of coronary calcification (a marker for coronary heart disease) in non- Hispanic Whites, non-Hispanic Blacks, Hispanics, and Chineses, and found a relationship between the number of years in the U.S. and the occurrence of calcium or amount of calcium in Chinese, non-Hipsanic blacks, and Hispanics. Even with acculturation, the socio-cultural health belief system within Latinos is embedded such that any introduction of alternative health beliefs or methods of treatment compete with these beliefs (Rubel, 1960). Many rely on the use of *curanderos/as* or traditional healers, *yerbero/as* or herbalists, and folk medicine to

prevent and manage illnesses; health decisions may also be influenced by beliefs such as *familismo* or the importance and centrality of the family; *machismo*, the gender-based expectations for men in Latino traditional cultures; or *sustos*, a folk illness caused by fright that results in malaise, fits, boils, lower right quadrant pain, changes in appetite and thought to cause loss of one's soul (Foster, 1953; Parra-Cardona, Bulock, Imig, Villarruel, & Gold, 2006; Tafur, Crowe, & Torres, 2009; Weigel, Armijos, Hall, Ramirez, & Orozco, 2007).

The imprecise nature of the acculturation and vague definition make measurement of the concept difficult (Hunt et al., 2004). Researchers rely on acculturation measurements comprised of objective as well as presumed characteristics of a cultural group and views of what adjusting to a new, unfamiliar culture involves as proxies for acculturation (Hunt et al., 2004). For these reasons, assessing the level of acculturation among immigrant populations requires both sound theoretical and operational definitions of acculturation, and the ability to accurately seek out proxy variables such as behaviors, attitudes, beliefs, values, and language differences (Hunt el al., 2004; Zane & Mak, 2003). The internal validity of the health and acculturation level are threatened by the inconsistent constructs within various instruments, such as some measures psychosocial functioning (language and social affiliation), while others assess cultural pride, cultural traditions, perceived discrimination or prejudice, family socialization, generational status, and knowledge, beliefs, or values of the culture (Zane & Mak, 2005). Mainous, Diaz, and Geesey (2008) examined the influence of healthy lifestyle habits and acculturation on diabetes within the Latino population by using the Short Acculturation Scale (SAS) developed by Marin et al. (1987), which focuses on language and social affiliation in the host country but neglecting the levels of health belief in their cultural origin. Results

from this study suggest a correlation between acculturation among Latino with diabetes and the adoption of unhealthy dietary habits; however, internal validity of the findings was threatened by the limitations of the acculturation measure. Consistent with other studies that explored the influence of acculturation among ethnic populations and health outcomes, researchers depend upon existing measures of acculturation that do not include specific constructs that focus on lifestyle habits of cultural origin (Eamranond, Patel, Legedza, Marcantonio, & Leveille, 2007; Kandula et al., 2008; Koya & Egede, 2007; Sundquist & Winkleby, 1999).

Research on acculturation of immigrant populations continues to provide insight into the complex process and effect of acculturation on health outcomes. In a systematic review of literature on acculturation and Latino health, Lara et al. (2005) found that with increased acculturation among Latinos the incidence of negative health outcomes concerning birth outcomes, substance abuse, smoking, and diet increased. For example, research indicates that with acculturation, Latinos adopt a more Western diet comprised of fatty, refined, high salt foods, and increase dairy products, which correlates with the development of chronic diseases and cancer (Cordain et al., 2005). In another study exploring how acculturation influences body weight and perceptions of weight in Mexican Americans, researchers found that Mexican Americans adopt behaviors from the U.S. culture that increases their risk for chronic diseases (Ahluwalia, Ford, Link, & Bolen, 2007). Lutsey et al. (2008) advanced evidence of the impact of acculturation in a cross-sectional epidemiological study exploring the relationship of acculturation and markers for subclinical cardiovascular disease. Researchers found a 4.4% increase in the prevalence of plaque formation with each decade of living in the U.S. for foreign-born Hispanics (Lutsey et al., 2008). They concluded that Westernization influenced the

development of carotid artery plaque and internal carotid intima-media thickness in Mexican Americans. Furthermore, Angell et al. (2008) emphasized that among immigrants in New York City, the longer their presence in the U.S., the greater the prevalence of HTN, which indicated that their condition of health declines over time in the U.S. Still; what is known and the possible paradoxes as reported by Eamranond et al. (2009) on language, years in the U.S. and risk for CVD require that more studies need to be performed focusing on factors that mediate acculturation and the development of interventions to reduce CVD risk in immigrant populations. While research strongly suggests that with increased acculturation Hispanic immigrants are susceptible to health risk factors associated with the dominant society, the variables of access to care, possession of health insurance, and positive health-seeking behavioral changes may play a role in the acculturation process to improve health outcomes. The challenge for researchers is to determine the true impact that acculturation has on health because of the potential to positively influence health behaviors and coping responses to poverty, discrimination, identity changes, beliefs, values, changes in social networks, and the introduction of different health behavior models in the U.S. (Abrafdo-Lanza, Armbrister, Florez, & Aguirre, 2006).

Health Literacy and Adherence to HTN Treatment

The recognition of low health literacy as a contributor to poor health outcomes is the fundamental premise of being able to make informed decisions about health as noted in the definition of health literacy adopted by *Healthy People 2010*: "the degree to which individuals have the capacity to obtain, process, and understand basic health information and services needed to make appropriate health decisions" (U.S. Department of Health and Human Services, 2000). Possessing general literacy skills is important for patients

when assessing materials and includes the ability to recognize words as well as reading comprehension (Rudd, 2007). Furthermore, literacy level represents what individuals have learned in school and linked to one's ability to the obtainment of new knowledge and successfully navigates the society (Baker, Parker, Williams, Clark, & Nurss, 1997). Although HCPs bear the burden of disseminating health information, the responsibility to use and follow through with health-related information is left with the individual (Rudd, 2007). However, patients who embark on the task of following medication directions may require specific literacy skills (Rudd, 2007). The elderly, the poor, ethnic and racial minorities, immigrants, and those whose first language is not English are most affected by low health literacy (Sentell & Halpin, 2006; Rudd, 2007).

Health literacy is further influenced by SES, cultural beliefs, language, social systems, and the ability to obtain health information (Nielsen-Bohlman, Panzer, & Kindig, 2004; Pawlack, 2005). The influence of culture on how individuals think and feel about health, how they respond to medical advice, perceptions of health and illness, and where they go to seek health care is inter-related with health literacy (Nielsen-Bohlman, Panzer, & Kindig, 2004). Individuals with low literacy levels not only have difficulty fully understanding their disease, but also lack the skills necessary for self-management or the ability to follow a plan of care (Paasche-Orlow & Wolf, 2007). Moreover, health literacy is found to have a relationship with hospitalizations in that a direct link between low literacy and higher health care costs, increased hospitalizations, and poor health outcomes exists (Baker, Parker, & Clark, 1998).

The classic work by Doak, Doak, and Root (1996) demonstrated one in five individuals in the U.S. read at a fifth grade level or below with the average reading level at eighth to ninth grade. More recent evidence of the state of literacy levels in the U.S. is

found in the 2003 survey by the National Assessment of Adult Literacy (NAAL). A vital component new to the NAAL survey was the assessment of health literacy, which included information about health-related vocabulary, written material, and navigation of the health care system (Kutner, Greenberg, Jin, & Paulsen, 2006). Results from the health literacy assessment showed that 22% of adults had only basic health literacy skills while 14% fell below basic health literacy. A strong relationship between low literacy and poor health outcomes has been identified from a systematic literature review of 3015 articles published between 1980 and 2003 (DeWalt et al., 2004). Further research establishes a strong relationship between literacy and knowledge about health, health care, hospitalization, and chronic diseases converge to improve health outcomes and finds support with other research (Baker et al., 2007; Davis et al., 2006; Nielsen-Bohlman, Panzer, & Kindig, 2004; Paasche-Orlow & Wolf, 2007; Rudd, 2006; Rudd, Kirsch, &Yamamoto, 2004).

Latino MSFWs possess lower educational levels and experience language barriers, which directly contributes to their potential for health literacy. Although research supports the relationship between low health literacy and poor health outcomes, the population growth within the Hispanic population creates additional health literacy barriers. To date, no studies were found exploring the relationship of health literacy among the growing number of Latino immigrants to the U.S. and health outcomes. However, in the general U.S. population, those with less than a fourth grade education are more likely to forget to refill prescriptions (Arozullah, Lee, Kim, & Lee, 2006), and have greater difficulty naming their antihypertensive medications (Persell, Osborn, Richard, Skripkauskas, & Wolf, 2007). Other studies find that health literacy predicts medication adherence, the ability to understand prescription medication labels and warning labels,

and prescription filling behaviors (Arozullah, Lee, Kim, & Lee, 2006; Davis et al., 2007; Davis et al., 2006; Gazmararian et al., 2006; Kripalani et al., 2006; Murray et al., 2004; Persell et al., 2007). Limited health literacy may result in the inability to understand prevention or recognition of the signs and symptoms of hypertension within this population, which may result in a delay in health care-seeking (Paasceh-Orlow & Wolf, 2007). Furthermore, literacy barriers may diminish an individual's ability to access to appropriate health care services. Therefore, inferences can be made from prior research on the general U.S. populations and applied to the Latino MSFW population. The environmental, social, and cultural factors specifically associated with MSFWs contribute to the growing problem of health literacy related to low educational level, high poverty level, and language barriers (Paashe-Orlow et al., 2006).

Health care Access and Adherence to Treatment

Health care accessibility is very important for individuals who would like to maintain their health status. In the updated Healthy People 2020, the goal of "access to quality health services" was continued with a focus on health care access in regards to how health care is covered, the services, timeliness, and workforce (U.S. Department of Health and Human Services, 2011). Access to health care is comprised of several factors that include financial resources, health care insurance, having a regular HCP, all of which influence whether an individual receives preventive care and monitoring of chronic diseases (Livingston, Minushkin, & Cohn, 2008). According to Livingston (2009) 60% of Latinos who do not have U.S. citizenship or are legal permanent residence lack health insurance coverage, although, federally funded community clinics and health centers serve as a safety net for a reported 41% (Livingston, 2009). Livingston, Minushkin, and Cohn (2008) found that among Latinos with less than a high school diploma, 32% lacked

access to usual source of care with 36% of men lacking a usual provider. Furthermore, 30% of Latinos who are foreign-born and less assimilated into the U.S. lack a usual HCP and 42% of those who are uninsured are more likely to lack a regular HCP. In a study exploring the relationship of preventive services use, and quality of care among U.S. born Latinos, foreign-born Latinos, and undocumented Latinos, researchers found that undocumented Latinos reported less insurance coverage, fewer BP checks, and less likely to have a usual source of care (Rodríguez, Bustamante, & Ang, 2009).

Improvements in access to care that are tracked by Healthy People 2020 are influenced by immigration issues and limited by current policy (Livingston, Minushkin, & Cohn, 2008; U.S. Department of Health and Human Services, n.d.). The Personal Responsibility and Work Opportunity Reconciliation Act of 1996 (PRWORA), which sought spending cuts on welfare programs and a decrease in out-of-wedlock/teenage pregnancies, addressed additional concerns surrounding the influx of immigrants into the U.S (Republican Contract with America, n.d.; Agrawal, 2008). The consequences of PRWROA led to restrictions on health care delivery, access to care, quality of care, and financial benefits for non-qualified immigrants, and withheld the use of public health care services for the first five years for qualified immigrants (Gamper-Rabindran, 2005; PRWORA, 1996). More than ten years since has passed since PRWORA was signed into law and is now expired, but all provisions within the policy remain effective until a new policy is written.

Although with the establishment of PRWORA, the government attempted to establish a fiscally sound health care policy for its citizens, 77% of migrant farmworkers are still not covered by health insurance (Carroll et al., 2005; Ku & Matani, 2001). Latino immigrants are less likely to have insurance, typically have higher rates of

poverty, lower education levels, are traditionally employed in areas in which health insurance is not offered, and have greater probability of residing in the U.S. without documents (Kandula, Kersey, & Lurie, 2004). On the surface, lack of insurance is the most conspicuous obstacle to health care access for Latino MSFWs; however, individual, cultural, social, environmental, and psychosocial factors are also formidable influences in the use of health care services (Livingston, 2009). At the individual level, conflict for the MSFW is associated with their commitment to work, which often affects the pursuit of necessary health care (Arcury & Quandt, 2007). In order to obtain treatment for an illness, the migrant farmworker may lose wages for a day, and therefore, the incentive to seek health care is diminished. More than half of migrant workers are unauthorized to be in the U.S., and fear of deportation drives their decision to forego the use of health care (Carroll et al., 2005; Marshall, Urrutia-Rojas, Mas, & Coggin, 2005; Passel, 2006). Furthermore, cultural health beliefs different from traditional Westerns medicine, such as the humoral or hot-cold theory may influence Latino MSFWs' use of U.S. health care services or other health-promotive behaviors (Arcury & Quandt, 2007; Quandt, Arcury, Austin, & Saavedra, 1998; Rubel, 1960). For example, *empacho*, a condition affecting the stomach or gastrointestinal tract is often treated by a healer who addresses the hot-cold imbalance through the use of massage and administration of lead protoxite (Rubel, 1960). Furthermore, herbal remedies, prescription medicines, and over-the-counter medicines bought at grocery stores in Mexico are often brought to the U.S. because prescriptions in the U.S. are difficult to acquire (Arcury & Quandt, 2007). Additional obstacles include many migrant farmworkers lack of transportation, linguistic barriers, and cultural beliefs which impede health care access (Arcury & Quandt, 2007; Carroll et al., 2005; Ngo-Metzger et al., 2003). According to the Agency for Health care Research

and Quality Report (2008), *National Health Care Disparities Report, 2008*, 52% of individuals who lacked English proficiency reported no regular source of care, and for those Hispanics who spoke another language within the home (16.6%), the rate of being insured was lower than Hispanics who spoke English in the home (36.9%). Finally, managing disease among this population is also inhibited by the migratory status of the Latino MSFW due to lack of continuity of care associated with the social and environmental barriers mobility presents (Migrant Clinicians Network, 2008; Quandt, Preisser, & Arcury, 2002).

Summary of Relevant Research

An abundance of research has been conducted on occupational hazards resulting in musculoskeletal injuries, respiratory health, eye and skin conditions, mental health, pesticide exposure, infectious diseases, oral health, and cancer within the migrant farmworker population (Arcury, Vallejos, Feldman, & Quandt, 2006; Brower, Earl-Richardson, May, & Jenkins, 2009; Farquhar et al., 2008; Grzywacz et al., 2009; Harley et al., 2008; Quandt et al., 2008; Shipp et al., 2009; Taylor et al., 2006). Research focusing specifically on HTN in Hispanic is limited, and even more meager in the Latino MSFW population (Pickering, 2004). Exploring adherence to HTN treatment by examining the social ecological characteristics evident in the Latino MSFW's environment might expose disease risks associated with BP knowledge, acculturation level, perceived stress, knowledge of HTN, health literacy, and health care access (Myers, 2009). Using the Ecology Systems Model as a framework for understanding these interactions can provide a panoramic view on the relationship between social conditions and ecological factors affecting the health of the Latino MSFW and help identify areas of vulnerability (Myers, 2009).

Research in the Latino MSFW Population

To date a proliferation of research focused on Hispanic health, both U.S. born and immigrant, is increasing due to the growth of the Hispanic population, which is now the largest minority population in the U.S. (Durden & Hummer, 2006; Ennis, Ríos-Vargas, & Albert, 2011). The Hispanic population is comprised of over 20 nationalities (Tienda & Mitchell, 2006). The notion of a pan-ethnic composition of the Hispanic population comprised of subgroups (Central/South Americans, Cubans, Mexicans, and Puerto Ricans) with various cultural, historical, and SES dimensions underscores the difficulties associated with research using generic categories (Landel & Oropesa, 2007). Landel and Oropesa (2007) recommend disaggregating the category and focus research on groups of specific national-origin. An additional factor when performing research with the Hispanic population are immigration factors such that the selective processes explored in research known as the "Hispanic paradox" (Urquia & Gagnon, 2011). The difficulty is making comparisons of foreign-born with American-born Hispanics due to the possible differences in health issues (Landel & Oropesa, 2007; Urquia & Gagnon, 2011). Research using the umbrella category "Hispanic" is inappropriate because of the biological, social, and cultural variations among the subgroups. Researchers must bear in mind that the Hispanics population is a pan-ethnic group of which Latino MSFWs belong and also consider their unique social, cultural, and environmental circumstances in order to legitimately understand the pathways to poor health outcomes.

In order to validate the research in Hispanics, Marin and Marin (1991) provide an overarching guideline for performing research with Hispanic populations. One primary characteristic of the Hispanic participant is the willingness to cooperate with researchers, which makes acquisition of participants uncomplicated, but requires an austere respect

for the participants on the part of researchers. Conveying respect begins with the initial impression exhibited by the researcher in the manner of dress, appreciation of personal space, and a welcoming environment. In addition, the danger with research in the Hispanic population is their obliging nature and their desire to accommodate researchers (Marin & Marin, 1991). For this reason employing bilingual interviewers of the same ethnicity will ensure participants understand the information clearly as well as promote trust. Furthermore, the concept of scripting, or written dialogue, is important when using bilingual interviewers so as to make the message personal and provide clarity for the purpose of the study. Finally, Marin and Marin (1991) emphasized the importance for the researcher to recognize that even among subgroups within the Hispanic population such characteristics as educational and linguistic characteristics vary. Careful attention to instrument design, reading level, scaling, and the use of training the respondents with simple examples prior to instrument use can guard against any illegitimacy of responses. Therefore, not only does research within the Hispanic population require knowledge of the diverse subgroups, but also preparation on several levels to produce valuable and useful data.

The research design exploring health issues in MSFWs varies across the literature, with descriptive, exploratory, correlational, and epidemiological approaches employed more often than experimental studies. The migration patterns among MSFWs alone would provide great threats to the ability to conduct a longitudinal study; therefore, because of the nature of the population certain research designs might be open to a number of internal and external threats. The approach to understanding the phenomenon of interest in this study, adherence to HTN treatment in hypertensive Latino MSFWs, does not require manipulation such as in an experimental approach, but will use a

descriptive cross-sectional design to illuminate knowledge regarding the social and environmental contributors to poor HTN management in the MSFW. Performing health-related research in this immensely vulnerable population is ethically and culturally challenging because of the additional attributes that make them vulnerable such as employment in low-wage jobs, limited English proficiency (LEP), lower educational levels, low literacy skills, poor housing, the psychosocial impact of living in another culture, instability created by migratory status, and undocumented status (Carroll et al., 2005; Lara et al., 2005; Quandt, Preisser, & Arcury, 2002; Wolf, Davis, & Parker, 2007). Furthermore, aspects of vulnerability act as a framework for the ethical perspective researchers must consider when recruiting participants and conducting research. The researcher must protect life, dignity, privacy, integrity, right to self-determination, and confidentiality, which is accomplished by ensuring that the study is scientifically sound and that participants were free from coercion or deprived of full knowledge regarding the study (Park & Grayson, 2008). When conducting research in the Latino MSFW population, researchers need to recognize the cultural perspective of *respeto* or respect in which participants are able to sense personal power and not feel exploited (Marin & Marin, 1991). This perspective includes the ability for them to understand the informed consent, protecting confidentiality among a group that is small and unique such that identification might be easy.

Measurement issues that require attention stem from the language barrier, and the need to translate instruments from English to Spanish, which is in the linguistic domain of the Spanish used by the ethnic group being studied. The Blood Pressure Knowledge Scale and Blood Pressure Self-care Scale required translation from English into Spanish and psychometric testing evaluated cultural equivalence (Flaherty et al., 1988).

Performing cross-cultural research so that researchers can make quantitative comparisons requires the etic approach (Flaherty et al., 1988). Through the etic perspective researchers are able to evaluate behavioral concepts from one culture to another culture, but with translation, maintaining concept equivalence is at risk of distortion making comparisons meaningless (Brislin, Lonner, & Thorndike, 1973; Flaherty et al., 1988). Brislin, Lonner, & Thorndike, (1973) emphasized that the goal of translation is equivalence as established by an external criterion and ensure that the questions' meaning about a construct is accurately depicted. Furthermore, maintaining the validity and reliability of an instrument so the constructs are measured across cultures were achieved using stepwise method for validation of instruments to assure cross-cultural equivalence (Flaherty et al., 1988). The researcher adhered to the established method of data interpretation for each instrument as published by the authors as well as used the appropriate levels of measurement, i.e., nominal, ordinal, interval, or ratio, when evaluating the demographic data.

CHAPTER III

METHODOLOGY

The purpose of this study was to explore the relationships among specific social ecological variables (acculturation level, perceived stress, BP knowledge, health literacy, and health care access) and adherence to HTN treatment (medication adherence, BP self-care, and BP control) in hypertensive Latino MSFW. Bronfenbrenner's Ecological Systems Theory was used to guide this cross-sectional descriptive, correlational study. The research design, setting, recruitment procedure, instruments and data analysis to answer each of the research questions is described below.

Research Design

A cross-sectional, correlational study design was used to explore the relationships between acculturation level, perceived stress, BP knowledge, health literacy, and healthcare access with their adherence to HTN treatment (medication adherence, BP self-care, and BP control) among Latino MSFWs. Data were collected via interpreters and in-person administration of questionnaires. In addition to the demographic form two sets of data collected. The first set included three instruments for the outcome variables: Morsiky Medication Adherence Scale (MMAS) (Morisky, Green, & Levine, 1986), BP self-care scale (BPSC) (Peters & Templin, 2008), and BP values were obtained following recommendations by Pickering et al., (2005) and BP control categorized using the standards for normal BP from the JNC-7 (U.S. Department of Health and Human Services, NHLBI, 2004). The second set included the instruments for the predictors:

Acculturation Rating Scale for Mexican Americans-II (ARSMA-II) (Cuéllar, Arnold, & Maldonado, 1995), Perceived Stress Scale (PSS) (Cohen, Kamarck, & Mermelstein, 1983), Blood Pressure Knowledge Scale (BPKS) (Peters & Templin, 2008), Health Literacy for Spanish-speaking Adults (SAHLSA-50) (Lee, Bender, Ruiz, & Cho, 2006), and HCA, which was measured from questions16 and 17 on the demographic form. Finally, two trained interpreters were employed to interview all of the study participants and collected the self-reported data. All instruments were available in both Spanish and English versions from which the study participants could choose.

Setting

The research was conducted through the clinics within 8-2, the Georgia Public Health District Georgia Farmworker Health Program in Decatur County, Georgia and Ellenton Clinic, Colquitt County, Georgia. Both programs are federally funded programs managed by the Georgia Department of Community Health and the Boards of Health, and the clinics provide primary health care to farmworkers and their families. Accordingly, 674 encounters for HTN occurred in 2009, and about 364 hypertensive patients have been diagnosed and are being treated within the clinic (S. Ramer, personal communication, August 20th, 2009).

Sample

Non-random sampling was used in this study. Over a 9-month period, 45 Latino MSFW who met the inclusion criteria participated in this study. The primary criterion for inclusion was a known diagnosis of HTN within the last 6 months, stage I (SBP > 140-159) to stage II (SBP > 160) based upon JNC-7 guidelines (U.S. Department of Health and Human Services, NHLBI, 2004). Additional inclusion criteria included being

self-identified as Hispanic/Latino descent, employment in agricultural labor, currently receiving treatment with antihypertensive therapy, and being 20 to 60 years of age. Both male and female participants, ages 20 to 60 years old were recruited, which is based upon the National Agriculture Workers Survey findings that the average age of MSFWs was 33 with the ages ranging from 18 to only slightly older than 54 (Carroll et al., 2005).

To prevent type II error, a total sample of 57 was required in order to have a minimum power of 80% with a medium effect size (0.25) and a significance level of .05 to answer the research questions using multiple linear regression with five predictors.

Protection of Human Subjects

Approval for this study was obtained from Georgia State University and the Georgia Department of Public Health. In this study participants had no more risks than one would have in daily life. Participating in the study did not benefit participants; however, the information gained from the study might help others with high BP and help to improve care of people who are migrant farmworkers.

The informed consent and Health Insurance Portability and Accountability Act (HIPAA) authorization and all other forms and questionnaires were provided in English and Spanish. Qualified interpreters were trained to administer the forms/questionnaires and were present to read the Spanish versions of the forms/questionnaires to participants. Using interpreters ensured that participants understood the study including the information they would be asked to provide. The informed consent addressed the purpose of the study and the procedures including measuring BP, collection of demographic information, and the administration of the six questionnaires. Confidentiality was explained to the participants by the interpreters and assured that no information or facts that point to them were linked to any questionnaires. In addition, the

risk and benefits were explained to the participants. Participants were assured that taking part in the study was completely voluntary, and if they did not want to answer all of the questions, they may skip questions or stop taking part in the study at any time. In order to insure participants were able to comprehend what was expected of them, they were asked to explain the study back to the researcher and interpreters.

All data were kept private to the extent allowed by law. A key of coded information was used with an identification number assigned to each participant. The identification number was used in place of each participant's name on the questionnaires, and forms were stored in a locked file cabinet separately from the code book with names and identification number and consent forms in the Ireland Poe Building, Thomas University, Thomasville, Georgia. Identifying information was kept in a locked file cabinet of which the primary investigator only has the key. All electronic data was entered and kept on a password protected computer in which only the researcher has the password. The key will be destroyed one year after the study is completed. The principal investigator's contact information was made available to each participant. The maximum amount of time participants were required to complete each aspect of the study was 45 minutes. Participants were compensated with a five dollar gift card and given educational literature on HTN, healthy diet, and exercise in Spanish upon completion of all questionnaires.

Instruments

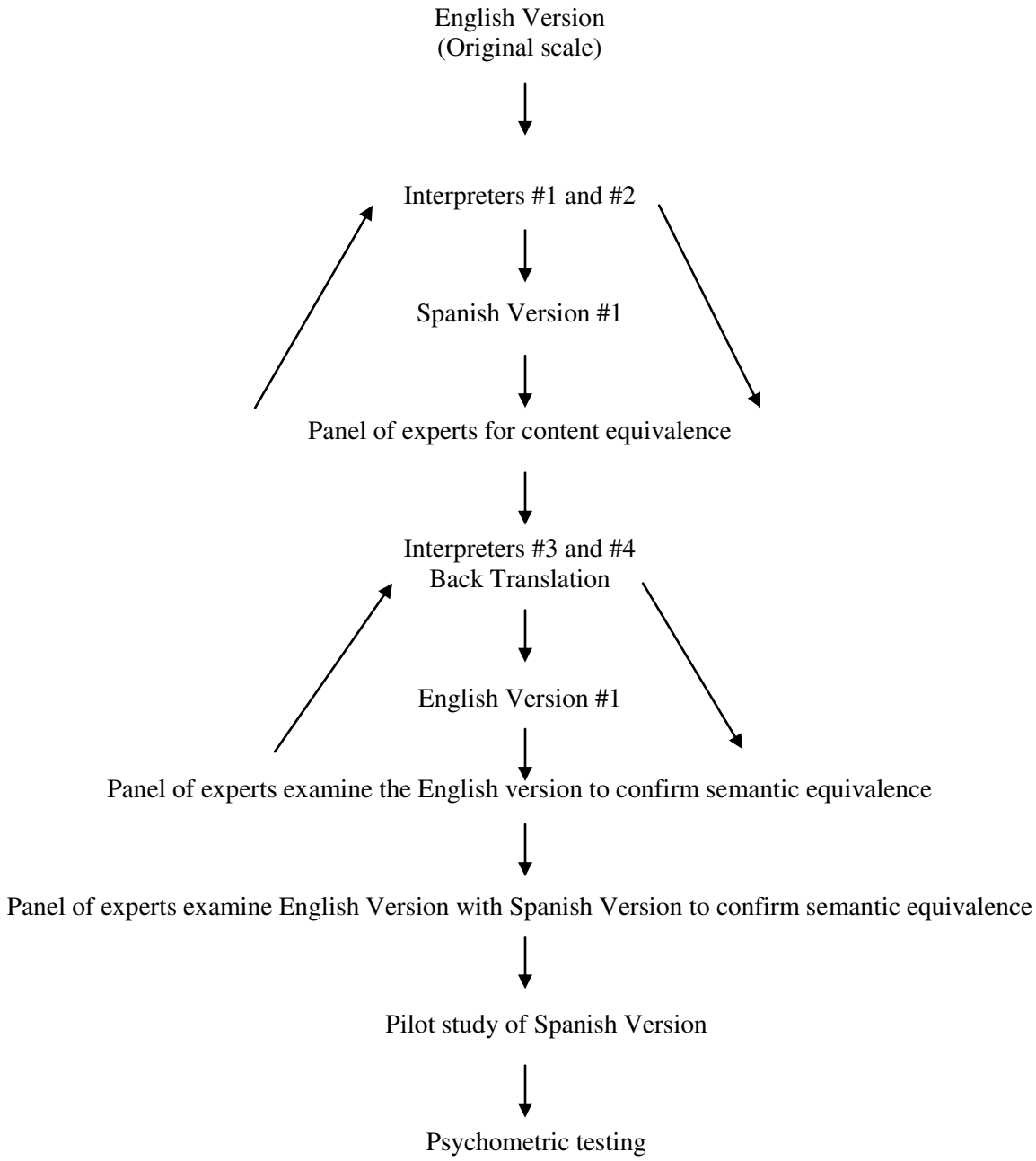
The study used existing self-report questionnaires, and all had Spanish versions except the Blood Pressure Knowledge Scale and Blood Pressure Self-care Scale, which required translation, and the investigator-developed demographic form (Table 1). Two professional bilingual interpreters translated the instruments from English to Spanish and then the instruments underwent the recommended technique of back-translation in which

the instruments were translated back into English by two more interpreters (Brislin, Lonner, & Thorndike, 1973). A third bilingual expert reviewed the versions to determine whether they had preserved the meaning through the process (Figure 2). A pilot test of the instruments was performed with two Latino MSFWs by using both the English and Spanish versions and compared the correlations between the two language versions of the instruments (Figure 2).

Blood Pressure Control. The bedrock of accurate diagnosis and treatment of HTN is dependent on the precision of BP measurement (Pickering et al., 2005). Several issues needed to be carefully addressed, which included preparing the participant, careful selection of BP monitoring device, cuff size, body position, cuff placement, observer, and number of measurements (Pickering, et al., 2005). Pickering et al. elaborate on each of these issues providing clear guidelines as to how to assure accuracy with BP measurement. For example, four cuff sizes are recommended to include the small adult size (12x22 cm), the adult size (16x30 cm), the large adult size (16x36 cm) and the adult thigh size (16x42 cm), with cuffs labeled with the arm circumference ranges (Pickering et al., 2005). Once in the examination room participants were instructed to sit comfortably with legs uncrossed with support for back and arm provided, and asked to remove clothing covering the area of cuff placement. Pickering et al. (2005) recommend that five minutes of time elapse before taking the first reading. Although the gold standard for BP measurement is the mercury sphygmomanometer, the availability of these in clinical practice has declined due to the environmental concerns with mercury (Pickering et al., 2005).

Figure 2.

Translation Process of the BP Knowledge Scale and BP Self-care Scale.



Adapted from Lee, S. (2007). Validating the General Sleep Disturbance Scale Among Chinese parents with hospitalized infants. Journal of Transcultural Nursing, 18, 111-117.

The clinics used the Welch Allyn Spot Vital Signs LXi, which is a non-mercury, electric monitor that provides a digital read out of the BP, temperature, and heart rate. A number of studies concluded that the automated BP measure is robust for clinical use (Heinemann, Sellick, Rickard, Reynolds, & McGrail, 2008; Tholl, Forstner, & Anlauf, 2004; Reinders et al., 2003). Pickering et al. add that with automated BP measurement, an opportunity for observer error is diminished; however, the observer must be properly trained and the device properly maintained. Recognition of the need to use appropriate cuff size for an accurate BP is reinforced by findings that the most common BP measurement error is undercuffing of large arms or overcuffing small arms, resulting in either underestimation of SBP in large arms and overestimation of SBP in small arms (Marks & Groch, 2000). Accordingly, in order to accurately measure BP, the cuff bladder length should be 80% and width 40% of the arm circumference or a 2:1 ratio; therefore, the appropriate cuff size was used (Pickering et al., 2005).

Blood pressures were taken by the researcher five minutes after the participant arrived in the examination room as recommended by Morisky, Ang, Krousel-Wood, and Ward (2008). To improve predictive validity, a minimum of two readings were taken one minute apart and an average of the two readings were used for the participant's BP (Pickering et al., 2005; U.S. Department of Health and Human Services, NHLBI, 2004). The recommendation regarding an additional reading if a 5 mm Hg difference between the two readings exists, was followed (Pickering et al., 2005). The average of the multiple readings as the final reading (Pickering et al., 2005) was used. If the mean of the SBP is $\geq$ 140 mm Hg or the mean of the DBP is $\geq$ 90, or SBP > 130 mm Hg or DBP > 80 in participants with diabetes, then the blood pressure was considered uncontrolled (Morisky, Ang, Krousel-Wood, &Ward, 2008). Finally, BP control was measured as a

dichotomous variable where 0 = blood pressure not controlled and 1 = blood pressure controlled for statistical analysis. Participants were seen by the clinic nurse or Nurse Practitioner and therefore, any BPs above or below established normal parameters were addressed prior to participating in the study.

Medication Adherence. The **Morisky Medication Adherence Scale** (MMAS) (Appendix E) was used to measure medication compliance as a component of adherence with HTN treatment. The 8- item MMAS was developed as a revision of the 4-item scale to include items that capture barriers to adherence behavior (Krousel-Wood et al., 2009; Morisky, Green, & Levine, 1986). This scale was implemented to determine adherence to medications as a BP self-care activity and variable in adherence with HTN treatment. Each of 8 items measures a specific medication-taking behavior and not a determinant of adherence behavior. Ranging from 0 to 8, the scores are trichotomized into 3 levels of adherence where a score of 8 represents high adherence, a score from less than 8 to 6 represents medium adherence, and a score less than 6 represents low adherence. For this study the MMAS scores measured as a continuous variable, where the higher the score, the better the adherence for the research questions. The internal consistency reliability of the 8-item medication adherence scale was adequate with a Cronbach's alpha =.83 (Morisky et al., 2008). When correlated with the original 4-item medication adherence scale, the 8-item scale demonstrated concurrent validity ($r = 0.64$, $p < .05$) (Morisky et al, 2008). Predictive validity of the MMAS was found to have a significant relationship with BPC ($\chi^2 = 6.6$, $p < .05$) (Morisky et al, 2008). The ability of the MMAS to identify poor blood pressure control in patients was determined by its sensitivity and specificity, which were 93%, and 53% respectively (Morisky et al., 2008).

BP Knowledge and BP Self-Care. Blood Pressure knowledge and BP self-care were measured using the two scales of the **BP Knowledge Scale** (BPKS) (Appendix F & H) and **BP Self-care Scale** (BPSC) (Appendix G & I). An extensive search for an instrument to measure knowledge of HTN resulted in no instrument found that measured all of the behaviors associated with BPC (Peters & Templin, 2008); however, a number of studies have assessed HTN knowledge using methods without published reliability or validity (Hunt, Siemienczuk, Touchette, & Payne, 2004; Oliveria, Chen, McCarthy, Davis, & Hill, 2005; Powers & Jalowiec, 1987; Vega et al., 1987). Recognizing the gap, Peters and Templin (2008) developed the BP Knowledge Scale and BP Self-Care Scale (Appendix B and C), which has published reliability and validity but is undergoing further psychometric evaluation. The scale was written at a seventh grade reading level and the original BPKS was comprised of 10 items that assess the extent to which individuals demonstrate knowledge of BP self-management on a scale of one to seven with the anchors of "strongly disagree" and "strongly agree" (Peters & Templin, 2008). The version that was used for this study is the revised BP Knowledge Scale, which has an 11^{th} item added. This item, for which reliability and validity is in process, was added because it addresses an important content area that has clinical relevance: "I will know if my blood pressure is high (above normal limits) because of how I feel" (R. Peters, personal email communication, October 10, 2009). Scoring consisted of adding the items and obtaining the average score, which could range from one to seven. A score of seven indicates more BP knowledge. The BPSC is comprised of 10 items that assesses the degree to which individuals employ certain behaviors to control BP on a scale of one to seven with the anchors of "never" and "always" (Peters & Templin, 2008). Two items are reversed coded and scores were achieved by averaging the items. A score of seven

indicates a more regular employment of specific self-care practices. Recent revisions of the BPKS resulted in an internal consistency reliability of .85, and revisions of the BPSC resulted in an alpha coefficient of .68 (R. Peters, personal communication, October 10, 2009).

In order to assure content validity of the items in relation to behaviors important in controlling BP, the authors constructed an expert panel to review the scales comprised of a hypertension specialized physician and two nurse practitioners employed in primary care. An additional group comprised of African American research assistants assisted with peer review from a cultural perspective. Confirmatory factor analysis was performed to determine the relationship of the two scales with the constructs with statistical significance for the BP knowledge scale; however, the BP Self-care scale had only an acceptable item-total correlation (R. Peters, personal email communication, October 10, 2009). Convergent validity was determined based on items from the General Health Survey since no instruments existed with the same constructs as those that assess self-care practices. Researchers found convergent validity of the BP Self-care Scale significant ($r = .30$, $p < .01$). Evidence for predictive validity was evaluated for the BP Knowledge and Self-care Scales to determine if BP knowledge influenced self-care and if BP knowledge and self-care were predictors of BP (Peters & Templin, 2008). Bivariate results demonstrated a significant and moderately strong relationship between BP Knowledge and BP Self-care Scales ($r = .31$, $p < .01$). However, the BP Knowledge Scale was not significantly correlated with the SBP but demonstrated a statistical relationship with DBP. Neither SBP nor DBP were correlated with self-care behavior (Peters & Templin, 2008).

Perceived Stress. Perceived stress was measured using **Cohen's Perceived Stress Scale** (PSS) (Appendix J & K), which measures the extent of how life events are stressful based on one's appraisal or perception (Cohen, Kamarck, & Mermelstein, 1983). The original 14-item self-report instrument, available in English and Spanish, evaluates three components of one's perception of life (erratic, unmanageable, and taxing) over the last month. The PSS is comprised of scoring from zero to five (0= never, 1= almost never, 2 = once in a while, 3 = often, 4 = very often) (Cohen, Kamarck, & Mermelstein, 1983). The 10-item PSS was used for this study. By reversing the scores of the items 4, 5, 7, and 8, which represent the positive statements and summing all the items, the total score for the PSS is obtained and ranges from 0 to 40. Higher scores indicate greater perception of stress. In a study of two groups of college students and one group of individuals participating in a smoking cessation program, Cohen, Kamarck, and Mermelstein (1983) obtained coefficient alphas of .84, .85, and .86 for the PSS. On two intervals of administration of the PSS the test-retest reliability was .85 indicating adequate stability. Concurrent and predictive validity of the PSS was obtained by determining correlations with the College Student Life-Event Scale, the Center for Epidemiologic Studies Depression Scale (CES-D), the Cohen-Hoberman Inventory of Physical Symptoms (CHIPS), the Social Avoidance and Distress Scale and correlated moderately with a range of these scales (Cohen, Kamarck, & Mermelstein, 1983). Scores from the College Student Life-Event Scale and the CHIPS had a correlation ranging from .18 to .36 with the PSS indicating convergent validity.

Translated into European Spanish, psychometric properties and confirmatory and exploratory factor analyses were validated (Remor, 2006; González & Landero, 2007). Remor (2006) demonstrated an internal consistency reliability of the 14 item Spanish

version of the PSS of .81. Test-retest reliability revealed a correlation of .73 (p = .000). Demonstrating satisfactory correlations, concurrent validity was assured with strong associations with the constructs of the Hospital Anxiety and Depression Scale-Anxiety and the Hospital Anxiety and Depression Scale-Depression, .64 and .71 respectively (Remor, 2006). González and Landero (2007) administered the PPS Spanish version in a Mexican population and obtained an internal consistency reliability of .83. The exploratory factor analysis was .87 and confirmatory factor analysis one and two, .83 and .78 respectively. Finally, adequate convergent validity was determined through correlations with the Beck Depression Inventory and the Scale of Emotional Exhaustion (González & Landero, 2007).

Acculturation. Acculturation was measured using the **Acculturation Rating Scale for Mexican Americans-II** (ARSMA-II) (Cuéllar, Arnold, & Maldonado, 1995) (Appendix L & M) that is comprised of two subscales, but only scale-I was used in this study. According to the authors acculturation is measured using a bicultural, multidimensional, orthogonal instrument that measures the construct for acculturation across two axes from Mexican Orientation Scale (MOS) and the Anglo Orientation Scale (AOS). The ARSMA-II is designed to evaluate acculturation by measuring behavioral aspects and some affective aspects with a 30-item self-rating scale for MOS and AOS (Cuéllar, Arnold, & Maldonado, 1995). Available in both English and Spanish versions and written at about a fifth to sixth grade reading level, the ARSMA-II (scale 1) is a Likert scale that ranges from one to five or "not at all" to "extremely often to almost always" (Cuéllar, Arnold, & Maldonado, 1995). Scoring for the scale is achieved by averaging 13 items of the AOS scale for the subscale. The MOS scale mean subscale score is obtained by averaging the 17 item responses. By subtracting the MOS mean from the AOS mean,

a linear acculturation score is obtained that provides the individual's score on "a continuum from very Mexican oriented to very Anglo oriented" (Cuéllar, Arnold, & Maldonado, 1995, p. 248). Cut-off scores were established for determining the level of acculturation: 1) Level I scoring < -1.33 is "very Mexican oriented", 2) Level II scoring ≥ -1.33 and ≤ -.07 is Mexican oriented to approximately balanced bicultural, 3) Level III scoring > -.07 and <1.19 is slightly Anglo oriented bicultural, 4) Level IV scoring ≥1.19 and < 2.45 is strongly Anglo oriented, and 5) Level V scoring > 2.45 is very assimilated, Anglicized (Cuéllar, Arnold, & Maldonado, 1995). Reliability ARSMA-II was demonstrated through internal reliability and test-retest reliability for both the AOS and the MOS. The AOS demonstrated adequate internal reliability with a coefficient of .77 and test-retest reliability of .94 (Cuéllar, Arnold, & Maldonado, 1995). The MOS demonstrated adequate internal consistency with a coefficient of .84 and test-retest reliability of .96 (Cuéllar, Arnold, & Maldonado, 1995). Concurrent validity was found to have a Pearson's *r* correlation of .89 when compared with the original Acculturation Rating Scale for Mexican Americans (Cuéllar, Arnold, & Maldonado, 1995). Finally, when evaluating acculturation with the ARSMA-II across five generations, the authors obtained strong construct validity by using analysis of variance to determine the differences between the five generations, $F(4, 346) = 54.195$, $p < .001$ (Cuéllar, Arnold, & Maldonado, 1995).

Health Literacy. The development of the **Short Assessment of Health Literacy for Spanish-speaking Adults (**SAHLSA-50) (Appendix N) addressed the need for HCPs to have a tool that is easy to use while also valid to assess literacy levels in the Spanish speaking population (Lee, Bender, Ruiz, & Cho, 2006). Comprised of 50 items, the SAHLSA-50's purpose is to determine Spanish-speaking adults' ability to comprehend

and read general medical terms. Scoring is achieved by the number of correct pronunciations and ability to associate medical words with total scores ranging from 1 to 50. Inadequate health literacy is determined if the individual receives a score between 0 and 37. Individuals scoring between 0-37 was coded as inadequate health literacy = 0, and any scores above 37 coded as adequate health literacy = 1. In order to ensure reliability and validity of the SALHSA-50, the authors further explored the psychometric properties using item t-test with literacy response theory to explore each participant's response with respect to any latent traits and showed the results with the mathematical function using the item characteristic curve. Based on field tests to explore the effectiveness of the SALHSA-50 among two groups of participants, which included 202 English-speaking and 201 Spanish-speaking adults, Lee et al. (2006) found a correlation of 0.76 for the design of the questions. The test correlated significantly with the *Test of Functional Health Literacy in Adults* (TOFHLA) and found to be positively associated with physical health of Spanish-speaking subjects indicating concurrent validity. The instrument also had good internal consistency reliability with a Cronbach's $\alpha = 0.92$ and test-retest reliability with a Pearson's correlation coefficient $r = 0.86$ (Lee, Bender, Ruiz, & Cho, 2006). In addition, to determine convergent validity, the Spanish TOFHLA was compared to the SAHLSA-50 and a significant relationship was found ($r = 0.65$). Holding age and years of education constant, prediction of Spanish speaking individual's health with the SAHLSA-50 was achieved with predictive validity at the $p < .05$ level and was statistically significant (Lee, Bender, Ruiz, & Cho, 2006).

Health care Access: Health care access (HCA) (Appendix O & P) was measured from questions on the demographic form in which six questions inquired about aspects of health care. The details of this form follows. The six questions were adapted from the

NAWS questionnaire (Carroll et al., 2005) and focused on health care access factors such as having insurance to obtain health care, who provides this health insurance, health care use, and barriers to health care access. Two were selected as measures of HCA for analysis in regression asks, "If you are injured at work or get sick as a result of your work, does your employer provide health insurance or pay for your health care?" (Question 16) and "If you are injured or get sick off the job" (e.g., at home), does your employer provide health insurance or pay for your health care?" (Question 17). These questions required a "yes", "no", or "don't know" response. The responses to these questions were recoded to reflect the existence of health care insurance as provided by their employer for work-related illnesses and for both work-related and personal illnesses, and no insurance at all. These items were dichotomously coded such that 0 = "no insurance at all", and 1 = "possession of health care insurance as provided by their employer for work-related illnesses and/or for both work-related and personal illnesses" and were measured at the nominal level. Descriptive statistics were provided for responses to the other 4, which included information whether they used health care in the U.S. in the last year, where they would go to obtain health care, type of payment for health care used, and whether they experienced any difficulties accessing health care.

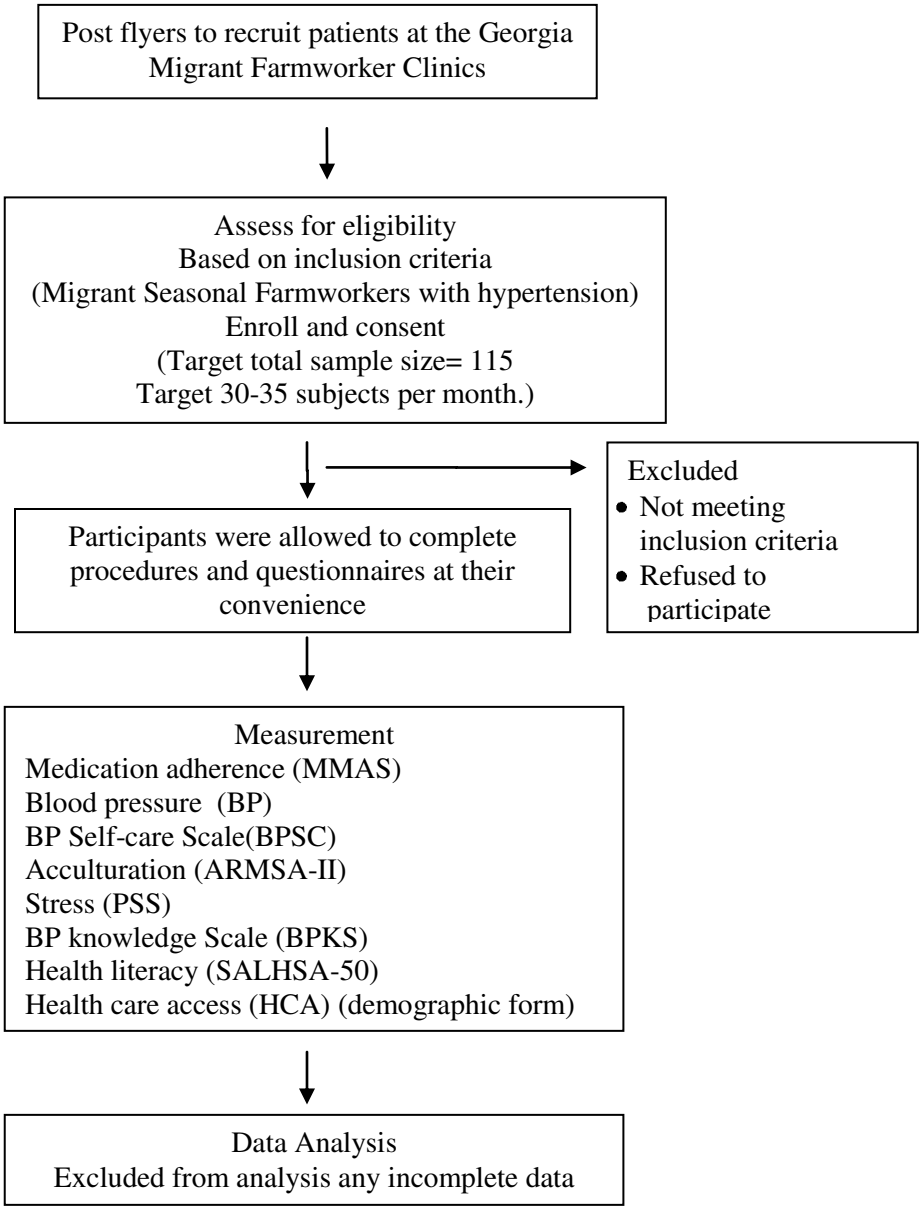
Demographic form: The investigator-developed **demographic form** (Appendix K) was used to collect general SES data such as gender, age, ethnicity, country of birth, year entered the U.S., language, education level, ability to speak English, and income. The form included questions from the NAWS questionnaire (Carroll et al., 2005) to obtain information about the type of crop worked with, the number of years working in agriculture, the distance of employment from his/her residence, and whether the employer provides health insurance. In addition, questions were asked regarding health

and health care access, as previously described. Two questions adapted from the Suinn-Lew Asian Self- Identity Scale (Suinn, Ahuna, & Khoo, 1992) were used to ascertain participants' level of self-identification with their cultural origin beliefs or American beliefs.

Data Collection Procedures

Once potential participants were identified, a public health worker at the site made the first contact with those meeting selection criteria. If the farmworkers were interested in hearing more about this study, the researcher, accompanied by an interpreter, approached them and explained the study to them. Participants were further screened for eligibility and informed consent (available in English and Spanish) was obtained for those who took part in this study. Specific times were established at the convenience of participants to complete the protocol (Figure 3). Prior to beginning the study, the principal investigator (PI) educated the interpreters on the full scope of the study as well as the public health workers at the clinics. The demographic form, as well as all of the questionnaires, was written in both English and Spanish. The interpreters were trained in assisting with administering all of the questionnaires; however, the PI guided the administration of the questionnaires.

Figure 3.Protocol Flow Chart



The consent form and HIPAA forms were read to the participants first. Once each participant gave their consent, their blood pressure was taken, and the PI first confirmed whether or not the participant took his/her medications. Blood pressures were taken by the researcher five minutes after the participant arrived in the examination room in the

right arm while sitting using the Welch Allyn Spot Vital Signs LXi. A second blood pressure measurement was taken one minute after the first blood pressure. The instruments and demographic form were read aloud to the participants after the BP was obtained. However, the SALSHA-50 is specifically designed to assess health literacy and therefore, was not read aloud to the participants.

Data Analysis Plan

All data were analyzed using SPSS version 17 Graduate Pack. Data were entered by the investigator twice in order to ensure accuracy of data. Prior to substantive analyses, the data were reviewed to check for impossible or improbable values. Frequency distributions were examined for reasonable approximations to normality for all interval/ratio variables. Based on the frequency distributions the investigator made the decision to use parametric or non-parametric statistical procedures. Non-normal data were handled by the process of transformation of data or the use of non-parametric statistics. Although each instrument was provided to the study participants in Spanish, each instrument was read aloud in Spanish to the study participants, and instruments reviewed for completion prior to completing the study. Therefore, missing items were not found on the survey instruments at the time of data entry. Internal consistency reliability measures for all instruments were calculated using Cronbach's alpha coefficients. Potential covariates from the study participants' characteristics that were associated with the outcome and predictor variables were identified using Pearson's Product Moment Correlations. Any statistically significant variables were examined and considered as covariates, which were then added to the hierarchical regression model in the first step. The demographic form, acculturation level, perceived stress, BP knowledge/self-care scale, health literacy, health care access, and adherence to HTN

treatment data were described with frequencies and standard deviations as appropriate. The linkage between variables, empirical indicators, and measures are detailed in Table 1.

Research Question One A and B

Research question 1 A: What is the level of adherence to HTN treatment among hypertensive Latino MSFWs? Data were analyzed using descriptive statistics. Means and standard deviations were analyzed to determine the level of adherence based upon the definition of adherence to HTN treatment in this study. The total score on the MMAS was used to address this question as a continuous variable.

Research question 1B: What are the relationships among medication adherence, BP self-care, and BPC? This question was measured using descriptive and frequency statistics. Data were analyzed using point-biserial or Pearson correlation where the MMAS was measured as a continuous variable and BP is measured as dichotomous variable.

Table 1

Linkage Between Variables, Empirical Indicators and Measures

Variables	Empirical indicators	Measurement
Adherence to HTN treatment • Blood pressure control	1. Blood pressure monitor*	• Means of two blood pressures monitored 1 minute apart
• Medication Adherence	2. 8 item-Morisky Medication Adherence Scale ***	• The MMAS was measured as a continuous variable with higher scores indicating greater adherence.
• BP Self-care	3. 10-item BP Self-care Scale***	• An average of 7 indicates a regular employment of specific self-care practices
Predictors of poor adherence to HTN treatment • Acculturation- phenomena which result when groups of individuals having different cultures come into continuous first-hand contact	ARMSA-II *** Two questions from the demographic form**	• Mean subscale scores: Average of 13 items of the AOS scale; Average of 17 MOS scale • Subtraction of the MOS mean from the AOS mean to obtain a linear acculturation individual score on "a continuum from very Mexican oriented to very Anglo oriented (ARSMA-II Linear Score) • Two questions from the demographic form addressing beliefs Hispanic and American. Responses in a Likert scale from "strongly believe" to "do not believe at all" was analyzed on a ordinal scale
• Stress- extent of how	10 item Cohen's PSS***	• Scoring from zero to four

life events are stressful based on one's appraisal or perception		(0= never, 1+ almost never, 2 = once in a while, 3 = often, 4 = very often, where higher scores are associated with higher perceived stress
• BP Knowledge	11-item BP Knowledge***	• An average of 7 indicates a high knowledge level that BP is controlled through specific behaviors
• Health Literacy- ability of the individual to obtain, process, and understand basic health information and services in order to make appropriate health decisions	SALHSA-50***	• Score between 0 and 37- Inadequate health literacy • Scores greater than 37- adequate health literacy
• Access to health care	Access to health care- demographic questions* 16 and 17	• Questions on the demographic form include: 1) "yes/no" responses to whether employer pays for health insurance when individual gets injured at work and/or sick when not on the job

*Nominal/Dichotomous variable; **Ordinal variable; ***Ratio.

Research Question Two

To what extent is medication adherence explained by an individual's level of BP knowledge, perceived stress, acculturation, health literacy, and health care access in hypertensive Latino MSFWs? This question was addressed by using the scores from the independent variables the BPKS, Cohen's PSS, ARMSA-II linear score, SALHSA-50, and from the responses on two HCA questions, and scores from the MMAS using hierarchical multiple regression. Correlations were used as initial tests of relationships among the predictor variables with the outcome variables, and any identified covariates were included in step one of the regression model. Predictor variables with a correlation coefficient greater than 0.25 were included in the regression models as step two and step

three. Guidelines to determine which variables should be included in the model were based on the Ecology System Model (see Chapter I, Figure 1).

Research Question Three

To what extent is BP self-care explained by an individual's level of acculturation, perceived stress, BP knowledge, health literacy, and health care access in hypertensive Latino MSFWs? This question was addressed by using the scores from the independent variables the BPKS, ARMSA-II linear score, Cohen's PSS, SALHSA-50, from the responses on two HCA questions, and scores from the BPSC using hierarchical multiple regression. Correlations were used as initial tests of relationships among the predictor variables with the outcome variables, and any identified covariates were included in step one of the regression model. Predictor variables with a correlation coefficient greater than 0.25 were included in the regression models as step two and step three. Guidelines to determine which variables should be included in the model were based on the Ecology System Model (see Chapter I, Figure 1).

Research question Four

How much of the variation in BPC is explained by an individual's level of BP knowledge, perceived stress, acculturation, health literacy, and health care access in hypertensive Latino MSFWs? This question was addressed using hierarchical logistical regression with scores from the predictor variables, the BPKS, Cohen's PSS, ARMSA-II, SALHSA-50, from the responses on two HCA questions, and the outcome variable, BP control. Correlations were used as initial tests of relationships among the predictor variables with the outcome variables, and any identified covariates were included in step one of the logistic regression. Predictor variables with a correlation coefficient greater than 0.25 were included in the logistic regression model as step two. Guidelines to

determine which variables were included in the model were based on the Ecology System Model (see Chapter I, Figure 1).

Time Frame

The timeframe of this study took nine months from August 2010 until April 2011 (Table 2).

Table 2

Time Frame for Study

Receive permission to conduct study	1st to 2nd month
Complete the questionnaires translation and pilot these	1st to 2nd month
Prepare the questionnaire booklet and purchase supplies	1st to 2nd month
Set up study protocol and training research team members	2nd month
Selection sample and collection of data	3rd to 12th month, 6-10 participants per month
Data entry	3rd to 7th month
Clean data and analysis data	7th to 8th month
Interpretation of findings	8th to 10th month
Communication regarding findings	10th to12th month

CHAPTER IV

RESULTS

In this chapter the results of the cross-sectional, correlational study are presented. The recruitment rate, sample characteristics, reliability of instruments, and data addressing the four research questions are reported. All of the study participants were interviewed by one of two trained interpreters along with the student PI to complete the Spanish version questionnaires. Prior to conducting statistical analysis, data were screened for errors in entry, outliers, normal distribution, and missing data. This screening revealed that of all of the variables were normally distributed with an exception of the BP Knowledge Scale (BPKS). Logarithmic transformation was performed for BPKS but skewness remained. Therefore, the original data was used to conduct final statistical analysis.

Sample Characteristics

Over a nine-month period, 45 farmworkers met criteria for participation in the study, agreed to participate, and completed the study. On average, farmworkers were middle age, ranging from 29 to 60 years old, and about half were female. The majority self-identified as Mexican (Table 3). More than half (58%) of the Latino MSFWs' BP were taken either in the late afternoon or evenings. On average, their SBP and DBP were higher than recommended guidelines for non-diabetic and diabetic Latino MSFWs. Systolic BP ranged from 101to 183 mm Hg and DBP ranged from 68 to 109 mm Hg. When converted to a dichotomous variable based on existing guidelines, the vast majority had uncontrolled BP. A majority of the MSFWs (80%) reported taking only one type of

antihypertensive medication (range: one to three); however, 42% of them reported that they did not take antihypertensive medicine on the day of data collection and 42% (n=19) of the MSFWs stated that they did not take their medicine the day before, and 17% failed to take their medications two days in a row. The predominant reason for not taking their antihypertensive medication was that they ran out of the medication (47%); however, two participants stated they take their medications in the evening, and one did not take his medication because it made him "sick."

In regards to the education level, 71% reported that they had completed elementary school up to sixth grade. Most of the Latino MSFWs were married, and slightly more than half reported making less than $10,000 a year. The vast majority of MSFWs reported using the U.S. health care system; however, only minimal employer benefits are provided by the farm employer to take care of work-related injuries or illnesses of MSFWs. Sixty percent reported that they received employer benefits if injured or sick as a result of work, while almost all reported that they did not receive employer health insurance beyond injuries or illnesses that were not work-related. However, 80% stated they did not have difficulties obtaining health care, and most of the participants reported that they paid the medical bill out of their own pockets. A number of the Latino MSFWs reported that they had diabetes (44.4%) or had been told that they were overweight (64.4%), but very few reported having heart disease. Most of the MSFWs neither smoked nor drank alcohol. Finally, 71.1% of the MSFWs reported they strongly believed in Hispanic values (marriage, family, education, and work) while 48.9% of them also strongly believed in American values.

Table 3

Participant Characteristics(N=45)

Characteristics	Frequency (%)	Mean(SD)
Age (years)		45 (9.0)
Ethnic group		
Mexican American	2 (4.4%)	
Mexican	39 (86.7%)	
other Latino	4 (8.9%)	
Gender		
Male	20 (44.4%)	
Female	25 (55.6%)	
Marital status		
Single	11 (24.4%)	
Married	34 (75.6%)	
Education Level		
No Education	3 (6.7%)	
Elementary to 6th grade	29 (64.4%)	
7th to 8th grade	5 (11.1%)	
9th -12th grade	6 (13.3%)	
1-2 years of college	2 (4.4%)	
First or primary language		
Spanish	45 (100%)	
Total Income (2009/2010)		
"I don't know"	11 (24%)	
≤ $10,000	26 (58%)	
> $10,000 and < $20,000	7 (16%)	
> $20,000 and < $30,000	1 (2%)	
Health accessibility		
Injured /get sick on the job have employer provided health insurance or pay for health care?		
Yes	27 (60.0%)	
No	18 (40.0%)	
Injured /get sick off the job (e.g., at home), have employer provided health insurance or pay for health care?		
Yes	3 (6.7%)	
No	42 (93.3%)	
Use of health care in US in last year		
Yes	42 (93.3%)	
No	3 (6.7%)	

Characteristics	Frequency (%)	Mean (SD)
Other Medical conditions		
Heart disease	3 (6.7%)	
Diabetes	20 (44.4%)	
Overweight	29 (64%)	
Health behaviors		
Smoke	3 (7%)	
Drink alcohol	11 (24%)	
Belief in Hispanic values		4.4 (1.0)
Do not believe at all	2 (4.4%)	
Believe a little	6 (13.3%)	
Moderately believe	5 (11.1%)	
Strongly believe	32 (71.1%)	
Belief in American values		4.0(1.3)
Do not believe at all	4 (8.9%)	
Mostly not believe	1 (2.2%)	
Believe a little	8 (17.8%)	
Moderately believe	10 (22.2%)	
Strongly believe	22 (48.9%)	
Average Systolic blood pressure		145 (17.6)
Average diastolic blood pressure		88 (9.9)
Blood Pressure control classification		
Uncontrolled	37 (82%)	
Controlled	8 (18%)	
Did not take antihypertensive medication on study today	19 (42.2%)	

Description of Dependent and Independent Variables

The reliability of each instrument, as well as the mean scores or total scores, standard deviations (SD), observed score range, and possible score raged are reported in this section (Table 4). All internal consistency reliability coefficients were adequate (Cronbach's alphas > .70).

Table 4

Descriptive Statistics for Theoretical Variables

Variable	M(SD)	Observed Range	Possible Range	Cronbach's Alpha
Adherence to HTN Treatment (MMAS)	5.2 (2.4)	0-8	0-8	.81
Adherence to HTN Treatment (BPSC)	5.8 (1.0)	2.7-7	1-7	.71
Blood Pressure Knowledge (BPKS)	6.5 (1.3)	1.6-7	1-7	.95
ARMSA-II Linear Score	-1.7 (0.8)	-3.4-0.3	<-1.33->2.45	.84
Anglo Orientation Score (AOS)	2.9 (0.9)	2.1-2.4	1-5	.80
Mexican Orientation Score (MOS)	4.6 (0.4)	2-3	1-5	.77
Perceived Stress (PSS)	16 (6.9)	0-34	0-40	.77
Health Literacy (SAHLSA-50)	38.1 (9.2)	15-49	0-50	.89*

Note. *Kuder Richardson-20. MMAS= Morisky's Medication Adherence Scale; BPSC = Blood Pressure Self-care Scale; BPKS= Blood Pressure Knowledge Scale; Linear Acculturation Score ARSMA-II Scale 1= Linear score from the Acculturation Rating Scale for Mexican Americans Scale 1; AOS = Anglo Oriented Scale; MOS = Mexican Oriented Scale; PSS= Perceived Stress Scale; SAHLSA-50= Short Assessment of Health Literacy for Spanish-speaking Adults.

Adherence to Hypertension Treatment

The adherence to HTN treatment was evaluated by using the MSFW's medication adherence, BP self-care (Table 4), and BPC as measured by the averaging of two BP values (Table 3). The study participants exhibited low adherence to their medications for HTN based on the 3 levels of adherence classification suggested by Morisky et al. (2008). The study participants reported a moderate level of BP self-care, and BP uncontrolled. On average MSFWs had poor medication adherence based on the MMAS. The MSFWs who reported taking their BP medication the day of participation in the study had better overall reported adherence ($r_{pb} = .33$, $p < .05$). In addition, on average the scores on self-care (BPSC) were high (M = 5.8, *SD* =1.0). Blood pressure control (BPC) was dichotomously categorized using the JNC-7 guidelines (U.S. Department of Health and Human Services, NHLBI, 2004). A majority of the study participants were classified as uncontrolled (82%) with the mean SBP ≥ 140 mm Hg (Range: SBP 101 to 183 mm Hg) or mean of the DBP ≥ 90 (Range: DBP 68 to 109 mm Hg), or in those participants with diabetes, SBP > 130 mm Hg (Range: SBP 125-178 mm Hg) or DBP > 80 (Range: DBP 68-106 mm Hg) (U.S. Department of Health and Human Services, NHLBI, 2004).

Blood Pressure Knowledge

On average, BP knowledge scores were high with most of the Latino MSFWs obtaining a score of six or higher on each items. These findings indicate that the study participants had sufficient knowledge about how to manage blood pressure. The most common items missed were item seven, eight, and nine. These items involve the knowledge of the influence of alcohol, stress, and weight has on BP.

Perceived Stress

On average, perceived stress was above the midpoint of the scale. Latino MSFWs perceived higher stress with a mean of 16 $\pm$ 6.9 score compared to the norm with a mean of 14 (*SD* = 6.9) for Hispanic population (Cohen, Kamarck, & Mermelstein, 1983) *t* (44) = 1.99, *p* = .05).

Acculturation Level

Acculturation level was measured by the ARSMA-II linear score (Cuéllar, Arnold, & Maldonado, 1995). The Acculturation Rating Scale for Mexican Americans-II (ARSMA-II) measures acculturation of Mexican Americans and other Latino groups (Cuéllar, Arnold, & Maldonado, 1995); however, it has been criticized for being culture-specific due to the terminology "Mexican." In this study, four study participants self-identified as other groups of Latino, to ensure cultural appropriateness, during the interview, they were asked all questions respective of the respondent's culture. For example, "I associate with Mexican and/or Mexican Americans" was changed to "I associate with Mexican and/or Honduran" to address the specific culture. This method was used by other researchers in another study comprised of Mexican Americans, Puerto Rican Americans, Salvadorian Americans, Cuban Americans and reportedly, other Hispanic Americans (Jimenez, Gray, Cucciarre, Kumbhani, & Gallaghar-Thompson, 2010). The differences between the AOS and the MOS scores were computed to determine the linear cut-off acculturation scores, but in the data analysis the scores were measured on a continuous scale as the ARSMA-II linear score. Cuéllar, Arnold, and Maldonado (1995) emphasized the bi-directionality of scale I indicating that individuals could be more Mexican oriented or Anglo oriented: 1) Level I scoring < -1.33 is "very

Mexican oriented", 2) Level II scoring ≥ -1.33 and ≤ -.07 is Mexican oriented to approximately balanced bicultural, 3) Level III scoring > -.07 and <1.19 is slightly Anglo oriented bicultural, 4) Level IV scoring ≥1.19 and < 2.45 is strongly Anglo oriented, and 5) Level V scoring > 2.45 is very assimilated, Anglicized. Accordingly, 67% of respondents were very Mexican oriented while 29% reported that they were Mexican oriented to approximately balanced-bicultural. For data analysis acculturation was used as a continuous variable with higher values indicating that study participants were more Anglo oriented.

Health Literacy

The health literacy was measured by summing up the study participants' correct answers in the SAHLSA-50 (Lee, Bender, Ruiz, & Cho, 2006). Findings revealed that 71.1% demonstrated adequate health literacy with a mean score of 38.1 (*SD* = 9.2) based on the classification suggested by the authors of the SAHLSA-50.

Health care Access

Health care access was evaluated by two questions from the demographic data form. Study participants' responses were dichotomized as with (were receiving health insurance from either work-related illnesses and/or personal illnesses) and without insurance (no coverage at all). Forty percent of the study participants reported that they neither had health insurance coverage for work-related injuries/illnesses nor home-related injuries/illnesses while only 4% reported that they had employer provided insurance for both work-related injuries/illness and home-related injuries/illnesses and the other 56% had insurance for either work-related injuries/illnesses or for home-related injuries/illness.

Relationships Among Participant Characteristics and Major Study Variables

Correlations between participant characteristics and the dependent/independent variables are in Table 5. Pearson's product moment correlation coefficients (r) and Point Biserial correlations (r_{pb}) were calculated for Pearsons' product moment correlation coefficients (r) was used for the interval data. Point Biserial correlations (r_{pb}) were used for dichotomous data, and Spearman's rho correlation coefficients (r_s) were calculated for data that was not normally distributed or ordinal data.

Those MSFW with better medication adherence had higher education, better medication adherence, and took their antihypertensive medication the day of participation in the study. Poorer medication adherence was associated with those more Hispanic value-oriented. In order to explore this further, a correlation was preformed among the MMAS and MOS. The MMAS and MOS had a low negative correlation (r = -.30, p < .05), with poorer medication adherence among those who are less acculturated. Higher BP self-care was associated with less smoking and alcohol consumption. Worse BP control was associated with younger age. As measured by the ARSMA-II, the longer period of time Latino MSFWs were in the U.S., the higher acculturation level they reached). Higher health literacy was associated self-reported educational level (r_s = .31, p < .01) and "how well you read in primary language (r_s = .45, p < .001). Finally, Latino MSFW characteristic were not related to HCA (Table 5).

Table 5

Relationships among Study Participants' Characteristics and Theoretical Predictor Variables and Outcome Variables

	MMAS	BPSC	BPC	BPKS	PSS	ARSMA-II Linear Score	SAHLSA-50	HCA
Age	-.11	-.07	-.37*	[a].04	-.09	-.05	-.02	.13
Gender	.08	.71	[a] -.05	[a] .14	-.12	-.15	.20	[a] .18
Marital Status	.08	.06	[a]-.28	[a] .01	-.06	-.35*	.13	[a] .06
Ethnicity	[a].14	[a].08	[a]-.01	[a]-.22	[a].15	[a]-.22	[a-].15	[a]-.15
Education Level	[a].30*	[a].09	[a].00	[a].15	[a]-.21	[a].10	[a].31*	[a]-.06
Years in U.S.	.02	-.02	.12	[a].19	-.11	.31*	.13	-.14
Income	[a].05	[a]-.07	[a]-.07	[a]-.18	[a]-.16	[a] -.22	[a]-.16	[a].10
Read in primary language	.02	-.23	[a].04	[a].09	-.09	-.12	[a].45**	[a]-.04
Belief in Hispanic values	[a]-.30*	[a]-.10	[a].19	[a].11	[a]-.03	[a].22	[a].21	[a].17
Belief in American values	[a].17	[a]-.15	[a].05	[a]-.04	[a].31*	[a].39**	[a].14	[a].16
Take BP medicine	.33*	.12	[a]-.07	[a].06	-.14	.25	.12	[a].13
Diabetes	-.04	-.09	[a]-.18	[a]-.12	-.37**	.07	-.12	[a].00
Overweight	-.12	.11	[a]-.14	[a].04	-.10	-.01	.07	[a]-.13
Smoke	.03	-.31*	[a].11	[a]-.08	.24	.12	.10	[a].04
Drink Alcohol	.15	-.30*	[a]-.13	[a]-.16	.19	.12	.04	[a].15

Note. * $p < .05$, ** $p < .01$. Pearson Correlation. [a]Spearman's Rho reported. MMAS= Morisky's Medication Adherence Scale; BPSC= Blood Pressure Self-care Scale; BPC = Blood Pressure Control; BPKS= Blood Pressure Knowledge Scale; PSS= Perceived Stress Scale, ARSMA-II Linear Score =Acculturation Rating Scale for Mexican Americans Linear Score; SAHLSA-50= Short Assessment of Health Literacy for Spanish-speaking Adults; HCA=Health care Access.

Table 6 shows the correlations between the outcome variables and the predictor variables. Better BP self-care was significantly related to better BP knowledge, acculturation level was associated with blood pressure self-care ($r = .48$, $p < .001$) and BPC ($r = .31$, $p < .05$) (Table 6), which indicates that aspects of Latino MSFWs being more acculturated to the e U.S. was associated with improved BP self-care activities, and having controlled BP.

Table 6

Relationship Among Outcome and Predictor Variables

	MMAS	BPSC	BPC
BPKS	[a] -.13	[a] .41**	.18
PSS	.12	-.12	-.02
ARSMA-II Linear Score	.09	.48**	.31*
SAHLSA-50	-.01	.02	.25
HCA	-.06	.21	[a].02

Note. * $p < .05$, ** $p < .001$. Pearson Correlation. [a]Spearman's rho reported. MMAS= Morisky Medication Adherence Scale; BPSC=Blood Pressure Self-care Scale; BPC= Blood Pressure Control; BPKS= Blood Pressure Knowledge Scale; PSS= Perceived Stress Scale, ARSMA-II Linear Score =Acculturation Rating Scale for Mexican Americans Linear Score; SAHLSA-50= Short Assessment of Health Literacy for Spanish-speaking Adults; HCA=Health care Access.

Results for Research Question One A and B

Research question 1a: What is the level of adherence to HTN treatment?

As previously noted adherence to HTN treatment for Latino MSFWs was low and they demonstrated uncontrolled BP, but BP self-care was moderate.

Since almost half of the study participants reported that they had not taken their medication on the day that data were collected, a Mann-Whitney U test was performed to

determine if a difference between those study participants who took their medication and those who did not in order to see if rate of uncontrolled BP was higher in one group or the other. Study participants who reported that they did not take their medication (Mean rank 23.7) were no more likely to have uncontrolled BP than those who had reported taking their medication (Mean rank 22.5), $U = 233.0$, $p = .63$.

Research Question 1b: What is the relationship between medication adherence, BP self-care, and BP control?

For the outcome variable of adherence to HTN treatment bivariate correlations were performed. Correlations between medication adherence BP self-care ($r = .10$, $p = .5$) and between BP control were not statistically significant ($r_{pb} = -.23$, $p = .13$). In addition correlations between BP self-care and BP control were not statistically significant ($r_{pb} = .16$, $p = .30$), although the correlation was in the expected direction such that the individuals with better BP self-care also had BP control.

Research Question Two

To what extent is medication adherence explained by an individual's level of acculturation, perceived stress, BP knowledge, health literacy, and health care accessibility?

According to the microsystem in Bronfenbrenner's Social Ecology model, hierarchical multiple regression was conducted to answer research question 2. Some confounding variables from the demographic characteristics were evaluated before the regression analysis, and two demographic variables were statistically significantly associated with the MMAS: education and "belief in Hispanic values" (Table 2). The

single item question "belief in Hispanic values" is partially measured in the ARSMA-II. However, the ARSMA-II linear score was used for the final regression analysis.

The correlation between MMAS and education level and the correlation between education level and the SAHLSA-50 (r_s = .31, p <.05) prompted further exploration into the relationship between similar concepts. In this study, education level and health literacy were significantly correlated; however, only education level, but not health literacy was significantly correlated with the MMAS. Research demonstrates that health literacy is a better predictor of health outcomes than education level (Baker, 2006; Berkman, Sheridan, Donahue, Halpern, & Crotty, 2011); however, due to the statistically significant correlation between education level and the MMAS, the education level was entered first in the regression model, and health literacy along with the other predictors were entered in the second step. Health care access was eliminated due to its lack of correlation with the MMAS (r_{pb} = -.06, p= .70) and the small sample size, which only allowed a maximum of 5 predictors.

Education level accounted for 9% of the variance in medication adherence (R^2 = .09, F (1, 43) = 4.05, p = .05). For step two the explanatory predictor variables BP knowledge, perceived stress, acculturation level, and health literacy were entered into the regression model. The predictor variables only accounted for an additional non-significant 4% variatiance in medication adherence (ΔR^2 = .04, F (4, 39) = .46, p = .76). In the final model, BP knowledge, perceived stress, acculturation level, and health literacy did not contribute to the variance in medication adherence (R^2 = .04, F (4, 39) = 1.14, p =.35). However, education level was an independent predictor of medication adherence (β = .32, t = 2.0, p = .05) (Table 7).

Table 7

Summary of Hierarchical Regression Analysis for the Variables Predicting Medication Adherence

Variable	B	SE β	β
Step 1			
(Constant)	4.14		
Education	.73	.36	.29*
Step 2			
(Constant)	5.34		
Education	.80	.39	.32*
Blood Pressure Knowledge	-.07	.29	-.04
Perceived Stress	.05	.05	.14
Acculturation Level	.29	.44	.10
Health Literacy	-.03	.04	-.12

Note. *$p = .05$. $R^2 = .09$, $p = .05$ for Step 1: $\Delta R^2 = .04$, $p = .76$: for Step 2: $R^2 = .13$, $p = .35$ for Total Model.

Research Question Three

To what extent is BP self-care explained by an individual's level of acculturation perceived stress, BP knowledge, health literacy, and health care access? Hierarchical multiple regression was conducted to explore research question 3. Two demographic variables were statistically significantly associated with BP self-care; smoking ($r = -.31$, $p < .05$) and alcohol consumption ($r = -.30$, $p < .05$). These two variables could be considered as covariates; however, the single item questions on "smoking" and "alcohol consumption" from the demographic form were also items found on the BP self-care scale, and therefore were measuring characteristics of the same concept of BP self-care. For this reason these two variables were not considered a threat to the outcome variable. In step one the first group of variables, BP knowledge, perceived stress, acculturation level, and health literacy were added, which accounted for 49% of the variation in BP

self-care with higher BP knowledge and with greater acculturation to the U.S. acculturation level associated with better BP self-care ($R^2 = .49$, $F(4, 40) = 9.42$, $p < .001$). Blood pressure knowledge ($\beta = .60$, $t = 4.1$, $p < .001$) and acculturation level ($\beta = .24$, $t = 2.02$. $p < .05$) significantly predicted of BP self-care in step one. In step two the predictor variable, HCA was added and did not account for any additional variance in BP self-care ($\Delta R^2 = .00$, $p = .84$). The final model was significant with the group of predictor variables contributing to 49% of the variance in BP self-care ($R^2 = .49$, $F(1, 39) = 7.4$, $p < .001$) (Table 8).

Table 8

Summary of Hierarchical Regression Analysis for the Variables Predicting Blood Pressure Self-care

Variable	B	SE β	B
Step 1			
Constant	4.15	.81	
Blood Pressure Knowledge	.45	.09	.60**
Perceived Stress	-.01	.02	-.09
Acculturation Level	.28	.14	.24*
Health Literacy	-.02	.01	-.15
Step 2			
Constant	4.15	.82	
Blood Pressure Knowledge	.45	.10	.61**
Perceived Stress	-.01	.02	-.09
Acculturation Level	.28	.14	.24
Health Literacy	-.02	.01	-.15
Health care Access	-.05	.25	-.02

Note. * $p < .05$, ** $p < .001$. $R^2 = .49$, $p < .001$ for Step 1; $\Delta R^2 = .00$, $p = .84$ for Step 2: $R^2 = .49$, $p < .001$ for Total Model.

Research Question Four

How much of the variance in BP control is explained by an individual's level of acculturation, perceived stress, BP knowledge, health literacy, and health care access?

Logistic regression was conducted to predict the odds of controlled versus uncontrolled BP control for the 45 participants using the predictor variables acculturation level and health literacy. Blood pressure knowledge was excluded because of the low correlation with BP control. In addition, due to the small correlations between the other predictor variables and the outcome variable, the decision was made to eliminate them from the regression analysis. The model was statistically significant when the predictors were tested against the constant only model, $\chi 2$ (2, N=43) = 9.06, p = .01, which indicated an interaction between the two predictors and BP control (Table 9). Without certainty due to the small sample size, the high odds ratio for acculturation and BP control indicated that acculturated individuals are 3.56: 1 more likely to adhere to their antihypertensive medication. Although these findings might indicate an interaction between acculturation level and BP control, the wide confidence interval and small sample size suggest that these results need to be interpreted with caution. Data with a larger sample size is needed for these findings to be definitive.

Table 9

Summary of Logistic Regression for the Variables Predicting MSFW with Controlled (n = 8) versus Uncontrolled (n = 37) Blood Pressure[a]

Variable	*P value*	*Odds ratio*	*95% CI*
Step 1			
Constant	.14	.00	
Acculturation Level	.04	3.56	(1.05-12.03)
Health Literacy	.11	1.16	(0.96-1.40)

[a]Model Fit Criteria: -2 log likelihood = 33.05, χ^2 = 9.06, df = 2, p = .01.

In this chapter the results of a cross-sectional, correlational study are presented to explore the relationships between specific social ecological variables (BP knowledge, perceived stress, acculturation, health literacy, and health care access) and adherence to HTN treatment (medication adherence, BP self-care, and BP control) in the hypertensive Latino MSFW. Medication adherence was not influence by any of the theoretical predictor variables, but education level was a significant predictor of medication adherence. BP self-care appears to have been strongly associated with the predictor, BP knowledge. As for BP control, acculturation and health literacy predicted BP control. The small sample size may have been inadequate for detecting statistically significant differences.

CHAPTER V

DISCUSSION AND CONCLUSIONS

Chapter V presents a discussion of study findings and conclusions of study results. The discussion of results includes major findings derived from the research questions and additional findings. Limitations of the study along with strengths, and implications are outlined, and recommendations for further research are addressed.

Hypertension in the Latino MSFW

Hypertension remains an important modifiable risk factor for CVD. Poorly managed or uncontrolled HTN is costly both at the individual and national levels because of the associated morbidity and mortality (AHA, 2009; Rosamond et al., 2008). Hypertension control is improving as evidenced by an examination of the NHANES 1988 through 2008; however, health disparities in minority ethnic groups remain, and Latinos continue to have a higher incidence of HTN as well as a higher life time risk as compared to Whites (Carson, Howard, Burke, Shea, Levitan, & Muntner, 2011; Egan, Zhao, & Axon, 2010). Little is known about HTN treatment adherence among Latino MSFWs; however, compared to Whites they are at greater risk of inadequate BP treatment and control possibly due to social ecological conditions (Krieger, 2001; Stokols, 1996). The MSFW live within a social environment that reflects a cumulative exposure to social deprivation brought on by social and economic poverty, cultural changes due to migration, modernization, and negative effects of psychosocial stressors (Krieger, 2001; Dressler, 2004). This study adds to the body of literature regarding adherence to HTN

treatment, including medication adherence, BP self-care, and BP control in the Latino MSWF.

Predictors of Hypertension Medication Adherence

In this sample of Latino MSFWs medication adherence was low. Medication non-adherence is comprised of a number of behaviors such as failing to obtain medication refills, taking the wrong amount of medication, stopping therapy altogether, intentionally not taking medication, and forgetting to take medications (Chisholm, 2002). The above behaviors have been associated with an individual's knowledge and motivation, skill, and the ability to obtain the medication (Compton, Haack, & Phillips, 2010). The Latino MSFWs in this study demonstrated adequate BP knowledge and the majority of them did not have difficulty accessing health care; however, motivation and skill were not explored and need to be further examined in future studies. In addition, to be able to provide more effective care, it is very important to distinguish whether the study participants' non-adherence is intentional (i.e., missing doses or altering doses) or unintentional (i.e., forgetting to take medication) (Kim et al., 2007). In the current study, almost half of those who were classified as uncontrolled (n =37) did not take antihypertensive medication on the day we interviewed them, and nine of those who did not take their medication stated that this failure was due to having run out of medication. One explanation may be that the Latino MSFWs may be under-treated. Studies demonstrate that treatment intensification occurs less often in Hispanic patients and additional issues associated with treatment intensification are related to poor access to regular health care and health insurance, and lack of preventative services and screenings (Margolis et al., 2007; Hicks, Fairchild, Horng, Orav, Bates, & Ayanian, 2004).

Identifying why the study participants did not refill medication on time was beyond the scope of this study, but several factors (e.g. medication costs, lack of transportation, or conflict working schedule) have been documented in literature and need to be take into consideration for future study (Arcury & Qunadt, 2007; Rose et al., 2010).

In this study, an individual's education level was the significant predictor of medication adherence, and the rest of the predictors including BP knowledge, perceived stress, acculturation level, and health literacy did not contribute significantly to medication adherence. Research supports a positive effect between higher educational level and medication adherence (Baker, 1999; Janson, Earnest, Wong, & Blanc, 2008. Although research also supports the importance of health literacy and health outcomes, a number of studies do not demonstrate the link between health literacy and medication adherence and uncertainty exists on how health literacy affects health outcomes (Baker, 1999; Wolf et al., 2001). Therefore, the absence of health literacy's, influence on medication adherence has been reported in more rigorous research studies.

Health literacy did not contribute to the variance in medication adherence, but education level was an independent contributor. Education level and general literacy are intertwined, and as such the more years spent in formal education the better one's reading ability (DeWalt & Pignone, 2005). Furthermore, uncertainty in health research remains as to whether individuals with adequate reading ability but low health literacy are at an increased risk for poor health outcomes (DeWalt & Pignone, 2005). Though the assumption was that both health literacy and education level would contribute to medication adherence, this was not the case in this current study. Previous research demonstrated medication adherence was unaffected by lower health literacy

(Paasche-Orlow et al., 2006). However, in that study those researchers also found the individuals with higher health literacy tended to adjust medications without discussing this decision with their HCP. The recommendations included future studies that explore how educational attainment affects one's understanding of medication regimens and illuminate the relationship between medication adherence and health literacy (Paasche-Orlow et al., 2006).

An unexpected finding was that education was not more strongly associated with health literacy. Education is presumed to advance literacy (De Walt & Pignone, 2005); however, educational level attained may not truly reflect literacy level (Baker et al., 1997; Gazmararian et al., 2006). Overall the education level in this sample was low and this may have contributed to the lack of relationship between education and health literacy. Some evidence demonstrates health literacy has more direct impact on adherence with medication regimens and health outcomes predominantly in African American and White populations (Davis et al., 2006; Hope, Wu, Tu, Young, & Murray, 2004; Wolf et al., 2007; Paasche-Orlow et al., 2007; Kripalani, Gatti, & Jacobson, 2010). Researchers have suggested that the key to better health outcomes is the education level "attained" in the Spanish speaking patients, as well as general health inequalities related to lower education levels (Baker et al., 1997; Huisman et al., 2005; Adler & Newman, 2002). In addition, researchers have posited that the lack of a linear relationship between literacy and health outcomes may be related to the network of relationships people share such that at a certain literacy level individuals require others to help them manage chronic diseases (Paasche-Orlow & Wolf, 2007).

While the literature supports that both education level and health literacy are important factors in medication adherence, the lack of relationship between the SAHLSA-50 and medication adherence may be explained by the measures of health literacy. Baker (2006) asserted that health literacy is a dynamic state, and it is influenced by the illness, the HCP, and the health care system; however, the existing health literacy instruments only examine one's reading and vocabulary but not one's ability to communicate or achieve knowledge, one's motivation, the role of the healthcare system in providing appropriate resources, and/or other societal influences. The SAHLSA-50 was designed to test comprehension of medical terms and make associations with words with similar meaning (Lee, Bender, Ruiz, & Cho, 2006), but it may not fully to take into account the individual capacity of which Baker (2006) discusses. Therefore, SAHLSA-50 may not be the best instrument to measure health literacy for the Latino hypertensive patient. Possibly an instrument that is specifically designed to measure health literacy incorporate HTN or CVD knowledge along with the components that Baker (2006) addressed might provide a more valid measurement.

Knowledge must be present for individuals to be able to understand health-related information, communicate with the healthcare professional effectively, and take steps toward the process of BP (Kim et al., 2007). However, BP knowledge did not significantly account for medication adherence, which may be due to the relatively small sample size and compressed variation in BP knowledge. In addition, if an individual has sufficient BP knowledge, this does not necessarily mean that one will take the medication as prescribed. In regards to BP knowledge levels found in this current study, Latino MSFWs reported that they knew specific aspects of how to take care of their high BP, but

application of this knowledge to the outcome of medication adherence was not evident. Therefore, medication adherence should not only be measured from the cognitive level but also the behavioral level. In addition, the gaps between knowledge and behavior should be examined further.

Perceived stress was not associated with medication adherence in this small sample; however, the study participants' stress level was significantly higher than the norm (Cohen, Kamarck, & Mermelstein, 1983). The mechanism of how daily life stressors influence medication adherence is not well understood, but the cumulative wear and tear or "allostatic load" brought on by psychosocial toll as well as low SES and environmental disparities has been explored in hypertensive African American women (Fongwa et al., 2008; Kalichman & Grebler, 2010; Seeman, Epel, Gruenewald, Karlamangla, & McEwen, 2010). The Latino MSFWs in this current study share a similar low SES and chronic environmental stressors. Further exploration into the relationship between perceived stress and medication adherence is needed for this population.

Acculturation level was not associated with medication adherence. Similar findings have been found in other studies, for example, a study exploring an intervention on prevention of schizophrenia relapse in Mexicans found that less acculturated individuals were less compliant with medications (Telles et al., 1995). Another study found psychotropic medication non-adherence was associated with lower acculturation in non-English speaking Hispanics as compared with bilingual Hispanics and Caucasians (Diaz, Woods, & Rosenheck, 2005). However, caution should be taken when interpreting the role of acculturation level in medication adherence. Some research suggests that among Hispanics who are more acculturated (length of time in U.S as the proxy for

acculturation), the likelihood of using some form of complementary alternative medicine (CAM) such as massage therapy or chiropractic care increases, but less acculturated Hispanics turn to neither ethnic-specific (use of "curanderos" or folk healer) or CAM therapies (Blumhagen, 1980; Lee, Goldstien, Brown, & Ballard-Barbash, 2010; Su, Li, & Pagán, 2008; Trotter & Chavira, 1980). Of the Latino MSFWs in the current study, 8% reported using some form of folk medicine in the form of tea to treat for such conditions reported as arthritis, high cholesterol, or colitis. Although no folk medicine directly related to treating hypertension was used, what motivated them to use alternative treatment needs to be further explored.

Predictors of Blood Pressure Self-care

Health literacy, perceived stress, and health access did not significantly explain the variance in BP self-care. Latino MSFWs from this study demonstrated that those who had higher BP knowledge and were more acculturated to the U.S. had better BP self-care. BP knowledge was the stronger predictor of BP self-care. Similar findings have been found from other prior studies (Cohen, Mitchell, & Sloane, 2008; Egan, Lackland, & Cutler, 2003; Kolb, Zarate-Abbott, Gillespie, Delinganiz, & Norgan, 2011).

Perceived stress did not significantly contribute to BP self-care. How stress is manifested in one's daily life varies, but one study showed that stressful events provoked both African American and Whites to choose unhealthy behaviors, such as increased consumption of unhealthy food and alcohol, increased smoking, and increased drug use to cope or reduce stress (Jackson, Knight, & Rafferty, 2010). Stress has been found in other studies to be a barrier to maintaining a heart healthy lifestyle in a study exploring factors associated with barriers to adhering to CVD medications and lifestyle changes in

racially and ethnically diverse urban population, including Hispanics (Mochari et al., 2007). Although how to cope with stress was not examined in this study, the hypertensive Latino MSFWs in current study perceived a high level of stress and warrant a further study to explore their stress and coping, and its impact to BP self care. In addition, strategies for HTN self care should include an inquiry of the possible stress provoking factors and mechanisms to reduce stress.

Acculturation did not significantly contribute to better BP self-care. Studies indicate that as Latinos acculturate to the U.S., the dietary patterns gravitate to what is known as the Western diet with an increase in consumption of more refined foods, increased salt intake, and increased intake of fatty meats and dairy products, which may contribute to poor BP self-care behaviors (Castellanos, Connell, & Lee, 2011; Duffey, Gordon-Larsen, Ayala, & Popkin, 2008). *Healthy People 2020*'s goal for nutrition and weight is to reduce the risk of chronic disease by promoting the consumption of healthy foods and maintaining healthy body weights, and offers resources and interventions that might be helpful in educating Latino MSFWs (U.S. Department of Health and Human Services, 2011). In addition, studies have used a variety of methods of defining acculturation such as birthplace, language spoken in home, language used for reading and thinking as well as for speaking with friends. Understanding the role of acculturation remains important because of the apparent changes in eating habits and behavioral choices, but acculturation is inconsistently operationally defined; therefore, further study by using a more valid measurement is needed (Yeh,Viladrich, Bruning & Roye, 2009). Health literacy and health care access did not significantly account for BP self-care. As discussed previously, this finding might be due to health literacy instruments only taking

a general approach to measuring health literacy levels, and may neglect disease-specific concepts important for understanding. As for health care access those Latino MSFW reporting no insurance, BP self-care behaviors were poorer. Research links health disparities to barriers to health care access, which is defined by health insurance, access to a HCP, and frequency of use of health care (Denavas-Walt, Proctor, & Smith, 2008; Marshall, Urrutia-Rojas, Mas, & Coggin, 2005; Urrutia-Rojas, Marshall, Trevino, Lurie, & Minguia-Bayor, 2006). Barriers to HCA for Latino MSFWs are emblematic of the overall social and ecological circumstances in which they live. Although the relationship of health care access to BP-self care behaviors is clearly delineated, literature supports the socio-environmental influence on chronic disease management for Latinos through SES resources reflected in such factors as access to healthy food choices and conducive, affordable exercise environments (Hubert, Snider, & Winkleby, 2005; Lopez-Class & Jurkowski, 2010). In addition, health care access was measured by two single, self-report item that addressed access to health care through the availability and type of health insurance. The use of these single items may have not been the best way to measure access to health care.

Finally, recognizing the small sample size and the statistically significant findings from the hierarchical regression for research question 3, a post hoc power analysis for multiple regression analysis with a maximum of five predictors in the equation was performed (Soper, 2011). Using an alpha of .05 and a power of .80, a total sample size of 37 would be required. Thus, the current study was sufficiently powered with a total sample size of 45.

Predictors of Blood Pressure Control

Blood pressure knowledge, perceived stress, and health literacy, healthcare access were not included in the final regression analysis due to the small coorealtions with the outcome of BP control. For the logistic regression the predictor variables, acculturation level and health literacty significantly contributed to the variance in BP control, while acculturation level was an independent predictor of BP control. Although the confidence interval for acculturation and BP control was wide, the findings of a higher odds ratio for acculturation among Latino MSFWs possibly indicated the likelihood for better BP control rates. If the odds ratio was a legitimate finding, then this might give further credence to the influence of acculturation and BP self-care noted earlier.

As previously noted, BP control rates were less than optimal with 82% demonstrating uncontrolled BP and 42% reporting that they did not take their medications. Several explanations may be considered important with closer examination of nature of BP control and the predictor variables. A majority of Latino MSFWs in the current study were "uncontrolled-treated" since they were receiving one to three antihypertensive medications; however, some did not get their medications refilled in a timely manner to maintain an ideal BP level while others remained uncontrolled-treated (Egan & Laken, 2011). Recent research supports the finding that the complex medication regimens in which individuals must take two or more medications and costs contribute to non-adherence (Egan & Laken, 2011). In addition, knowing specific aspects of ways to manage one's BP is not often manifested in consistent behavioral change. For example poor BP control occurs even though people know that consumption of too much salt in their diets affects BP. Consumption of more sodium occurs among

the general population as 77% of the sodium consumed continues to come from restaurants and process foods, which tend to be accessible and cheaper (Havas, Dickinson, &Wilson, 2007). The issue of increased salt consumption by most individuals as having an influence on HTN is unequivocal along with other important dietary approaches to reduce high BP (Appel et al., 2006; Kanbay, Chen, Solak, & Sanders, 2011).

Another factor may be related to the physiology of BP since an individual's BP may be higher in the afternoons (diurnal nature) than in the early mornings and as a result may not necessarily be "uncontrolled". The diurnal nature of BP is influenced not only by the pathology, but also by normal physiological random variations associated with known morning surges, daily activities, and nocturnal declines (Bilo & Parati, 2011; Duan et al., 2009). The time of day in which study participants' BP was measured was not controlled for since the study was conducted at a variety of times throughout a day. Although guidelines established by Pickering et al. (2005) were adhered to in order to decrease potential variability, Rothwell (2010) cautions against episodic variability. Health care providers should avoid defining individuals as uncontrolled due to the "noise" caused by visit-to visit check-ups (Rothwell, 2010). Instead they should monitor individuals over 24-hour period in order to reduce the burden of unnecessary medication regimens that lead to perceived non-adherence down the road (Rothwell, 2010). The finding of mostly uncontrolled BP in the study participants might be explained in the findings from the literature that reveals additional variables that influence BP variability (Rothwell, 2010).

Implications for Clinical Practice

Adherence to HTN treatment is very important to an individual's wellbeing. The findings from this study demonstrated that Latino MSFWs had a moderate BP self-care knowledge, their medication adherence was low, and their BP was poorly controlled. Strategies to improve adherence to HTN treatment in Latino MSFWs should include focused, culturally appropriate education for the Latino MSFW, education for HCPs, the use of interpreters in the clinical setting, and community involvement. Furthermore, more than half of the Latino farmworkers in this study were women, an unanticipated finding, but important nonetheless. Hypertensive Latina farmworker study participants equally contributed to the findings in this study, which indicates the need for HCPs to recognize that the socio-ecological issues Latino MSFWs experience are not unique only to the men. Gender differences should be considered as well as the Latino cultural perspective of females when addressing adherence to HTN treatment and BP control. Improving BP control in Latino MSFWs cannot occur at the individual level, and therefore, implications for practice stress the JNC-7's focus on collaborative efforts within community-based programs and health care systems to include education for the Latino MSFW population, HCPs, and use of interpreters.

Education for the Latino MSFW

The study participants in the current study had a high level of knowledge regarding BP control; however, majority of them did not have a good medication adherence, and their BP was not under control. Furthermore the rate of reported overweight/obesity and diabetes indicates additional comorbidities associated with BP control that requires attention. An accumulation of years of evidence reinforces the inter-relationship between

overweight/obesity, diabetes, HTN, and the risk for CVD and stroke. These phenomena among the Latino MSFWs indicate that a gap exists between knowledge and behavior, and a need to for preventive care that instructs them on how to apply their knowledge to their daily lives in order to control their BP.

Although the burden of managing HTN is not solely the individual's responsibility, education provided in a culturally sensitive environment can have a positive influence on self-efficacy and BP management. If Latino MSFWs are provided with the tools to move their BP knowledge into daily activities improvements in other aspects of adherence to HTN might evolve. From a qualitative perspective, the PI noted that at the completion of the interviews, study participants stated that they learned something new about management of their HTN. These comments provided evidence that the individual time spent with the study participants apparently allowed for more opportunity and personal time for them to learn more about their disease as well as express their thoughts and concerns.

In this current study, all of the study participants chose to use the Spanish version questionnaires, which indicates they feel more comfortable with using their primary language. For the Latino MSFW, educational programs and literature should be developed with consideration of not only the individual attributes such as age, gender, and educational level, but also their perceptions of risk, the effectiveness of treatment, potential harm from treatment, degrees of coping with disease, self-efficacy, and willingness to change behavior (Chan et al., 2010; Jackevicius, Li, & Tu, 2008). In addition educational program development should consider the socio-ecological factors such as income, access to health care and social support, which might influence

adherence to HTN treatment (Chan et al., 2010; Jackevicius, Li, & Tu, 2008). When considering health literacy for Latino MSFWs, it is important to provide culturally and linguistically appropriate health related information that is on a reading level at which they can understand. Health education materials directly translated from English to Spanish often remain at a higher educational level for Spanish-speaking individuals, and even when written at the sixth grade reading level some individuals will not be able to understand the material (Hernandez, Cruz, & Robinson, 2011). Educational attainment and literacy is influenced by social ecological and cultural background from where Latino MSFWs come, and their beliefs, traditions, and cultural mores influence how they receive information (The Joint Commission, 2010; Nielsen-Bohlman, Panzer, & Kindig, 2004). Therefore, multiple facets within an individual in conjunction with the ethnic and cultural factors of the Latino MSFW require a mixed approach to adherence to HTN treatment education.

Culturally and linguistically appropriate BP management educational programs that incorporate lifestyle modifications and stress reduction might be better accomplished with the use of community health workers, which has been successful (Brownstein et al., 2007; Katz, Murimi, Gonzales, Njike, & Green, 2011; Kotchen, 2010; Kountz, 2004). Kotchen (2010) recommends strategies to improve BP control should focus on cardiovascular disease risks rather than on HTN because its association with overweight/obesity and dyslipidemia. Adherence to HTN treatment educational programs that promote behavioral changes should include the cultural value of *familialism,* which values the presence and participation of the family.

Education for HCPs

To ensure the educational materials will be successfully employed and to increase the treatment compliance for the hypertensive Latino/Latina MSFWs, HCPs need to be knowledgeable about the patients' barriers to better adherence as well as their unique cultural background. Health care practitioners should be culturally competent and knowledgeable regarding literacy issues and the education level among Latino MSFWs as well as language barriers that may contribute to misunderstanding of antihypertension treatment. Herein is where Spanish language concordance by the HCP can improve communication of expectations; however, the use of professional interpreters can stand in the gap for those with limited English proficiency (LEP) and improve the patient's encounter with the HCP (Perez-Stable & Salazar, 2004). Both migrant farmworker health programs from which the sample was drawn have interpreters who have extensive healthcare knowledge and represent Latino ethnic diversity available for patient encounters.

Additional opportunities for improving BP control exist in the social relationships shared among the Latino MSFW. *Personalismo*, respecting and honoring dignity, is an important first step when communicating with the Latino population (Hartweg & Isabelli-García, 2007). When developing individuals' medication regimen, HCPs can seek to engage family members as a mechanism to augment adherence to HTN treatment. For example, with the cultural belief of *familismo*, the extended family, particularly women, play a key role in food preparation and are the family caretakers (Perez-Stable & Salazar, 2004). Health care practitioners have the opportunity to include the family as a unit in order to partake in changes in nutritional habits and increasing physical activity

(Perez-Stable & Salazar, 2004). In another study to improve BP control in 6 months in which physicians were to monitor how many pills were taken, family members were enlisted to bolster patients' medication adherence behavior and findings demonstrated an improvement in adherence to antihypertensive medication (Plavadell et al., 2010). In addition, culture influences one's beliefs about a disease, the ability to manage the disease, and the receptivity to treatment, as well as the ability to process health information (Shaw et al., 2009). Other important cultural values include *simpatia* (establishing a smooth social relationship), *respeto* (respect), and gender roles can influence the HCP-patient relationship and ultimately affect adherence to HTN treatment (Compton, Haack, & Phillips, 2010).

Although the process of acculturation is ambiguous, HCPs should be aware of the positive affect acculturation has on influencing health-seeking behaviors, the ability to maintain dietary and physical activity requirements, and medication regimens (Shaw, Huebner, Armin, Orzech & Vivan, 2009). A number of studies support the relationship between prevalence of chronic disease, health screenings, use of health care, and health-seeking behaviors among Hispanics and acculturation (Castellanos, Connell, & Lee, 2011; Oetzel, DeVargas, Ginossary, & Sanchez, 2007; Perz-Escamilla & Putnik, 2007; Williams, Pomery, Latimer, Martinez, & Salovey, 2010). In addition the role of mental and physical stress in the lives of hypertensive Latino MSFWs should also be an area of focus for HCPs when designing HTN treatment plans. For the Latino MSFW, the sources of stress include not only the commonly known causes, but also acculturative stress, which can lead to anxiety, depression, and poor coping mechanisms that augment problems with adherence to HTN treatment (Hovey & Magña, 2000; McEwen, 2008;

Unger & Parati, 2005). Discussing with Latino MSFW patients the issues regarding medication adherence such as the logistical problems, costs, or transportation, might provide an opportunity for them to be heard, but also providing education on stress reduction should be a part of the treatment regimen (Aggarwal & Mosca, 2010; Casagrande et al., 2005; Garcia-Vera, Sanz, & Labrador, 1998; Garcia-Vera, Sanz, & Labrador, 2004). Since acculturation into the U.S. exposes Latino MSFWs to potentially positive social and ecological environments, HCPs have an opportunity to explore the level of acculturation in their patients in order to arrest the its negative impact.

Use of Interpreters

According to Sherzer (1987), the language-culture relationship is symbiotic, and possesses a mutual bond that is expressed socially in the world and reflects group relationships and membership. The use of language is an important communication tool between bicultural clients and their HCPs (Hadziabdic, Heikkilä, Albin, & Hjelm, 2009). In addition to the need to provide effective strategies to promote education, clinical implications exist for the use of interpreters. Limited English Proficiency (LEP) is a leading cause of adverse outcomes, and for the Latino MSFWs, results in reluctance to see the HCP, leads to non-compliance with pharmacologic and non-pharmacologic therapies and treatment plans (Chandrika, Koss, Schmaltz, & Loeb, 2007; Kountz, 2004; Ku & Flores, 2005; Ponce, Hays, & Cunningham, 2005). Shin and Kominski (2010) found from the American Community Survey, "Language use in the United States: 2007" that 20 % of the 281.0 million surveyed spoke a language other than English in their homes, and of this 20%, 15.3 million were Spanish speakers.

The findings from the American Community Survey highlight what is true among the Latino MSFWs in this study a closer examination of the study participants demonstrated that 38% did not speak English at all, 49% reported that they spoke English only a little, and 11% reported that they spoke English somewhat. Interestingly, one's primary language spoken, read, listened to via forms of media such as music on the radio, television, and movies as is a primary proxy measure of acculturation in several acculturation measurement tools, which articulates the importance of language as a part of one's identity (Wallace, Pomery, Latimer, Martinez, & Salovey, 2010). Even in this current study's small sample Latino MSFWs the LEP among this group allows for a more focused consideration of the role interpreters can have as mediators during a patient-HCP interaction.

Successful use of interpreters to mediate between LEP patients and HCPs is evident in research (Bender, Clawson, Harlan, & Lopez, 2004; Gurman & Moran, 2008; Kagawa-Singer & Kassim-Lakha, 2003; Moreno, Tam, & Morales, 2009; Ramirez, Engel, & Tang, 2008). Title VI of the Civil Rights Acts of 1964 requires that HCP provide services for interpretation for LEP and failure to abide by the rules can lead to withdrawal of federal funding (Equal Employment Opportunity, 2004; Perkins, 2003). In addition the U.S. Department of Health and Human Services' Office of Minority Health established the Culturally and Linguistically Appropriate Services (CLAS) Standards in order to ensure appropriate services for persons with limited English proficiency and reduce health inequities caused by LEP barriers (U.S. Department of Health and Human Services' Office of Minority Health, 2001). Furthermore, The Joint Commission provides recommendations on how to ensure culturally and linguistically appropriate

services. In keeping with the CLAS, implications for clinical practice include making language services available to patients through interpreters and bilingual staff, encouraging the recruitment and retention of diverse staff that reflects the demographics of the community, and ensure the delivery of culturally competent care through ongoing education and training (U.S. Department of Health and Human Services' Office of Minority Health, 2001).

Implications for Practice at the Community Level

Clinical implications exist at the community level as well. Latino MSFWs often work under physically and environmentally demanding conditions. The pursuit of economic stability along with the psychosocial stressors brought on by financial uncertainty, interpersonal relationships, and acculturation predisposes Latino MSFWs to numerous physical and psychological health issues that ultimately affect the vibrancy of a community. For these reasons, community partners have opportunities to join HCPs in the effort to reduce health care disparities among this population. A starting place is with the goal set forth in the Patient Protection and Affordable Care Act of 2010 to boost the availability of free preventative services. Furthermore HCPs, health care systems, and community partners can focus on HTN management through the incorporation of community-based programs that target the social and physical environment by employing population-based strategies shown to be successful (Fulwood, Guyton-Krishnan, Wallace & Sommer, 2006; Kotchen, 2010). Dressler (2004) eloquently stated that:

> Patients of other cultures do not arrive in a clinic with only a particular pattern of health problems and behaviors…[instead, they arrive carrying] with them the accumulated weight of their daily lives, and an understanding of how an individual

> patient may be struggling, not necessarily to succeed in some upper middle class sense, but rather simply to have a decent life, can help to understand their life situations. (p. 29)

Therefore, outcome of adherence to HTN treatment for Latino MSFWs was explored in this study through several predictor variables that represented aspects of the "accumulated weight" to which Dressler (2004) referred.

Strength and Limitations of the Study

To our knowledge, this study is the first one conducted with Latino MSFWs focused on HTN and adherence to treatment. The study is unique in that the investigator sought to explore HTN adherence as defined by three outcome variables (i.e. medication adherence, BP self-care, and BP control), in order to explore the nature of adherence to HTN treatment, which may guide tailoring of programs to improve BP control. In particular, this study allowed for the translation of the BP Knowledge Scale and BP Self-care Scale into Spanish, which was unavailable prior to the study. The procedure used to translate the scales allowed for increased internal validity, and the translation process allowed for a culturally informed study. The post hoc power analysis demonstrated that the sample size was sufficient to produce research findings that guide future research, but the findings should still be interpreted with caution. Finally, from a qualitative perspective, the investigator noted that repeatedly the Latino MSFWs stated that they learned something from participating in the study, and believed perhaps participation in the study provided an avenue to let their thoughts and feelings be heard.

Limitations of this study should be acknowledged. The primary limitation of this study was the low number of study participants and the resulting lack of statistical power

that would have allowed an adequate exploration of the research questions. Although the study findings contribute to knowledge about specific social ecological variables and their influence on adherence to these findings should be considered in light of the small sample size.

An additional limitation was that the investigator did not speak Spanish and had to rely on two trained interpreters to assist with the administration of the instruments. The investigator knew the instruments well in Spanish despite the inability to fluently converse in the language; however, there were moments when conversations would occur between the interpreter and the study participant, and the investigator had to have the conversation interpreted into English. Often these occurrences allowed for more detailed information about the lives of the study participants but were a reminder to the investigator that language barriers when performing cross-cultural research can be limiting.

In addition, a limitation in this study may be related to the operationalization of health care access. The demographic form was designed to capture aspect of health care access such as availability of insurance and barriers, such as transportation and costs. Although descriptive statistics were available for the other questions, only two questions were used to measure health care access in the regression analyses. Therefore, understanding the depth of the issues with health care access may have been overlooked.

Another concern was operationalizing controlled BP as a dichotomous variable that was collected in one snapshot in time instead of considering the episodic nature of BP. As mentioned in the discussion, the diurnal nature of BP and the attempt to control for inaccurate BP measurements through procedures established by Pickering et al. (2005)

and recommended by Rothwell (2010) cannot support empirical determinations that study participants had uncontrolled BP. Therefore, future studies should follow participants over a period of time to gather information about medication adherence as well as monitor BP more than once.

Future Research

Research that seeks to understand the determinants of health within a population using a social ecological perspective allows researchers to understand the inter-relationships among the social determinants of health and the risk of disease. The literature on these inter-relationships is impressive (Adler & Ostrove, 1999; Adler & Snibbe, 2008; Crimmins, Kim, & Seeman, 2009; Grzywacz & Fuqua, 2000; Krieger et al., 2008; Seeman et al., 2008). Why the study participants did not refill medication on time emerged as an issue not clearly understood as well as other possible barriers to medication adherence, which elucidates opportunities for future research. In addition among Latino MSFWs with poorer medication adherence also had a lower education level, and therefore, opportunities with future research exist with exploring specific strategies designed at the appropriate learning level.

Despite the evidence that BP knowledge and acculturation led to BP self-care behaviors and a lack of association of the outcome variables with well-researched social determinants of adherence to HTN treatment (i.e., perceived stress, health literacy, and health care access), a gap exists as to why these variables were not contributors to medication adherence in study participants. Therefore, further research to examine these relationships with a larger sample might provide insight into those issues that may

prevent Latino MSFWs from obtaining their antihypertensive medications and taking them as prescribed.

In addition, the appearance that acculturation level has some influence on any one of the three outcome variables leaves the question as to what role acculturation to the U.S. by Latino MSFWs plays in the overall ability to adhere to HTN treatment. Acculturation is a "dynamic social processes" which influences behavior and beliefs in conjunction with the SES changes that come with Latino MSFW immigration to the U.S. (Hunt, Schneider, & Comer, 2004). The overabundance of literature on acculturation's influence on health outcomes in immigrants is beneficial for understanding its role, but transferring the knowledge to clinical practice is not well studied and could offer opportunities for future research. This study on a small level allowed for the exploration of the additional characteristics through the social ecological perspective. However, more research needs to be performed at a community level that seeks to mitigate barriers to management of chronic diseases as well as explore the role of interdisciplinary collaboration that focuses on not only the disease but also reducing disparities thought to propagate unhealthy living (Hunt, Schneider, & Comer, 2004; Wallerstein, Yen, & Syme, 2011).

Conclusions

This study sought to explore select determinants of adherence to HTN treatment in Latino MSFWs in a culturally and linguistically appropriate way. Exploring a combination of proposed factors' effect on adherence to HTN treatment using Bronfenbrenner's Social Ecology model in Latino MSFWs provided inconclusive results. However, examining how individual characteristics interact to influence adherence to

HTN treatment can add to the body of literature in that possibly the process of acculturation into the U.S. allows for better health care through the migrant farmworker clinics. This improved care appears to have resulted in a degree of self-efficacy or "individual capacity" (Baker, 2006), as evidenced by the statistically significant relationship between BP self-care and BP knowledge. In addition, evidence of potential social ecological barriers may exist that contribute to poor medication adherence. Although health literacy and health care access did not appear to influence the outcome variables, these two concepts represent factors stemming from SES and remain factors within the individual which provide opportunities for improvement in the delivery of care.

References

Abraido-Lanza, A., Dohrenwend, B., Ng-Mak, D. & Turner, B. (1999). The Latino mortality paradox: a test of the 'salmon bias' and healthy migrant hypotheses. *American Journal of Public Health, 89*, 1543-1548.

Abrafdo-Lanza, A., Armbrister, A., Flórez, K., & Aguirre, A. (2006). Toward a theory-driven model of acculturation in public health research. *American Journal of Public Health, 96*, 1342-1346.

Adler, N. & Newman, K. (2002). Socioeconomic disparities in health: Pathways and policies. *Health Affairs (Millwood), 21*, 60-76.

Adler, N. & Ostrove, J. (1999). Socioeconomic status of health: What we know and what we don't. In N. Adler, M. Marmot, B. McEwen, & J. Stewart (Eds.), Socioeconomic status and health in industrial nations: Social, psychological, and biological pathways. *Annals New York Academy of Sciences, 896*, 3-15.

Adler, N. & Snibbe, A. (2003). The role of psychosocial processes in explaining the gradient between socioeconomic status and health. *Current Directions in Psychological Scienc*e, *12*, 119-123.

Agency for Health Care Research and Quality. (2008). *National Disparities Health care Report, 2008*, Retrieved from http://www.ahrq.gov/qual/nhdr08/nhdr08.pdf

Aggarwal, B. & Mosca, L. (2010). Life-style and psychosocial risk factors predict non-adherence to medication. *Annals of Behavioral Medicine, 40*, 228-233. doi 10.1007/s12160-010-9212-6

Agrawal, S. (2008). Immigrant exclusion from welfare: An analysis of the 1996 welfare reform legislative process. *Politics and Policy, 36*, 636-675. doi: 10.1111/j.1747-1346.2008.00124.x

Alderman, M. (2002). Salt, blood pressure, and health: A cautionary tale. *International Journal of Epidemiology, 31*, 311-315.

Ahluwalia, I., Ford, E., Link, M. & Bolen, J. (2007). Acculturation, weight, and weight-related behaviors among Mexican Americans in the United States. *Ethnicity and Disease, 17*, 643-649.

Akresh, I. (2007). Dietary assimilation and health among Hispanic immigrants in the United States. *Journal of Health and Social Behavior*, *48*, 404-417. doi: 10.1177/002214650704800405

American Diabetes Association. (2003). Treatment of hypertension in adults with diabetes. *Diabetes Care, 26*, S80-S82.

American Heart Association. (2009). Heart disease and stroke statistics: 2009 at-a-glance. Retrieved from http://www.americanheart.org/downloadable/heart/1240250946756LS-1982%20Heart%20and%20Stroke%20Update.042009.pdf

Anderson, L., Scrimshaw, S., Fullilove, M., Fielding, J., & The Task Force on Community Services. (2003). The community's guide for linking social environment health. *American Journal of Preventive Medicine*, *24*(Suppl. 3), 12-20.

Angell, S., Garg, R., Gwynn, C., Bash, L., Thorpe, L., & Frieden, T. (2008). Prevalence, awareness, treatment, and predictors of control of hypertension in New York City. *Circulation, 1*(1), 46-53. doi: 10.1161/CIRCOUTCOMES.108.791954

Aneshensel, C. (1992). Social stress: Theory and research. *Annual Review of Sociology, 18*, 15- 38.

Appel, L., Brands, M., Daniels, S., Karanja, N., Elmer, P., & Sacks, F. (2006). Dietary approaches to prevent and treat hypertension: A scientific statement from the American Heart Association. *Hypertension*. *47*, 296-308.

Arcury, T., & Quandt, S. (2007). Delivery of health services to migrant and seasonal farmworkers. *Annual Review of Public Health, 28*, 345-363. doi: 10.1146/annurev.publhealth.27.021405.102106

Arcury, T., & Quandt, S. (1998). Chronic agricultural chemical exposure among migrant and seasonal farmworkers. *Society and Natural Resources, 11*, 829-843.

Arcury, T., Vallejos, Q., Feldman, S., & Quandt, S. (2006). Treating skin disease: Self-management behaviors of Latino farmworkers. *Journal of Agromedicine*, *11*, 27-35. doi:10.1300/J096v11n02_06

Arozullah, A., Lee, S., Kim, J., & Lee, T. (2006). Is health literacy level predictive of prescription filling behavior or medication adherence? *Journal of General Internal Medicine, 21*, Suppl. 77.

Ayoola, B., Nettleman, M., & Brewer, J. (2007). Reasons for unprotected intercourse in adult women. *Journal of Women's Health, 16*, 302-310. doi: 10.1016/j.jmwh.2006.10.019

Baker, D. (2006). The meaning and measure of health literacy. *Journal of General Internal Medicine, 21*, 878-883. doi:10.1111/j.1525-1497.2006.00540.x

Baker, D. (1999). Reading between the lines: Deciphering the connections between literacy and health. *Journal of General Internal Medicine, 14*, 315-317. doi: 10.1046/j.1525-1497.1999.00342.x

Baker, D., Parker, R., & Clark, W. (1998). Health literacy and the risk of hospital admission. *Journal of General Internal Medicine, 13*, 791-798.

Baker, D., Parker, R., Williams, M., Clark, W., & Nurss, J. (1997). The relationship of patient reading ability to self-reported health and use of health services. *American Journal of Public Health, 87*, 1027-1030.

Baker, D., Wolf, M., Feinglass, J., Thompson, J., Gazmararian, J., & Huang, J. (2007). Health literacy and mortality among elderly persons. *Archives of Internal Medicine, 167*, 1503-1509. doi: 10.1007/s11606-008-0566-4

Barrow, F., Armstrong, M., Vargo, A., & Boothroyd, R. (2007). Understanding the findings of resilience-related research for fostering the development of African American adolescents. *Child and Adolescent Psychiatric Clinics of North American, 16*, 392-413. doi:10.1016/j.chc.2006.12.004

Bender, D., Clawson, M., Harlan, C., & Lopez, R. (2004). Improving access for Latino immigrants: evaluation of language training adapted to the needs of health professionals. *Journal of Immigrant Health, 6*, 197-209.

Berkman, N., Sheridan, S., Donahue, K., Halpern, D. & Crotty, K. (2011). Low health literacy and health outcomes: An updated systematic review. Annals of Internal Medicine, 155, 97-107.

Berry, J. W. (2006). Contexts of acculturation. In D. L. Sam & J. W. Berry (Eds.), *The Cambridge handbook of acculturation psychology.*

New York, NY: Cambridge University Press.

Bilo, G., & Parati, G. (2011). Rate of blood pressure changes assessed by 24 h ambulatory blood pressure monitoring: another meaningful index of blood pressure variability? *Journal of Hypertension, 29*, 1054-1058. doi:10.1097/HJH.0b013e328347bb24

Blumhagen, D. (1980). Hyper-tension: a folk illness with a medical name. *Culture, Medicine, and Psychiatry*, *4*, 197-227.

Brislin, R., Lonner, W., and Thorndike, R. (1973). Cross-Cultural Research Methods. New York: John Wiley & Sons.

Bronfenbrenner, U. (2005). The developing ecology of human development: Paradigm lost or paradigm regained. In U.Bronfenbrenner (Ed.) *Making Human Beings: Bioecological Perspectives on Human Development* (pp. 94-105).Thousand Oaks: Sage Publications.

Bronfenbrenner, U. (1979). *The ecology of human development: Experiments by nature and design.* Cambridge, Massachusetts: Harvard University Press.

Brower, M., Earle-Richardson, G., May, J., & Jenkins, P. (2009). Occupational injury and treatment patterns of migrant and seasonal farmworkers**.** *Journal of Agromedicine*, 14(2), 172-178. doi:10.1080/10599240902799715

Brownstein, J., Chowdhury, F., Norris, S., Horsley, T., Jack, L., Zhang, X., & Satterfield D. (2007). Effectiveness of community health workers in the care of people with hypertension. *American Journal of Preventive Medicine, 32*, 435-447. doi:10.1016/j.amepre.2007.01.011

Carroll, D., Samardick, R., Bernard, S., Gabbard, S. & Hernandez, T. (2005). Findings from the National Agricultural Workers Survey (NAWS), 2001-2002: A demographic and employment profile of United States farmworkers. Washington, D.C.: U.S. Department of Labor.

Carson, A. P., Howard, G., Burke, G. L., Shea, S., Levitan, E. B., & Muntner, P. (2011). Ethnic differences in hypertension incidence among middle-aged and older adults: The Multi-Ethnic Study of Atherosclerosis [Epidemiology/Population Studies]. *Hypertension, 57*, 1101-1107. doi:10.1161/HYPERTENSIONAHA.110.168005

Carvalho, J.J., Baruzzi, R.G., Howard, P.F., Poulter, N., Alpers, M.P., Franco, L.J., . . . Stamler, R. (1989). Blood pressure in four remote populations in the INTERSALT Study. *Hypertension, 14*, 238-246.

Castellanos, D., Connell, C., and Lee, J. (2011). Factors affecting weight gain and dietary intake in Latino males residing in Mississippi: A preliminary study. *Hispanic Health Care International, 9*, 91-98. doi: 10.1891/1540–4153.9.2.91

Centers for Disease Control and Prevention. (2008, May 23). *Morbidity and Mortality Weekly Report*: QuickStats: Age-adjusted Percentage of adults aged ≥20 years with hypertension, by poverty Level—National Health and Nutrition Examination Survey, United States, 2003-2006. Retrieved from http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5720a5.htm

Chandrika, D., Koss, R. G., Schmaltz, S. P., & Loeb, J. M. (2007). Language proficiency and adverse events in U.S. hospitals: A pilot study. *International Journal for Quality in Health Care*, *19*, 60–67. doi:10.1093/intqhc/mzl069

Chan, D., Shrank, W., Cutler, D., Jan, S., Fischer, M., Lui, J., . . . Choudhry, N. (2010). Patient, physician and payment predictors of statin adherence. *Medical Care, 48*, 196 –202. doi: 10.1097/MLR.0b013e3181c132ad

Chisholm, M. (2002). Enhancing patients' adherence to medication therapy. *Clinical Transplant, 16*, 30–38.

Cho, Y., Frisbie, P., & Rogers, R. (2004). Nativity, duration of residence, and the health of Hispanic Adults in the United States. *The International Migration Review, 38*, 184-211.

Chobanian, A., Bakris, G., Black, H., Cushman, W., Green, L., Izzo, J., Jones, D. . . . National High Blood Pressure Education Program Coordinating Committee. (2003). The Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure: the JNC 7 report. *JAMA, 289*, 2560–2572.

Coe, C., & Laudenslager, M. (2007). Psychosocial influences on immunity, including effects on immune maturation and senescence. *Brain, Behavior, And Immunity*, *21*, 1000-1008. doi:10.1016/j.bbi.2007.06.015

Cohen, S., Kamarck, T., & Mermelstein, R. (1983). A global measure of perceived stress. *Journal of Health and Social Behavior, 24*, 385-396.

Compton , S., Haack, S. & Phillips, C. (2010). Identification of barriers to medication adherence in a Latino population. *Research in Social and Administrative Pharmacy, 6*, 365–371. doi:10.1016/j.sapharm.2009.11.003

Conner, A., Layne, L., & Thomisee, K. (2010). Providing care for migrant farm worker families in their unique sociocultural context and environment. *Journal of Transcultural Nursing, 21*, 159-166. doi: 10.1177/1043659609357631

Cordain, I., Eaton, S. B., Sebastian, A., Mann, N., Lindeberg, S., Watkins, B., . . . Brand-Miller, J. (2005). Origins and evolution of the Western diet: Health implications for the 21st century. *American Journal of Clinical Nutrition*, *81*, 341–354.

Crespo, C. & Garcia-Palmieri, M. (2008). Hypertension among Hispanics in the United States. In J. L. Izzo, D. A. Sica, H. R. Black (Eds.), *Hypertension Primer: The Essentials of High Blood Pressure* (pp. 282-284). Philadelphia, PA: Lippincott Williams and Wilkins.

Crimmins, E., Kim, J., Alley, D., Karlamangla, A., & Seeman, T. (2007). Hispanic paradox in biological risk profiles. *American Journal of Public Health, 97*, 1305-1310. doi:10.2105/AJPH.2006.091892

Crimmins, E., Kim, J., & Seeman, T. (2009). Poverty and biological risk: the earlier "aging" of the poor. *The Journals of Gerontolontolgy*, *64*, 286–292. doi:10.1093/Gerona/gln010

Crowley, M., Lichter, D., & Qian, Z. (2006). Beyond gateway cities: Economic restructuring and poverty among Mexican immigrant families and children. *Family Relations, 55*, 345-360.

Cuéllar, I., Arnold, B., & Maldonado, R. (1995). Acculturation Rating Scale for Mexican Americans-II: A revision of the original ARSMA scale. *Hispanic Journal of Behavioral Sciences, 17*, 275-305.

Cunningham, P., Banker, M., Artiga, S., & Tolbert, J. (2006). Kaiser Commission on Medicaid and the Uninsured: Health coverage and access to care for Hispanics in "New Growth Communities" and "Major Hispanic Centers". Retrieved from http://www.kff.org/uninsured/upload/7551.pdf

Cushman, W. (2003). The burden of uncontrolled hypertension: Morbidity and mortality associated with disease progression. *The Journal of Clinical Hypertension, 5*, 14-22.

Cushman, W. (1990). Why the self is empty: Toward historically situated psychology. *American Psychologist, 45*, 599-611.

Cutler, J., Sorlie, P., Wolz, M., Thom, T., Fields, L. & Roccella, E. (2008). Trends in hypertension prevalence, awareness, treatment, and control rates in United States adults between 1988–1994 and 1999–2004. *Hypertension*, *52*, 818-827. doi: 10.1161/HYPERTENSIONAHA.108.113357

Davis, T., Wolf, M., Bass, P., Tilson, H., Neuberger, M., & Parker, R. (2006). Literacy and misunderstanding of prescription drug labels. *Annals of Internal Medicine, 145*, 887–894.

Davis, T., Wolf, M.., Bass, P., Middlebrooks, M., Kennen, E., Baker, D., . . . Parker, R. (2006). Low literacy impairs comprehension of prescription drug warning labels. *Journal of Internal Medicine 21*, 847-851.

Denavas-Walt, C., Proctor, B., & Smith, J. (2008). *Income, poverty, and health insurance coverage in the United States: 2007.* Retrieved from http://www.census.gov/prod/2008pubs/p60-235.pdf

DeWalt, D., & Pignone, P. (2005). Reading is fundamental: The relationship between literacy and health. *Archives of Internal Medicine, 165*, 1943-1944.

DeWalt, D., Berkman, N., Sheridan, S., Lohr, K., & Pignone, P. (2004). Literacy and health outcomes: A systematic review of the literature. *Journal of General Internal Medicine, 19*, 1228-1239.

Diaz, E., Woods, S., & Rosenheck, R. (2005). Effects of ethnicity on psychotropic medications adherence. *Community Mental Health Journal, 41*, 521-537. doi: 10.1007/s10597-005-6359-x

Diez-Roux, A., Detrano, R., Jackson, S., Jacobs, D., Schreiner, P., Shea, S., & Szklo, M. (2005). Acculturation and Socioeconomic position as predictors of coronary calcification in a multiethnic sample. *Circulation, 112*, 1557-1565. doi: 10.1161/CIRCULATIONAHA.104.530147

Di lorio, C. (2005). *Measurement in Health Behavior: Methods for Research and Education.* San Francisco, CA: Jossey-Bass.

Doak, C., Doak, L., & Root, J. (1996). *Teaching patients with low siteracy Skills* (2nd ed.). Philadelphia, PA: J.B. Lippincott Company. Retrieved from http://www.hsph.harvard.edu/healthliteracy

Dohrenwend, B. (2000). The role of adversity and stress in psychopathology: Some evidence and its implications for theory and research. *Journal of Health and Social Behavior, 41*, 1-19.

Dow Chemical Co. (n.d.). *The Human Element*. Retrieved from http://www.splendad.com/ads/show/40-Dow-The-Human-Element

Dressler, W. (2004). Culture and the risk of disease. *British Medical Bulletin, 69*, 21–31. doi: 10.1093/bmb/ldh020

Dressler, W., Balieiro, M., Riberio, R., & Dos Santos, J.E. (2007). Cultural consonance and psychological distress: Examining the associations in multiple cultural domains. *Culture, Medicine, and Psychology, 31*, 195-224. doi: 10.1007/s11013-007-9046-2

Dressler, W., Bindon, J., & Neggers, Y. (1998). Culture, socioeconomic status, and coronary heart disease risk factors in an African American community. *Journal of Behavioral Medicine, 21*, 527-544.

Duan, J., Hoa, C., Lu, W., Han, L., Pan, Z., Gu, Y., Liu, P., . . .Du, Y. (2009). A new method for assessing variability of 24 h blood pressure and its first application in 1526 elderly men. *Clinical & Experimental Pharmacology & Physiology, 36*, 1093-1098. doi: 10.1111/j.1440-1681.2009.05196.x

DuBard, C., Garrett, J., & Gizlice, Z. (2006). Effect of language on heart attack and stroke awareness among U.S. Hispanics. *American Journal of Preventive Medicine, 30*, 189-196. doi:10.1016/j.amepre.2005.10.024

DuBard, C., & Gizlice, Z. (2008). Language spoken and differences in health status, access to care, and receipt of preventative services among U.S. Hispanics. *American Journal of Public Health, 98*, 2021-2028. doi: 10.2105/AJPH.2007.119008

Dubard, C., & Massing, M. (2008). Trends in emergency Medicaid expenditures for recent and undocumented immigrants. *JAMA, 297*, 1085-1092. doi:10.1001/jama.297.10.1085

Duffey, K. J., Gordon-Larsen, P., Ayala, G. X., & Popkin, B. M. (2008). Birthplace is associated with more adverse dietary profiles for US-born than for foreign-born Latino adults. *Journal of Nutrition*, *138*, 2428–2435. doi:10.3945/jn.108.097105

Durden, T., & Hummer, R. (2006). Access to health care among working-age Hispanic adults in the U.S. *Social Science Quarterly, 87*, 1319-1343. doi:10.1111/j.1540-6237.2006.00430.x

Eamranond, P., Legedza, A., Diez-Roux, A., Kandula, N., Palmas, W., Siscovick, D., & Mukamal, K. (2009). Association between language and risk factor levels among Hispanic adults with hypertension, hypercholesterolemia, or diabetes. *American Heart Journal, 157*, 53-59. doi:10.1016/j.ahj.2008.08.015

Eamranond, P., Patel. K., Legedza, A., Marcantonio, E., & Leveille, S. (2007). The association of language with prevalence of undiagnosed hypertension among older Mexican Americans. *Ethnicity and Disease, 17*, 699-706.

Egan, B., & Laken, M. (2011). Is blood pressure control to less than 140/less than 90mmHg in 50% of all hypertensive patients as good as we can do in the USA: Or is this as good as it gets? *Current Opinion in Cardiology, 26*, 300-307. doi:10.1097/HCO.0b013e3283474c20

Egan, B., Zhao, Y., & Axon, R. (2010). U.S. trends in prevalence, awareness, treatment, and control of hypertension, 1988-2008. *JAMA, 303*, 2043-2050. doi: 10.1001/jama.2010.650

Egan, B., Lackland, D., & Cutler, N. (2003). Awareness, knowledge, and attitudes of older Americans about high blood pressure. *Archives of Internal Medicine, 163*, 681-687.

Elder, P., Ayala, G., Parra-Medina, D., & Talavera, G. (2009). Health communication in the Latino community: Issues and approaches. *Annual Review of Public Health, 30*, 227-251. doi: 10.1146/annurev.publhealth.031308.100300

Ennis, S., Ríos-Vargas, M., & Albert, N. (2011, May). The Hispanic population: 2010. U.S. Census Bureau. Retrieved from http://www.census.gov/prod/cen2010/briefs/c2010br-04.pdf

Equal Employment Opportunity. (2004, Janaury). Title VI, Prohibition Against National Origin Discrimination Affecting Limited English Proficient Persons. *National Archives and Records Administration, 69,* 1763-1768. Retrieved from http://www.archives.gov/eeo/laws/title-vi.html

Farquhar, S., Samples, J., Ventura, S., Davis, S., Abernathy, M., McCauley, L., . . . Shadbeh, N., (2008). Promoting the occupational health of indigenous farmworkers**.** *Journal of Immigrant & Minority Health*, *10*, 269-280. doi:10.1007/s10903-007-9075-5

Finch, B. &Vega, W. (2003). Acculturation stress, social support, and self-rated health among Latinos in California. *Journal of Immigrant Health, 5,* 109–117.

Fiscella, K., Franks, P., Gold, M., & Clancy, C. (2000). Inequality in Quality addressing socioeconomic, racial, and ethnic disparities in health care. *JAMA, 283*, 2579-2584. doi: 10.1001/jama.283.19.2579

Flaherty, J., Gaviria, M., Pathak, D., Mitchell, T., Wintrob, R., . . .Birz, S. (1988). Developing instruments for cross-cultural psychiatric research. *The Journal of Nervous and Mental Disease, 176*, 257-263.

Fleury, J., & Lee, S. (2006). The social ecological model and physical activity in African American women. *American Journal of Psychology, 37*, 129-140. doi: 10.1007/s10464-005-9002-7

Flegal, K., Carroll, M., Ogden, C., & Curtin, L. (2010). Prevalence and trends in obesity among U.S. adults, 1999-2008. *JAMA, 303*, 235-241. doi: 10.1001/jama.2009.2014

Foster, G. (1953). The relationship between Spanish and Spanish-American folk medicine. *The Journal of American Folklore*, *66,* 201-217.

Fongwa, M., Evangelista, L., Hays, R., Martins, D., Elashoff, D., Cowan, M., & Morisky, D. (2008). Adherence treatment factors in hypertensive African American women. *Vascular Health and Risk Management, 4*, 157-166.

Franklin, S., Gustin, W., Wong, N., Larson, M., Weber, M., Kannel, W., & Levy, D. (1997). Hemodynamic patterns of age-related changes in blood pressure. *Circulation, 96,* 308-315.

Frishman, W. (2007). Importance of medication adherence in cardiovascular disease and the value of once-daily treatment regimens. *Cardiology in Review, 15*, 257-263. doi:10.1097/CRD.0b013e3180cabbe7

Fulwood, R., Guyton-Krishnan, J., Wallace, M., & Sommer, E. (2006). Role of community programs in controlling blood pressure. *Current Hypertension Reports*, *8*, 512–520.

Gallo, L., de los Monteros, K., Allison, M., Roux, A. Polak, J., Watson, K., & . . . Morales, L. (2009). Do socioeconomic gradients in subclinical atherosclerosis vary according to acculturation level? Analyses of Mexican-Americans in the Multi-Ethnic Study of Atherosclerosis. *Psychosomatic Medicine*, *71*, 756-762. doi: 10.1097/PSY.0b013e3181b0d2b4

Gamper-Rabindran, S. (2005, September 24). Impact of prenatal care eligibility restrictions on health outcomes: A GIS analysis of immigrant composition and provider location in urban Texas. THEW Seminar. Retrieved from http://www.unc.edu/~shanti/texas_the.pdf

Garcia-Vera, M., Sanz, J., & Labrador , F. (1998). Psychological changes accompanying and mediating stress: Management training for essential hypertension. *Applied Psychophysiology and Biofeedback, 23,* 159-178.

Garcia-Vera, M., Sanz, J., & Labrador , F. (2004). Blood pressure variability and stress-management training for essential hypertension. *Behavioral Medicine, 30,* 53-62.

Gazmararian, J., Kripalani, S., Miller, M., Echt, K., Ren, J., & Rask, K. (2006). Factors associated with medication refill adherence in cardiovascular-related diseases: A focus on health literacy. *Journal of General Internal Medicine*, *21*, 1215-1221. doi: 10.1111/j.1525-1497.2006.00591.x

Giles, T., Aranda, J., Suh, D., Choi, I., Preblick, R., Rocha, R., . . . Frech-Tamas, F. (2007). Ethnic/racial variations in blood pressure awareness, treatment, and control. *The Journal of Clinical Hypertension, 9*, 354-356. doi: 10.1111/j.1524-6175.2007.06432.x

Giles, T., Berk, B., Black, H., Cohn, J., Kostis, J., Izzo, J., . . . Weber, M. (2005). Expanding the definition and classification of hypertension. *The Journal of Clinical Hypertension, 7*, 505-512.

Gillespie, C., Kuklina, E.V., Briss, P.A., Blair, N.A., & Hong, Y. (2011, March 14). Vital signs: Prevalence, treatment, and control of hypertension—United States, 1999–2002 and 2005–2008. *Morbidity & Mortality Weekly Report*, *60*, 103-108.

Goldman, D., Smith, J., & Sood, N. (2006). Immigrants and the cost of medical care. *Health Affairs, 25*, 1700-1711. doi: 10.1377/hlthaff.25.6.1700

González, M. T., & Landero, R. (2007). Factor structure of the Perceived Stress Scale (PSS) in a sample from Mexico. *The Spanish Journal of Psychology, 10*, 19-206.

Grundy, S. (2008). Controversy in clinical endocrinology: Metabolic syndrome: A multiplex cardiovascular risk factor. *The Journal of Clinical Endocrinology & Metabolism, 92*, 399-404. doi: 10.1210/jc.2006-0513

Grzywacz, J., & Fuqua, J. (2000). The social ecology of health: Leverage points and linkages. *Behavioral Medicine, 26*, 101-115.

Grzywacz, J., Alterman, T., Muntaner, C., Gabbard, S., Nakamoto, J., & Carroll, D. (2009). Measuring job characteristics and mental health among Latino farmworkers: Results from cognitive testing. *Journal of Immigrant & Minority Health*, *11*, 131-138.

Grzywacz, J., Quandt, S., Chen, H., Isom, S., Kiang, L. Vallejos, Q., &Arcury, T. (2010a). Depressive symptoms among Latino farmworkers across the agricultural season: Structural and situational influences. *Cultural Diversity and Ethnic Minority Psychology, 16*, 335-343. doi: 10.1037/a0019722

Grzywacz, J., Quandt, S., Vallejos, Q. M., Whalley, L., Chen, H., Isom, S., . . . Arcury, T. (2010b). Job demands and pesticide exposure among immigrant Latino farmworkers. *Journal of Occupational Health Psychology. 15*, 252-266. doi:10.1037/a0019303

Gurman, T., & Moran, A. (2008). Predictors of appropriate use of interpreters: Identifying professional development training needs for labor and delivery clinical staff serving Spanish-speaking patients. *Journal of Health Care for the Poor and Underserved, 19*, 1303-1320.

Hadziabdic, E., Heikkilä, K., Albin, B., & Hjelm, K. (2009). Migrants' perceptions of using interpreters in health care. *International Nursing Review, 56*, 461-469. doi: 10.1111/j.1466-7657.2009.00738.

Hartweg, D., & Isabelli-García, C. (2007). Health perceptions of low-income, immigrant Spanish-Speaking Latinas in the United States. *Hispanic Health Care International, 5*, 53-63. doi:10.1891/154041507780978914

Havas, S., Dickinson, B., & Wilson, M. (2007). Urgent need to reduce sodium consumption. *Journal of the American Medical Association, 298*, 1439-1441.

Hawkins, D., & Groves, D. (2011). The future role of community health centers in a changing health care landscape. *Journal of Ambulatory Care Manage, 34*, 90–99.

Hawkshead, A., & Krousel-Wood, M. (2007). Techniques for measuring medication adherence in hypertensive patients in outpatient settings. *Disease Management Health Outcomes, 15*, 109-118.

Health Resources and Services Administration. (n.d.). What is a health center? Retrieved from http://www.bphc.hrsa.gov/about/index.html

Heinemann, M., Sellick, K., Rickard, C., Reynolds, P., & McGrail, M. (2008). Automated versus manual blood pressure measurement: a randomized crossover trial. *International Journal of Nursing Practice, 14*, 296-302. doi:10.1111/j.1440-172X.2008.00696.x

Hernandez, C. Cruz, M., & Robinson, J. (2011). Spanish-speaking patient health educational preferences. *Archives of Dermatology, 147*, 242-243. doi:10.1001/archdermatol.2010.300

Hernandez, N., & Arroyo, L. (2007). Latino health, Georgia's future: Strategies for improving the health of Latinos in the state. Washington, D.C.: National Council of La Raza.

Hicks, Fairchild, Horng, Orav, Bates, & Ayanian, (2004). Determinants of JNC VI guideline adherence, intensity of drug therapy, and blood pressure control by race and ethnicity. *Hypertension*, *44*, 429-434. doi:10.1161/01.HYP.0000141439.34834.84

Hope, C., Wu, J., Tu, W., Young, J., & Murray, M. (2004). Association of medication adherence, knowledge, and skills with emergency department visits by adults 50 years or older with congestive heart failure. *American Journal of Health Systems Pharmacy, 61*, 2043-2049.

Hovey, J. (2000). Acculturative stress, depression, and suicidal ideations among Mexican immigrants. *Cultural Diversity and Ethnic Minority Psychology, 6*, 134-151.

Hovey, J. & Magaña, C. (2000). Acculturative stress, anxiety, and depression among Mexican immigrant farmworkers in the Midwest United States. *Journal of Immigrant Health, 2,* 119-131.

Hubert, H., Snider, J., & Winkleby, M. (2005). Health status, health behaviors, and acculturation factors associated with overweight and obesity in Latinos from a community and agricultural labor camp survey. *Preventive Medicine, 40*, 642–651. doi:10.1016/j.ypmed.2004.09.001

Huisman, M., Kunst, A., Bopp, M., Borgan, J., Borrell, C., Costa, G. . . . Mackenbach, J. (2005). Educational inequalities in cause-specific mortality in middle-aged and older men and women in eight western European populations. *Lancet. 365*, 493–500.

Humes, K., Jones, N., & Ramirez, R. (2011, March). Overview of race and Hispanic origin: 2010 Census briefs. Retrieved from http://www.census.gov/prod/cen2010/briefs/c2010br-02.pdf

Hunt, L., Schneider, S., & Comer, B. (2004). Should "acculturation" be a variable in health research? A critical review of research on U.S. Hispanics. *Social Science and Medicine, 59*, 973-986.

Hunt, K., Resendez, R., Williams, K., Haffner, S., Stern, M., & Hazuda, H. (2003). All-cause and cardiovascular mortality among Mexican-American and non-Hispanic white older participants in the San Antonio Heart Study: Evidence against the "Hispanic paradox". *American Journal of Epidemiology, 158*, 1048-1057.

Hunt, J., Siemienczuk, J., Touchette, D., & Payne, N. (2004). Impact of educational mailing on the blood pressure of primary care patients with mild hypertension. *Journal of Internal Medicine, 19*, 925-930.

Izzo, J. Giles, T., and Materson, B. (2008). *Defining the syndrome of hypertension*. In J. Izzo, D. Sica, & H. Black (Eds.), *Hypertension Primer: The Essentials of High Blood Pressure* (pp. 315-355). Philadelphia, PA: Lippincott Williams and Wilkins.

Jackevicius, C., Li, P., & Tu, J. (2008). Prevalence, predictors and outcomes of primary nonadherence after acute myocardial infarction. *Circulation*, *117*, 1028-1036. doi: 10.1161/CIRCULATIONAHA.107.706820

Jackson, J. S., Knight, K. M., & Rafferty, J. A. (2010). Race and unhealthy behaviors: chronic stress, the HPA Axis, and physical and mental health disparities over the life course. *American Journal of Public Health*, *100*, 933-939. doi:10.2105/AJPH.2008.143446

Janson, S., Earnest, G., Wong, K., & Blanc, P. (2008). Predictors of asthma medication nonadherence. *Heart Lung, 37*, 211-218. doi:10.1016/j.hrtlng.2007.05.

Jimenez, D., Gray, H., Cucciarre, M., Kumbhani, S., & Gallaghar-Thompson, D. (2010). Using the revised Acculturation Rating Scale for Mexican Americans (ARMSA-II) with older adults. *Hispanic Health Care International*, 8, 14-22. doi: 10.1891/1540–4153.8.1.14

Jones, D., Heflinger, C., & Saunders, R. (2007). The ecology of adolescent substance abuse service utilization. *American Journal of Community Psychology, 40,* 345-358.

Kalichman, S., & Grebler, T. (2010). Stress and poverty predictors of treatment adherence among people with low-literacy living with HIV/AIDS. *Psychosomatic Medicine, 72*, 810-816. doi:10.1097/PSY.0b013e3181f01be3

Kanbay, M., Chen, Y., Solak, Y., & Sanders, P. (2011). Mechanisms and consequences of salt sensitivity and dietary salt intake. *Current Opinion in Nephrology and Hypertension, 20*, 37–43. doi:10.1097/MNH.0b013e32834122f1

Kandula, N., Kersey, M., & Lurie, N. (2004). Assuring the health of immigrants: What the leading health indicators tell us. *Annual Review of Public Health, 25*, 357–76.

Kandula, N., Diez-Roux, A., Chan, C., Daviglus, M., Jackson, S., Ni, H., & Schreiner, P. (2008). Association of acculturation levels and prevalence of diabetes in the Multi-Ethnic Study of Atherosclerosis (MESA). *Diabetes Care, 3*, 1621-1628. doi: 10.2337/dc07-2182

Kaplan, G., & Keil, J. (1993). Socioeconomic factors and cardiovascular disease: a review of the literature. *Circulation, 88*, 1973-98.

Katz, D., Murimi, M., Gonzalez, A., Njike, V., & Green, L. (2011). From controlled trial to community adoption: The Multisite Translational Community Trial. *American Journal of Public Health, 101*, e17-e27. doi:10.2105/AJPH.2010.300104

Kagawa-Singer, M., & Kassim-Lakha, S. (2003). A strategy to reduce cross-cultural miscommunication and increase the likelihood of improving health outcomes. *Academic Medicine, 78*, 577–87.

Kemeny, M. (2003). The psychobiology of stress. *Current Directions in Psychological Science, 12*, 124-129.

Keppel, K. (2007). Ten largest racial and ethnic health disparities in the United States based on Healthy People 2010 Objectives. *American Journal of Epidemiology, 166*, 97-103. doi: 10.1093/aje/kwm044

Kimbro, R., Bzostek, S., Goldman, N., &Rodríguez, G. (2008). Race, ethnicity, and the education gradient in health. *Health Affairs, 27*, 361-372. doi:10.1377/hlthaff.27.2.361

Kim-Godwin, Y., & Bechtel, G. (2004). Stress among migrant and seasonal farmworkers in rural Southeast North Carolina. *The Journal of Rural Health, 2*, 271-278.

Kim, E., Han, H., Jeong, S., Kim, K., Park, H.,Kang, E. . . .Kim, M. (2007). Does knowledge matter? Intentional medication nonadherence among middle-aged Korean Americans with high blood pressure. *Journal of Cardiovascular Nursing 22*, 379-404. doi: 10.1097/01.JCN.0000287038.23186.bd

Kolb, S., Zarate-Abbott, P., Gillespie, M., Deliganis, J., & Norgan, G. (2011). Perceptions about high blood pressure among Mexican American adults diagnosed with hypertension. *Family Community Health, 34*, 17-27.

Kotchen, T. (2010). The search for strategies to control hypertension. *Circulation, 122*, 1141-1143. doi: 10.1161/circulationaha.110.978759

Kottak, C. (2006). Mirror for humanity: A concise introduction to cultural anthropology. Boston: McGraw Hill.

Koya, D., & Egede, L. (2007). Association between length of residence and cardiovascular disease risk factors among an ethnically diverse group of United States immigrants. *Journal of General Internal Medicine, 22*, 41–846. doi: 10.1007/s11606-007-0163-y

Kountz, D. (2004). Hypertension in ethnic populations: Tailoring treatments. *Clinical Cornerstone, 6*, 39-48.

Krieger, N. (2001). A glossary of social epidemiology. *Journal of Epidemiology and Community Health, 55*, 693-700.

Krieger, N., Rehkopf, D., Chen, J., Waterman, P., Marcelli, E., & Kennedy, M. (2008). The fall and rise of US inequities in premature mortality: 1960–2002. *PLoS Medicine*, *5*, 227- 241.

Kripalani, S., Henderson, L., Chiu, E., Robertson, R., Kolm, P., & Jacobson, T. (2006). Predictors of medication self-management skill in a low-literacy population. *Journal of General Internal Medicine, 21*, 852-856.

Kripalani, S., Gatti, M., & Jacobson, T. (2010). Association of age, health literacy, and medication management strategies with cardiovascular medication adherence. *Patient Education and Counseling, 8*, 177-181. doi:10.1016/j.pec.2010.04.030

Krousel-Wood, M., Islam, T., Webber, S., Re, R., Morsiky, D., & Muntner, P. (2009). New medication adherence scale versus pharmacy fill rates in seniors with hypertension. *The American Journal of Managed Care, 15*, 59-66.

Kutner, M., Greenberg, E., Ying, J., & Paulsen, C. (2006). The health literacy of American adults: Results from the 2003 National Assessment of Adult Literacy. National Center for Education Statistics. Retrieved from http://nces.ed.gov/pubs2006/2006483.pdf

Ku, L., & Flores, G. (2005). Pay now or pay later: Providing interpreter services in health care. *Health Affairs, 24*, 435–44. doi: 10.1377/hlthaff.24.2.435

Ku, L., & Waidmann, T. (2003, August). How race/ethnicity, immigration status and language affect health insurance coverage, access to care, and quality of care among the low-income population. Kaiser Commission on the Uninsured. Retrieved from http://www.kff.org/uninsured/upload/How-Race-Ethnicity-Immigration-Status-and-Language-Affect-Health-Insurance-Coverage-Access-to-and-Quality-of-Care-Among-the-Low-Income-Population.pdf

Ku, L., & Matani, S. (2001). Left out: Immigrants' access to health care and insurance. *Health Affairs, 20*, 247-56. doi: 10.1377/hlthaff.24.2.435

Landel, N., & Oropesa, R. (2007). Hispanic families: Stability and change. *Annual Review of Sociology, 33*, 381-405.

Landon, B., Hicks, L., O'Malley, J., Lieu, T., Keegan, T., McNeil, B., & Guadagnoli, E. (2007). Improving the Management of Chronic Disease at Community Health Centers. *New England Journal of Medicine, 356*, 921-934.

Lara, M., Gamboa, C., Kahramanian, M., Morales, L., & Bautista, D. (2005). Acculturation and Latino health in the United States: A review of the literature and its sociopolitical context. *Annual Review of Public Health, 26*, 367-397.

Larson, A. (2001). Environmental/occupational safety and health. *Migrant Health Issues: Monograph Series* No. 2, 8–13. Retrieved from http://www.ncfh.org/docs/02%20%20environment.pdf

Lee, S. (2007). Validating the General Sleep Disturbance Scale among Chinese American Parents with hospitalized infants. *Journal of Transcultural Nursing, 18*, 111-117.

Lee, S., Bender, E., Ruiz, R., & Cho, Y. (2006). Development of an easy-to-use Spanish health literacy test. *Health Service Research, 41*, 1392-1412. doi: 10.1111/j.1475-6773.2006.00532.x

Lee, J., Goldstein, M., Brown, E., & Ballard-Barbash, R. (2010). How does acculturation affect the use of complementary and alternative medicine providers among Mexican- and Asian- [sic] Americans?. *Journal of Immigrant & Minority Health*, *12*, 302-309. doi:10.1007/s10903-008-9171-1

Leininger. M. (1988). Leininger's Theory of Nursing: Cultural Care Diversity and Universality *Nursing Science Quarterly, 1,* 152-160.

Lichtenstein, A., Appel, L., Brands, M., Carnethon, M., Daniels, S., Franch, H, . . .Wylie-Rosett, J. (2006). Diet and lifestyle recommendations revisions 2006: A scientific statement from the American Heart Association Nutrition Committee. *Circulation, 114*, 82-86. doi: 10.1161/CIRCULATIONAHA.106.176158

Lian, Y., Cooper, R., Cao, G., Durazo-Arvizu, R., Kaufam, J., Luke, A., & McGee, D. (1998). Mortality patterns among adult Hispanics: Findings from the NHIS 1986-1990. *American Journal of Public Health, 88*(2), 227-232.

Liao, Y., Greenlund, K., Croft, J., Keenan, N., & Giles, W. (2009). Factors explaining excess stroke prevalence in the US stroke belt. *Stroke, 40*, 3336-3341.

Link, B., & Phelan, J. (1995). Social conditions as fundamental cause of disease. *Journal of Health and Social Behavior, 35*, 80-94.

Livingston, G. (2009). Hispanics, health insurance, and health care access. Retrieved from http://pewhispanic.org/files/reports/113.pdf

Livingston, G., Minushkin, S., & Cohn, D. (2008). Hispanics and health care in the United States: Access, information and knowledge. Retrieved from http://pewhispanic.org/files/reports/91.pdf

Losada, A., Shurgot, G. R., Knight, B. G., Marquez, M., Montorio, I., Izal, M., . . . Ruiz, M. A. (2006). Crosscultural study comparing the association of familismo with burden and depressive symptoms in two samples of Hispanic dementia caregivers. *Aging and Mental Health, 10*, 69-76. doi: 10.1177/1043659609334851

Lopez-Class, M., & Jurkowski, J. (2010). The limits of self-management: Community and health care system barriers among Latinos with diabetes. *Journal of Human Behavior, 20*, 808-826. doi: 10.1080/10911351003765967

Lutsey, P., Roux, A., Jacobs, D., Burke, G., Harman, J., Shea, S., & Folsom, A. (2008). Associations of acculturation and socioeconomic status with subclinical cardiovascular disease in the multi-ethnic study of atherosclerosis. *Research and Practice, 98*, 1963-1970.

Lynch, J. Kaplan, G. Salonen, R., Cohen, R., & Salonen, J. (1995). Socioeconomic status and carotid atherosclerosis. *Circulation*. *92*, 1786-1792.

Maher, M., Lurie, S., Trafton, S., & Dozier, A. (2011). A study of perinatal outcomes of Hispanic migrant farmworkers using the Optimality Index-US. *Hispanic Health Care International, 9*, 22-31, 2011. doi: 10.1891/1540–4153.9.1.22

Mainous, A., Diaz, V., &Geesey, M. (2008). Acculturation and health lifestyle among Latinos with Diabetes. *Annals of Family Medicine, 6*, 131-137.

Margolis, K., Piller, L., Ford, C., Henriquez, M., Cushman, W., Einhorn, P. Colon, P., . . . Goff, D. (2007). Blood pressure control in Hispanics in the Antihypertensive and Lipid-Lowering Treatment to Prevent Heart Attack Trial. *Hypertension, 50*, 854-861. doi: 10.1161/HYPERTENSIONAHA.107.092650

Marin, G., & Marin, B. (1991). *Research with Hispanic populations*. Newberry Park, California: Sage Publications, Inc.

Marin, G., & Gamba, R. (2003). Acculturation and changes in cultural values. In K. Chun, P. Organista, & G. Marin (Eds.), *Acculturation: Advances in theory,*

measurement, and applied research (pp. 83-93).Washington, D.C.: American Psychological Association.

Marin, G., Sabogal, F., Marin, V., Otero-Sabogal, R., & Perez-Stable, E. (1987). Development of a short acculturation scale for Hispanics. *Hispanic Journal of Behavioral Sciences, 18*, 183-205.

Marks, L., & Groch, A. (2000). Optimizing cuff width for noninvasive measurement of blood pressure. *Blood Pressure Monitoring, 5,* 153–158.

Marshall, K., Urrutia-Rojas, X., Mas, F., & Coggin, C. (2005). Health status and access to health of documented and undocumented immigrant Latino women. *Health care for Women International, 26*, 916-936.

McCabe, P. (2000). Stress, coping, and cardiovascular disease. Mahwah, N.J.: Lawrence Erlbaum Associates, Inc.

McEwen, B. (2008). Central effects of stress hormones in health and disease: Understanding the protective and damaging effects of stress and stress mediators. *European Journal of Pharmacology*, *583*, 174-185. doi: 10.1016/j.ejphar.2007.11.071

Mensah, G., Mokdad, A., Ford, E., Greenlund, K., & Croft, J. (2005). State of disparities in cardiovascular health in the United States. *Circulation,* 1233-1241.

Migrant Clinicians Network. (2008). *Migrant information – migration patterns*. Retrieved from http://www.migrantclinician.org/migrant_info/migration_patterns.html

Mochari, H., Ferris, A., Adigopula, S., Henry, G., & Mosca, L. (2007). Cardiovascular disease knowledge, medication adherence, and barriers to preventive action in a minority population. *Preventive Cardiology*, *10*, 190-195. doi: 10.1111/j.1520-037X.2007.06619.x

Montez, J. K., & Eschbach, K. (2008). Country of birth and language are uniquely associated with intakes of fat, fiber, and fruits and vegetables among Mexican-American women in the United States. *Journal of the American Dietetic Association*, *108*, 473–480.

Moreno, G., Tarn, D. M., & Morales, L. S. (2009). Impact of interpreters on the receipt of new prescription medication information among Spanish-speaking Latinos. *Medical Care, 47*, 1201-1208. doi: 10.1097/MLR.0b013e3181adcc1b

Morisky, D., Ang, A., Krousel-Wood, M., & Ward, H. (2008). Predictive validity of a medication adherence measure in an outpatient setting. *Journal of Clinical Hypertension, 10*, 348-354. doi:10.1111/j.1751-7176.2008.07572.x

Morisky, D., Green, L., & Levine, D. (1986). Concurrent and predictive validity of a self-report measure of medication adherence. *Medical Care, 24*, 67-74.

Murray, M., Wu, J., Tu., W., Clark, O., Weiner, M., Morrow, D., & Brater, D. (2004). Health literacy predicts medication adherence. *American Society for Clinical Pharmacology and Therapeutic, 75*, 76.

Munger, M., Van Tassell, B., & LaFleur, J. (2007). Medication nonadherence: An unrecognized cardiovascular risk factor. *Medscape General Medicine, 9*, 58.

Myers, J., & Hard, D. (1995). Work-related fatalities in the agricultural production and services sectors, 1980-1989. *American Journal of Industrial Medicine, 27*, 51-63.

Myers, H. (2009). Ethnicity-and-socioeconomic status-related stress in context: An integrative review and conceptual model. *Journal of Behavioral Medicine, 32*, 9-19. doi 10.1007/s10865-008-9181-4

National Center for Minority Health and Health Disparities. (n.d.). *Mission*. Retrieved from http://ncmhd.nih.gov/about_ncmhd/mission.asp

National Kidney Foundation Guidelines. (2002). K/DOQI clinical practice guidelines for chronic kidney disease: Evaluation, classification, and stratification. Kidney Disease Outcome Quality Initiative. *American Journal of Kidney Disease, 39*(Suppl. 2), S1-S246.

Nielsen-Bohlman, L., Panzer, A., & Kindig, D. (2004). *Health literacy: A prescription to end confusion*. Retrieved from http://books.nap.edu/openbook.php?record_id=10883&page=R1

Ngo-Metzger, Q., Massagli , M., Clarridge, B., Manocchia, M., Davis, R., &. . . Phillips, R. (2003). Linguistic and cultural barriers to care. *Journal of General Internal Medicine, 18*, 44–52. doi 10.1046/j.1525-1497.2003.20205.x

Nord, M., Coleman-Jensen, A., Andrews, M., & Carlson, S. (2010). Household food security in the United States, 2009. Economic Research Report 2010, No. 108. Retrieved from http://www.ers.usda.gov/Publications/ERR108/ERR108.pdf

Oetzel, J., DeVargas, F., Ginossary, T., & Sanchez, C. (2007). Hispanic women's preferences for breast health information: Subjective cultural influences on source, message, and channel. *Health Communication, 21*, 223-233.

Oliveria, S., Chen, R., McCarthy, B., Davis, C., & Hill, M. (2005). Hypertension knowledge, awareness, and attitudes in a hypertensive population. *Journal of Internal Medicine, 20*, 219-225.

Ong, K., Cheung, B., Man, Y., Lau, C., & Lam, K. (2007). Prevalence, awareness, treatment, and control of hypertension among United States adults 1999-2004. *Hypertension, 49*, 69-75. doi: 10.2105/AJPH.89.2.219

Ostchega, Y., Yoon, S., Hughes, J., & Louis, T. (2008, January). Hypertension awareness, treatment, and control—continued disparities in adults: United States, 2005 – 2006. NCHS data brief no. 3. Hyattsville, MD: National Center for Health Statistics. Retrieved from http://www.cdc.gov/nchs/data/databriefs/db03.pdf

Osterberg, L., & Blaschke T. (2005). Adherence to medication. *The New England Journal of Medicine, 353*, 487-497.

Paasche-Orlow, M., & Wolf, M. (2007). The causal pathways linking health literacy to health outcomes. *American Journal of Health Behavior, 31*(Suppl.), s19-s26.

Palloni, A., & Arias, E. (2004). Paradox lost: Explaining the Hispanic adult mortality advantage. *Demography*, *41*, 385-415.

Park, S., & Grayson, M. (2008). Clinical research: Protection of the “vulnerable”? *Journal of Allergy and Clinical Immunology, 121*, 1103-1107.

Parra-Cardona, J., Bulock, L., Imig, D., Villarruel, A., & Gold, S. (2006). "Trabajando duro todos los días": Learning from the life experiences of Mexican-Origin migrant families *Family Relations, 55*, 36-375.

Paasche-Orlow, M., & Wolf, M. (2007). The causal pathways linking health literacy to health outcomes. *American Journal of Health Behavior, 31*(Suppl. 1), S19-S26.

Paasche-Orlow, M., Cheng, D., Palepu, A., Meli, S., Faber, V., &Samet, J. (2006). Health literacy, antiretroviral adherence, and HIV-RNA suppression: A longitudinal Perspective. *Journal of General Internal Medicine*, *21*, 835-840. doi: 10.1111/j.1525-1497.2006.00527.x

Passel, J. (2006). The size and characteristics of the unauthorized migrant population in the U.S. Pew Hispanic Center. Retrieved from http://pewhispanic.org/files/reports/61.pdf

Passel, J., & Cohn, D. (2011, February 1). Unauthorized immigrant populations: National and state trends, 2010. Washington, DC: Pew Hispanic Center.

Passel, J., Cohn, D., & Lopez, M. (2011, March 24). Census 2010: 50 million Latinos Hispanics account for more than half of nation's growth in past decade. Pew Research Center. Retrieved from http://pewhispanic.org/files/reports/140.pdf

Pawlack, R. (2005). Economic considerations of health literacy. *Nursing Economics, 23*, 173-180. 241-256.

Pearlin, L. (1989). The sociological study of stress. *Journal of Health and Social Behavior*, *30,* 241-256.

Pérez-Escamilla, R. (2010). Dietary quality among Latinos: is acculturation making us sick? *Journal of the American Dietetic Association, 110*(5 Suppl), S36-S39.

Perez-Stable, E., & Salazar, R. (2004). Issues in achieving compliance with antihypertensive treatment in the Latino population. *Hypertension in Hispanics, 6*, 49-64.

Perez-Stable, E., Napoles-Springer, A., & Miramonte, J. (1997). The effects of ethnicity and language on medical outcomes of patients with hypertension or diabetes. *Medical Care, 35*, 1212-1219.

Perilla, J., Wilson, A., Wold, J., & Spencer, L. (1998). Listening to migrant voices: Focus groups on health issues in South Georgia. *Journal of Community Health Nursing, 15*, 251-263.

Perkins, J. (2003, August). Ensuring linguistic access in health care settings: An overview of current legal rights and responsibilities. Retrieved from http://www.kff.org/uninsured/upload/Ensuring-Linguistic-Access-in-Health-Care-Settings-An-Overview-of-Current-Legal-Rights-and-Responsibilities-PDF.pdf

Persell, S., Osborn, C., Richard, R., Skripkauskas, S., &Wolf, M. (2007). Limited health literacy is a barrier to medication reconciliation in ambulatory care. *Journal of General Internal Medicine, 22*, 1523-1526.

Personal Responsibility and Work Opportunity Reconciliation Act of 1996. H.R. 3734, 104th Cong. (1996).

Peters, R., & Templin, T. (2008). Measuring blood pressure knowledge and self-care behaviors of African Americans. *Research in Nursing and Health, 31*, 543-552.

Pickering, T. (2004). Hypertension in Hispanics. *The Journal of Clinical Hypertension, 6*, 279-282.

Pickering, T. (1997). The effects of environmental and lifestyle factors on blood pressure and the intermediary role of the sympathetic nervous system. *Journal of Human Hypertension, 11*, (Suppl. 1), S9-S18.

Pickering, T., Hall, J., Appel, L., Falkner, B. Graves, J., Hill, M., . . .Roccella, E. (2005). Recommendations for blood pressure measurement in humans and experimental animals. *Hypertension, 45,* 142-161. doi: 10.1161/01.HYP.0000150859.47929.8e

Pladevall, M., Brotons, C., Gabriel, R., Arnau, A., Suarez, C., de la Figuera, M., . . . Writing Committee on behalf of the COM99 Study Group (2010). Multicenter cluster-randomized trial of a multifactorial intervention to improve antihypertensive medication adherence and blood pressure control among patients at high cardiovascular risk (The COM99 study). *Circulation, 122,* 1183–1191. doi: 10.1161/CIRCULATIONAHA.109.89277

Pleis, J., Ward, B., & Lucas, J. (2010). Summary health statistics for U.S. adults: National Health Interview Survey, 2009. *National Center for Health Statistics. Vital Health Statistics, 10*(249).

Pleis, J., & Lethbridge-Çejku, M. (2006). Summary health statistics for U.S. adults: National health interview survey, 2005. National Center for Health Statistics. *Vital and Health Statistics, 10*(232).

Ponce, N., Hayes, R., & Cunningham, W. (2006). Linguistic disparities in health care access and health status among older adults. *Journal of General Internal Medicine, 21*(7), 786-91. doi 10.1111/j.1525-1497.2006.00491.x

Powers, M., & Jalowiec, A. (1987). Profile of the well-controlled, well-adjusted hypertensive patient. *Nursing Research, 36*, 106-110.

Quandt, S., Arcury, T.Austin, C., & Saavedra, R. (1998). Farmworker and farmer perceptions of farmworker agricultural chemical exposure in North Carolina. *Human Organization*, *57*, 359-368.

Quandt, S., Preisser, J., & Arcury, T. (2002). Mobility patterns of migrant farmworkers in North Carolina: Implications for occupational health research and policy. *Human Organization, 61*, 21-29.

Quandt, S., Schulz, M., Vallejos, Q., Feldman, S., Verma, A., Fleischer, A., Rapp, S., & Arcury, T. (2008). The association of dermatologist-diagnosed and self-reported skin diseases with skin-related quality of life in Latino migrant farmworkers. *International Journal of Dermatology*, *47*, 236-241.

Quinn, L., Thompson, S., & Ott, K. (2005). Application of the Social Ecological Model in folic acid public health initiatives. *Journal of Obstetric, Gynecologic, and Neonatal Nursing, 34*, 672-681. doi: 10.1177/0884217505281877

Ramirez, D., Engel, K. G., & Tang, T. (2008). Language interpreter utilization in the emergency department setting: A clinical review. *Journal of Health Care for the Poor and Underserved, 19*, 352-362.

Redfield, R., Linton, R., & Herskovits, M. (1936). Memorandum for the study of acculturation. *American Anthropologist, 18*(1), 149-152. Retrieved fromhttp://www.jstor.org.proxy.library.vanderbilt.edu/stable/pdfplus/662563.pdf

Reinders, A., Cuckson, A., Jones, C., Poet, R., O'Sullivan, G., & Shennan, A. (2003). Validation of the Welch Allyn 'Vital Signs' blood pressure measurement device in pregnancy and pre-eclampsia. *BJOG: An International Journal of Obstetrics & Gynaecology*, *110*, 134-138.

Remor, E. (2006). Psychometric properties of a European Spanish version of the Perceived Stress Scale (PSS). *The Spanish Journal of Psychology, 9*, 86-93.

Republican Contract with America. (n.d.) Retrieved from http://www.house.gov/house/Contract/CONTRACT.html

Rodrigez, M., Bustamente, A., & Ang, A. (2009). Perceived quality of care, receipt of preventive care, and usual Source of health care among undocumented and other Latinos. *Journal of General Internal Medicine, 24* (Suppl 3), 508–513. doi:10.1007/s11606-009-1098-2

Rosamond, W., Flegal, K., Furie, K., Go, A., Greenlund, K., Haase, N., & . . . Hong, Y. (2008). Heart disease and stroke statistics—2008 update: A report from the American Heart Association Statistics committee and stroke statistics subcommittee. Retrieved from http://circ.ahajournals.org/cgi/reprint/117/4/e25.pdf

Rosenbaum, S., & Shin, P. (2005). Migrant and seasonal farmworkers: Health insurance coverage and access to care. Kaiser Commission on Medicaid and the Uninsured. Center for Health Services Research and Policy.

Rosenberg, T., Raggio, T., & Chiasson, M. (2005). A further examination of the 'epidemiologic paradox': birth outcomes among Latinas. *Journal of the National Medical Association, 97*(4), 550-556.

Rose, A., Glickman, M., D'Amore, M., Orner, M., Berlowitz, D., & Kressin, N. (2010). Effects of daily adherence to antihypertensive medication on blood pressure control. *Journal of Clinical Hypertension, 13*, 416-421. doi: 10.1111/j.1751-7176.2011.00427.x

Rothwell, P. (2010). Limitations of the usual blood-pressure hypothesis and importance of variability, instability, and episodic hypertension. *Lancet, 37*, 938-948. doi:10.1016/S1474-4422(10)70066-1

Rubel, A. (1960). Concepts of disease in Mexican-American culture. *American Anthropology, 62*, 795-814.

Rudd, R. (2007). Health literacy skills of U.S. adults. *American Journal of Health Behavior*, *31*(Suppl. 1), 8-18.

Rudd, R., Kirsch, I., &Yamamoto, K. (2004). *Literacy and health in America*. Princeton, New Jersey: Educational Testing Service.

Sam, D. (2006). Acculturation: Conceptual background and core components. In D. L. Sam & J. W. Berry (Eds.), *The Cambridge handbook of acculturation psychology.* New York, NY: Cambridge University Press.

Santibañez, L., Vernez, G., & Razquin , P. (2005). Education in Mexico: Challenges and opportunities. Santa Monica, CA: RAND Cooperation. Retrieved from http://www.rand.org/pubs/documented_briefings/2005/RAND_DB480.pdf

Seeman, T., Epel, E., Gruenewald, T., Karlamangla, A., & McEwen, B. (2010). Socio-economic differentials in peripheral biology: Cumulative allostatic load. *Annals of New York Academy of Science, 1186*, 223-239. doi:10.1111/j.1749-6632.2009.05341.x

Seeman, T., Merkin, S., Crimmins, E., Koretz, E., Charette, S., & Karlamangla, A. (2008). Education, income and ethnic differences in cumulative biological risk profiles in a national ample of US adults: NHANES III (1988–1994). *Social Science and Medicine, 66*, 72–87. doi:10.1016/j.socscimed.2007.08.027

Sentell, T., & Haplin, A. (2006). Importance of adult literacy in understanding health disparities. *Journal of General Internal Medicine, 21*, 862-866.

Shaw, S., Huebner, C., Armin, J., Orzech, K., & Vivan, J. (2009). The role of culture in health literacy and chronic diseases screening and management. *Journal of Immigrant Minority Health, 11,* 460–467. doi:10.1007/s10903-008-9135-5

Sherzer, J. (1987). Discourse-center approach to language and culture. *American Anthropologist, 89*, 295-309.

Shin, H., & Kominski, R. (2010). Language use in the United States: 2007: American community Survey Reports. Retrieved from http://www.census.gov/hhes/socdemo/language/data/acs/ACS-12.pdf

Shipp, E., Cooper, S., del Junco, D., Delclos, G., Burau, K., . . . Whitworth, R. (2009). Chronic back pain and associated work and non-work variables among farmworkers from Starr County, Texas. *Journal of Agromedicine*, *14*, 22-32.

Smedley, B., Stith, A., & Nelson, A. (Eds.). (2003). *Unequal treatment: Confronting racial and ethnic disparities in health care.* Washington, D.C.: The National Academies Press.

Sobralske, M. (2006). Health care seeking among Mexican American men. *Journal of Transcultural Nursing, 17*, 129-138.

Soper, D.S. (2011). A-priori sample size calculator for hierarchical multiple regression. Retrieved from http://www.danielsoper.com/statcalc3

Sorlie, P., Backlund, E., & Keller, J., (1995). US mortality by economic, demographic, and social characteristics: The National Longitudinal Mortality Study. *American Journal of Public Health, 85*, 949-956.

Sparrenberger, F., Cichelero, F., Ascoli, A., Fonseca, F., Weiss, G., Berwanger, O., . . .Fuchs, F. (2009). Does psychosocial stress cause hypertension? A systematic review of observational studies. *Journal of Human Hypertension, 23*, 12-19. doi:10.1038/jhh.2008.74

Stewart, L., McInnes, G., Murray, L. Sloan, B., Walters, M., Morton, R., . . . Morrison, D. (2009). Risk of socioeconomic deprivation on mortality in hypertensive patients. *Journal of Hypertension, 27*, 730-735. doi:10.1097/HJH.0b013e328324ed58

Steffen, P., Smith, T., Larson, M., & Butler, L. (2006). Acculturation to Western society as a risk factor for high blood pressure: A meta-analytic review. *Psychosomatic Medicine, 68*, 386-397. doi: 10.1097/01.psy.0000221255.48190.32

Stokols, D., Grzywacz, J., McMahan, S., & Phillips, K. (2003). Increasing the health promotive capacity of human environments. *American Journal of Health Promotion, 18*, 4-13.

Stokols, D. (1992). Establishing and maintaining healthy environments: Toward a social ecology of health promotion. *American Psychologist, 47*, 6-22.

Stokols, D. (1996). Translating social ecological theory into guidelines for community health promotion. *American Journal of Health Promotion, 10*, 282-298.

Su, D., Li, L., & Pagán, J. (2008). Acculturation and the use of complementary and alternative medicine. *Social Science and Medicine, 66*, 439-53. doi:10.1016/j.socscimed.2007.08.023

Sudano, J., & Baker, D. (2001). Antihypertensive Medication Use in Hispanic Adults: A Comparison with Black Adults and White Adults. *Medical Care, 39*, 575-587.

Suinn, R. M., Ahuna, C., & Khoo, G. (1992). The Suinn-Lew Asian Self-Identity Acculturation Scale: Concurrent and factorial validation. *Educational and Psychological Measurement, 52*, 1041-1046.

Sundquist, J. & Winkleby, M. (1999). Cardiovascular risk factors in Mexican American adults: A transcultural analysis of NHANES III, 1988-1994. *American Journal of Public Health, 89*, 723-730.

Tafur, M., Crowe, T., & Torres, E. (2009). A review of curanderismo and healing practices among Mexicans and Mexican Americans. *Occupational Therapy International*, *16*, 82-88.

Telles, C., Karno, M., Mintz, J., Arias, M., Tucker, D., & Lopez, S. (1995). Immigrant families coping with schizophrenia: behavioral family intervention v case management with a low income Spanish-speaking population. *British Journal of Psychiatry, 167*, 473–479. doi:10.1192/bjp.167.4.473

The Joint Commission. (2010). *Advancing Effective Communication, Cultural Competence, and Patient- and Family-Centered Care: A Roadmap for Hospitals* Oakbrook Terrace, IL: The Joint Commission.

The Patient Protection and Affordable Care Act of 2010, 11th Congress (2010). Retrieved from http://www.gpo.gov/fdsys/pkg/PLAW-111publ148/html/PLAW-111publ148.htm

Tholl, U., Forstner, K., & Anlauf, M. (2004). Measuring blood pressure: Pitfalls and recommendations. *Nephrology, Dialysis, and Transplantation, 19*, 766-768.

Tienda, M., & Mitchell, F. (2006). Introduction: E pluribus plures or e pluribus unum. In M. Tienda and F. Mitchell (Eds.), *Hispanics and the future of America* (pp. 1-15). Washington, D.C.: National Academies Press.

Timio, M., Verdecchia, P., Venanzi, S., Gentili, S., Ronconi, M., & Francucci, B. (1988). Age and blood pressure changes; A 20-year follow-up study in nuns in secluded order. *Hypertension, 12*, 457-461.

Trapp, D. (2007, January 8). The illegal effect: Who pays for treatment? *American Medical News*. Retrieved from http://www.amaassn.org/amednews/2007/01/01/gvsa0101.htm

Trimble, J. (2003). Introduction: Social change and acculturation. In K. Chun, P. Organista, & G. Marin (Eds.), *Acculturation: Advances in theory, measurement, and applied research* (pp. 3-13).Washington, D.C.: American Psychological Association.

Trotter, R., & Chavira, J. (1980). Curanderismo: Am emic theoretical perspective of Mexican-American Folk Medicine. *Medical Anthropology*, 424-485.

Unger, T., & Parati, G. (2005). Acute stress and long-lasting blood pressure elevation: a possible cause of established hypertension? *Journal of Hypertension, 23*, 261–263

Urquia, M., & Gagnon, A. (2011). Glossary: Migration and health. *Journal of Epidemiology and Community Health, 65*, 467-472. doi:10.1136/jech.2010.109405

Urrutia-Rojas, X., Marshall, K., Trevino, E., Lurie, S. G., & Minguia-Bayor, G. (2006). Disparities in access to health care and health status between documented and undocumented Mexican immigrants in north Texas. *Hispanic Health Care International, 4*, 5–14.

U.S. Census Bureau. (2008). *2008 population estimates*. Retrieved January 9, 2010, from http://factfinder.census.gov/servlet/DatasetMainPageServlet?_program=PEP

U.S. Census Bureau. (2001). *Health insurance coverage: 2001.* Retrieved from http://www.census.gov/prod/2008pubs/p60-235.pdf

U.S. Census Bureau. (2007). *Hispanics of the United States.* Retrieved from http://www.census.gov/population/www/socdemo/hispanic/files/Internet_Hispanic_in_US_2006.pdf

U.S. Census Bureau. (2010). *U.S. Hispanic population: 2006*. Retrieved from http://www.census.gov/population/socdemo/hispanic/cps2006/CPS_Powerpoint_2006.pdf

U.S. Department of Health and Human Services. (2000). *Healthy People 2010*: *Understanding and Improving Health.* Retrieved from http://www.healthypeople.gov/2010/Document/pdf/Volume1/11HealthCom.pdf

U.S. Department of Health and Human Services. (2011, June 30). *Healthy People 2020: Heart Disease and Stroke.* Retrieved from http://healthypeople.gov/2020/topicsobjectives2020/objectiveslist.aspx?topicId=21

U.S. Department of Health and Human Services. (n.d.) *Midcourse Review: Healthy People 2010.* Retrieved from http://www.healthypeople.gov/data/midcourse/pdf/ExecutiveSummary.pdf

U.S. Department of Health and Human Services. (n.d.) *Midcourse Review: Healthy People 2010.* Retrieved from http://www.healthypeople.gov/data/midcourse/html/focusareas/FA01ProgressHP.htm

U.S. Department of Health and Human Services, National Heart, Lung, and Blood Institute. (2004). *The Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure*. Retrieved from http://www.nhlbi.nih.gov/guidelines/hypertension/jnc7full.pdf

U.S. Department of Health and Human Services' Office of Minority Health. (2001). National Standards for Culturally and Linguistically Appropriate Services in Health Care: Final Report. Retrieved from http://minorityhealth.hhs.gov/assets/pdf/checked/executive.pdf

Vaeth, P. &Willett, D. (2005). Level of acculturation and hypertension among Dallas County Hispanics: Findings from the Dallas Heart Study. *Annals of Epidemiology 15*, 373–380.

Vasan, R., &Kannel, W. (2009). Strategies for cardiovascular risk assessment and prevention over the life course: Progress amid imperfections. *Circulation, 120*, 360-363. doi: 10.1161/CIRCULATIONAHA.109.881995

Vega, W., Sallis, J., Patterson, T., Rupp, J., Atkins, C., & Nader, P. (1987). Assessing knowledge of cardiovascular health-related diet and exercise behaviors in Anglo- and Mexican-Americans. *Preventive Medicine, 16*, 696-709.

Viera, A., Cohen, L., Mitchell, M. & Sloane, P. (2008). High blood pressure knowledge among primary care patients with known hypertension: A North Carolina Family Medicine Research Network (NC-FM-RN) Study. *Journal of the American Board of Family Medicine, 21*(4), 300-308.doi:10.3122/jabfm.2008.04.070254

Wallace, P., Pomery, E., Latimer, A., Martinez, J. & Salovey, P. (2010). A review of acculturation measures and their utility in studies promoting Latino health. *Hispanic Journal of Behavioral Sciences, 32*, 37-54. doi: 10.1177/0739986309352341

Wallenstein, N., Yen, I., & Syme, S. L. (2011). Integration of social epidemiology and community engaged interventions to improve health equity. *American Journal of Public Health, 101*, 822-830. doi: 10.2105/AJPH.2008.140988

Weigel, M., Armijos, R., Hall, Y., Ramirez, Y. & Orozco, R. (2007). The household food insecurity and health outcomes of U.S.-Mexico border migrant and seasonal farmworkers. *Journal of Immigrant Minority Health, 9*, 157-169.

Williams, D., Costa, M., Odunlami, A., & Mohammed, S. (2008). Moving upstream: how interventions that address the social determinants of health can improve health and reduce disparities. *Journal of Public Health Management and Practice*, S8-S17.

Wolf, M., Davis, T., Osborn, C., Skripkauskas, S., Bennett, C., & Makoul, G.(2007). Literacy, self-efficacy, and HIV medication adherence. *Patient Education and Counseling, 65*, 253-260. doi:10.1016/j.pec.2006.08.006

Wolf, M., Tomori, C. Lyons, T, Davis, T., Cross, T., & Bennett, C. (2001). Examining the relationship between health literacy, race, and adherence to HAART among individuals with HIV infection. *Abstracts from the Academy of Health Service Research and Health Policy Meeting, 18*, 41.

Yeh, M., Viladrich, A., Bruning, N., & Roye, C. (2009). Determinants of Latina obesity in the United States: The role of selective acculturation. *Journal of Transcultural Nursing, 20*(1), 105-115. doi 10.1177/1043659608325846

Zane, N., & Mak, W. (2005). Major approaches to measurement of acculturation among ethnic minority populations: A content analysis and an alternative empirical strategy. In K. Chun, P. Organista, & G. Marin (Eds.), *Acculturation: Advances in theory, measurement, and applied research* (pp. 3-13).Washington, D.C.: American Psychological Association.

Zuvekas, A. (2002, March). *Measuring farmworker and homeless patients' experiences in Community health centers*. Retrieved from http://www.midwestclinicians.org/files/mentoring/NACHC/docs/PEERS%20Monograph.pdf

APPENDIX A

INSTITUTIONAL REVIEW BOARD

Mail: P.O. Box 3999
Atlanta, Georgia 30302-3999
Phone: 404/413-3500
Fax: 404/413-3504

In Person: Alumni Hall
30 Courtland St, Suite 217

June 22, 2010

Principal Investigator: Lee, Shih-Yu (Sylvia)

Protocol Department: College of Health & Human Sciences/B.F. Lewis School of Nursing

Protocol Title: Social Ecology of Adherence to Hypertension Treatment in Latin@ Migrant and Seasonal Farmworkers

Funding Agency: Sigma Theta Tau-Alpha Epsilon Chapter

Submission Type: Protocol H10338

Review Type: Expedited Review

Approval Date: June 21, 2010

Expiration Date: June 20, 2011

The Georgia State University Institutional Review Board (IRB) reviewed and approved the above referenced study and enclosed Informed Consent Document(s) in accordance with the Department of Health and Human Services. The approval period is listed above.

Federal regulations require researchers to follow specific procedures in a timely manner. For the protection of all concerned, the IRB calls your attention to the following obligations that you have as Principal Investigator of this study.

1. When the study is completed, a Study Closure Report must be submitted to the IRB.

2. For any research that is conducted beyond the one-year approval period, you must submit a Renewal Application 30 days prior to the approval period expiration. As a courtesy, an email reminder is sent to the Principal Investigator approximately two months prior to the expiration of the study. However, failure to receive an email

3. reminder does not negate your responsibility to submit a Renewal Application. In addition, failure to return the Renewal Application by its due date must result in an automatic termination of this study. Reinstatement can only be granted following resubmission of the study to the IRB.
4. Any adverse event or problem occurring as a result of participation in this study must be reported immediately to the IRB using the Adverse Event Form.

5. Principal investigators are responsible for ensuring that informed consent is obtained and that no human subject will be involved in the research prior to obtaining informed consent. Ensure that each person giving consent is provided with a copy of the Informed Consent Form (ICF). The ICF used must be the one reviewed and approved by the IRB; the approval dates of the IRB review are stamped on each page of the ICF. Copy and use the stamped ICF for the coming year. Maintain a single copy of the approved ICF in your files for this study. However, a waiver to obtain informed consent may be granted by the IRB as outlined in 45CFR46.116(d).

All of the above referenced forms are available online at https://irbwise.gsu.edu. Please do not hesitate to contact Susan Vogtner in the Office of Research Integrity (404-413-3500) if you have any questions or concerns.

Sincerely,

Susan K. Laury

Susan K. Laury, IRB Chair

Federal Wide Assurance Number: 00000129

APPENDIX B

HEALTH DISTRICT 8-2	Revised:	Page 5	Policy Number:
POLICY MANUAL	5 June 2008		700.9

GEORGIA DIVISION OF PUBLIC HEALTH: HEALTH DISTRICT 8, UNIT 2
REQUEST FOR APPROVAL OF A RESEARCH ACTIVITY

REVIEW FORM

Title of Project: _____Social Ecology of Adherence to Hypertension Treatment in Latin@ Migrant and Seasonal Farmworkers_____

Principal Investigator:
Shih-Yu (Sylvia) Lee, RNC, PhD Byrdine F. Lewis School of Nursing Student PI: Student PI Eleanor Moore MSN, RN Georgia State University

Shelia Ramer, FPN-C, Director Georgia Farmworker Health Program
NAME TITLE AFFILIATION

Byrdine F. Lewis School of Nursing, Suite 909 Urban Life Building
Georgia State University
PO Box 4019
Atlanta, GA 30302-4019 404-413-1176
ADDRESS TELEPHONE

Eleanor Moore's: 1501 Millpond Road, Thomas University, Thomasville, GA 31792 229-227-6429
ADDRESS TELEPHONE

Health District Sponsor (If Principal Investigator is not a Public Health employee :)

Shelia Ramer FNP APRN Director FW Program
NAME TITLE AFFILIATION

920 W St. Bainbridge, GA 39819 229-248-3748
ADDRESS TELEPHONE

1. Estimated duration of project: From: ___May 2010__ To: _March 2011_____
DATE DATE

2. Facilities where research is to be conducted:
Georgia Farmworker Health Program Bainbridge, GA

3. Will DHR clients be subjects in the research?

Yes __X_ No ___ If Yes, how many? ____115_____

4. Are any of the subjects children?

Yes ___ No _X__ If Yes, how old? (age range) _____

5. Clearly explain why you are conducting this research, what the anticipated benefits might be, and what the importance of the knowledge to be gained might be (Use additional pages if necessary).

This research study is the dissertation work of the student PI, Eleanor Hall, MSN, RN. The social and ecological influence on health care outcomes in Latin@ migrant and seasonal farmworkers remains not well understood. The Institute of Medicine's landmark publication "Unequal treatment: Confronting racial and ethnic disparities in health care" exposed health care disparities experienced by ethnic and racial minorities and represents a framework for the obstacles to reducing the prevalence and incidence of HTN (Smedley, Stith, & Nelson, 2003). Racial and ethnic health care disparities are closely linked to SES, environmental deprivation, discrimination, and access to healthcare (Smedley, Stith, & Nelson, 2003; Krieger, 2001; Marshall, Urrutia-Rojas, Mas, & Coggin, 2005). Link and Phelan (1995) emphasize that historically, research mainly focused on understanding correlations between the proximal risk factors (e.g. decreased exercise, inadequate diet, high cholesterol, or high blood sugar) and diseases such as HTN, while neglecting the role of social factors, known as "fundamental causes of disease" or social conditions (availability of resources, relationships, and social support) on health because of their distal nature. The gaps in the perceived distal nature of social conditions make establishing causal link with illness more difficult and may produce flawed understanding as well as an underrated value of the impact of social factors on illness and health (Link & Phelan, 1995). Furthermore, the National Center on Minority Health and Disparities (NCMHHD) supports the exploration into the cultural and social determinates of minority health, in diminishing health care disparities (NCMHD n.d.). Finally, Healthy People 2010 has emphasized the importance of adherence to antihypertension therapy with in public health (U.S. Department of Health and Human Services, 2000).

6. Continued if needed.

Therefore, the benefit from this study is to gain understanding of the social, cultural, and ecological issues that affect adherence to hypertension treatment in Latin@ migrant and seasonal farmworkers so that interventions can be tailored to address possible barriers in the public health setting and potentially improve health care outcomes.

7. In your opinion, does this research involve more than minimal risk to subjects? *Minimal risk means that the probability and magnitude of harm or discomfort anticipated in the research are not greater, in and of themselves, than ordinarily encountered in daily life or during the performance of routine physical or psychological examinations or tests.*

Yes ____ (Explain) No __X__ (Explain)

Participation in this study is completely voluntary, and risks are minimal. Participants' blood pressure will be taken twice within 2 minutes and questionnaires will be

administered over a 90 minute period.

8. Clearly explain how all risks to subjects are reasonable, in relationship to the anticipated benefits of the research, and the importance of the knowledge to be gained.

The risks are minimal and are reasonable in that their participation will be similar to a blood pressure screening and the acquisition of information about how they manage their blood pressure. The information obtained from their participation will help researchers and health care providers understand the influence of the interrelationships between adherence to hypertension treatment and the social, cultural, and ecological variables that affect adherence to hypertension treatment.

9. Are all of the following materials attached? (*One copy of each will be sufficient.*)

__x___ A narrative description of the proposed methods of research, including the research design and the involvement of human subjects.

___x__ Any research instruments, such as interview forms or questionnaires, which will be used in this study.

___x__ Consent Forms

___x__ Drug brochure, if applicable. A drug brochure may substitute for a narrative description and research instruments.

****

I have reviewed and approve this research:

5/3/10

Jacqueline H. Grant, MD — Date

District Health Director

HEALTH DISTRICT 8-2 POLICY MANUAL	Revised: 5 June 2008	Page 4	Policy Number: 700.9

UNDERSTANDING AND AGREEMENT

It is understood and agreed to by the applicant that:

1. The research will not be started until it is reviewed and approved by the Administrative Staff of Health District 8, Unit 2.
2. The investigator or sponsor will promptly notify the Administrative Staff, through the District Health Director, whenever there are changes in the approved research which may affect the project's status, relative to the review criteria.
3. Approved informed consent procedures will be followed without deviation, and no subject will be enrolled in the research without informed consent.
4. All personal information concerning individuals served or studied under the project will be treated as confidential. Any individually identifying program records will be used only for the purpose for which access to the records was authorized, and will not be disclosed without the subject's consent to persona not directly involved in the research activity.
5. Any unexpected adverse events which could be related to an experimental procedure will be reported immediately to the Administrative Staff.
6. Reports for continuing review will be submitted, as requested, to the Administrative Staff.
7. Responsibility for the establishment and maintenance of acceptable ethical practice in research remains with the individual investigator. The investigator is also responsible for the ethical treatment of research subjects by collaborators, assistants, students, consultants, and other employees, all of whom, however, incur parallel obligations.

	Investigator:	**Sponsor:**
Name:	Eleanor Hall	Shelia Ramer per KBridges since Shelia is on leave 2/17/10
Signature:	Eleanor Hall	
Date:	2/17/10	

Health Director:

Name:	G. Hunt, MD
Signature:	G. Hunt, MD
Date:	5/3/10

Forward a completed copy of this Review Form and all appropriate attachments to:
Administrative Staff, Health District 8, Unit 2
Attn.: District Health Director
1109 North Jackson Street
Albany, GA 31701
Ph: 229-430-4127

APPENDIX C

Georgia State University

Southwest Health District Public Health

Informed Consent Form and HIPPA Authorization

Title: Adherence to Hypertension Treatment in Latin@ Migrant and Seasonal Farmworkers

Principal Investigator:

Shih-Yu Lee, RNC, PhD (Assistant Professor at Georgia State University)

Shelia Ramer, FNP-C (Director at Georgia Farm Worker Health Program- Decatur County)

Student Principal Investigator: Eleanor Hall, MSN, RN (Doctoral student at Byrdine F. Lewis School of

Nursing, Georgia State University)

I. Purpose:

You are being asked to take part a study because you are of Latin background with high blood pressure, and work with area farmers. The purpose of the study is to find out about how you take care of your high blood pressure and the things that make taking care of your high blood pressure hard. Findings from this study will help nurses and doctors to provide better quality of care for Latin@ Farmworkers. Taking part in this study will take about 90 minutes. A total of 115 people will be asked to be a part of this study.

II. Procedures:

If you want to be a part of the study, you will be asked some questions one time in a private room at the Georgia Farmworker Health Program in Bainbridge, Georgia. You can pick a day that is good for you. Eleanor Hall and a Spanish-speaking team member will be present to ask you to fill out six forms with questions on them. A nurse will take your blood pressure two times before the interview. All of the forms with questions are in Spanish and English for you to choose. You will be asked about how you take care of your high blood pressure, your cultural background, and your experience with stress. You will receive a small gift to thank you for your time and the information that you are giving.

III. Risks:

There are no risks to you during this study. You may feel uncomfortable while you are answering questions during the interview. If this happens, you do not need to answer the question, or you may stop the interview.

IV. Benefits:

Being in this study will not benefit you. The information that you give will help us to provide better care for the migrant farmworkers.

V. VoluntaryParticipationandWithdrawal:

Being in this study is up to you. You may not want to answer all the questions; you may skip questions or stop taking part in the study at any time. No matter what you want to do, you will not lose any benefits you should receive, and no matter if you are a part of the study or not, the care you currently receive will not change.

VI. Confidentiality and Protected Health Information (PHI):

PHI is a term we use for protected health information. PHI are any facts about you or your health that could tell someone who you are. We will only use your health information for the purposes of this study. While we are doing this study, the study team may use only the personal health information that you have given us: (your name, address, medical information, etc.). The people and places that will be able to look at your personal health information are: Eleanor Hall, Dr. Lee, and members of the research team. People other than those doing the study may look at study records. Agencies that make rules and policy about how research is done have the right to review these records. Those with the right to look at your study records include the Georgia State University Institutional Review Board (IRB) and the Southwest Georgia Public Health District 8- 2 (IRB). Records can also be opened by court order. We will keep your records private to the degree allowed by law. We will do this even if outside review occurs. We will use a study number rather than your name on study records where we can. We will keep your records in a locked cabinet and on password- and firewall- protected computers. We will use a key to identify which files are yours. This key will be kept in a locked file, away from the data. Your name and other facts that might point to you will not appear when we present this study or publish its results. The findings will be reported in group form. You will not be identified personally.
A federal law now protects the privacy of your PHI. This law is the Health Insurance and Portability and Accountability Act (HIPAA). That law says we must tell you before you agree to be in the study about the following facts:
1. What PHI of yours the research team will use.

2. Who will collect your PHI?

3. Who will use your PHI?

4. With whom your PHI will be shared and why it is shared each time.

5. The date or event, if any is set, after which we will not use or report your PHI anymore; and 6. Your rights under HIPAA to ask us not to use your PHI any more.

You may choose to join in this research. If you do, you will be agreeing to let the researchers and any other persons, companies or agencies described below to use and share your PHI for the study in the ways that are in this section. So please review this section carefully.

1. What PHI the research team will use.

If you are willing to take part in this study, you will be asked to fill out some forms with

questions. The questions will be about your health, and your feelings. You will also be asked some questions about yourself and how you take care of your blood pressure. We will get some health information from your medical record such as your medical diagnoses, medical history, age, gender, and information related to treatment of your blood pressure.

2-3.Who will collect and use your PHI?

The researchers will collect the PHI described above. If any of the PHI is to be shared with other persons then the researchers also will be responsible for making this information known.

4. With whom your PHI will be shared and why it is shared each time.

We have told you of our need to collect your PHI in order to do the study. We will share your PHI with the following persons, agencies or companies. They will use your PHI only for the purposes listed in the chart below.

Person/Entity

Researchers in this study

Southwest Georgia Public Health District 8-2, the Institutional Review Boards (IRB) at Georgia State University and the Office for Human Research Protections at Georgia State University

Purpose

The purpose of this study is to understand what things make taking care of your blood pressure easy or difficult.

To monitor safety and compliance with applicable laws, regulations and University policies and procedures.

5. The date or event, if any is set, after which we will not use or disclosure your PHI any more.

The researchers will add your PHI to a database that they are making for research purposes. There is no date or event after which your agreeing to share your PHI will run out and your PHI will no longer be used for this purpose. Your agreeing to use and share your personal health information

will not run out because the information will be kept in a research database and may be used for research purposes in the future.

What if I decide not to give consent to use and share my personal health information?

If you refuse to agree you will not be able to be in this research study.

May I review or copy the information?

You have the right to go over, correct and copy your information. However, if you decide to be in

this study and sign this document, you will not be allowed to look at or copy your information if making known the information would put in danger the purposes of the study. At the end of the research study, you may ask to see your information for as long as this information is kept.

6. Your Right Under HIPAA to Revoke Your Authorization and Ask Us Not to Use Your PHI Any More:

It is your free choice to give the researchers your OK to use and share your PHI. The term for this OK means you "agree." At any time you may take back that you have agreed to let the researchers use and share your PHI. The word we use for "taking back" your consent is "revoke." This means the researchers will not collect any more health information that identifies you. They may use or report information that you already gave them so that: 1) notify any of the other researchers that you have revoked your authorization; 2) maintain the truthfulness or reliability of the research study; 3) obey any law that they have to obey. Taking back your having agreed also does not mean you will lose of any benefits.

It is a simple process to take away your having agreed to let us to use your PHI. You may do this by completing and signing what we call a "revocation letter." We will give you a copy of that letter along with your copy of this Informed Consent/HIPAA Authorization form. You would fill it out and sign it if you choose to take away your having agreed to let us use your PHI. Then you would give it to the researchers. The researchers will give you another copy at any time you want one. You must make a written request to take away your consent to use your PHI. We will act at once if we get a letter from you to take away your having agreed to let use your PHI. We will not make any other use of your PHI or share it with anyone else, except as follows:

We will give PHI data to any governmental or University personnel, departments, or committees that may need it to comply with any laws, regulations, or policies. We will also give PHI data to any of these groups that need it to investigate the failure to comply with laws, regulations, or policies, or adverse events from the study.

You may take away your consent to use and share your personal health information at anytime.

You can do this by sending a written letter to the Investigator, Eleanor Hall or Dr. Lee. If you take away your consent to use and share your personal health information, you may not be allowed to continue to take part in the research study.

When you take away your consent, no new health information that might identify you will be gathered after that date. Information that was gathered prior to your withdrawal may continue to be used and given to others for the purposes described in this consent. This would be done if it were necessary for the research.

PHI May be Re reported:

If we report your PHI to one of the other parties described above, that party might further report your PHI to another party. If your PHI is further reported, then the information is no longer covered by HIPAA. Any information that is reported to someone who is not subject to HIPAA will not be governed by HIPAA regulations.

VII. Costs:

There are no known costs to you for taking part in this study except your time.

VIII. Contact Persons:

Call Dr. Lee and Eleanor Hall at 229-227-6924 if you have questions about this study. If you have questions about your rights in this study, you may contact Susan Vogtner in the Office of Research Integrity at 404-413-3513 or svogtner1@gsu.edu or Shelia Ramer, FNP-C, Director Georgia Farm Worker Health Program at 229-248-3748 or sbramer@dhr.state.ga.us.

IX. Copy of Consent/HIPAA Form to Subject:

We will give you a copy of this consent/HIPAA form to keep.

The agreement to let us use your PHI will expire when the research study ends on December 2011.

If you are willing to volunteer for this study, please sign below.

_____ _____

Participant Date

_____ _____

Principal Investigator or Researcher Obtaining Consent Date

_____ _____

Witness Date

Consent Form Approved by Georgia State University IRB June 21, 2010 - June 20, 2011

APPENDIX D

Georgia State University

Southwest Health District Public Health

Informed Consent

(Consentimiento

informado)

Titulo: Adherencia al Tratamiento de Hipertension en Latin@Migrant and Seasonal Farmworkers.

Principal Investigador :
Shih-Yu Lee, RNC, PhD (Assistant Professor at Georgia State University)
Shelia Ramer, FNP-C (Director at Georgia Farm Worker Health Program- Decatur County)

Principal Estudiante Investigador: Eleanor Hall, MSN, RN (Doctoral student at Byrdine F. Lewis School of Nursing, Georgia State University)

I. Proposito:

Usted esta siendo invitado a formar parte de este estudio porque usted tiene antecedentes latinos, alta presion sanguinea y trabaja en el area de la agricultura. El proposito de este estudio es saber como usted cuida de su alta presion sanguinea y de las cosas que le dificultan el tomar cuidado de su alta presion sanguinea. Los resultados de este estudio ayudaran a doctores y enfermeras a brindar una mejor calidad de atencion y cuidado para Latin@Farmworkers. Ser parte de este estudio le tomara unos 60 minutos. Un total de 115 personas seran invitadas a formar parte de este estudio.

II. Procedimientos:

Si usted desea formar parte del estudio, usted sera entrevistado una vez en una sala privada, en Georgia Farmworker Health Program en Bainbridge, Georgia. Usted puede escoger el dia de su entrevista. Eleanor Hall y un miembro del grupo que hable espanol estaran presentes para entrevistarlo usando cinco cuestionarios. Una enfermera tomara su presion sanguinea dos veces antes de la entrevista. Todos los cuestionarios estan disponibles en Espanol e Ingles, usted escoje el idioma. Se le preguntara respecto a su experiencia con la alta presion sanguinea, sus antecedentes culturales, y su experiencia con el estres. Usted recibira un pequeno regalo como agradecimiento por su tiempo y la informacion que usted esta aportando.

III. Riesgos:

No se esperan riesgos durante este estudio. Usted se puede sentir incomodo respondiendo las preguntas durante la entrevista. Si esto ocurre, usted puede negarse a contestar la

pregunta, o puede suspender la entrevista completamente.

IV. Beneficios:

Ser parte de este estudio no lo beneficiara a usted. La informacion que usted aporte nos ayudara a dar mejor cuidado a los imigrantes que trabajan en el area campesina.

V. Participacion o retiro voluntario:

Ser parte de este estudio depende de usted. Puede que usted no desee contestar todas las preguntas; usted puede evitar responder algunas preguntas o dejar de tomar parte en este estudio en cualquier momento. No importa lo que usted decida, usted no perdera ningun beneficio que debiera recibir, y si usted es parte del estudio o no lo es, los cuidados que recibe actualmente no cambiaran.

VI. Confidencialidad y Proteccion de la Informacion de Salud (PHI) :

PHI es un termino que usamos para proteger la informacion de la salud. PHI son los antecedentes respecto a usted y su salud que podrian indicar quien es usted. Usaremos su informacion solo para los propositos de este estudio. Mientras nosotros realizamos este estudio, el grupo de estudio podra usar solamente la informacion que usted nos ha brindado: (su nombre, direccion, informacion medica, etc.) Las personas y lugares que tendran acceso a su informacion personal de salud son: Eleanor Hall, Dr. Lee, y miembros del equipo de investigacion. Otras personas ajenas al estudio solo podran ver los registros del estudio. Las agencias que dictan las reglas y politicas de como se desarrola una investigacion tienen derecho a revisar estos registros. Las entidades que tienen el derecho de revisar dichos registros incluyen a Georgia State University Institutional Review Board (IRB) y el Southwest Georgia Public Health Distric 8-2 (IRB). Los registros tambien pueden ser abiertos por orden de la Corte.

Mantendremos la privacidad de sus registros tanto como la ley lo permita. Lo haremos incluso en caso de una revision externa. En vez de su nombre usaremos un numero de estudio en todos los registros que nos sea posible. Guardaremos sus registros en un computador con clave y total seguro de acceso y proteccion, dentro de un gabinete con llave.Usaremos una llave para identificar sus archivos. Esta llave se guardara en otro archivo con seguro, alejada de sus registros. Su nombre y otras informaciones que lo pudiesen identificar no apareceran cuando este estudio sea presentado o se publiquen sus resultados. Los descubrimientos seran resumidos y reportados a modo de grupo. Usted no sera personalmente identificado.

Una ley Federal protege actualmente la privacidad de su PHI. Esta ley es la Health Insurance and Portability and Accountability Act (HIPAA). Esta ley dice que debemos informarle antes de que usted acepte participar en este estudio, respect a los siguientes antecedentes:

1.Cual de su PHI sera usado por el grupo de investigacion.
2.Quien recogera su PHI?
3.Quien usara su PHI?.
4. Con quienes se compartira su PHI y para que es compartido cada vez.
5.La fecha o evento, si alguno es acordado, despues del cual no usaremos o revelaremos mas su PHI.
6. Sus derechos bajo HIPAA para solicitarnos que su PHI no se vuelva a usar.

Usted puede escoger el participar en esta investigacion. Si lo hace, usted estara de acuerdo en permitir a los investigadores y otras personas, companias o agencias que se describen mas abajo, a usar y compartir su PHI para el estudio segun se indica en el punto cuarto de esta seccion. Por favor revise cuidadosamente esta seccion.

1.Que PHI usara el grupo de investigacion.

Si usted esta dispuesto a formar parte de este estudio , se le solicitara completar algunos questionarios. Las preguntas seran respecto a su salud, sus sentimientos, y si usted fuma. Tambien se le haran algunas preguntas generales respecto a usted y de como cuida su presion sanguinea. Nosotros obtendremos alguna informacion de salud de su registro medico, tales como sus diagnosticos medicos, historial medico, su edad, genero e informacion relacionada al tratamiento de su presion sanguinea.

2-3.Quien recogera y usara su PHI?

Los investigadores recogeran el PHI descrito arriba. Si cualquiera de los PHI es compartido con otras personas, segun se indicara mas adelante en esta seccion, entonces los investigadores tambien seran responsables por estas revelaciones.

4. Con quienes se compartira su PHI y para que sera compartido cada vez.

Ya le hemos informado de nuestra necesidad de recoger su PHI en orden de realizar este estudio. Compartiremos su PHI con las siguientes personas, agencias o companias. Ellas usaran su PHI solamente para los propositos listados en el siguiente cuadro .

Persona/Entidad	Proposito
Investigadores	Para conducir el estudio: el proposito de este estudio es comprender que cosas le facilitan o le dificultan el tomar cuidado de su presion sanguinea.
Southwest Georgia Public Health District 8-2, the Institutional Review Boards (IRB) at Georgia State University and the Office for Human Research Protections at Georgia State University	Para monitorear la seguridad y conformidad con las leyes aplicables, regulaciones y las politicas y procedimientos de la Universidad.

5. La fecha o evento, si alguno es acordado,despues del cual no usaremos o revelaremos mas PHI_____

Los Investigadores agregaran su PHI a una base de datos que ellos reunen para propositos de investigacion. No hay fecha o evento despues del cual su autorizacion expirara y su PHI ya no sera usado para este proposito. Su permiso para usar y compartir su informacion personal de salud no expirara porque la informacion se mantendra en una base de datos y podria ser usada en el futuro para propositos de investigacion.

Que ocurre si decido no dar permiso para usar y compartir mi informacion personal de salud?

Si usted niega el permiso, no le sera posible participar en este estudio de investigacion.

Puedo revisar o copiar la informacion?

Usted tiene derecho a revisar, corregir y copiar su informacion. Sin embargo, si usted participa en este estudio y firma este documento, no se le permitira ver o copiar su informacion si la revelacion de esta informacion pusiera en peligro los propositos del estudio. Al termino del estudio de investigacion, si usted lo require y si es razonablemente factible, usted podra tener acceso a su informacion mientras esta informacion sea retenida.

6. Sus derechos bajo HIPAA para revocar su autorizacion y pedir que no usemos mas su PHI:

Es su propia decision dar a los investigadores su OK (aprobacion) para usar y compartir su PHI. El termino OK significa su “autorizacion” . En cualquier momento usted puede retirar su autorizacion para que los investigadores usen y compartan su PHI. El termino que usamos para retirar su autorizacion se llama “revocacion” . Revocar su autorizacion significa que los investigadores no reuniran mas informacion de salud que lo identifiquen. Se podria usar o revelar la informacion que usted ya les ha dado para: 1.Notificar a los otros investigadores que usted ha revocado su autorizacion; 2. Mantener la integridad o veracidad de la investigacion y 3. Cumplir con las leyes que ellos deben respetar. El revocar su autorizacion no le causara ninguna multa o castigo. Esto tampoco no le causara la perdida de los beneficios que de alguna manera usted podria recibir.

El revocar su autorizacion para que usemos su PHI es un proceso simple. Para hacerlo usted debe completar y firmar lo que llamamos una “carta de revocacion” . Le daremos una copia de esa carta junto con una copia de esta combinacion de Consentimiento Informado/Forma de Autorizacion HIPAA. Usted solo debe llenarlo y firmarlo si desea revocar su autorizacion. Luego se lo entrega a los investigadores. Los investigadores le daran otra copia cuando usted lo requiera. Usted debe presentar una solicitud escrita para revocar su autorizacion para usar su PHI. Nosotros actuaremos inmediatamente al recibir una carta suya revocando su autorizacion para usar su PHI. No volveremos a usar o compartir su PHI con nadie mas, excepto lo siguiente:

Daremos informacion de PHI a cualquier entidad de gobierno , a personal de universidades, departamentos o comites que sea necesario para cumplir con las leyes, regulaciones o politicas.Tambien daremos informacion de PHI a cualquiera de estos grupos que lo necesiten para investigar el fracaso del cumplimiento con las leyes, regulaciones o politicas o cualquier situacion adversa en este estudio.

Usted puede cancelar o retirar su permiso para usar y compartir su informacion en cualquier momento. Lo puede hacer enviando una carta escrita al investigador, Eleanor Hall o al Dr. Lee. Puede que no le sea permitido continuar siendo parte de este estudio de investigacion, si usted retira o cancela su permiso para usar y compartir su informacion personal de salud.

Despues de la fecha en que usted cancele o retire su permiso, no se reunira mas informacion de salud que pudiese identificarlo. La informacion que fue reunida antes de su retiro podria seguir siendo usada y compartida con otros para los propositos descritos en este consentimiento. Esto se haria si fuese necesario para la investigacion.

Consent Form Approved by Georgia State University IRB June 21, 2010 - June 20, 2011

Que ocurre si decido no dar permiso para usar y compartir mi informacion personal de salud?

Si usted niega el permiso, no le sera posible participar en este estudio de investigacion.

Puedo revisar o copiar la informacion?

Usted tiene derecho a revisar, corregir y copiar su informacion. Sin embargo, si usted participa en este estudio y firma este documento, no se le permitira ver o copiar su informacion si la revelacion de esta informacion pusiera en peligro los propositos del estudio. Al termino del estudio de investigacion, si usted lo require y si es razonablemente factible, usted podra tener acceso a su informacion mientras esta informacion sea retenida.

6. Sus derechos bajo HIPAA para revocar su autorizacion y pedir que no usemos mas su PHI:

Es su propia decision dar a los investigadores su OK (aprobacion) para usar y compartir su PHI. El termino OK significa su “autorizacion” . En cualquier momento usted puede retirar su autorizacion para que los investigadores usen y compartan su PHI. El termino que usamos para retirar su autorizacion se llama “revocacion” . Revocar su autorizacion significa que los investigadores no reuniran mas informacion de salud que lo identifiquen. Se podria usar o revelar la informacion que usted ya les ha dado para: 1.Notificar a los otros investigadores que usted ha revocado su autorizacion; 2. Mantener la integridad o veracidad de la investigacion y 3. Cumplir con las leyes que ellos deben respetar. El revocar su autorizacion no le causara ninguna multa o castigo. Esto tampoco no le causara la perdida de los beneficios que de alguna manera usted podria recibir.

El revocar su autorizacion para que usemos su PHI es un proceso simple. Para hacerlo usted debe completar y firmar lo que llamamos una “carta de revocacion” . Le daremos una copia de esa carta junto con una copia de esta combinacion de Consentimiento Informado/Forma de Autorizacion HIPAA. Usted solo debe llenarlo y firmarlo si desea revocar su autorizacion. Luego se lo entrega a los investigadores. Los investigadores le daran otra copia cuando usted lo requiera. Usted debe presentar una solicitud escrita para revocar su autorizacion para usar su PHI. Nosotros actuaremos inmediatamente al recibir una carta suya revocando su autorizacion para usar su PHI. No volveremos a usar o compartir su PHI con nadie mas, excepto lo siguiente:

Daremos informacion de PHI a cualquier entidad de gobierno , a personal de universidades, departamentos o comites que sea necesario para cumplir con las leyes, regulaciones o politicas.Tambien daremos informacion de PHI a cualquiera de estos grupos que lo necesiten para investigar el fracaso del cumplimiento con las leyes, regulaciones o politicas o cualquier situacion adversa en este estudio.

Usted puede cancelar o retirar su permiso para usar y compartir su informacion en cualquier momento. Lo puede hacer enviando una carta escrita al investigador, Eleanor Hall o al Dr. Lee. Puede que no le sea permitido continuar siendo parte de este estudio de investigacion, si usted retira o cancela su permiso para usar y compartir su informacion personal de salud.

Despues de la fecha en que usted cancele o retire su permiso, no se reunira mas informacion

de salud que pudiese identificarlo. La informacion que fue reunida antes de su retiro podria seguir siendo usada y compartida con otros para los propositos descritos en este consentimiento. Esto se haria si fuese necesario para la investigacion.

PHI podria ser re-revelada:

Si nosotros revelamos su informacion de PHI a una de las partes mencionadas mas arriba, esa parte podria tambien revelar su informacion de PHI a otra parte. Si su informacion de PHI sigue siendo revelada ya no sera cubierta por HIPAA. Toda informacion que sea revelada a alguien que no esta sujeto a HIPAA no estara bajo las regulaciones de HIPAA.

VII. Costos:

No hay costos para usted al tomar parte en este estudio, excepto su tiempo.

VIII. Personas de Contacto:

Lame al Dr. Lee o Eleanor Hall al numero 229-227-6924 si usted tiene preguntas respecto a este estudio. Si usted tiene preguntas relacionadas a sus derechos en este estudio, usted puede contactar a Susan Vogtner en la Office of Research Integrity al telefono 404-413-3513 o svogtner1@gsu.edu o Shelia Ramer, FNP-C, Director Georgia Farm Worker Health Program al numero 229-248-3748 o sbramer@dhr.state.ga.us.

IX. Copia de la forma de Consentimiento/HIPAA para el sujeto:

Le daremos una copia de esta forma de Consentimiento/HIPAA para que usted la guarde.

Si usted esta dispuesto a ser voluntario para este estudio , y su voz ha sido grabada, por favor firme abajo.

_____ _____

Participante Fecha

_____ _____

Investigador Principal o Investigador Receptor Autorizado Fecha

Consent Form Approved by Georgia State University IRB June 21, 2010 - June 20, 2011

APPENDIX E

	Morisky Medication Adherence Scale (©MMAS-8) **Escala de Morisky de 8 puntos sobre la adherencia a medicamentos**
	Even though you are currently taking the high blood pressure medication prescribed by your physician:
	A pesar de que actualmente toma la medicación para la hipertensión arterial prescrita por su médico:
1.	Do you sometimes forget to take your medicine? ∟ No ⌟ Yes
	¿Olvida tomar su medicina algunas veces? ∟ No ⌟ Si
2.	People sometimes miss taking their medications for reasons other than forgetting. Thinking over the past two weeks, were there any days when you did not take your high blood pressure medications? ∟ No ∟ Yes
	¿Algunas veces las personas no se toman su medicina por razones diferentes al olvido. Piense en las dos semanas pasadas ¿dejó de tomar su medicina para la hipertensión arterial algún día? ∟ No ∟ Si
3	Have you ever cut back or stopped taking your medication without telling your doctor, because you felt worse when you took it? ∟ No ⌟ Yes
	¿Alguna vez ha tomado menos pastillas, o ha dejado de tomarlas sin decírselo al docto porque se sentía peor cuando las tomaba? ∟ No ∟ Si
4	When you travel or leave home, do you sometimes forget to bring along your high blood pressure medications? ∟ No ∟ Yes
	¿Cuando viaja o sale de casa olvida llevar sus medicinas para la hipertensión arterial algunas veces? ∟ No ⌟ Si
5	Did you take your high blood pressure medications yesterday? ⌟ No ⌟ Yes
	¿Se tomó sus medicinas para la hipertensión arterial ayer? ∟ No ∟ Si
6	When you feel your symptoms are under control, do you sometimes stop taking your high blood pressure medicine? ∟ No ∟ Yes
	¿Cuando siente que sus síntomas están bajo control deja de tomar su medicina para la hipertensión arterial algunas veces? ∟ No ∟ Si

7	Taking high blood pressure medication everyday is a real inconvenience for some people. Do you ever feel hassled about sticking to your treatment plan? ∟ No ⌟ Yes
	¿Tomar medicina para la hipertensión arterial todos los días es realmente incómodo para algunas personas ¿siente usted que es un fastidio lidiar con su plan de tratamiento? ∟ No ∟ Si
8	How often do you have difficulty remembering to take all your high blood pressure medications? Never/Rarely……....**4** Once in a while…….**3** Sometimes……....**2** Usually……..**1** All the time……...**0**
	¿Con qué frecuencia le es difícil recordar que debe tomar todas sus medicinas para la hipertensión arterial? _____

APPENDIX F

Blood Pressure Knowledge Scale

In general, how likely do you believe that the following statements are true? Using the scale below, please choose the number that best matches your answer.

		Strongly disagree						Strongly Agree
1	Eating a low fat diet each day will help me keep my blood pressure within normal limits	1	2	3	4	5	6	7
2	Eating a low salt diet will help me keep my blood pressure within normal limits	1	2	3	4	5	6	7
3	Eating a diet with at least five fruits and vegetables each day will help me keep my blood pressure within normal limits	1	2	3	4	5	6	7
4	Physical activity for at least 30 minutes each day will help me keep my blood pressure within normal limits	1	2	3	4	5	6	7
5	Seeing my doctor on a regular basis will help me keep my blood pressure within normal limits	1	2	3	4	5	6	7
6	If someone has high blood pressure the best way to keep their blood pressure within normal limits is by taking medicines every day as prescribed by their doctor	1	2	3	4	5	6	7
7	Avoiding alcohol (such as beer, wine, liquor) will help me keep my blood pressure within normal limits	1	2	3	4	5	6	7
8	Reducing stress will help me keep my blood pressure within normal limits	1	2	3	4	5	6	7
9	Maintaining normal body weight would help me keep my blood pressure within normal limits	1	2	3	4	5	6	7
10	Avoiding tobacco (such as smoking or chewing) would help me keep my blood pressure within normal limits	1	2	3	4	5	6	7
11	I will know if my blood pressure is high (above normal limits) because of how I feel	1	2	3	4	5	6	7

From: Measuring blood pressure knowledge and self-care behaviors of African Americans. Peters, R. and Templin, T. (2008). *Research in Nursing and Health, 31*, 543-552.

APPENDIX G

Blood Pressure Self-Care Scale

In general, how often are the following statements true about you? Using the scale below, please choose the number that best matches your answer**.**

			Never						Always
1	I am eating a low-fat diet each day		1	2	3	4	5	6	7
2	I am eating a low-salt diet each day		1	2	3	4	5	6	7
3	I am eating a diet with at least five fruits and vegetables each day		1	2	3	4	5	6	7
4	I am physically active at least 30 minutes each day		1	2	3	4	5	6	7
5	I am able to maintain a low level of stress each day		1	2	3	4	5	6	7
6	I am able to maintain a healthy weight		1	2	3	4	5	6	7
7	I am drinking two or more alcoholic drinks each day		1	2	3	4	5	6	7
8	I use tobacco		1	2	3	4	5	6	7
9	I see my doctor as often as he/she tells me to.		1	2	3	4	5	6	7
10	I am taking my blood pressure pills exactly as prescribed by my doctor each day	N/A	1	2	3	4	5	6	7

From: Measuring blood pressure knowledge and self-care behaviors of African Americans. Peters, R. and Templin, T. (2008). *Research in Nursing and Health, 31*, 543-552.

APPENDIX H

Escala para evaluar sus conocimientos sobre la presión sanguínea

En general, ¿en qué medida piensa usted que las siguientes afirmaciones son verdaderas? Utilice la escala que aparece a continuación y escoja el número que más se acerca a su respuesta.

		Completamente en desacuerdo						**Completamente de acuerdo**
1	Comer alimentos con poca grasa todos los días me ayudará a mantener la presión sanguínea dentro de los límites normales.	1	2	3	4	5	6	7
2	Comer alimentos con poca sal me ayudará a mantener la presión sanguínea dentro de los límites normales.	1	2	3	4	5	6	7
3	Comer alimentos que contengan al menos cinco frutas y vegetales todos los días me ayudara a mantener la presión sanguínea dentro de los límites normales.	1	2	3	4	5	6	7
4	Hacer ejercicios físicos durante 30 minutos como mínimo todos los días me ayudará a mantener la presión sanguínea dentro de los límites normales.	1	2	3	4	5	6	7
5	Visitar a mi médico con regularidad me ayudará a mantener la presión sanguínea dentro de los límites normales.	1	2	3	4	5	6	7
6	Si alguien tiene la presión sanguínea alta, la mejor manera de mantener su presión sanguínea dentro de los límites normales es tomar las medicinas cada día	1	2	3	4	5	6	7
7	Evitar las bebidas alcohólicas (por ejemplo, la cerveza, el vino y las bebidas fuertes) me ayudará a mantener la presión sanguínea dentro de los límites	1	2	3	4	5	6	7
8	Reducir el estrés me ayudará a mantener mi presión sanguínea dentro de los límites normales.	1	2	3	4	5	6	7
9	Mantener un peso adecuado me ayudará a tener la presión sanguínea dentro de los límites normales.	1	2	3	4	5	6	7
10	Evitar fumar o mascar tabaco me ayudará a mantener la presión sanguínea dentro de los límites normales.	1	2	3	4	5	6	7
11	Yo sabré si mi presión sanguínea esta alta (sobre los límites normales) debido a cómo me siento.	1	2	3	4	5	6	7

APPENDIX I

Escala de conocimiento del cuidado personal de la presión sanguínea

En general, ¿con qué frecuencia/regularidad considera que las siguientes afirmaciones se cumplen en su caso? Utilice la escala que aparece a continuación y escoja el número que más se acerca a su respuesta.

			Nunca						**Siempre**
1	Como alimentos con poca grasa todos los días.		1	2	3	4	5	6	7
2	Como alimentos bajos en sal todos los días.		1	2	3	4	5	6	7
3	Como al menos cinco frutas y vegetales cada día.		1	2	3	4	5	6	7
4	Realizo actividades físicas durante 30 minutos como mínimo todos los días.		1	2	3	4	5	6	7
5	Soy capaz de mantener un nivel de estrés bajo todos los días.		1	2	3	4	5	6	7
6	Me puedo mantener en un peso saludable.		1	2	3	4	5	6	7
7	Bebo dos o más bebidas alcohólicas todos los días.		1	2	3	4	5	6	7
8	Consumo tabaco.		1	2	3	4	5	6	7
9	Visito a mi doctor tan a menudo como él me lo indica.		1	2	3	4	5	6	7
10	Tomo mis pastillas para la presión todos los días exactamente como me lo recetó mi doctor.	N/A	1	2	3	4	5	6	7

APPENDIX J

Perceived Stress Scale

The questions in this scale ask you about your feelings and thoughts **during the last month**. In each case, you will be asked to indicate by circling *how often* you felt or thought a certain way.

Name _____ Date _____

Age _____ Gender (*Circle*): **M F** Other _____

0 = Never 1 = Almost Never 2 = Sometimes 3 = Fairly Often 4 = Very Often

1. In the last month, how often have you been upset because of something that happened unexpectedly?	0	1	2	3	4
2. In the last month, how often have you felt that you were unable to control the important things in your life?	0	1	2	3	4
3. In the last month, how often have you felt nervous and "stressed"?	0	1	2	3	4
4. In the last month, how often have you felt confident about your ability to handle your personal problems?	0	1	2	3	4
5. In the last month, how often have you felt that things were going your way?	0	1	2	3	4
6. In the last month, how often have you found that you could not cope with all the things that you had to do?	0	1	2	3	4
7. In the last month, how often have you been able to control irritations in your life?	0	1	2	3	4
8. In the last month, how often have you felt that you were on top of things?	0	1	2	3	4
9. In the last month, how often have you been angered because of things that were outside of your control?	0	1	2	3	4
10. In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?	0	1	2	3	4

Please feel free to use the *Perceived Stress Scale* for your research.

Mind Garden, Inc.
info@mindgarden.com
www.mindgarden.com

References

The PSS Scale is reprinted with permission of the American Sociological Association, from Cohen, S., Kamarck, T., and Mermelstein, R. (1983). A global measure of perceived stress. *Journal of Health and Social Behavior*, 24, 386-396.

Cohen, S. and Williamson, G. Perceived Stress in a Probability Sample of the United States. Spacapan, S. and Oskamp, S. (Eds.) *The Social Psychology of Health*. Newbury Park, CA: Sage, 1988.

APPENDIX K

European Spanish version of the Perceived Stress Scale

Las preguntas en esta escala hacen referencia a sus sentimientos y pensamientos durante el último mes. En cada caso, por favor indique con una "X" cómo usted se ha sentido o ha pensado en cada situación

Ítems PSS 10	Nunca	Casi nunca	De vez en cuando	A menudo	Muy a menudo
1. En el último mes, ¿con qué frecuencia ha estado afectado por algo que ha ocurrido inesperadamente?	0	1	2	3	4
2. En el último mes, ¿con qué frecuencia se ha sentido incapaz de controlar las cosas importantes en su vida?	0	1	2	3	4
3. En el último mes, ¿con qué frecuencia se ha sentido nervioso o estresado?	0	1	2	3	4
4. En el último mes, ¿con qué frecuencia ha estado seguro sobre su capacidad para manejar sus problemas personales?	0	1	2	3	4
5. En el último mes, ¿con qué frecuencia ha sentido que las cosas le van bien?	0	1	2	3	4
6. En el último mes, ¿con qué frecuencia ha sentido que no podía afrontar todas las cosas que tenía que hacer?	0	1	2	3	4
7. En el último mes, ¿con qué frecuencia ha podido controlar las dificultades de su vida?	0	1	2	3	4
8. En el último mes, ¿con qué frecuencia se ha sentido al control de todo?	0	1	2	3	4
9. En el último mes, ¿con qué frecuencia ha estado enfadado porque las cosas que le han ocurrido estaban fuera de su control?	0	1	2	3	4
10. En el último mes, ¿con qué frecuencia ha sentido que las dificultades se acumulan tanto que no puede superarlas?	0	1	2	3	4

From; Psychometric properties of a European Spanish version of the Perceived Stress Scale (PSS). Remor, E. (2006). *The Spanish Journal of Psychology, 9*(1), 86-93.

APPENDIX L

Acculturation Rating Scale for Mexican Americans-II (ARSMA-II)
Scale 1

Circle a number between 1 and 5 next to each item that best applies.

	1	2	3	4	5
	Not at all	Very little or not very often	Moderately	Much or very often	Extremely often or almost always
1. I speak Spanish	1	2	3	4	5
2. I speak English	1	2	3	4	5
3. I enjoy speaking Spanish	1	2	3	4	5
4. I associate with Anglos	1	2	3	4	5
5. I associate with Mexican and/or Mexican Americans	1	2	3	4	5
6. I enjoy listening to Spanish language music	1	2	3	4	5
7. I enjoy listening to English language music	1	2	3	4	5
8. I enjoy Spanish language TV	1	2	3	4	5
9. I enjoy English language TV	1	2	3	4	5
10. I enjoy English language movies	1	2	3	4	5
11. I enjoy Spanish language movies	1	2	3	4	5
12. I enjoy reading (e.g., books in Spanish)	1	2	3	4	5
13. I enjoy reading e.g., books in English)	1	2	3	4	5
14. I write (e.g., letters in Spanish)	1	2	3	4	5
15. I write (e.g., letters in English)	1	2	3	4	5
16. My thinking is done in the English language	1	2	3	4	5
17. My thinking is done in the Spanish language	1	2	3	4	5
18. My contact with Mexico has been	1	2	3	4	5
19. My contact with the USA has been	1	2	3	4	5
20. My father identifies or identified himself as 'Mexicano'	1	2	3	4	5
21. My mother identifies or identified herself as 'Mexicana'	1	2	3	4	5
22. My friends, while I was growing up, were of Mexican origin	1	2	3	4	5
23. My friends, while I was growing up, were of Anglo origin	1	2	3	4	5
24. My family cooks Mexican foods	1	2	3	4	5
25. My friends now are of Anglo origin	1	2	3	4	5
26. My friends now are of Mexican origin	1	2	3	4	5
27. I like to identify myself as an Anglo American	1	2	3	4	5
28. I like to identify myself as a Mexican American	1	2	3	4	5
29. I like to identify myself as a Mexican	1	2	3	4	5
30. I like to identify myself as an American	1	2	3	4	5

From: Acculturation Rating Scale for Mexican Americans-II: A revision of the original ARSMA scale. Cuéllar, I., Arnold, B., and Maldonado, R. (1995). *Hispanic Journal of Behavioral Sciences, 17*(3), 275-305

APPENDIX M

Acculturation Rating Scale for Mexican Americans-II: Versión en Español
SCALE 1

Marque con un circulo el numero entre 1 y 5 a la respuesta que sea mas adecuada para usted

	Nada	Un poquito o aveces	Moderado	Mucho o muy frecuente	Muchisimo o casi todo el tiempo
1. Yo hablo Espanol	1	2	3	4	5
2. Yo hablo Ingles	1	2	3	4	5
3. Me gusta hablar en Espanol	1	2	3	4	5
4. Me asocio con Anglos	1	2	3	4	5
5. Yo me asocio con Mexicanos o con Norte Americanos	1	2	3	4	5
6. Me gusta la musica Mexicana (musica en idioma Espanol)	1	2	3	4	5
7. Me gusta la musica de Idioma Ingles	1	2	3	4	5
8. Me gusta ver programas en la television que sean en Espanol	1	2	3	4	5
9. Me gusta aver programas en la television que sean en Ingles	1	2	3	4	5
10. Me gusta ver peliculas en Ingles	1	2	3	4	5
11. Me gusta ver peliculas en Espanol	1	2	3	4	5
12. Me gusta leer (e.g., libros en Espanol)	1	2	3	4	5
13. Me gusta leer (e.g., libros en Ingles)	1	2	3	4	5
14. Escribo (e.g., cartas en Espanol)	1	2	3	4	5
15. Escribo (e.g., cartas en Ingles)	1	2	3	4	5
16. Mis pensamientos ocurren en el idioma Ingles	1	2	3	4	5
17. Mis pensamientos ocurren en el idioma Espanol	1	2	3	4	5
18. Mi contacto con Mexico ha sido	1	2	3	4	5
19. Mi contacto con los Estados Unidos Americanos ha sido	1	2	3	4	5
20. Mi padre se identifica (o se identificaba como Mexicano)	1	2	3	4	5
21. Mi madre se identifica (o se identificaba como Mexicana)	1	2	3	4	5
22. Mis amigos (as) de mi ninez eran de origen Mexicano	1	2	3	4	5
23. Mis amigos (as) de mi ninez eran de origen Norte Americano	1	2	3	4	5
24. Mi familia cocina comidas mexicanas	1	2	3	4	5
25. Mis amigos recientes son Anglo Americanos	1	2	3	4	5
26. Mis amigos recientes son Mexicanos	1	2	3	4	5
27. Me gusta identificarme como Anglo Americano	1	2	3	4	5
28. Me gusta identificarme como Norte Americano* (Mexicanos-Americano)	1	2	3	4	5
29. Me gusta identificarme como Mexicano	1	2	3	4	5
30. Me gusta identificarme como un (a) Americano (a)	1	2	3	4	5

APPENDIX N

APPENDIX 2: The 50 items of *SAHLSA*, rank-ordered according to the parameter *b* of item difficulty (keys and distracters are listed in the same random order as in the field interview)

Stem	Key or Distracter		
1. próstata	glándula	circulación	no se
2. empleo	trabajo	educación	no se
3. menstrual	mensual	diario	no se
4. gripe	sano	enfermo	no se
5. avisar	medir	decir	no se
6. comidas	cena	paseo	no se
7. alcoholismo	adicción	recreo	no se
8. grasa	naranja	manteca	no se
9. asma	respirar	piel	no se
10. cafeína	energía	agua	no se
11. osteoporosis	hueso	músculo	no se
12. depresión	apetito	sentimientos	no se
13. estreñimiento	bloqueado	suelto	no se
14. embarazo	parto	niñez	no se
15. incesto	familia	vecinos	no se
16. pastilla	tableta	galleta	no se
17. testículo	óvulo	esperma	no se
18. rectal	regadera	inodoro	no se
19. ojo	oír	ver	no se
20. irritación	rígido	adolorido	no se
21. abnormal	diferente	similar	no se
22. estrés	preocupación	feliz	no se
23. aborto espontáneo	pérdida	matrimonio	no se
24. ictericia	amarillo	blanco	no se
25. papanicolaou	prueba	vacuna	no se
26. impétigo	pelo	piel	no se
27. indicado	instrucción	decisión	no se
28. ataque	herida	sano	no se
29. menopausia	señoras	niñas	no se
30. apéndice	rascar	dolor	no se
31. comportamiento	pensamiento	conducta	no se
32. nutrición	saludable	gaseosa	no se
33. diabetes	azúcar	sal	no se
34. sífilis	anticonceptivo	condón	no se
35. inflamatorio	hinchazón	sudor	no se
36. hemorroides	venas	corazón	no se
37. herpes	aire	sexo	no se
38. alérgico	resistencia	reacción	no se
39. riñón	orina	fiebre	no se
40. calorías	alimentos	vitaminas	no se
41. medicamento	instrumento	tratamiento	no se
42. anemia	sangre	nervio	no se
43. intestinos	digestión	sudor	no se
44. potasio	mineral	proteína	no se
45. colitis	intestino	vejiga	no se
46. obesidad	peso	altura	no se
47. hepatitis	pulmón	hígado	no se
48. vesícula biliar	arteria	órgano	no se
49. convulsiones	mareado	tranquilo	no se
50. artritis	estómago	articulación	no se

From: Development of an easy-to-use Spanish health literacy test. Lee, S., Bender, E., Ruiz, R., and Cho, Y. (2006). *Health Service Research, 41*(4), 1392-1412.

Appendix O

demographic form

Date:_____ Time:_____

Blood pressure #1_____ Blood pressure #2_____

Medications for Blood
Pressure:_____

Did you take your BP medication today? _____What time did you take your medication?_____

1. Age: _____ 2. Sex: ☐ Male ☐ Female 3. Marital Status: ☐ Single ☐ Married ☐ Separated ☐ Divorced 4. Country of Birth _____ Month and year first entered the U.S.? _____ List crops that you work with: _____ _____ _____ 5.Which of the following describes you *[READ CHOICES. MARK ONLY ONE]*: ☐ 1. Mexican-American? ☐ 2. Mexican? ☐ 3. Chicano? ☐ 4. Puerto Rican? ☐ 5. Other Hispanic? ☐ 6. Not Hispanic or Latin@? 6. Education: What is the highest grade level you have completed? ☐ 1. Elementary to 6 ☐ 2. 7 to 8 ☐ 3. 9-12 ☐ 4. 1-2 years of college ☐ 5 3-4 years of college ☐ 6. College graduate or higher	7. Have you attended any of the following special classes or school in the U.S.? *[READ CHOICES. MARK ALL THAT APPLY]* ☐ 1. English/English as a second language? ☐ 2. Citizenship? ☐ 3. Literacy? ☐ 4. Job training? ☐ 5. GED, High School Equivalency? ☐ 6. College or University? ☐ 7. Adult Basic Education? ☐ 8. Even Start? ☐ 9. Migrant Education? ☐ 10. Other?_____ ☐ 11. None 8. What is your first or primary language *[What language do you speak at home]*? ☐ 1. English ☐ 2. Spanish ☐ 3. Other _____ 9. How well do you read in your primary language? ☐ 1. Not at all ☐ 2. A little ☐ 3. Somewhat ☐ 4 .Well 10. How well do you speak English? ☐ 1. Not at all ☐ 2. A little ☐ 3. Somewhat ☐ 4. Well	11. How well do you read English? ☐ 1. Not at all ☐ 2. A little ☐ 3. Somewhat ☐ 4. Well 12. Approximately how many years have you done FARM WORK in the U.S.? *[COUNT ANY YEAR IN WHICH 15 DAYS OR MORE WERE WORKED].* Years _____ 13. Do you work for (current employer) year round or on a seasonal basis? ☐ 1. Year round ☐ 2. Seasonal ☐ 3. Don't know (first time) 14. What was your TOTAL INCOME last year – in **2009** - in U.S. dollars *[U.S. earnings only FOR farm work and non-farm work]*? *[MARK ONLY ONE]* ☐ did not work AT ALL IN **2009** ☐ less than 500 ☐ 500 to 999 ☐ 1,000 to 2,499 ☐ 2,500 to 4,999 ☐ 5,000 to 7,499 ☐ 7,500 to 9,999 ☐ 10,000 to 12,499 ☐ 12,500 to 14,999 ☐ 15,000 to 17,499 ☐ 17,500 to 19,999 ☐ 20,000 to 24,999 ☐ 25,000 to 29,999 ☐ 30,000 to 34,999 ☐ 35,000 to 39,999 ☐ Over 40,000 ☐ Don't remember (Don't know)
15. How far is your current job from your current residence? ☐ 1. I'm located at the job ☐ 2. Within 9 miles ☐ 3. 10-24 miles ☐ 4. 25-49 miles ☐ 5. 50-74 miles ☐ 6. 75 or more miles	23. Do you use any folk medicine to treat these conditions? ☐ No ☐ Yes If yes, what?_____ 24. Have you ever been told that you are overweight? ☐ No ☐ Yes	28. Rate your self on how much you believe in Hispanic values (such as marriage, family, folk medicine, education, work): 1. Do not believe at all 2. Mostly not believe 3. Believe a little 4. Moderately believe 5. Strongly believe

16. If you are injured AT WORK or get sick as a result of your work, does your employer provide health insurance or pay for your health care? ☐ No ☐ Yes ☐ Don't know 17. If you are injured or get sick OFF THE JOB (e.g., at home), does your employer provide health insurance or pay for your health care? ☐ No ☐ Yes ☐ Don't know 18. In the last year, in the **U.S.A**., have you used any type of health care services from doctors, nurses, dentists, clinics, or hospitals? ☐ No Why?_____ _____ ☐ Yes How many times?____ Under what kind of situation?_____ _____ _____	25. Do you smoke cigarettes? ☐ No ☐ Yes Number of cigarettes a day _____ 26. Do you drink alcohol? ☐ No ☐ Yes If yes, how much do you drink alcohol each day? _____ 27. Your current health status is: ☐ Poor ☐ Fair ☐ Good ☐ Very good ☐ Excellent	29. Rate your self on how much you believe in American (Western) values: 1. Do not believe at all 2. Mostly not believe 3. Believe a little 4. Moderately believe 5. Strongly believe

- Questions 4-21 are adapted from the National Agricultural Workers Survey – 2002(used with permission)
- Questions 28 and 29 are adapted from Suinn, R.M., Rickard-Figueroa, K., Lew, S., & Vigil, P. (1987). The Suinn-Lew self-identity acculturation scale: an initial report. *Educational and Psychological Measurement*, 47, 401-407.

APPENDIX P

Hoja de Datos Demograficos

Fecha:_____ Hora:_____

Presion sanguinea #1_____

Presion sanguinea #2_____

Medicamentos para la Presion Sanguinea:_____

Tomo hoy sus medicamentos para la PS? _____ A que hora tomo sus medicamentos?_____

1. Edad: _____
2. Sexo:
   - | | Masculino
   - | | Femenino
3. Estado Civil:
   - | | Soltero
   - | | Casado
   - | | Separado
   - | | Divorciado

4. Pais de Nacimiento _____

Mes y ano que entro a Estados Unidos por primera vez? _____

Liste los cultivos con los que usted trabaja:
_____
_____
_____

5.Cual de las siguientes etnias lo describe mejor?
[LEA LAS OPCIONES. MARQUE SOLO UNA]:
1. Mexico-Americano?
2. Mexicano?
3. Chicano?
4. Puerto Riqueno?
5. Otra nacionalidad Hispana?
6. No Hispano o Latino?

6. Educacion: Cual es su nivel de educacion mas alto?
   - | | 1. Educacion Primaria hasta 6 grado.
   - | | 2. 7 a 8 grado
   - | | 3. 9-12 grado
   - | | 4. 1-2 anos de Universidad
   - | | 5. 3-4 anos de Universidad
   - | | 6. Universitario graduado o mas.

7. Ha asistido usted a alguna de las siguientes clases especiales o a la escuela en Estados Unidos? [LEA LAS OPCIONES. MARQUE TODAS LAS QUE LE APLICAN]

- | | 1. Ingles/Ingles como segunda lengua?
- | | 2. Ciudadania?
- | | 3. Lectura/escritura?
- | | 4. Capacitacion laboral?
- | | 5. EG, Equivante a Escuela Secundaria?
- | | 6. Instituto o Universidad?
- | | 7. Educacion Basica para Adultos?
- | | 8. Clases de nivelacion?
- | | 9. Educacion para imigrantes?
- | | 10. Otros?_____
- | | 11. Nada

8. Cual es su idioma primario? [Que idioma habla usted en su hogar?]
1. Ingles
2. Espanol
3. Otro _____

9. Cuanto puede leer usted en su idioma primario?
- | | 1. Nada
- | | 2. Un poco
- | | 3. Bastante
- | | 4 .Bien

10. Cuanto Ingles habla usted?

- | | 1. Nada
- | | 2. Un poco
- | | 3. Bastante
- | | 4. Bien

11. Cuanto Ingles puede leer usted?
1. Nada
2. Un poco
3. Bastante
4. Bien

12. Aproximadamente cuantos anos ha trabajado usted en la agricultura en Estados Unidos?
[CUENTE TAMBIEN LOS ANOS EN QUE USTED TRABAJO 15 DIAS O MAS AL ANO].
Anos _____

13. Trabaja usted para su actual empleador por todo el ano o solamente por la temporada?

- | | 1. Todo el ano
- | | 2. Temporada
- | | 3. No se, es la primera vez

14. Cual fue su INGRESO TOTAL el ano pasado -2009- en dolares Americanos [Solamente lo que recibio en dolares por trabajos agricolas y no agricolas]? [MARQUE SOLAMENTE UNA]
- | | No trabaje NADA en 2009
- | | menos de 500
- | | 500 a 999
- | | 1,000 a 2,499
- | | 2,500 a 4,999
- | | 5,000 a 7,499
- | | 7,500 a 9,999
- | | 10,000 a 12,499
- | | 12,500 a 14,999
- | | 15,000 a 17,499
- | | 17,500 a 19,999
- | | 20,000 a 24,999
- | | 25,000 a 29,999
- | | 30,000 a 34,999
- | | 35,000 a 39,999
- | | Mas de 40,000
- | | No recuerdo (No se)

15. A que distancia esta su actual trabajo de su actual residencia?

| | 1. Vivo en el lugar de trabajo
| | 2. A 9 millas
| | 3. 10-24 millas
| | 4. 25-49 millas
| | 5. 50-74 millas
| | 6. 75 o mas millas

16. Si usted sufre una herida EN EL TRABAJO o se enferma a causa de su trabajo, su empleador le provee seguro de salud o paga por los cuidados medicos necesarios?

| | No
| | Si
| | No se

17. Si usted sufre una herida o se enferma FUERA DEL TRABAJO (por ej. En su casa), su empleador le provee seguro de salud o paga por su salud?

| | No
| | Si
| | No se

18. Durante el ultimo ano en Estados Unidos, ha usado usted algun tipo de servicios medicos de doctores, enfermeras, dentistas, clinicas u hospitales?

| | No Por que?_____
_____
| | Si
Cuantas veces?_____
En que tipo de situaciones?
_____
_____

19. Donde fue usted la ultima vez que uso el servicio de atencion de la salud, que tipo de lugar era?

| | 1. Centro de Salud Comunitario Hospital/Sala d e Emergencia
| | 2. Servicio privado de doctores oficina/clinica privada
| | 3. Sanador/ "curandero"
| | 4. Clinicas de la salud para imigrantes
| | 5. La oficina de un quiropractico o un naturopata.

| | 6. Dentista
| | 7. Otro:_____
| | 8. No se

20. Quien pago la mayor parte del costo la ultima vez que usted utilizo un servicio de salud?

| | 1. Yo pague la cuenta de mi "propio bolsillo".
| | 2. Medicaid/Medicare
| | 3. La clinica publica no cobro.
| | 4. El empleador proveyo un plan de salud.
| | 5. Yo mismo o la familia compro un plan de salud individual.
| | 6. Se cobro, pero no se pago.
| | 7. Compensacion para los trabajadores.
| | 8. Otro plan:_____
| | 9. Combinacion de:
_____
_____

21.Que dificultades encuentra usted cuando desea recibir atencion medica en los Estados Unidos? [MARQUE TODAS LAS QUE APLICAN.]

| | 1. No hay transporte, esta muy lejos.
| | 2. No se donde los servicios estan disponibles.
| | 3. El Centro de Salud no esta abierto cuando se necesita.
| | 4. Ellos no brindan los servicios que yo necesito
| | 5. No hablan mi idioma.
| | 6. No me tratan con respeto/ no me siento a gusto.
| | 7. No entienden mis problemas.
| | 8. Perdere mi trabajo
| | 9.Demasiado caro/ sin seguro
| | 10. Otro:
| | 11. No hay dificultades
| | 12. Soy "indocumentado", no me tratan bien.

22. Alguna vez en su vida, un doctor o una enfermera le ha dicho que usted tiene las siguientes condiciones?

A. Diabetes

| | No
| | Si

Actualmente, esta usted tomando medicamentos para esta condicion?

| | No
| | Si

Si no lo esta haciendo, por que no?
_____
_____

Medicamento(s):
_____
_____
_____

22. (Continuacion) Alguna vez en su vida, un doctor o una enfermera la ha dicho que usted tiene las siguientes condiciones: B. Enfermedad Cardiaca |	No ☐ Si Actualmente, esta usted tomando medicamentos para esta condicion? |	No |	Si Si no lo esta haciendo, por que no? _____ _____ Medicamento(s): _____ _____ _____ C. Otras condiciones? |	No |	Si Si su respuesta es "si", nombrelas: _____ _____ _____ Actualmente, esta usted tomando medicamentos para estas condiciones? |	No |	Si Si no lo esta haciendo, por que no? _____ _____ Medicamento(s): _____ _____ _____	23. Usa usted algun tipo de medicina popular para tratar estas condiciones? |	No |	Si De ser asi, que medicinas toma? _____ _____ 24. Le han dicho alguna vez que usted tiene sobrepeso? |	No |	Si 25. Fuma usted cigarrillos? |	No |	Si Numero de cigarillos por dia _____ 26. Bebe usted alcohol? |	No |	Si Si lo hace, cuanto bebe cada dia? _____ _____ 27. Su estado de salud actual es: ☐ Malo ☐ Regular ☐ Bueno ☐ Muy bueno ☐ Excellente	28. Evaluese a si mismo sobre cuanto cree usted en los valores Hispanos tales como el matrimonio, la familia, la medicina popular, la educacion, el trabajo: 1. No creo nada en ellos 2. No creo mucho. 3. Creo un poco 4. Creo moderadamente 5. Creo fuertemente 29. Evaluese a si mismo sobre cuanto cree usted en los valores Americanos (del Oeste): 1. No creo nada 2. No creo mucho 3. Creo un poco 4. Creo moderadamente 5. Creo fuertemente

APPENDIX Q

Volunteers Needed
To Study
High Blood Pressure

Eleanor Hall, Registered Nurse and Doctoral student,
Georgia State University

- If you work for local farmers and have high blood pressure, and are willing to answering some questions
- Volunteers will be asked some questions about high blood pressure, medications, diet, beliefs, and the ability to get health care
- Risks: You will not have any more risks than you would in daily life
- Benefits: Your participation will be helping other migrant and seasonal farmworkers who have high blood pressure.

Please see the Public Health Interpreter if you wish to participate

A small gift of appreciation will be given to volunteers following the interview

APPENDIX R

Se necesitan voluntarios para un estudio sobre la alta presion sanguinea

Eleanor Hall, Registered Nurse and Doctoral student,
Georgia State University

- Si usted trabaja para agricultores locales , tiene alta presion y esta dispuesto responder algunas preguntas

- A los voluntarios se le haran algunas preguntas respecto a su alta presion sanguinea, los medicamentos, su alimentacion, sus creencias y la habilidad para obtener cuidados medicos.

- Riesgos: No tendra mas riesgos que los que usted tiene en su vida normal.

- Beneficios: su participacion ayudara a otros imigrantes y trabajadores agricolas que tienen alta presion sanguinea.

Por favor **visitar** Public Health Interpreter si deseo a participar

Los voluntarios recibiran un pequeno regalo de apreciacion despues de la entrevista.