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The influence of acculturation and other family characteristics on asthma outcomes in Hispanic children

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The Influence of Acculturation and Other Family Characteristics on Asthma Outcomes in
Hispanic Children

by

Rose M. Nieves

A dissertation submitted in partial fulfillment
of the requirements for the degree of
Doctor of Philosophy
College of Nursing
University of South Florida

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Dedication

I dedicate this dissertation to a special nurse who showed me that one nurse could make a difference. You showed me to look at the world through the eyes of a nurse, seeing the needs of others before my own. Showing me that where I was born did not limit where I could go and what I could become. You taught me that there were no limits to what I could achieve and managed to have encouraging words at every stage of my life. You guided my steps in life, showing me to honor God before all things and knowing exactly when to let me spread my wings and fly. Thanks Mom. This is for you. To my wonderful father, beloved husband, precious daughter, supportive brother, and incredible niece, I thank you for always being there for me and inspiring me to greatness.

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ABSTRACT

The objective of this study was to determine the influence of child and caregiver characteristics on asthma outcomes in Hispanic children. Specific research objectives of the study were to: (1) to assess the relative influence of family characteristics, caregiver level of education, asthma severity, insurance status and acculturation, on asthma outcomes in Hispanic children; (2) to assess the direct and indirect influence of acculturation on asthma outcomes in Hispanic children, while controlling for other variables; (3) to determine the relative influence of familial characteristics, parental level of education, asthma severity, insurance status and acculturation, as they predict utilization of asthma services.

The Children's Health Survey for asthma, the abbreviated Multidimensional Acculturation Scale and components of the Children's Medicaid Managed Care Questionnaire were administered during a one time visit with Hispanic caregiver's of children with asthma in a primary care setting. The primary care setting was either a local pediatrician office in Hillsborough County or the local Hillsborough County Health Department. These facilities provide primary care for local residents of the county. The interviews were conducted to identify the relative influence of barriers to asthma outcomes in this at risk population.

A sample of one hundred seventy eight caregivers of Hispanic children with asthma identified significant findings that have a profound effect on pediatric asthma outcomes. Findings suggest that factors such as caregiver age and asthma severity have a negative effect on asthma outcomes in Hispanic children. This study found that advanced caregiver age was associated with poorer healthcare outcomes. Acculturation was not found to be significantly associated with asthma outcomes, directly or indirectly even with use of service utilization as a mediator. In this subject sample the level of acculturation of the caregiver does not impact health care outcomes of the child. This study showed that asthma severity and acculturation significantly impacted service utilization. Children with higher asthma severity scores were found to utilize more services. Finally, acculturation was found to have a significant impact on service utilization. The more acculturated caregivers utilized more services than less acculturated caregivers.

Chapter 1

Introduction

Asthma morbidity and mortality is on the rise. The occurrence of asthma is epidemic and more than doubled from 6.8 million cases in 1980 to 14.6 million cases in 1996 (National Center for Health Statistics), to 17.3 million cases in 1999 (Center for Disease Control and Prevention).

The increase of asthma in the pediatric setting is startling. Asthma is the most frequently seen chronic illness in children, affecting approximately 5 million children in the United States (Flores et al., 2002). Literature shows that the economic burden of this diagnosis, is an estimated 11 billion dollars annually for the treatment of childhood asthma (Lara, et al., 2002). The increased morbidity and mortality due to asthma are often attributed to noncompliance or as now more frequently called “non adherence” to treatment regimens (Divertie, 2002). Noncompliance is defined as the extent to which a person’s behavior coincides with the prescribed regimen given by health care providers (Cameron, 1996; Divertie, 2002; Milgrom et al.; 2001 & Tashkin, 1995).

Statement of the Problem

The chronicity of asthma has long been well established and the prevalence among minority populations has been found to be astounding. In 2001, 73 people per 1,000 or 20.3 million people had a diagnosis of asthma. Among children, 87 per 1,000, had an asthma diagnosis (6.3 million) compared to 69 per 1,000 adults 18 and older, (14

million). Hispanic blacks had a rate 40% higher as compared to non-black Hispanics. In the adult population females had a 30% higher prevalence compared to males, but this pattern was reversed in the pediatric population; male children under the age of 18 bear a disproportionate amount of asthma burden (Asthma and Allergy Foundation, 2005).

Despite the advances in health care for all children, racial disparities persist. Low income and minority children have the greatest morbidity from asthma (Szilagyi, et al; 2006). Ortega, et al. (2000) noted that, “Black and Latino children continue to misuse health care and medication because of lack of access to culturally sensitive pediatricians who understand their needs and barriers to accessing care. These factors contribute to more severe, poorly controlled asthma”. African American and Hispanic children experience increased adverse health outcomes compared to white American children (Nevin, 2002). Low-income populations, minorities, and children living in inner cities experience disproportionately higher morbidity and mortality due to asthma (Aligne, et al., 2000; CDC, 2003). The greatest disparity in asthma outcomes was seen in asthma hospitalizations and mortality; the highest rates of asthma hospitalizations are seen in blacks and Puerto Rican populations (AAF, 2005; Akinbami, 2002). Asthma prevalence increased 4.3% per year from 1980-1996, from 3.6% to 6.2%. In children aged 0-17 in 1980-1981 was 36.8 per 1,000, rising by 1995-1996 to an alarming 68.6 per 1000. The incidence of asthma in black children was found to be 41.9 per 1000 in 1980-1981 and rose to 82.1 per 1000 in 1995-1996. No information was available for Hispanic children in 1980-1981, but in 1995-1996, the prevalence in this population was 76.1 per 1000 (Akinbami, 2002).

Little research has been done to address areas which impact Hispanic caregivers in providing care to their children with asthma, namely the extent to which acculturation and other family characteristics such as level of caregiver's education, insurance status and asthma severity impacts outcomes in asthma care.

Research Objectives

The objectives of this study are:

1. To assess the relative influence of familial characteristics, caregiver level of education, asthma severity, insurance status and acculturation, on asthma outcomes in Hispanic children.

Hypothesis 1: Higher levels of acculturation, education, decreased asthma severity and being insured are associated with positive asthma outcomes.

2. To assess the direct and indirect influence of acculturation on asthma outcomes in Hispanic children, while controlling for other variables.

Hypothesis 2: Acculturation has a positive direct effect on asthma outcomes in Hispanic children.

3. To determine the relative influence of familial characteristics, parental level of education, asthma severity, insurance status and acculturation, as they predict utilization of asthma services.

Hypothesis 3: Service utilization can be predicted by higher levels of acculturation, parental age, income and education, lower asthma severity, having health insurance, specific ethnic group and caregiver marital status.

Significance of the Problem

One of the many goals of advanced nursing practice and nursing research is to improve health outcomes and decrease healthcare disparities in the United States. In order to accomplish this goal it is important to begin to understand the underlying causes of healthcare disparities in our society. Research in the United States (U.S.) has shown that all cultures are not equal in relation to health status and access to interventions (AAAAI, 2003; Aligne, et al., 2000; CDC, 2003; Nevin, 2002). In developing an understanding of the reasons these disparities exists, for various ethnic groups nursing practice may advance to the next stage of designing and implementing culturally sensitive interventions that will be beneficial to these cultural groups.

According to the American Lung Association (2003), the estimated annual cost of treating asthma in children less than 18 years of age is \$3.2 billion. Asthma is the most common childhood chronic illness, afflicting more than 6.3 million American children and accounting for 10.1 million days missed from school annually. Asthma diagnosis is the number one chronic condition causing children to be absent from school and the highest ranked cause of pediatric hospitalizations in the U.S. Children with asthma make more than 2.7 million physician visits annually and require 200,000 hospitalizations. In order to care for these children, caregivers must lose time at work. Lost productivity among caregivers of children with asthma results in indirect costs of more than \$1 billion each year (AAAAI, 2003).

Medicaid and state children's health insurance program (SCHIP), have a great potential to improve access for asthma care thereby overcoming a major health care barrier. This is supported by data indicating that the number of uninsured children under

the age of 19 was reduced from 9.6 to 7.6 million between the years 1999-2002 and the uninsured rate among low income children was reduced by nearly six percent. Uninsured rates among blacks and Hispanics declined nearly 4 percentage points (Urban institute, 2003). Two groups remain at increased risk. These are being children whose caregivers do not qualify for a state funded insurance plan and do not have health insurance through their place of employment and children who are not citizens of the U.S. An evaluation of New York State's Child Health Plus program found that providing health insurance for uninsured children who have asthma helped overcome financial barriers that prevented children from receiving care for acute asthma exacerbation and for chronic asthma (Szilagyi, et al; 2000). Enrollment in the New York SCHIP program was associated with improvements in relation to access to care, less unmet health care needs, reduction in asthma attacks and overall improvement of quality of asthma care (Szilagyi et al., 2006).

New research -based strategies may decrease the impact of asthma on healthcare dollars. Chapter 2 will review current literature supporting the basis of this dissertation.

Chapter 2

Review of Literature

“Asthma is a chronic respiratory disease characterized by episodes or attacks of inflammation and narrowing of small airways in response to asthma “triggers.” Asthma attacks can vary from mild to life threatening and involve shortness of breath, cough, wheezing, chest pain or tightness, or a combination of these symptoms. Many factors can trigger an asthma attack, including allergens, infections, exercise, abrupt changes in the weather, or exposure to airway irritants, such as tobacco smoke” (CDC, 2003).

The natural history of asthma remains unknown. Many mild cases of asthma in childhood may resolve. Yet in other cases asthma is a progressive condition that can become a long- term disease in adulthood.

Asthma prevalence

In 2001, 73 people per 1,000 or 20.3 million people in the U.S. had a diagnosis of asthma. Among children, 6.3 million children had asthma compared to 14 million adults. When race or ethnicity was considered, the prevalence was about 10% higher in non-Hispanic blacks when compared to non-Hispanic whites. Hispanic blacks had a 40% higher rate as compared to non-black Hispanics. In the general population females had a 30% higher prevalence compared to males although this pattern was reversed in the

pediatric population. The current asthma prevalence rate for boys aged 0-17 years (99 per 1,000) was over 30% higher than the rate among girls (74 per 1,000) (CDC, 2003).

Asthma is the most common chronic illness in childhood and one of the most frequent causes of hospitalization. Peak prevalence of asthma was 68.6% in 1995 (Akinbami et al., 2002). In Hispanic adults and children, 1.2 deaths per 100,000 were attributable to asthma (PHPAB, 1999). Each year childhood asthma accounts for 3,028,000 doctor visits, 570,000 emergency room visits for wheezing for children under age 15, 164,000 hospitalization for children under the age of 15 and for over 8.7 million prescriptions for children under the age of 17 (AAAI, 2003). Children with asthma account for 10.1 million missed school days per year (Mansour et al., 2000). Between 1982 and 1994 the number of children affected with asthma increased 70%, and asthma related deaths increased in children 50% (Bashir, 2002).

In regards to asthma severity, attack prevalence is used as a crude indicator of how many people have uncontrolled asthma and are at risk for a poor outcome from asthma such as hospitalization. In 2001, approximately 12 million people, about 60% of the people who had asthma at the time of the Center for Disease Control and Prevention, CDC, survey, had experienced an asthma attack in the previous year. Asthma attack prevalence decreased with increasing age; 57 per 1,000 children 0-17 years had an asthma attack in the previous year compared to 38 per 1,000 adults aged 18 years and over (CDC, 2003).

Economic effect of childhood asthma

Asthma in children has a significant impact on health care resources. The estimated annual cost of treating asthma in children under the age of 18 years of age is \$3.2 billion dollars (ALA, 2003, PHPAB, 1999). Children with asthma utilized an average of \$1129 per child of total health care expenditures as compared to \$468 for those children without asthma (Lozano, et al., 1999). One in five American households includes at least one or more family members with asthma, making disease management and understanding imperative in order to reduce economic cost (ALA, 2003). Childhood asthma has a significant impact on U.S. health care dollars and methods of improving asthma morbidity and mortality need to be developed.

Health disparities

Ortega et al. (2000) that, “Black and Latino children continue to misuse health care and medication because of lack of access to culturally sensitive pediatricians who understand their needs and other barriers, which contribute to more severe, poorly controlled asthma”. African American and Hispanic children experience increased adverse health outcomes compared to white American children (Nevin, 2002). Asthma is noted to have a higher prevalence in minority and low- income individuals compared with their more advantaged peers. Prevalence rates of asthma among minority children range from 10-20%, while overall rates among U.S. children are only 6% (Mansour et al., 2000). Despite the advances in health care for all children racial disparities persist. Low-income populations, minorities, and children living in inner cities experience disproportionately higher morbidity and mortality due to asthma (Aligne, et al; 2000; CDC, 2003). The greatest disparity in regards to asthma outcomes is seen in the area of

asthma hospitalizations and mortality (Akinbami, 2002). Asthma prevalence in children aged 0-17 in 1980-1981 was 36.8 per 1000 , rising to an alarming 68.6 per 1000 by 1995-1996. The incidence of asthma in black children was 41.9% in 1980-1981 and rose to 82.1 per 1000 in 1995-1996. No information was available for Hispanic children in 1980-1981 but was available in 1995-1996 with a 76.1 per 1000 prevalence in this population (Akinbami, 2002).

The reasons for racial and ethnic disparities between races are complex but studies show that these individuals lack access to appropriate primary health services and may not receive the range of available treatments recommended by the national guidelines (Finkelstein et al.;2002). It has been argued that minority children, particularly those on Medicaid, have received poorer quality health care than their white counterparts (Ortega, 2000). In a study done in Connecticut and Massachusetts, it was found that most asthmatic black and Hispanic children received care from residents, interns and non-board certified pediatricians (Ortega, 2000). This study concluded that many children were not receiving asthma care indicated by the National Asthma Education and Prevention Program (Ortega, 2000).

National Guidelines

Guidelines have been developed by the National Institutes of Health, National Heart, Lung and Blood Institute in order to improve asthma outcomes in the pediatric population. The guidelines set forth a stepwise approaches for management of infants and young children, 5 years old and younger with acute or chronic asthma, and a stepwise approach for treating asthma in adults and children older than 5 years of age. The guidelines divide treatments into steps according to severity of asthma. Asthma

categories range from mild intermittent, mild persistent, moderate persistent to severe persistent. Within each category symptoms are evaluated and recommendations for medication are given (see Appendix A for NIH guidelines).

The goals set forth by the Expert Panel under the guidance of the National Heart, Lung and Blood Institute are to:

- “ 1. Treat the patient with the least aggressive therapy sufficient to prevent chronic symptoms and exacerbations
2. Maintain normal activity and normal or near-normal lung function
3. Avoid missing school or work
4. Eliminate sleep disruption”

(Guidelines for Diagnosis and Management of Asthma, Expert Panel Report 2, 1997)

These goals are focused around four components:

- “1. Step-wise pharmacologic therapy adjusted to the severity of the patient’s disease
2. Use of objective measures of lung function
3. Environmental control
4. Patient education to advance a partnership among the patient, family and clinicians” (Guidelines for Diagnosis and Management of Asthma, Expert Panel Report 2, 1997).

The effect of the fourth component is to promote adherence to the preceding components. Success can only be achieved if both providers and patients are compliant with care.

National guidelines have been less utilized in minority populations. Many factors can contribute to non-adherence to national guidelines in asthma management, resulting

in poorer outcomes. There are inadequacies in asthma management, compliance with NIH guidelines and in education of patients with asthma in Hispanic Americans (Hunninghake, et al., 2006).

Studies have demonstrated that the goals of the Expert Panel are not being met. This health-care provider barrier includes the lack of recognition of the child's asthma severity and the failure to accurately comply with the guidelines for asthma management (Szilagyi, 2006). Fewer than half of the individuals presenting to the emergency room or who require hospitalization are receiving anti-inflammatory medication advocated by the Expert Panel (Milgrom et al.; 2001). Studies have found that adherence to recommendations in long-term regimens range between 50 and 60% (Milgrom et al., 2001). In children the adherence rate was found to be only 48% (Milgrom et al., 2001). In a cross sectional study done by Finkelstein in 2002, 73% of surveyed participants were underusers of controller therapy, while 49% reported no controller medication use and 24% reported less than daily use (Finkelstein, 2002).

Non-adherence

Adherence is defined as the extent to which a patient's action corresponds to the prescribed regimen (Urquhart, 1998). Understanding non-adherence is essential in the area of asthma therapy, particularly because national clinical practice treatment guidelines are available. Many practitioners utilize these guidelines in order to choose the most appropriate and effective medication. We know that these guidelines are only effective if patients are adherent to the prescribed regimen. When patients are non-adherent there is increased morbidity and in some cases mortality.

Non-adherence takes many forms, ranging from failure to fill prescriptions, incorrect dosage, improper dosing intervals and premature discontinuation of drugs (Melnikow, 1994). Adherence problems occurring outside of the health care system are associated with language barriers, fears about medications, cultural differences and living conditions. (AAAAI, 2003; Naspitz et al., 2001). Family dynamics have been shown to have a strong impact on medication adherence in the pediatric setting. Studies have shown that children whose caregivers scored poorly on adherence measures had a greater increase in morbidity than those with good scores on adherence measures. Children with poorly adherent caregivers were found to have double the hospitalization rates, missed more than twice the amount of school, had more days of wheezing and demonstrated poorer overall functioning (Bauman et al., 2002).

Another contributor to non-adherence is medication phobias. This issue is found in both providers and families. Steroid phobia still exists in the medical community today. One reason for continued steroid phobia is that the findings of research on steroid use in very young children are inconsistent (Naspitz et al.; 2001).

Adverse effects of medication affect adherence. Subtle and long-term side effects of asthma medication are poorly documented. Medications are less likely to be utilized if they are expensive, have untoward side effects, difficult to take and if their benefits are not seen immediately (Bender, 2002; Milgrom et al., 2001).

Barriers within the healthcare system include limits to coverage for pre-existing conditions, ease of transition through insurance plans, deductibles and co-payments, limits on number of well-care or follow up visits, limits on specialist referral, limited reimbursements, limited support and availability of patient education programs, lack of

case management, lack of primary care, lack of care coordination and high cost of asthma medication and services (AAAAI, 2003; Szilagyi et al.,2006). Asthma deaths in children have been associated with medication non-adherence and delay in seeking emergency medical care (Milgrom et al.,2001).

Hispanics and Asthma Therapy

Hispanics are a growing proportion of the U.S. population. According to the 2000 census this group comprises 12.5% of the U.S. population, approximately 35 million individuals. It has been well documented in the literature that ethnic minorities are under treated in relation to asthma therapies (Ortega, 2000). Yet there are few descriptions of the specific barriers that Hispanic children with asthma encounter, and data on predictors of morbidity among these children are unavailable. The National Health and Nutrition Examination Survey III (1997) reported that young poor, and Spanish-speaking children were at high risk for inadequate asthma therapy. Another study showed that minority children hospitalized for asthma were less likely than their non-minority hospitalized peers to have effective preventive asthma therapy, receiving fewer Beta 2 agonists and fewer inhaled steroids (Ortega et al., 2002). The relationship between racial and ethnic status and the use of prescription medication mirrors other types of services, such as physician visits, and affirms that minorities receive fewer services than whites (Hahn, 1995).

Among minorities asthma treatment has two consistent characteristics, lack of access to treatment and health care inconsistent with national guidelines. A study of inner city children previously hospitalized with asthma, (n=1658, 38% black, 19% Latino and 31% white), showed that the National Institute of Health guidelines for the

management of asthma exacerbations were not being followed among these children (Warman, 1999).

Black and Latino children have worse asthma status and lower use of preventive asthma medications than white children within the same managed Medicaid populations (Aligne, 2000). Increasing the use of preventive medications is a natural focus for reducing racial disparities in asthma (Lieu et al., 2002). In a clinical study in East Harlem, in a sample of 1319 children subjects, 298 of participants had an asthma diagnosis. The children were mainly Puerto Rican (n=136, 46%) and Blacks (n=98, 33%), the study results showed underuse of anti-inflammatory medication for children with persistent or severe asthma. Differences in access to care may explain some findings; however, reasons for ethnic differences in use remain unclear. Both community interventions and additional provider education are indicated (Diaz, 2000).

Caregiver Education

Latino youth by far have the highest school dropout rate in the nation, 29% as compared to 7% of whites (Flores, 2002). Hispanic mothers are found to be more likely to not have graduated from high school and to not be employed. This educational factor has an influence on the understanding of the healthcare system and treatment options leading to poorer healthcare outcomes of these children (Boyer et al., 2001; Flores, 2002; Flores, 2004; Hunninghake et al.; 2006 & Mansour, 2000). In a low income Hispanic sample in San Diego, mothers who had completed high school were 1.5 to 2 times more likely to utilize hospitals, emergency rooms and urgent care services for their children with asthma compared to mothers without a high school education (Berg, et al., 2004). Racial minorities and children who are less educated are at higher risk for under use of

controller medication in asthma management, and are less likely to utilize services leading to poorer asthma outcomes (Berg, et al., 2004, Finkelstein et al., 2002). These family based barriers include confusion about asthma symptoms and therapies (Finkelstein et al., 2002; Mansour et al., 2000; Szilagyi et al., 2006).

Insurance Status

Insurance status, a health care system barrier, has an influence on health care outcomes (Lara, et al., 1999). Lack of insurance is a deterrent in seeking healthcare. Studies have identified lack of insurance as a major reason in delaying healthcare utilization in Hispanic families (Berg, et al., 2004, Cachelin, et al., 2000, Cornelius et al., 1993, Mansour, et al, 2000). This factor has been found to contribute to poorer health outcomes in Latino children with asthma (Berg et al., 2004). Having health insurance was associated with increased access to care and greater use of health care services in children (Flores, 1999; Halfon, 1997; St.Peter, 1992). A study done through the US Veterans Administration found that Hispanic patients with equal access to medical services had higher survival rates than two other ethnicities in relation to cardiac diseases (Prakash et al., 2003). Type of medical insurance, private versus state funded have also had a noted impact on health care outcomes. Increased access problems were noted by individuals on Medicaid in comparison to individuals who had private health insurances (Bair et al., 2001).

Severity of Illness

Severity of illness has a strong impact on accessing of services and asthma outcomes. Minority individuals have been found to access services at more severe levels of diagnosis than their white counterparts. Caregivers of young children have failed to

perceive early symptoms, waiting too long to intervene in asthma exacerbations thus impacting child asthma outcomes (Meng et al., 2002). Black and Hispanic children have much higher admission histories and past emergency room use, supporting the thesis that severity of illness impacts accessing of services and health outcomes (Akinbami, et al., 2002, Boudreaux, et al., 2003).

Acculturation

Barriers such as acculturation have an effect on Hispanic minorities and outcomes of care. Acculturation issues include ideas about causation of diseases, the treatment of illnesses, access to ethnic medical practitioners, usage of traditional, herbal or imported drugs, dietary preferences, religious practices that have a medical component, translation of medical concepts and differing expectations of the medical system (Jenista, 2001).

Acculturation to western culture and medicine has long been thought to improve the outcomes of diseases and chronic illnesses in immigrants to the United States. With the utilization of specialized medication and treatment plans individuals, especially Hispanics coming from poorer third world countries, were thought to benefit from early screenings, interventions and treatments. The literature supports this belief in regards to areas such as cancer screening, diabetes management and childhood immunization (Clark, 2002; Diaz, 2002; Hubbel, 1996).

A number of studies on adults have shown that an increase in acculturation has been associated with altered health outcomes (Diaz, 2002; Jenista, 2001; Moreno, 1997). Studies in minority women have shown how strongly these women have been affected by acculturation to western society. Less acculturated women have been found to underutilize preventive services and are more likely to present with advanced stages of

disease (Hubbel, 1996). Cervical cancer is the third most common cancer in Hispanic women in the US. These women have a higher age adjusted incidence and mortality rate for cervical cancer than other ethnic groups (Diaz, 2002). Having a higher acculturation score increased their likelihood of receiving a PAP smear (Diaz, 2002, Hubbell, 1996), thus supporting the beneficial effects of acculturation. Studies of minority women have shown also that higher levels of acculturation to western society lead to a significant reduction in levels of anxiety and communication barriers, especially in relation to cancer screenings (Diaz, 2002). Early diagnosis and treatment have led to decreased anxiety levels in regards to cancer screenings (Diaz, 2002). These findings for women are particularly important because women are more likely to be the primary caregivers for their children.

More highly acculturated Hispanic elderly utilized increased services, such as mammography, flu vaccinations and smoking cessation, improving outcomes in relation to early intervention and preventive care. The highest prevalence rates of depression have been found in the least acculturated groups in society, which may be related to cultural barriers encountered by immigrants and less-aculturated older Mexican Americans and to poorer health status (Gonzalez, 2001).

Immigrant mothers have described more barriers to children's health care than more acculturated mothers (Clark, 2002). The barriers included difficulty accessing the clinic for well child visits, high co-pay for services and the provider or the agency not speaking their primary language.

On the opposite end of the spectrum are findings that acculturation to American society has had a negative effect on Hispanics' health. Latinos have historically had

great strengths. These strengths have included extensive family support, resilience in the face of social turmoil, willingness to accept economic hardship and determination to improve the lives of their children through education and financial success (Jenista, 2001). Acculturating to American societal norms has left this minority group with decreased social support, changes in environmental exposures and lifestyles which have increased obesity, smoking, depression, heart disease and violent deaths.

Studies have shown that as time from immigration increases, health problems become less important (Jenista, 2001). Social, mental health and acculturation issues rise to the forefront as time progresses and acculturation increases (Jenista, 2001). With the loss of support from their home county and decrease in extended family size, issues such as domestic violence, substance abuse, gang membership and generational conflict arise, issues that have long plagued American society. Findings show that LatinoAmericans, have a higher than expected incidence of chronic diseases such as hypertension, cancer, diabetes and sexually transmitted diseases.

Smoking is the leading cause of preventable morbidity and mortality in the US among all ethnic minorities (Perez-Stable, 1998). Latinos have been found to smoke less than whites, but as acculturation increases the numbers of smokers increase. The protective factors of *familialismo* (strong family orientation) and *simpatia* (politeness and pleasantness in interpersonal relationships) are lost as the families mimic American culture.

Even though the U.S. Latino population is relatively young they demonstrate a high level of cardiovascular disease and obesity (Moreno, 1997). The factors that contribute to this increase in poor health outcomes are the lifestyle changes occurring

upon entering the United States, for example, meal times become more irregular, eating out occurs more often, unhealthy eating habits develop, the focus turns to weight loss and not health maintenance, confusing physically active jobs with exercise and not knowing the effect of smoking on heart health (Diaz, 2002).

Genetics and Asthma in Hispanics

In non-Hispanics, studies have demonstrated significant genetic contributions to asthma and have identified chromosomal regions that may contain susceptibility for asthma (Daniels et al., 1996 & Hunninghake, et al., 2006). There has been limited inclusion of Hispanics in genetic studies may prevent this ethnic group from benefiting from advanced in asthma diagnosis and therapy in relation to genetic studies (Hunninghake et al., 2006). This is further complicated by Hispanic subgroups, small sample sizes and lack of adjustments made for in the Latino population.

Asthma Outcome Measures

Health care utilization is one measure used to evaluate outcomes in asthma and asthma management and includes the number of primary care outpatient visits, hospital outpatient departments and emergency room visits. According to the CDC in 2000, there were 10.4 million outpatient asthma visits to private physician offices and hospital clinics, or 379 per 10,000 people. Children aged 0-17 years had 4.6 million visits with an outpatient visit rate of 649 per 10,000 while adults 18 years and over had a rate of 285 per 10,000. Blacks had an office visit rate 40% higher than whites, and females a 10% higher visit rate compared to males (CDC, 2003, PHAB, 2002). It is important to note that these national statistics do not include Hispanic data, since the CDC states that this data is non-consistent in national health care utilization data (CDC, 2003).

Asthma deaths are a strong indicator of the impact of this disease on society. The CDC reported 4,487 deaths from asthma in 2000 which included 223 children aged 0-17 years old. Non-Hispanic blacks were the most likely to die from asthma and had an asthma death rate over 200% higher than non-Hispanic whites and 160% higher than white Hispanics. Females had an asthma death rate about 40% higher than males (CDC, 2003).

The overall health status of American children has improved since the beginning of the century, due to increases in technology, medications and standardization of care. Infant mortality rates have steadily declined by more than 90% from 1915 to 1997 (MMRW, 1999). Yet, in relation to asthma prevalence there has been a continuous rise. Children aged 0-4 years of age had the largest increase in prevalence of asthma and the greatest health care use, while adolescents had the highest mortality. Asthma now affects over 5 million people who are younger than 18 years of age (AAAAI, 2003; CDC, 2003).

Many techniques have been utilized in the evaluation of asthma management outcomes. No validated gold standard exists for measuring asthma outcomes, leading researchers to utilize multiple outcome measures. These inconsistencies in outcome measures have led to ambiguous results and inefficient use of resources. Many factors can affect the type of outcome measurement utilized in pediatric asthma and the major focus of the research can dictate the type of outcome measure to be utilized.

From a societal or health insurance perspective health care cost and health care utilization are the major areas of outcomes focus. Issues related to hospitalizations, emergency room visits and out of plan expenses are evaluated. A major outcome measure in pediatric asthma is health care dollar utilization. Many health insurance

companies and state funded research projects have used these outcomes measures. Outcome measures include emergency room visits for issues related to an asthma diagnosis, hospitalizations and actual outside of health plan use costs. Costs that are not part of the staff model health maintenance organization's internal costs are included in this evaluation.

The rationale behind the utilization of this form of outcome measurement is the high cost of pediatric asthma. Pediatric asthma was found to cause an estimated 10 million school days lost and an attached health care dollar cost of 1.8 billion dollars, 3 million office visits, 570,000 emergency department visits and 164,000 hospitalizations (Diette et al 2001; Greineder, et al, 1999). By utilizing interventions in education and treatment, studies have looked at pre-interventional data and post interventional data in order to justify inclusion of different methodologies with the hope of decreasing the disease burden on health care dollars (Diette, 2001; Goodman et al, 1998; Greineder et al., 1999; Legorreta et al, 1998& Stergachis et al 2002). In the area of asthma outcomes related to disparities in asthma diagnosis, studies have shown that national disparities in asthma outcomes come from epidemiologic trends that link high rates of asthma hospitalizations and death with poverty, ethnic minorities and urban living. Impoverished nonwhite neighborhoods have a 2 to 10 fold higher rate of hospitalizations and death caused by childhood asthma than do non-disadvantaged neighborhoods (Federico et al., 2003). The United States, Centers for Disease Control and Prevention, utilizing data from the National Center for Health Statistics, identified impairment in daily activities as an indicator of asthma outcome. Studies of this nature also focus on hospitalizations and deaths as major health outcome indicators.

Problems that arise with outcome based evaluations are many. Even though evaluation of hospitalizations and emergency room visits provide a snapshot of the current trend in the diagnosis of asthma, the fluctuation of these numbers have been affected by other confounds. For example, the burden of illness from asthma may be increasing and less effective medical care may be available for at risk populations. Poorer children with asthma have been shown to have fewer physician visits despite higher numbers of hospitalization days. Health care providers may be more likely to diagnose asthma than in the past or the supply and characteristics of medical care may have changed. Changes likely include a decrease in the availability of beds, the practice style of physicians and the proximity of children to medical care (Goodman et al, 1998).

A current major study by the Childhood Asthma Management Program Research Group, utilizing a random sample of 1041 children aged 5 through 12 with moderate to severe asthma was designed to evaluate the effect of long term use of budesonide or nedocromil in children with asthma. They evaluated multiple outcome measures including health outcomes, examining hospitalizations for asthma, urgent care visits and medication use in conjunction with physical indicators and found that surrogate markers that permit the assessment of patient's response to therapy can be identified and that clinical trials can advance the diagnosis and treatment of asthma (Szeffler et al., 2000).

Other studies utilize physical indicators as measures of asthma outcomes. These indicators incorporate lung function, daily symptoms, medication usage, quality of life or validated tools that incorporate several of these indicators.

Pulmonary function testing has been used as a major indicator of asthma outcomes, encompassing home measurements with peak flow meters, office measures of

spirometry and hospital measures of plethysmography. These indicators have provided a picture of lung capacity and functioning pre and post treatments (Nasptiz, et al., 2001; Skoner, 2002; Stergachis et al , 2002; Szeffler, et al 2001 & Szeffler, 2000). The utilization of peak flow measurements has been recommended by the National Institute of Health guidelines for the management of childhood asthma (NIH, 2003). These markers have shown only small changes but may be significant over time, leading to the need for long- term studies in order to evaluate these small changes.

The problems associated with the previously discussed outcome measures are many. Spirometry measures are valid only in children 5 years and older and must be performed by a trained professional utilizing the same equipment with a standard performance. Similar issues exist with peak flow measurements in regards to the age requirement. Peak flow measures, if done in the home must be performed reliably and the results must be recorded. A noted method to bypass this drawback of peak flow utilization is the ‘airwatch’ peak flow that utilizes an internal data collection system (Szeffler, 2001). The costs associated with plethysmography are high. Similar drawbacks exist in relation to age and administration but cost has become a greater barrier with this form of testing since it is based in a hospital setting (Skoner, 2002). The time needed to evaluate the significance of these outcomes is a barrier. Studies must be done for years to evaluate the long- term changes in lung functioning.

Caregiver report of disease symptoms, health care utilization, functional health status, quality of life and diary data, which encompasses symptoms, night wakings and bronchodilator use have also been utilized to examine asthma outcomes (Guendelman et al, 2002; Sharek, et al 2002& Skoner, 2002). These measures of asthma symptomatology

can indicate changes over days, weeks or months. Symptom reporting can evaluate nocturnal and breakthrough symptoms as well as assess the frequency of wheezing after normal activities. The utilization of a diary, such as the Pediatric Asthma Caregiver Diary, by caregivers of preschool children ages 2-5 was found to be a valid parameter for outcome measures in the control of asthma (Santanello et al, 1991).

The problems with using symptom indicators is the under reporting of symptoms. Young children are unable to verbalize symptoms and caregivers may miss certain symptoms that could indicate exercise induced asthma, dyspnea or night symptoms (Skoner et al 2002). Diaries are often dangerous to utilize in very young children because persons filling out these reports are often not accurate historians in reporting numbers and timing of medication usage (Nasptiz, et al., 2001). The extent to which the problem of under reporting exists was validated in a study that recorded episodes of coughing at night by placing a microphone on the necks of children with mild asthma. Eighty percent of children were actually coughing at night, but as noted by caregivers report only 15% of these episodes were accounted for, leaving an alarming 85% of the nocturnal coughing episodes unreported (Skoner, et al., 1991).

Even with discrepancies in caregiver reporting studies have found that coughing and wheezing are valid outcome measures in pediatric asthmatics (Skoner, 2002). A study which assessed the relationship between multiple measures of disease status over time found that after a disease management intervention asthma status was best categorized by parent-reported symptoms, caregiver reported utilization and functional health status measures. Asthma diaries and pulmonary function testing did not seem to

provide additional benefits, even though they may play an important role in individual patient management (Sharek, et al 2002).

Tools have been developed that encompass numerous aspects of outcome measurements. The tool which was found in the literature to be most widely utilized was the “Asthma Quality Assessment System (AQAS), a questionnaire that encompasses measurements of asthma severity, patient quality of life, asthma awareness and knowledge, confidence in managing asthma, use of peak flow meters, asthma symptoms, medication use, lost work or school days. The AQAS, is a battery of self reported quality indicators of life, asthma management skills and knowledge. This tool has been validated and has found significant differences in asthma outcomes after intervention programs, completed by caregiver or patient (Forshee et al., 1998; Georgiou, et al, 2003).

Another tool for the evaluation of outcomes is the “Health Survey for Asthma Patients: The Outcome Management System Consortium Asthma Project”. This tool has been validated and contains three major components. The first component includes asthma specific information, including questions regarding asthma symptoms, prescribed medications, knowledge of disease self management, use of medical care, medical history and satisfaction with care. The second component is functional status. It measures eight functional attributes, which include general health perception, physical functioning, social functioning, role limited by physical conditions, role limited by emotional conditions, bodily pain, mental health, and energy or fatigue. The final component is related to personal information including demographic variables, socioeconomic status, and health insurance coverage (Legorreta, et al.,1998).

Another validated instrument is the “Children’s Health Survey for Asthma, CHSA”. It has been used in several large federally funded studies, including the Pediatric Asthma Core Port II (Olsen et al., 2004). One study compared the CHSA, with spirometry and other asthma related indicators. Results suggest that health status assessment as measured by the CHSA provides a broader perspective on the burden of asthma than spirometry, symptom scores, or health care utilization (Asmussen et al., 2002). The CHSA, is a self administered tool developed by Sullivan and Olsen consisting of 5 domains. The tool is a Likert- type scale with 48 items, with the scores ranging from 0-500. In a study done by Asmussen (1999), established the validity and reliability for this tool. The test –retest reliability after forty eight hours was 0.62-.86, and the instrument was internally consistent and valid across diseases and severity (Asmussen et al. 1999).

Another well- developed tool, Asthma Outcomes Monitoring System (AOMS), is composed of 3 components. The first includes a 10-item child health questionnaire, the CHQ –10, for children 14 years and younger. The Integrated Therapeutic Group, (ITG) Asthma short form, which is a self report capturing functional status and well being and a battery that captures data on the experience and severity of asthma symptoms, use of health care services and other indicators that provide information useful in interpreting the previously two mentioned scales. The 15-item Integrated Therapeutics Group Asthma Short Form (ITG-ASF) retains the validity of the AQLQ with improved scaling properties and interpretability. The ITG-ASF yields 6 scores: Symptom-Free Index, Functioning with Asthma, Psychosocial Impact of Asthma, Asthma Energy and Asthma-Confidence in Health and a Total Score. All items correlated 0.40 or higher with the

hypothesized scales and passed discriminant validity tests, with scaling success rates from 75 to 100%. Reliability exceeded the minimum of 0.70 for group comparisons. Scales were valid in relation to changes in asthma severity and lung function. The best predictor of asthma severity according to the National Asthma Education and Prevention Program (NAEPP) was the Symptom-Free Index (Bayliss, 2000).

Many indicators and measures have been utilized in the literature in the measurement of pediatric outcomes, ranging from physical measures to economic measures. All seem to cover a part of the overall picture of outcomes measurements. The most accurate picture may be seen when multiple components are evaluated together. Tools such as the AQAS and the Health Survey for Asthma patients incorporate numerous aspects into their evaluations of outcomes to present a uniform picture of outcomes and its relation to interventional strategies.

Summary

Asthma is the most commonly seen chronic medical condition in children. It affects over 6 million children a year (CDC, 2002). Hispanic children suffer a disproportionate amount of this asthma burden, with a 76.1 per 1000 prevalence rate (Akinbami, 2002). Research has strongly supported that Hispanics suffer poorer health outcomes than non-Hispanic whites. Multiple barriers have been identified that may contribute to this increased burden. These barriers are categorized as health-care system related, provider related and family related (Szilagyi, 2006). This increased prevalence of asthma, increased identifiable health disparities in Hispanics and failure to comply with National guidelines leaves this minority subgroup wanting for change. With this

knowledge and utilizing current research on asthma, minority health, outcome measurements and pediatrics, this study will evaluate the relationship of acculturation with other familial characteristics and outcomes utilizing a combined methodology to evaluate asthma outcomes in Hispanic children.

Chapter 3 will cover the methodology utilized in this study. It will cover design, sample size and settings, instrumentation, Institutional Review Board data, procedures, informed consent and data management.

Chapter 3

Method

The purpose of this study was to assess the influence of acculturation and other family characteristics on utilization of services and asthma outcomes in Hispanic children. The aims of this study were; (1) to assess the relative influence of family characteristics, guardian level of education, asthma severity, insurance status and acculturation, on asthma outcomes in Hispanic children, (2) to assess the direct and indirect influence of acculturation on asthma outcomes in Hispanic children and, (3) determine the relative influence of family characteristics, asthma severity, insurance status and acculturation, as they predict utilization of asthma services.

Design

A multiple regression, correlation design was utilized to ascertain a relationship in a path analytic framework between (1) acculturation and asthma outcomes, (2) acculturation and health care utilization, (3) educational level of the primary caregiver and healthcare utilization, (4) maternal educational level and asthma outcomes, (5) severity of illness and health care utilization, (6) severity of illness and asthma outcomes, (7) insurance status and health care utilization, (8) insurance status and asthma outcomes, and (9) family characteristics on each other.

Definition of Terms

For the purpose of this study the following terms have been defined:

1. Acculturation- Acculturation is a term that describes the basic process of cultural change and encompasses a range of adaptation that may include a blending of cultures or complete assimilation and virtual loss of the original culture.
Acculturation is a learning process through which at least some of the cultural patterns of the host country are adopted by the individual. It involves the psychosocial adaptation of individuals from their culture of origin to the new or host cultural environment. (Gordon-Larsen et al, 2006; Hernandez et al., 1998 & Jenista, 2001). In this study acculturation is measured using Marin's 'Short Acculturation Scale for Hispanics'.
2. Hispanics- Persons from Latin/ South America [including Puerto Ricans, Cubans, Columbians, Guatemalans, Nicaraguans, Hondurans, Panamanians, Ecuadorians, Peruvians, Salvadorians, Mexicans, Dominicans] descent, identifying themselves as Hispanic or Latin.
3. National Asthma Guidelines- Guidelines developed by the National Institutes of Health, National Heart, Lung and Blood Institute in order to improve asthma outcomes in the pediatric population. (Guidelines for Diagnosis and Management of Asthma, Expert Panel Report 2, 1997).
4. Asthma- A chronic inflammatory disorder of the airways, characterized by recurrent episodes of wheezing, breathlessness, chest tightness and coughing. These episodes are usually associated with widespread, but variable obstructed

airflow. (Guidelines for Diagnosis and Management of Asthma, Expert Panel Report 2, 1997).

5. Pediatrics- Branch of medicine concerned with the development and care of children (Mosby, 1990).
6. Study design- A regression, cross sectional, correlation design will be utilized.
7. Outcome measure- The outcome to be utilized is a measure of asthma outcomes, which will be collected utilizing the Children's Health Survey for Asthma (CHSA). Components of the *Children Medicaid Managed Care Questionnaire (CAHPS 2.0)*, will be utilized to evaluate health service utilization. A demographic data form will be used to collect information such as age, sex, race and other socio-demographics.
8. Mediator – “ the generative mechanism through which the focal independent variable is able to influence the dependant variable of interest” (Baron&Kenny, 1986)

Sample and Setting

The setting for this study was in an urban setting in Hillsborough County, Florida. Hispanics in Hillsborough County, including the City of Tampa, account for nearly 20% of the population. In addition, Hispanic children make up close to 30% of the Hillsborough County School System. This study consisted of a nonrandom convenience sample of 178 Hispanic caregivers of children with an asthma diagnosis between the ages of 5 and 12. Approval was secured from the Institutional Review Board of the University of South Florida and Florida Department of Health Review Board to solicit subjects for the study.

A convenience sample of 178 patients from local health departments and private practices in Hillsborough County, Florida were recruited. Community health clinics at two locations and primary care pediatric provider were selected to recruit Hispanic children with asthma. Subjects were contacted during clinic visits. Eligible participants were those that identify themselves as of Hispanic/Latin ethnicity with a child with a diagnosis of asthma, between the ages of 5 and 12. The child would have been symptomatic within the last two years, so that issues related to asthma were relevant and a current issue. Participants must be able to read, write and understand English or Spanish. Patients of both sexes were admitted into the study.

Exclusion criteria included concurrent diagnosis of other chronic illnesses, a child over the age of 12, younger than 5 or not being of Hispanic / Latin origin.

Instrumentation

The abbreviated *Multidimensional Acculturation Scale* was utilized to collect quantitative data on acculturation levels of Hispanic families. This scale evaluates cultural identity, language competence and cultural competence. It has been well validated in the literature, used in numerous studies related to Hispanic acculturation in relation to numerous health and psychological outcomes (Marin, 1990, Marin, 2000). This tool is appropriate for this proposed study because it is multidimensional in its observations. The Abbreviated Multidimensional Acculturation Scale (AMAS) has been thoroughly evaluated on both reliability and validity. Findings indicated good internal reliability of the three subscales, which are language use, media and ethnic social relations, with a reliability coefficient of α 0.92 at a p level of less than .001 (Marin et al., 1987). Adequate concurrent validity was established, and the scale also showed

adequate convergent and discrimination validity. Construct validity was demonstrated through factor analysis of the samples (Zea et al., 2003). Validity of all items on generation were 0.65, on length of residency 0.70, self evaluation of 0.76 and acculturation index of 0.83 at $p < .001$ (Marin et al., 1997). For the current study reliability testing showed a Chronbach's alpha of .9403.

The *Children's Health Survey for Asthma (CHSA)* was used to measure asthma outcomes. This tool is a 48- item paper and pencil measure completed by caregiver's of the children aged 5-12 diagnosed with asthma. The tool includes five scales, including physical health, activity of the child, activity of the family, emotion health of the child, emotional health of the family as well as questions about health care utilization, asthma triggers and family demographics (Asmussen et al., 1999). Studies have shown that "The Children's Health Survey for Asthma" is valid and reliable. Internal consistency reliability for each of the scales was high, showing a Chronbach's alpha of .81-.92. Test-retest reliability ranged from .62-.86. In three separate tests the CHSA, displayed strong reliability and validity. Descriptive statistics demonstrated a range of scale scores. Internal consistency was good to excellent and short-term test-retest reliability was good on all five scales. Construct validity was demonstrated by the ability of the CHSA to distinguish levels of disease severity, defined by symptom activity (Asmussen et al. 1999). For the current study Chronbach's alpha was .9432.

Components of the *Children Medicaid Managed Care Questionnaire (CAHPS 2.0)*, will be utilized to evaluate health service utilization. Plan-level reliability of all CAHPS[R] 2.0 reporting composites is high with the given sample sizes. Two of the five CAHPS[R] 2.0 reporting composites have high internal consistency and plan-level

reliability. The other three summary measures were reliable at the plan level and approach acceptable levels of internal consistency. The five-dimension model of consumer assessments best fits the data among the privately insured; therefore, consumer reports using CAHPS[R] surveys should provide feedback using five composites (Hargraves, et al., 2003).

A demographic data form was used to collect information such as age, sex, race and other socio-demographics. This form will included the following information:

1. Race/Ethnicity
2. Caregiver level of education
3. Caregiver's year of birth
4. Residential zip code
5. Insurance status
6. Annual income

All tools were available in both English or Spanish.

Institutional Review Board

The study protocol was submitted to the Social and Behavioral Institutional Review Board of the University of South Florida and Florida State Health Department Review Board and was approved before this study was initiated. Exempt review status was granted because the posing of minimal risk to the individual and did not utilize pediatric subjects.

Informed consent

Because this study posed less than minimal risk to its subjects and the consent was the only form of identifiable information it was not collected for this study for the

private practice settings. Per Health Department IRB recommendation a written consent was given to all study subjects contacted at the Health Department but no signed consent obtained.

Procedures

Subjects were contacted during the doctors' visit, verbal consent obtained and data collected. During this one time visit the tool was administered to the caregiver or guardian. The researcher administered all questionnaires and was available for assistance and instruction. The tool was completed by study subjects.

Data Management

Once subjects were contacted and inclusion criteria met the subject was assigned a number and all tools were labeled with the same number. The number represented the subject's chronological entrance into the study. No individual identifiable data was collected. Information obtained from the administered instruments was analyzed by the principal investigator and research committee.

Chapter 4 will describe the data analysis and results of this study.

Chapter 4

Results

The analysis of the results is presented by first defining the subjects and their characteristics. This section presents both caregiver and child characteristics individually. This section is included so that caregiver responses and characteristics can be established with their relationship with child asthma health outcomes. Preliminary data analysis is presented followed by the discussion of the predictability of the independent variables and outcomes in Hispanic asthmatic children. The final sections will address the three proposed hypotheses. The analysis will show direct and indirect effects of independent variables on outcomes utilizing multiple regression methodology.

Sample

The study sample included 178 Hispanic caregivers of children with asthma. The caregiver's ages ranged from 17 to 72 with a mean age of 35 years (see table 1). The caregivers' ethnicity were 36% Puerto Rican, 13.5% Mexican, 33.7% Cuban, 2.8% Dominican, 1.7% Ecuadorian, 1.1% Spaniard, 3.4% South American and 6.7% Other (see table 1). For the purpose of analysis the subjects were categorized as Puerto Rican, Cuban and other, due to the amount of subjects in the study sample. The majority of the sample was married, 61.8%, 9.6% were separated, 12.9% were divorced, 0.6% were widowed and 15.2% were single (see table 1). For the purpose of this analysis the caregiver subjects were categorized as married and single.

Table 1

Caregiver characteristics

Variable	N	Min	Max	Mean	SD	Frequency	Percent
Caregiver age	178	17	72	34.98	8.314	--	--
Acculturation	177	1.00	4.58	2.8206	.84902	--	--
Marital Status							
Married						110	61.8
Separated						17	9.6
Divorced						23	12.9
Widowed						1	.6
Single						27	15.2
Caregiver education							
8 grade or less						8	4.5
Over 8 th grade						7	3.9
High School/GED						65	36.5
2 yr. college/Tech school						31	17.4
4 year college						15	8.4
Post graduate						15	8.4
Family income							
Less \$10,000						12	6.7
\$10,000-\$19,999						26	14.6
\$20,000-\$29,999						33	18.5

\$30,000-\$39,999	35	19.7
\$40,000-\$49,999	18	10.1
\$50,000-\$59,999	17	9.6
Over \$60,000	37	20.8
Caregiver ethnicity		
Puerto Rican	64	36.0
Cuban	60	33.7
Mexican	24	13.5
Other	12	6.7
South American	6	3.4
Dominican	5	2.8
Ecuadorian	3	1.7
Spaniard	2	1.1

Caregiver level of education ranged from less than 8th grade education to post graduate studies. The majority of the sample obtained a high school diploma or equivalency, 36.5%, or some college, 34.2%. Family income ranged from less than \$10,000 per year to over \$60,000 per year (see table 1). The highest percentage fell within the \$30,000-\$39,000 (19.7%) and over \$60,000 (20.8%) range. Caregiver acculturation levels ranged from 1 to 4.58, higher scores indicating higher acculturation levels (see table 1). The mean score was 2.82 with standard deviation of .849.

The children's ages ranged from 5 to 12 years of age. Of this sample 51.1% were male and 48.9% female (see table 2). Asthma severity ranged from mild intermittent to severe persistent, with 60.7% in the mild intermittent category (see table 2).

Table 2

Child characteristics

Variable	N	Min	Max	Mean	SD	Frequency	Percent
Age sx onset	177	0	144	20.14	24.096		
Age of diagnosis	177	0	144	22.91	25.690		
CHSA score	160	153.43	500	381.847	95.243		
Service Utilization	177	.00	9.00	2.655	2.153		
Sex							
Male						91	51.1
Female						87	48.9
Asthma Severity							
Mild intermittent						108	60.7
Mild persistent						40	22.5
Moderate persistent						19	10.7
Severe persistent						11	6.2

Note: Ages represented in months

The mean age of onset of symptoms of these children was 20.14 months. Mean age of asthma diagnosis was 22.91 months (see Table 2). The Children's Health Survey for asthma scale, which is a quality of life outcome measure, ranged from 153.43 to 500, with a mean score of 381.84 and a standard deviation of 95.24 (table 2). Higher scores indicate more positive outcomes. Service utilization, the amount of times within the last

6 months the child was seen by a health care provider, ranged from 0 to 9 visits, with a mean of 2.65 visits and standard deviation of 2.15 (table 2).

Preliminary Data Analysis

Preliminary data cleaning was conducted to verify accuracy of the data. Excel data was evaluated for any extreme measures; these scores were then verified with study instrument and corrected as necessary. Once this was completed the data was imported into SPSS and once again the data was analyzed for any extreme variance. Descriptive statistics were run evaluating means, minimums, maximums and standard deviations along with plotting of the variables. Once it was determined that the data were properly coded and inputted into the system a Pearson correlation was run, including the outcome variable and independent variables. This correlation matrix was analyzed by the researcher to assure that identified correlations were consistent with known research, such as the correlation between service utilization and asthma outcomes. Individual tend to utilize more services when they suffer from increased illness severity.

This correlation matrix included asthma outcomes scores, acculturation scores, service utilization, asthma severity, family income, caregiver level of education, and caregiver age (Table 3). Numerous significant correlations were found during this analysis.

Table 3:

Correlation Matrix

	CHSA	Acculturation	Service	Severity	Income	Education	Age
CHSA	1.00	-0.003	-0.288**	-0.298**	0.19*	0.044	-0.139
Acculturation	-0.003	1.00	-0.042	0.061	0.47**	0.193*	-0.015
Service use	-0.288**	0.042	1.00	0.195*	0.207**	-0.113	-0.081
Severity	-0.298**	0.061	0.195*	1.00	-0.031	0.043	0.029
Income	0.19*	0.47**	-0.207**	-0.031	1.00	0.426**	0.026
Education	0.044	0.193*	-0.133	0.043	0.426**	1.00	0.331**
Age	-0.139	-0.015	-0.081	0.029	0.026	0.331**	1.00

Note: Numbers stated are Pearson's r correlations (r)

**p < 0.01. *p < 0.05.

Results show that the main outcome variable of CHSA total score was significantly correlated with service utilization, asthma severity and family income. Meaning that children with better asthma outcomes scores are shown to utilize fewer services, have milder asthma symptoms and have higher family incomes. The higher the quality of life the fewer services are utilized, having less severe asthma and higher financial means.

Acculturation, another variable of interest was significantly correlated with family income and level of caregiver education. The more highly acculturated caregivers have higher family incomes and have higher levels of educational attainment.

Service utilization, which was later used as a mediating variable was found to be significantly correlated with asthma outcomes, asthma severity and family income. Children that suffered from more severe asthma and had lower socioeconomic status were noted to utilize more services both in the urgent and non urgent settings. Individuals with lower income possessed higher levels of service utilization. This finding may be contributed to the facilitating effect of Medicaid, which does not charge co-payments and allows urgent and non urgent coverage.

An important finding was the significant contribution of family income on other variables of interest. Family income was positively correlated with asthma outcome scores, acculturation scores and caregiver level of education. Family income was found to be negatively correlated with service utilization.

Level of caregiver education followed closely to the impact of family income. Level of caregiver education was positively correlated with acculturation scores, family income and caregiver age.

The variable which was found to have the least amount of correlation with other variables was caregiver age. Caregiver age was positively correlated with level of caregiver education.

The significant correlations found in the preliminary analysis lent support for the further continuance of hypothesis testing which guided this research study.

The categorical variables were analyzed utilizing one way ANOVA testing on the continuous variables service utilization, acculturation and asthma outcomes in independent testing. A one way ANOVA test was performed using dependant variables service utilization, acculturation and asthma outcomes with insurance status as a factor. This analysis was significant between insurance status and service utilization and insurance status and acculturation. (See table 4).

Table 4

Analysis of Variance for Insurance Status

	Public Mean Score	Private Mean Score	F	
Service Utilization	2.500	3.2344	4.382	(1,156)*
Acculturation	3.0629	2.4909	19.167	(1,156)*
CHSA	384.2148	377.6486	.179	(1,156)

Note: *p < .05

This indicates that there is significant difference between these categorical groups across the dependant variables. Insurance status is a unique variable in analyzing contributors to the model of service utilization and acculturation score predictions. Privately insured children utilize more services than publicly insured children. Publicly funded children's caregivers were significantly more highly acculturated than privately funded children.

The next categorical variable analyzed was marital status. In testing this factor on dependant variables acculturation, asthma outcomes and service utilization marital status was only found to have a significant impact on service utilization. (See table 5).

Table 5

Analysis of Variance for Martial Status

	Married Mean Score	Single Mean Score	F	
Service Utilization	2.4433	3.3607	6.828	(1,156)*
Acculturation	2.8574	2.7896	.236	(1,156)
CHSA	392.7337	381.5551	3.489	(1,156)

In evaluating service utilization an individual's marital status is significant to the predictability value on how many services are utilized. Single caregiver households utilized significantly more services than married households.

The last categorical variable to be analyzed was ethnicity. Ethnicity showed to be significantly associated with acculturation scores. (See table 6)

Table 6

Analysis of Variance for Ethnicity

	Puerto Rican Mean	Cuban Mean	Other Mean	F
Service Utilization	2.6500	2.6863	3.1064	.668 (2,155)
Acculturation	3.0792	2.7761	2.5745	5.031 (2,155)*
CHSA	381.3077	390.6448	372.0076	.462 (2,155)

Note: * $p < .05$

The specific ethnic group membership adds unique information in predicting acculturation scores but not service utilization or asthma outcomes. Puerto Ricans have significantly higher acculturation scores than the other two subgroups classified.

Analysis of research questions

The proposed research questions were based on current research finding and in some cases gaps in the research literature. It has been well documented in the literature that certain variables such as level of education, illness severity, insurance status and family income have an impact of health care outcomes. Studies are lacking in regards to looking at these variables in Hispanic children suffering from asthma. Some variable such as the effect of acculturation is a little vaguer in the literature. Individuals with higher levels of acculturation have been found to have more positive health outcomes while other studies support the 'healthy immigrant effect'. The healthy immigrant effect

basically states that the health and nutritional qualities preserved from one's upbringing in their caregiver country have a more positive effect on certain health care outcomes than those immigrants that acculturate to American society. General statements can not be made to this subpopulation unless they are studied directly, thus leading to this study's research hypothesis.

Hypothesis 1: Higher levels of acculturation, education, decreased asthma severity and being insured are associated with more positive asthma outcomes.

Is there a significant relationship between family characteristics, asthma severity, insurance status, acculturation and asthma outcomes in Hispanic children? It was hypothesized that higher levels of acculturation, higher educational attainment, decreased asthma severity, increased caregiver age, caregivers being married, higher family income, belonging to certain ethnic groups and being insured are associated with more positive asthma outcomes in Hispanic children. The overall model with 8 predictors for asthma outcomes explained approximately 16% of the variance. This model was significant at $p = .001$ with an F of 3.429 and 8 and 150 degrees of freedom. A multiple regression standardized beta coefficient revealed that asthma severity had a significant impact on asthma outcomes while the other covariates did not (See table 7). Not unexpectedly, as asthma severity increases outcome scores were lower, meaning the more severe the asthma the poorer the asthma outcomes.

Table 7

Summary of Regression Analysis for Variables Predicting Health Care Outcomes , 8 Predictors (N=158)

Variable	B	SE B	β
Caregiver age	-1.735	.908	-.154
Marital status	-.4.080	3.920	-.083
Ethnic group	-.570	2.583	-.017
Family income	9.586	5.118	.194
Level of education	1.897	5.537	.031
Asthma severity	-27.914	7.771	-.275*
Insurance status	3.424	16.840	.018
Acculturation	-9.578	9.851	-.085

Note: $R^2 = .155$. * $p < .05$

Hypothesis 2: Acculturation has a positive direct effect on asthma outcomes in Hispanic children.

Is there a significant relationship, directly or indirectly, between acculturation and asthma outcomes in Hispanic children? It was hypothesized that children of caregivers with higher levels of acculturation would have more positive asthma outcomes. In order to ascertain the indirect effect of acculturation a mediator variable was utilized. Since service utilization was found in the research to have an effect on health care outcomes it was utilized in this study. According to Baron and Kenny (1986), a mediator is a third variable that influences the relationship between a predictor variable and an outcome variable, acculturation and asthma outcomes accordingly (Baron et al.,1986). This mediating effect accounts for a relationship between a predictor variable and an outcome

variable (Kinley et al., 1993). No significant direct or indirect effect was found for acculturation and asthma outcomes, while controlling for other covariates. In order to ascertain the effect of service utilization on asthma outcomes a multiple regression analysis was run utilizing nine predictor variables, adding service utilization to the previous model. This regression analysis explained approximately 19.4% of the variance of asthma outcomes, change in R^2 of .039 (See table 8). No significant relationship was found utilizing a mediator model between acculturation, service utilization and asthma outcomes. A significant relationship between acculturation and service utilization was found to be .176 with a p value of .049 in this mediator model. A significant relationship was also found between service utilization and asthma outcomes with a beta weight of -.215 and a p value of .008. The relationship in this mediator model between acculturation and asthma outcomes remained nonsignificant, with a beta weight of .047 and p value of .589, thus rejecting the hypothesis that acculturation is associated with asthma outcomes in Hispanic children (See figure 1). In this model caregiver age, asthma severity and service utilization were found to have a significant impact on asthma outcomes. See table 8. Caregiver age, asthma severity and service utilization all had a negative association with asthma outcomes. As caregiver age increases, asthma outcomes scores decrease, meaning become poorer. A standardized beta weight of -.170 and a p value of .034 were found for this variable, meaning that advanced caregiver age is associated with poorer asthma outcomes. As asthma severity increases asthma outcomes decrease. Asthma severity has a -.234 beta coefficient with a p value of .003 on asthma outcomes. The children with more severe asthma have poorer outcomes. The final significant finding in this model shows that as service utilization increases, asthma outcomes

decrease. Service utilization has a beta weight of -.215 with a p value of .008 on asthma outcomes. As these children utilize more services they are found to have poorer outcomes even while controlling for other covariates, including asthma severity.

Figure 1: Mediating effect of Service Utilization

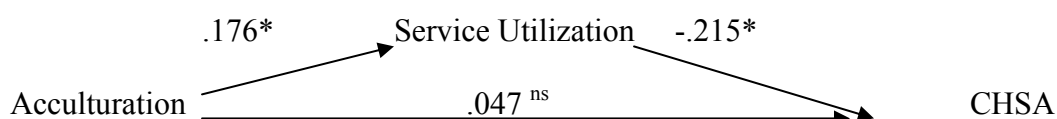


Table 8

Summary of Regression Analysis for Variables Predicting Health Outcomes, including Service Utilization. (N=157)

Variable	B	SE B	β
Caregiver age	-1.916	.896	-.170*
Marital status	-.3.017	3.895	-.062
Ethnic group	3.889	2.555	.000
Family income	.7.834	5.072	.158
Level of education	1.735	5.441	.028
Asthma severity	-23.697	7.795	-.234*
Insurance	9.851	16.757	.051
Acculturation	-5.309	9.806	-.047
Service Utilization	-9.382	3.472	-.215*

Note: $R^2 = .194$. * $p < .05$.

Hypothesis 3: Service utilization can be predicted by higher levels of acculturation, caregiver age, income and education, lower asthma severity, having health insurance, specific ethnic group and caregiver marital status.

Can service utilization be predicted by caregiver factors along with asthma severity and insurance status? It was hypothesized that caregiver factors, such as caregiver age, marital status, ethnic group, family income, level of education and acculturation along with other variables such as asthma severity, and insurance status can be used to predict service utilization in Hispanic children with asthma. The overall multiple regression models with 8 predictors explained approximately 14% of the variance of service utilization. The model with an F of 2.972, a p value of .004 with 8 and 149 degrees of freedom was significant. Upon further analysis viewing the standardized beta coefficients, it was found that asthma severity and acculturation were significant predictors of service utilization in this population (See table 9). Asthma severity had a beta weight of .190, with a p value of .016, meaning that more severe asthmatic Hispanic children had increased rates of service utilization. It was also found that acculturation, with a beta weight of .176 and p value of .049, was associated with higher service utilization rates. As acculturation levels in caregivers increased service use also increased.

Table 9

Summary of Regression Analysis predicting Service Utilization, with 8 predictors (N=157)

Value	B	SE B	β
Caregiver age	-1.774	.021	-.069
Marital status	.124	.091	.111
Ethnic group	.5.493	.060	.073
Family income	-.181	.119	-.159
Level of education	-1.861	.128	-.013
Asthma severity	.440	.180	.190*
Insurance	.647	.392	.146
Acculturation	.453	.228	.176*

Note: $R^2 = .138$. * $p < .05$

Chapter 5 will discuss the discussion of the research findings and implications for future research and practice.

Chapter 5

Discussion

Health disparity is a very complex issue that the American health care system is facing with long lasting effects on economic dollars. Dr. Martin Luther King stated that “Of all forms of inequality, injustice in health care is the most shocking and inhumane” (Dr. Martin Luther King Jr.) Substantial evidence supports that pediatric ethnic and race disparities exist (Center for Disease Control, 2004). The increased awareness of these race, ethnic, income based disparities has made it a priority in health care legislation and clinical practice. These disparities are evident in prevention and management of asthma (Institute of Medicine, 2002; & Strunk, 2002). An example showing the extent of health disparity is found in New York City. The annual hospitalization rate among Hispanic asthmatics was 62.9 per 10,000, 59.9 for African Americans and 12.2 among whites (Carr et al., 1992). This same study showed that those same Hispanics had the highest annual mortality rate, 1.3 per 100,000 for asthma (Carr et al., 1992). Despite asthma treatment advances race/ethnicity based deficiencies persist (Boudreaux, et al., 2003).

Hispanic Children and Asthma

For a developed country in the forefront of research and technology we have failed in the area of child health. The United States is ranked number eleven for children living in poverty, seventeenth for low birth weight infants, twenty- third for infant mortality and last for protecting children against gun violence (CDC, 2001). This poor

performance in regards to child health is magnified in asthma disparities among Hispanic children. These disparities are defined as differences in health indicators that exist across subgroups of a population, including infancy, childhood and adolescents (Oberg et al., 2006). Little is known about Hispanic children with asthma, especially the difference among Latino subgroups. What is known is that Hispanic children suffer from increased morbidity and mortality from asthma than their non-Hispanic counterparts (Lara et al., 2006).

This study has attempted to identify unique factors that impact the health care of Hispanics with a focus on asthma in children. Studies done in the United States, Europe, Israel and Australia have discovered relationships between migration and risk of asthma (Eldeirawi et al., 2005; Eldeirawi et al., 2006; & Holguin et al., 2005). These findings suggest that some risk factors are modifiable, leading to identifying unique risk factors in Hispanic children.

This chapter will first discuss unique factors that influence asthma outcomes in Hispanic children. A discussion of current literature supporting the relevant findings of this study will be discussed, followed by other contributing factors which influence outcomes. The limitations and strengths of the study are discussed along with indications for future research. Finally, the implications for nursing are presented.

Ethnicity

It is important to understand the Latino culture as unique. Latino's comprise many subgroups, such as Puerto Ricans, Cubans, Mexican, Dominicans, Ecuadorians, Spaniards and others. Each individual subgroup has unique barriers in and of themselves thus lending support to the variable of ethnicity utilized in this study (Canino et al.,

2006). We see that regarding asthma severity Puerto Rican children bear a large proportion of the asthma burden than their ethnic counterparts. They have been found to have the highest prevalence of lifetime asthma (26%), and recent asthma attacks (12%), compared with other children of similar age and different ethnic and racial grouping (Lara et al., 2006).

In looking at Latinos and their child's health care, research has identified many cultural beliefs which impact asthma outcomes. One such cultural belief is the use of folk/home remedies. These remedies may be used in replacement of traditional medicine or in conjunction with prescribed regimens. Once again, the utilization of folk remedies varies within Latino subgroups and need to be uniquely identified within each subgroup (Bearison et al., 2002). By understanding the uniqueness of each cultural group a support is established for the evaluation of addressed variables, such as caregiver acculturation and educational levels, noting that caregiver's beliefs strongly impact the healthcare outcomes of their children.

Socioeconomic Variables

In relation to socioeconomic variables, compared with whites, Hispanic children were more likely to live in single-caregiver households, have caregivers that did not graduate high school, have low family income, be overweight, lack health insurance, not have a usual source of health care and live in urban areas (Lara et al., 2006).

Lack of health insurance is a major contributor to health disparities. Children without coverage have difficulty obtaining care and are forced to not obtain preventative visits, thus allowing them to suffer from increased severity of illness (Oberge et al., 2006). Approximately 11.6 million US children are uninsured, 24.9% of these children are

Hispanic, the largest group in comparison to black and white children (Stevens et al., 2003). In 2004 Latino's comprised 15% of the population yet accounted for 36% of uninsured children in the United States (AHRQ, 2004). The SCHIP program which was intended to create an expansion of coverage through private and/or public avenues has resulted in improved access to care and a reduction in existing pediatric health disparities (Oberge et al., 2006). This study looked at private versus public insurance and found no noted significant difference between asthma outcomes in both groups in regards to asthma outcomes. This is a strong support that American health care in the private and public setting is improving for those that have health insurance; this does not undress the uninsured or underinsured populations.

Compared with insured Latino children, uninsured Latino children had twenty three times the odds of not having a regular physician and were less likely to be brought in for needed medical care due to expense, cultural barriers and difficulty in accessing the system (Flores et al., 2006). A disturbing trend identified in the literature is that having one or both caregivers employed decreases the likelihood of being insured (Flores, 2006). These findings may be due to employment in lower wage jobs and increased likelihood of not having employer sponsored coverage at their place of employment (Cooper et al., 1997). This finding has the potential to maintain and/or increase the persistence of asthma disparities in Hispanic children.

Insurance status between private and public was significantly associated with service utilization and acculturation scores in this current study, but not with asthma outcome scores. Publicly funded children utilized increased service than their privately funded counterparts. This finding may be due to increased severity of illness or less

financial commitment of the publicly funded group. The more highly acculturated subjects in this study were more likely to be privately insured. This finding seems intuitive in that the more familiar one is with the American culture and social norms the increased ease of access to private medical insurance, be it through the mediating effect of education or higher income.

Marital status of the child's caregivers has been found to have an significant relationship with asthma outcomes. Children that live with married caregivers have a decreased likelihood of using services than children who reside with single caregivers. This supports research finding that rearing a child without the benefit of a spouse increases risk factors that contribute to poorer health outcomes (Lara et al., 2006). Being a single caregiver has an impact on psychosocial stressors of the family thus impacting asthma outcomes (Aneshensel et al. 1996).

Family income was found to be significantly correlated with asthma outcomes in Hispanic children. As families combined income increase asthma quality scores improve. This finding is supported by current literature and may be associated with environmental exposures and associated with insurance coverage (Canino, et al., 2006 & Flores et al., 2006). Latinos have higher rates of low income status than majority groups; this places them in low income communities which are expected to have poor ventilation, increased indoor allergens such as cockroaches, mice and mites. These factors in combination with neighborhood stressors of crime, substandard living conditions increase the rates of asthma morbidity and mortality (Canino et al., 2006).

Family income was negatively correlated with service utilization in this study. This may be due to the fact of the working poor. Individuals that fall within the lower

socioeconomic spectrum qualify for programs such as Medicaid and the SCHIP program in Florida. The individuals that are classified as the working poor, or near poor, that fail to qualify for SCHIP and Medicaid programs, may not afford primary, acute or specialist services due to financial constraints (Oberg et al., 2006). It has been shown in recent studies that children on Medicaid and SCHIP do have increased service utilization (Szilagyi et al., 2006). The data collection sites for this study had large Medicaid and SCHIP membership which may have contributed to these findings along with the limited sampling of privately funded subjects.

Level of caregiver education was not found to be significantly associated with asthma outcomes in Hispanic children in this current study. This finding does not support current literature which states that caregiver level of education is a factor in evaluating health outcomes in children (Lara et al., 2006). This finding may be based on an over representation of the higher ends of the educational spectrum. Approximately ninety-one percent of the enrolled subjects had obtained a High school diploma, only approximately eight percent had less than a high school education.

Asthma severity

Asthma severity was found to impact both asthma outcomes and service utilization in this study. The higher the severity of the asthma the lower quality of asthma outcomes, meaning the sicker the child the worse quality of life the child maintains. Another area of significance was that as asthma severity scores increased a noted increase in the use of services were seen. These findings support research which has found that Hispanic children suffer poorer asthma outcomes and suffer from higher severity scores (Canino et al., 2006). This increased level of asthma severity may be

attributed to genetic differences such as significant lower bronchodilator responsiveness and higher indices of airway obstruction relative to other groups (Burchard et al., 2004). Others have argued biological factors and genetic factors in interaction with the environment account for these high indices (Lara et al., 1999). Genetic studies of asthma have found that genetic risk factors may vary by ethnicity but individual markers for Latino subgroups have not yet been identified (Chourdhy et al., 2005). Additional studies have made significant arguments for other factors to support the basis for these increased severity levels. These studies have looked at socioeconomic variables, cultural beliefs, medication behaviors and healthcare system variables to attempt to explain some of this variance (Bearison et al., 2002, IOM, 2002). Further research has identified caregiver mental status as a significant contributor to higher asthma severity scores in Latino children (Bartlett et al., 2004).

Acculturation

Acculturation, a main variable of interest was not found to influence asthma outcomes in Hispanic children significantly. Acculturation is an important factor to consider when evaluating asthma diagnosis, risk factors and intervention (Lara et al., 2006). Research has shown both positive and negative associations between acculturation levels and asthma outcomes. One theory supports the ‘healthy immigrant effect’, which states that less acculturated families consistently are associated with better health outcomes even though immigrants suffer from higher prevalence of risk factors (Flores et al., 2005). Others have shown that more highly acculturated individuals have improved healthcare outcomes, due to the fact that they are better able to overcome healthcare system barriers, such as language and have better compliance which leads to

improved healthcare outcomes (Lara, 2006; Reichardson et al., 2003). Individuals who do not speak the language are unable to report symptoms accurately thereby affecting the provider's basis for making an accurate diagnosis and treatment plan. Also with communication barriers it is difficult to form a trusting relationship with the clinician which would lead to improved outcomes (Canino, et al., 2004). It has also been found that within ethnic subgroups acculturation plays an alternating role. For Mexican children lower acculturation serves a protective effect while for Puerto Rican children it shows the opposite effect (Klennert et al., 2002, Lara et al., 2006). This finding is of interest due to the fact that island born Puerto Rican children are the only US citizen and have the fewest potential barriers to the healthcare system than other Hispanic children born outside of the United States (Lara et al., 2006).

Acculturation was found to be influential in its impact on service utilization. As acculturation scores increase service utilization also increases. Studies have shown that more acculturated families are more like to have insurance and access the healthcare system (Flores et al., 2006). In order to overcome this barrier of low acculturation scores, studies on asthma care have found that practice sites that support cultural competency have higher quality care for children with asthma and children are less likely to underutilize asthma preventive services (Lieu et al., 2004).

In this study ethnic group membership being defined as Puerto Rican, Cuban or other, was significantly association with acculturation scores. In the study sample Puerto Ricans were the mostly highly acculturated group, followed by Cubans. This finding supports that island born Puerto Ricans may have less difficulty in acculturating due to their American citizenship (Canino et al., 2006).

Service utilization

While controlling for other variables service utilization was found to be negatively associated with asthma outcomes in this study. Even though these finding seems to be counter intuitive they are supported in the research for minority subgroups. Children whose caregivers have reported higher severity scores and increased service use have been found to have poorer functioning scores while controlling for other known variable that may impact asthma outcomes (Canty-Mitchell, et al., 2005). Another area of explanation found in the literature is that contact with the health care system is related to increased likelihood of obtaining an asthma diagnosis (Lara et al., 2006). Other studies have shown that being exposed to racist events in the health care setting contribute to poor health outcomes (Kwate, et al., 2003).

The current study defined service utilization as the number of times in contact with the system, either in primary or acute care settings, it did not factor in quality of services, which may have impacted this outcome. The components of quality of care include scope of service, and the richness of the benefit (Oberg, et al. A., 2006). Service utilization was not found to be a mediator between acculturation and asthma outcomes since no relationship existed between acculturation and asthma outcomes.

Child characteristics

Symptoms of asthma usually begin to appear by age 5, with boys being twice as likely to be affected, by age 30 gender distributions are equal (Madrid et al., 2006). This study had equal representation of both genders with girls being significantly more likely to suffer from increased asthma severity. The age of onset of symptoms and the age of diagnosis of asthma were significantly correlated at .931. This is a positive finding in

that clinicians are identifying the problem at much earlier severity levels. Age of onset of symptoms and of diagnosis was not found to be significantly correlated with any other evaluated variable.

Subgroup analysis

A multiple regression analysis was performed analyzing the predictor variables of service utilization, acculturation, asthma severity, insurance status, family income, level of caregiver education, marital status and caregiver age on asthma outcomes for individual racial groups. The analysis performed on the Puerto Rican sub sample found that these eight variables were significantly predictive of asthma outcomes. The model explained approximately 33% of the variance in this sub population. Caregiver age and asthma severity guided the significance of this regression model, service utilization which was significant in Hypothesis 2 was no longer a guiding factor. (See Table 10).

Table 10
Summary of Regression Analysis within the Puerto Rican subgroup
(N=59)

Value	B	SE B	β
Service Utilization	-10.434	5.515	-.242
Acculturation	-15.834	17.582	-.113
Asthma Severity	-28.659	11.669	-.300*
Insurance	7.334	25.361	.039
Family Income	13.338	7.007	.281
Level of education	-.903	8.503	-.015
Marital Status	3.726	6.382	.080
Caregiver age	-2.836	1.269	-.291*

Note: $R^2=.327$. * $p<.05$

The model was not significant in the Cuban or “Other” population. These findings show that the predictor variables utilized for this analysis are best utilized in the Puerto Rican population. The model including all subgroups explained approximately 19% of the variance while in the Puerto Rican population explained 33% of the variance.

Limitations of the Study

This study has limitations that may have influenced the results. The first area of limitation was that the sample was collected from individuals in a primary care setting in West Central Florida. These individuals possessed access to a system of care, they were all service users, not allowing for adequate representation of individuals that lack access. Study subjects were subjects of convenience, robbing the study of unique variable identification that may pertain to individuals that are disgruntled with the system or that lack the time, resources or desire to receive optimal care.

Data in this study were collected retrospectively and relied on self report and could be subject to recall bias. Recall becomes a major obstacle since most of the asthma outcome questions were asking about a six month period. Caregiver reporting of asthma diagnosis and symptoms may differ from clinical assessment and across time. This study was cross sectional in nature thus not allowing for temporal nature of the association to be examined. Even though previous studies have showed that agreement between caregiver reporting and medical records is the highest for asthma, the agreement is only found to be moderate (Miller et al., 2001). Furthermore even though total sample size was adequate for the reported hypothesis, the breakdown of subgroups did not allow for analysis between individual ethnic groups. The majority of the study sample was

Puerto Rican or Cuban in ethnicity, presenting the highest Hispanic ethnic population of the data collection sites.

The next noted limitation was the operational definition utilized to obtain information on service utilization. The variable service utilization was defined as total number of healthcare encounters within a six month period; it did not take into account the quality of the care received by the subjects.

This study did not address environmental, genetic, health literacy or mental health status of the child or caregiver which did not allow the study to completely ascertain the effects on asthma outcomes.

External validity is limited in that only one state was studied. The majority of the children studied had medical insurance so these finding may not be generalizability to the entire population or near poor children that do not qualify for Medicaid or SCHIP programs.

Strengths of the study

Strengths of this study include the sample size of Hispanic children with asthma (N=178). The study utilized a Bilingual researcher and allowed the option of English or Spanish tools. This study also allowed for adjustment of variables such as severity of illness, level of caregiver education, family income, service utilization and acculturation. It also looked at added barriers that have been identified in the literature such as the sex of the child, age of diagnosis, marital status of the caregiver, ethnic group membership and insurance status.

Implications for Nursing Practice

This study has confirmed that Hispanic children with asthma are a particularly vulnerable population. This knowledge and the identifiable factors that impact asthma outcomes, such as asthma severity, may lead clinical nurses, research nurses and nurse policy makers to target specific programs such as SCHIP and Medicaid funding to provide high quality care to this high risk group. In order to overcome the ‘near poor’ crisis that this country is facing all nurses are called upon to make health care disparities not only in Hispanic children but in all children a major focus of healthcare reform. This reform may be in the area of increased federal funding to subsidize small business to provide family health plans to their employees. Other avenues would be to reevaluate the guidelines of the SCHIP program, a program that was initially designed to assist in the reduction of health disparities and meeting the needs of the near poor.

Insurance companies should screen primary care and specialty care offices to determine if National Guidelines are being followed in the treatment of asthma. In the year 2007, in the most economically advanced nation in the world we should not be seeing discriminatory treatment of our citizens based on race, ethnicity, and income, level of education or age. If a noted disparity is found between the treatment of minority clientele and non-minority clientele reprimands should be instituted.

Research nurses and clinical nurses need to ensure that their professional organizations support, culturally sensitive care and that culturally competent care is provided in their work settings. Culturally sensitive clinicians, who can communicate effectively and provide appropriate education, can counter act the effect of perceived barriers that Hispanics face regarding healthcare. The use of Spanish speaking

employees, extended hours, transportation services, and having Medicaid and SCHIP representatives available on site would overcome many of the healthcare system related barriers.

Intervention programs must be developed created and disseminated into the community to educate these families about asthma. These programs can be taught at the community level, in schools, daycares setting, churches and primary care offices. Follow up visits should be scheduled with the same educators to instill a relationship of trust. Educating patients is a primary goal of nursing and does not require a major change in the nursing paradigm.

Nursing researchers must continue research on asthma disparities in these Hispanic subgroups. By analyzing the difference among Hispanics we may one day be able to identify the genetic, biological, and environmental links in asthma. These studies need to assess the unique contribution of each individual factor and the influence of interacting factors. Interventional studies must be undertaken to determine the effects of education and culturally sensitive care on asthma outcomes in Hispanic children.

While health disparities continue to exist in the United States and the rest of the civilized world every nurse is called to stand up and call for change.

Future Research

The next steps for this researcher would be obtaining an increased sample size of minority subgroups, representing the county population. This would allow the results to be generalizable to the county residents. Further studies would include looking at other variables which have been found to impact healthcare outcomes in minority patients.

These variables include compliance with NIH guidelines, health literacy, quality of health

care services, environmental and genetic information. Once this was carried out and the impact of barriers accessed to asthma outcomes the spectrum of disease may be broadened to support the uniqueness of the identified barriers across disease diagnosis in the Hispanic population.

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Appendices

Appendix A
Stepwise Approach for Managing Asthma in Adults and Children
Older than 5 years of Age: Treatment

	<u>Symptoms/Day</u> <u>Symptoms/Night</u>	PEF or FEV1 PEF Variability	Daily Medications
Step 4 Severe Persistent	<u>Continual</u> Frequent	$\leq 60\%$ 30%	Preferred treatment: <ul style="list-style-type: none"> - High dose inhaled corticosteroids AND <ul style="list-style-type: none"> - Long acting inhaled beta 2 agonist AND, if needed Corticosteroids tablets or syrup long term (2mg/kg/dy, generally do not exceed 60 mg per day). (Make repeat attempts to reduce systemic corticosteroids and maintain control with high dose inhaled corticosteroids).
Step 3 Moderate Persistent	<u>Daily</u> > 1 night week	$>60\%$ - $<80\%$ >30%	Preferred treatment: <ul style="list-style-type: none"> - Low-to-medium dose inhaled corticosteroids and long acting inhaled beta-agonist. - Alternative treatment (list alphabetically): - Increase inhaled corticosteroids within medium-dose range OR <ul style="list-style-type: none"> - Low-to-medium dose inhaled corticosteroids and either leukotriene modifier or theophylline <p>-----</p> If needed (particularly in patients with recurring severe exacerbations): Preferred treatment: <ul style="list-style-type: none"> - Increase inhaled corticosteroids within medium dose range and add long acting inhaled beta2 agonist. - Alternative treatment: Increase inhaled corticosteroids within medium-dose range and add either leukotriene modifier or theophylline.
Step 2 Mild Persistent	$\geq 2/\text{week but } < 1 \text{ day}$ >2 nights/month	$\geq 80\%$ 20-30%	Preferred treatment: <ul style="list-style-type: none"> - Low-dose inhaled corticosteroids. - Alternative treatment (listed alphabetically): Cromolyn, leukotriene modifier, nedocromil, OR sustained release theophylline to serum concentrations of 5-15 mcg/mL.
Step 1 Mild Intermittent	$\leq 2 \text{ days/week}$ $\leq 2 \text{ nights/month}$	$\geq 80\%$ < 20%	No daily medication needed. Severe exacerbations may occur, separated by long periods of normal lung function and no symptoms. A couple of systemic corticosteroids is recommended.

Quick Relief	<ul style="list-style-type: none"> -Short acting bronchodilator: 2-4 puffs short acting inhaled beta2-agonist as needed for symptoms. -Intensity of treatment will depend on severity of exacerbation; up to 3 treatments at 20 minute intervals or a singl nebulizer treatment as needed. Course of systemic corticosteroids may be needed. - Use of short-acting beta2-agonist >2 times a week in intermittent asthma (daily, or increasing use in persistent (asthma) may indicate the need to initiate (increase) long term control therapy.
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Appendix A (Continued)
Stepwise Approach for Managing Infants and Young Children
(5 Years of Age and Younger) with Acute or Chronic Asthma

	<u>Symptoms/Day</u> Symptoms/Night	Daily Medications
Step 4 Severe Persistent	<u>Continual</u> Frequent	Preferred treatment: - High dose inhaled corticosteroids AND - Long acting inhaled beta ² agonist AND, if needed Corticosteroids tablets or syrup long term (2mg/kg/dy, generally do not exceed 60 mg per day). (Make repeat attempts to reduce systemic corticosteroids and maintain control with high dose inhaled corticosteroids).
Step 3 Moderate Persistent	<u>Daily</u> > 1 night week	Preferred treatment: - Low dose inhaled corticosteroids and long acting inhaled beta ² -agonist. OR - Medium dose inhaled corticosteroids Alternative treatment: - Low dose inhaled corticosteroids and either leukotriene receptor antagonist or theophylline. ----- If needed (particularly in patients with recurring severe exacerbations): Preferred treatment: - Medium-dose inhaled corticosteroids and long-acting beta 2 agonist. - Alternative treatment: - Medium dose inhaled corticosteroids and either leukotriene receptor antagonist or theophylline.
Step 2 Mild Persistent	>2/week but < 1 day >2 nights/month	Preferred treatment: - Low-dose inhaled corticosteroids(with nebulizer or MDI with holding chamber with or without face mask or DPI). - Alternative treatment (listed alphabetically): Cromolyn (nebulizer is preferred or MDI with holding chamber) OR leukotriene receptor antagonist.
Step 1 Mild Intermittent	≤ 2 days/week ≤ 2 nights/month	No daily medication needed.

Quick Relief of no

-Bronchodilator as needed for symptoms. Intensity of treatment will depend upon severity of exacerbation.

-Preferred treatment: Short acting inhaled beta2 agonists by nebulizer or face mask and space/holding chamber.

- With viral respiratory infection

-Bronchodilator q 4-6 hours up to 24 hours (longer with physician consult); in general, repeat more than once every 6 weeks.

- Consider systemic corticosteroid if exacerbation is severe or patient has history of previous exacerbations indicate the need to initiate (increase) long-term control therapy.

↓ Step down
Review treatment every 1 to 6 months; a gradual stepwise reduction in treatment may be possible.

↑ Step up
If control is not maintained, consider step up. First, review patient medication technique, adherence, and environmental control.

Goals of Therapy: Asthma Control

-Minimal or no chronic symptoms day or night
- Minimal or no exacerbations
-No limitations on activities; no school/or parent's work missed.

-Minimal use of short acting inhaled beta2 agonist (<1x per day, < 1 canister/month)
-Minimal or no adverse effects from medication

Appendix B
NOTIFICATION OF INSTITUTIONAL REVIEW BOARD APPROVAL

June 20, 2006

To: Nieves, Rose M.

Protocol Title: The influence of acculturation and other family characteristics on asthma outcomes in Hispanic children.

DOH IRB Number: H06053

Funding Agency:

Submission Type: Protocol H06053

Review Type: Expedited Review

Approval Date: June 19, 2006

Expiration Date: June 18, 2007

The Department of Health Institutional Review Board, or representative, determined your study involves no more than minimal risk and meets the criteria for expedited review. It has been granted **expedited approval**. The study is approved for implementation.

As a reminder, the IRB must review and approve all human subjects research protocols at intervals appropriate to the degree of risk, but not less than once per year. **You are responsible for applying for renewal of this project at least 60 days prior to the expiration date of June 18, 2007.** This approval is valid for no more than one year. Re-approval is contingent upon IRB review and approval of a Continuing Review Report prior to the anniversary or expiration date of this approval.

Approval is contingent upon continued ethical research practice and your agreement to obtain informed consent and authorization from your subjects, unless waived. Please make certain that confidentiality is maintained. You must abide by the policies and procedures of the Florida Department of Health with regard to the use of human subjects in research, and keep appropriate records concerning your subjects.

Investigators are required to notify the IRB in writing as soon as possible, but within 10 working days, of the occurrence of any adverse events, unanticipated problems, injuries, side effects,

(Continued)

deaths, other problems involving risks to subjects, or deviations from federal or state

Appendix B (Continued)

regulations, or DOH policy.

The IRB has approved exactly what was submitted. Any revisions to this protocol or consent form, no matter how minor, must be presented to the IRB for review and approval before implementation of the changes, except where necessary to eliminate hazard to human subjects. If a change is required to eliminate an immediate hazard, the IRB should be notified as soon as possible but no later than 10 working days.

Researchers are required to notify this IRB, in writing, in the event that this study is not implemented or when termination of this study takes place.

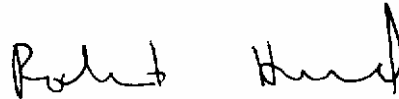
Research records must be maintained for three years after completion of the research; if the study involves medical treatment, it is recommended that records be maintained for eight years.

Please note that this protocol has been assigned the above-referenced DOH IRB protocol number. All inquiries and correspondence concerning this protocol must include (1) the above-referenced IRB number; (2) name of the principal investigator; and, (3) full title of study.

If you have any questions, or if we can be of any assistance, please contact the Department of Health IRB at (850) 245-4585 or toll-free in Florida (866)-433-2775. You may also visit our website at: <http://www.doh.state.fl.us/execstaff/irb/>

Thank you for your cooperation with the IRB.

Sincerely,



Robert Hood, Ph.D.
Ethics and Human Research Protection Program
Assistant Director, Office of Public Health Research

Encl:

Federal Wide Assurance#: 00004682

Appendix C

June 30, 2006
Rose Marie Nieves

RE: **Exempt Certification** for Application for Exemption
IRB#: 104625
Title: *The Influence of Acculturation and Other Family Characteristics on Asthma Outcomes in Hispanic Children*

Dear Ms. Nieves:

On June 29, 2006, the Institutional Review Board (IRB) determined that your Application for Exemption **MEETS FEDERAL EXEMPTION CRITERIA two (2)**. It is your responsibility to ensure that this research is conducted in a manner consistent with the ethical principles outlined in the Belmont Report and in compliance with USF IRB policies and procedures.

Please note that changes to this protocol may disqualify it from exempt status. It is your responsibility to notify the IRB prior to implementing any changes.

The Division of Research Compliance will hold your exemption application for a period of five years from the date of this letter or until a Final Review Report is received. If you wish to continue this protocol beyond the five-year exempt certification period, you will need to submit an Exemption Certification Request form at least 30 days before this exempt certification expires. The IRB will send you a reminder notice prior to expiration of the certification; therefore, it is important that you keep your contact information current. Should you complete this study prior to the end of the five-year period, you must submit an Application for Final Review.

Please reference the above IRB protocol number in all correspondence to the IRB or the Division of Research Compliance. In addition, we have enclosed an Institutional

Appendix C (Continued)

Review Board (IRB) Quick Reference Guide providing guidelines and resources to assist you in meeting your responsibilities when conducting human subjects research. Please read this guide carefully.

We appreciate your dedication to the ethical conduct of human subject research at the University of South Florida and your continued commitment to the Human Research Protections Program. If you have any questions regarding this matter, please call 813-974-9343.

Sincerely,

Paul G. Stiles, J.D., Ph.D.

USF Institutional Review Board

Enclosures: IRB Quick Reference Guide

Cc: Christy A Stephens, USF IRB Professional Staff

Dr. Mary Evans

IA-EC-05-01

Appendix D

Consent Form Approved by FDOH IRB June 19, 2006 - June 18, 2007

Space below reserved for IRB Stamp – Please leave blank

Informed Consent for an Adult

Social and Behavioral Sciences

University of South Florida

Information for People Who Take Part in Research Studies

Researchers at the University of South Florida (USF) study many topics. We would like to know if certain family characteristics, unique to Hispanics, effect asthma outcomes in their children. To do this, we need the help of people who agree to take part in a research study.

Title of research study: The Influence of Acculturation and Other Family Characteristics on Asthma Outcomes in Hispanic Children.

Person in charge of study: Rose M Nieves ARNP-C, MSN

Where the study will be done: Hillsborough County Health Department

Should you take part in this study?

This form tells you about this research study. You can decide if you want to take part in it. You do not have to take part. Reading this form can help you decide.

Before you decide:

- Read this form.
- Talk about this study with the person in charge of the study or the person explaining the study. You can have someone with you when you talk about the study.
- Find out what the study is about.

You can ask questions:

- You may have questions this form does not answer. If you do, ask the person in charge of the study or study staff as you go along.
- You don't have to guess at things you don't understand. Ask the people doing the study to explain things in a way you can understand.

After you read this form, you can:

- Take your time to think about it.
- Have a friend or family member read it.

IRB Form: ICadult-SBv17

Appendix D (Continued)

Consent Form Approved by FDOH IRB June 19, 2006 - June 18, 2007

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· Talk it over with someone you trust.

It's up to you. If you choose to be in the study, then you can sign the form. If you do not want to take part in this study, do not sign the form.

Why is this research being done?

The purpose of this study is to find out if family characteristics such as acculturation, parental level of education, insurance status and asthma severity affect childhood asthma. Why are you being asked to take part?

We are asking you to take part in this study because you are the primary caregiver of a child with asthma and are of Hispanic descent.

How long will you be asked to stay in the study?

You will be asked to spend about 1 hour in this study. You will be asked to fill out some form in a one time meeting that will take you approximately 1 hour.

How often will you need to come for study visits?

A study visit is one you have with the person in charge of the study or study staff. You will need to come for 1 study visits in all.

At the visit, the person in charge of the study will:

· Administer a short acculturation tool to obtain information regarding how acculturated you are to the American culture. The next tool to be administered will be the Children's health survey for asthma. This tool allows us to obtain information regarding how much asthma affects the everyday life of your child and your family, Next we will ask you to fill out the Consumer Assessment of Health Plans (CAHPS). This allows us to obtain information regarding services your child receives. Finally a short demographic form will let us obtain information such as race, level of education and income.

How many other people will take part?

About 50 people will take part in this study at the Hillsborough County Health Department. People will also take part at other study sites. A total of about 100 people will take part.

Appendix D (Continued)

Consent Form Approved by FDOH IRB June 19, 2006 - June 18, 2007

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What other choices do you have if you decide not to take part?

If you decide not to take part in this study, that is okay.

How do you get started?

If you decide to take part in this study, you will need to read this consent form.

What will happen during this study?

You will be asked by your child's medical provider to volunteer for this study. You will only be asked to make contact with us one time. Once you complete the tools the researcher will no longer be in contact with you. Being involved or not being involved does not affect your child's treatment.

Here is what you will need to do during this study

Come and see the researcher, read the informed consent and fill out the survey tools.

Will you be paid for taking part in this study?

We will not pay you for the time you volunteer in this study.

What will it cost you to take part in this study?

It will not cost you anything to take part in the study.

What are the potential benefits if you take part in this study?

We don't know if you will get any benefits by taking part in this study.

What are the risks if you take part in this study?

There are no known risks to those who take part in this study.

If you have any of these problems, call the person in charge of this study right away at....

What will we do to keep your study records private?

Federal law requires us to keep your study records private.

Appendix D (Continued)

Consent Form Approved by FDOH IRB June 19, 2006 - June 18, 2007

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All documents will have code number. Your name or any other identifiable information will not be collected.

However, certain people may need to see your study records. By law, anyone who looks at your records must keep them confidential. The only people who will be allowed to see these records are:

- The study staff.
 - People who make sure that we are doing the study in the right way. They also make sure that we protect your rights and safety:
 - o The USF Institutional Review Board (IRB), The Florida Health Dept. IRB
 - o The United States Department of Health and Human Services (DHHS)
- We may publish what we find out from this study. If we do, we will not use your name or anything else that would let people know who you are.

What happens if you decide not to take part in this study?

You should only take part in this study if you want to take part.

If you decide not to take part:

- You won't be in trouble or lose any rights you normally have.
- You will still get the same services you would normally have.
- You can still get your regular services at the Health Department.

What if you join the study and then later decide you want to stop?

If you decide you want to stop taking part in the study, tell the study staff as soon as you can.

Are there reasons we might take you out of the study later on?

Even if you want to stay in the study, there may be reasons we will need to take you out of it.

You may be taken out of this study:

- If we find out it is not safe for you to stay in the study. For example, your health may get worse.

You can get the answers to your questions.

Appendix D (Continued)

Consent Form Approved by FDOH IRB June 19, 2006 - June 18, 2007
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If you have any questions about this study, call Rose M Nieves at 813-393-9309.
If you have questions about your rights as a person who is taking part in a study, call USF Research Compliance at (813) 974-5638 or the Florida Department of Health Institutional Review Board (DOH IRB) at (866) 433-2775 (toll free in Florida) or 850-245-4585.

Consent to Take Part in this Research Study

It's up to you. You can decide if you want to take part in this study.

Appendix E

The purpose of this study is to find out how much your child's asthma is affected by different factors and how that asthma affects your child and your family.

This study is purely voluntary. At any point you may choose to withdraw from the study. Your participation will not affect your child's care.

Please answer the following questions to the best of your recollection.



Contact Information
Rose Nieves ARNP-C, MSN
Doctoral Candidate
University of South Florida
College of Nursing

Appendix E (Continued)

These questions ask about your child's health and medical care during the past 2 weeks -- please keep this in mind when you answer these questions.

1. During the past 2 weeks, **how many times** has your child had **wheezing, a whistling sound when breathing out?** (Use your best guess).....

2. During the past 2 weeks, **how many times** has your child had an **asthma attack**, or trouble breathing when your child needed rest or extra medical care (such as more medicines or trips to the doctor)?...

3. During the last 2 weeks, because of problems with asthma, **how many times** has your child stayed **overnight in the hospital?**.....

4. During the last 2 weeks, because of problems with his or her asthma, **how many times** has your child been **seen in the emergency room?**.....

5. During the last 2 weeks, because of problems with asthma, **how many times** has your child been **seen in the doctor's office or clinic for a sick visit** (not including today's visit)?.....

Appendix E (Continued)

During the past 2 weeks, **how much of the time** has your child had any of the following **due to asthma?**

(Circle **ONE** number on each line)

	All of the Time	Most of the Time	Some of the Time	Little of the Time	None of the Time
a. Shortness of breath	1	2	3	4	5
b. Tightness in the chest	1	2	3	4	5
c. Wheezing without a cold	1	2	3	4	5
d. Cough	1	2	3	4	5
e. A cold that won't go away	1	2	3	4	5
f. Wheezing with a cold	1	2	3	4	5
g. Difficulty sleeping (such as trouble falling to sleep, waking in the	1	2	3	4	5

7. Does your child currently use a **peak flow meter** to measure his or her breathing?

Yes, my child uses a peak flow meter everyday 1

Yes, my child uses a peak flow meter sometimes 2

No, my child does not use a peak flow meter 3

Don't know what a peak flow meter is 4

8. Does your child currently **use medicine** for his or her **asthma?**

Yes, my child uses asthma medicines everyday

Yes, my child uses asthma medicines a few times per week

Yes, my child uses asthma medicines only with symptoms

Appendix E (Continued)

No, my child does not use asthma medicines

9. During the past 2 weeks, **how much of the time** did your child take the asthma medicines as he or she should? Give your best guess.

(Circle **ONE**)

My child took the medicine **all of the time**

My child took the medicine **most of the time**

My child took the medicine **some of the time**

My child took the medicine a **little of the time**

My child took the medicine **none of the time**

10. During the past 2 weeks, **how often** did your child have each of the following that may have been **due to asthma medicines**?
(Please circle only one answer per line)

	All of the Time	Most of the Time	Some of the Time	Little of the Time	None of the Time
a. Rapid heart rate or pounding of the heart	1	2	3	4	5
b. Headache	1	2	3	4	5
c. Upset stomach/vomiting	1	2	3	4	5
d. Tightness in the chest	1	2	3	4	5
e. Irritable or fussy	1	2	3	4	5
f. Fatigue (tires easily)	1	2	3	4	5
g. Difficulty paying attention or sitting still	1	2	3	4	5
h. Difficulty sleeping at night	1	2	3	4	5

Appendix E (Continued)

11. During the past 2 weeks, how much of the time did your child need to use asthma medicines **to exercise or play sports?**

My child used medicine **all of the time**

My child used medicine **most of the time**

My child used medicine **some of the time**

My child used medicine **little of the time**

My child used medicine **none of the time**

Does not apply, child does not exercise or play sports

12. During the past 2 weeks, how much of the time did each of the following statements describe your child due **to asthma?**

(Circle **ONE** number on each line)

	All of the Time	Most of the Time	Some of the Time	Little of the Time	None of the Time
a. Is frustrated about having asthma	1	2	3	4	5
b. Is frustrated having to rely on asthma treatments	1	2	3	4	5
c. Is frustrated by having to limit activities because of asthma	1	2	3	4	5
d. Is upset about having asthma	1	2	3	4	5
e. Is upset by having to take asthma treatments	1	2	3	4	5

Appendix E (Continued)

13. During the past 2 weeks, how many days of school did your child miss **because of asthma?** _____ days

14. During the past 2 weeks, how much was your child limited from participating in the following activities **because of asthma?**

	Totally Limited	Very Limited	Limited Some	Limited a Little	Not Limited
a. School gym classes	1	2	3	4	5
b. Sports or running outside	1	2	3	4	5

15. During the past 2 weeks, how much was your child limited from doing the following activities **because of asthma?**

	Totally Limited	Very Limited	Limited Some	Limited a Little	Not Limited
a. Very "strenuous" activities (such as running fast or playing hard)	1	2	3	4	5
b. Moderate activities (such as bike riding, walking up stairs, or jumping rope)	1	2	3	4	5
c. Mild activities (such as walking)	1	2	3	4	5

Appendix E (Continued)

16. Compared to this time last year, how is your child's asthma?

Much better now than one year ago

Somewhat better now than one year ago

About the same as one year ago

Somewhat worse than one year ago

Much worse now than one year ago

17. During the past 2 weeks, how often did your child's asthma limit your family activities?

	All of Tim	Mo of Tim	Som of Time	Littl of Tim	None of the Time
a. We changed family plans or trips because we were not sure when an attack could occur	1	2	3	4	5
b. We canceled social plans because our child had a problem with asthma	1	2	3	4	5
c. We avoided activities or an attack (such as visits to or going out in the cold)	1	2	3	4	5

Appendix E (Continued)

18. During the past 2 weeks, how many days (or nights) did the following happen to you or another caretaker because of your child's asthma?

	More than 10 Days Nights	7-10 Days Nights	4-6 Days Nights	1-3 Days or Nights	None
a. Lost sleep	1	2	3	4	5
b. Missed work or school	1	2	3	4	5
c. Normal routine was changed	1	2	3	4	5

19. During the past 2 weeks, how much were you bothered by the following?

	Bothered A Great Deal	Bothered A lot	Bothered Some	Bothered A Little	Not Bothered At All
a. Making frequent trips to the doctor's office or hospital	1	2	3	4	5
b. Finding a babysitter who can handle my child's asthma	1	2	3	4	5
c. Getting my child to take asthma medicine	1	2	3	4	5
d. Having all of the necessary equipment for the child's asthma	1	2	3	4	5
e. Keeping the house clean to avoid triggering an attack	1	2	3	4	5

Appendix E (Continued)

20. During the past 2 weeks, how much do you agree or disagree with the following statements describing your feelings related to your child's health and medical care **for asthma?**

	Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
a. My child's asthma has caused stress in my family	1	2	3	4	5
b. I am frustrated that other people don't understand what it is like to have a child with asthma	1	2	3	4	5
c. Sometimes I get angry and ask "why is it happening to my child?"	1	2	3	4	5
d. I have doubts that I am doing the right things in the treatment of my child's asthma	1	2	3	4	5
e. I am not confident that I can handle a severe attack of my child's asthma	1	2	3	4	5
f. Sometimes I lose hope that my child will get better	1	2	3	4	5

21. During the past 2 weeks, how much do you agree or disagree with the following statements describing the other children in your family? **If there are no other children in your family, please check here I_I then skip question 21 and go to question 22.**

(Circle ONE number on each line)

	Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
a. My other child or this child has a problem with asthma	1	2	3	4	5
b. My other child or this child has a problem with	1	2	3	4	5

Appendix E (Continued)

22. During the past 2 weeks, how much do you agree or disagree with the following

	Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
a. I am concerned about side-effects my child could get from taking asthma	1	2	3	4	5
b. I worry about the cost of my child's medical care for asthma	1	2	3	4	5
c. I worry that my child is not getting good medical care for asthma	1	2	3	4	5
d. I worry that asthma causes my child to be left out from playing with other children	1	2	3	4	5
e. The cost of medical care for my child's asthma causes stress in our family	1	2	3	4	5
f. I am concerned about problems from asthma that my child currently has or may	1	2	3	4	5

statements about your feelings related to your child's asthma?

23. Compared to this time last year, how has your family been dealing with your child's asthma?

- Much better** now than one year ago 1
- Somewhat better** now than one year ago 2
- About the same** as one year ago 3
- Somewhat worse** now than one year ago 4
- Much worse** now than one year ago 5

Appendix E (Continued)

These questions ask for background information about yourself (the person filling out this survey), your child, and the household your child lives in.

Please tell us about yourself:

24 My date of birth is:

/ /

Month

Day

Year

25. My relationship to this child is:

(Circle ONE)

Parent

Grandparent

Other relative (specify

_____)

Not related

1

2

3

4

26. I am a:

(Circle ONE)

Male

Femal

1

2

27. This child lives with me:

(Circle ONE)

Yes, we live in the same home

No, we live in different homes

1

Appendix E (Continued)

Please tell us about your child:

28. Is your child a boy or a girl?

(Circle
ONE)

Boy

Girl

29. What is **your child's** race?

(Circle the **BEST** response)

- | | |
|------------------------------------|---|
| Black/African-American | 1 |
| White/Caucasian | 2 |
| Asian/Oriental or Pacific Islander | 3 |
| American Indian or Alaskan Native | 4 |
| Spanish or Hispanic | 5 |
| Other (specify)_____ | 8 |

30. **How old was your child** when **you began to notice** that he/she had wheezing, trouble breathing, or other asthma related problems?

(Use your best

guess) _____ D months D years

31. **How old was your child** when a **doctor diagnosed** him/her with asthma?

(Use your best guess) _____ D months D years

2. Have any of the following ever happened to your child?(

Appendix E (Continued)

Has your child had...

	Yes	No	Don't Know
a. Had a tube put in throat to aid breathing because of asthma	1	2	3
b. Used steroids for more than 2 weeks	1	2	3
c. Used steroids more than 4 times in a 6 month period	1	2	3
d. Hospitalized for asthma	1	2	3
e. Taken to the Emergency Room/Department for asthma			

33. At each time of the year listed below, how serious is your child's asthma?

(Circle **ONE** response for each season)

	No Problem At All	Mild	Moderate	Severe	Very Severe
a. Winter	1	2	3	4	5
b. Spring	1	2	3	4	5
c. Summer	1	2	3	4	5
d. Fall	1	2	3	4	5

Appendix E (Continued)

34. Do any of the following make your child's asthma problems worse?

(Circle ONE number on each line)

	Yes	No	Don't Know
a. Colds	1	2	3
b. Sinus infections	1	2	3
c. Bronchitis	1	2	3
d. Pets or other animals	1	2	3
e. Dust	1	2	3
f. Aspirin	1	2	3
g. Smog	1	2	3
h. Cigarette smoke	1	2	3
i. Smoke from a campfire or wood burning stove	1	2	3
j. Strong smells	1	2	3
k. Perfumes	1	2	3
l. Cold air	1	2	3
m. Exercise	1	2	3
n. Pollen	1	2	3
o. Wind	1	2	3

Appendix E (Continued)

35. Has anyone else in this child's family (mother, father, brother, or sister) ever had any of the following?

(Continued)

36. Does your child spend time in more than one household or
 37. regularly go to child care for one or more days per week?
 (Circle ONE)

1-> if YES, answer questions 37-40 separately for each household

2-> if NO, answer questions 37-40 for Household 1 only

HOUSEHOLD 1 HOUSEHOLD 2

37. Does someone smoke in the house?

(Circle ONE)

(Circle ONE)

1

1

(Circle ONE number on each line)

Y e s	(Circle ONE number on each line)	
	YES	NO
a. Allergies	1	2
b. Asthma	1	2
N o c. Eczema (skin rash)	1	2

Appendix E (Continued)

38. Do any pets live in the house all or part of the time?

Cat	1	1
	2	2
Dog	3	3
	4	4
Bird	4	4
	5	5
No pets inside	5	5
Other type of pet	_____	

(Continued)

39. How long does it take to travel from this household to the doctor's office where your child gets most care for asthma problems?

_____min _____min

40. How long does it take to travel from this household to an emergency room?

_____min _____min

Appendix E (Continued)

41. What is the current marital status of the child's parents or guardians?

Married	1
Separated	2
Divorced	3
Widowed	4
Other	5

42. What is the year of birth of this child's parents or guardians:

Mother/female guardian:	19
Father/male guardian:	19

Appendix E (Continued)

43. Using the scale below, please indicate the highest level of education COMPLETED by this child's parents, or guardians:

Mother/female	Father/male guardian	
Eighth grade or less	1	1
More than 8th grade, but not a high school graduate	2	2
High school graduate or equivalent	3	3
Some college	4	4
Two-year college or technical school graduate	5	5
Four-year college graduate	6	6
Any post-graduate work	7	7

44. Which of the following categories best describes the total income for 2005 for the household where this child lives? *Please include income from all sources such as wages and public assistance, or investments.*

Less than \$10,000	1
\$10,000-19,999	2
\$20,000-29,999	3
\$ 30,000-39,999	4
\$40,000-49,999	5
\$50,000-59,000	6
Over \$60,000	7

(Circle ONE)

Appendix E (Continued)

(Circle ONE)

45. What is your main source of insurance?

(Continued)

Private insurance

(For example: Blue Cross/Blue Shield or other Health insurance purchased by your employer or by Yourself) 1

Public insurance (Aid) (For example: Medicaid) 2

Self –pay (no health insurance) 3

Other (specify) 4

46. How do you pay for your child's prescription drugs?

(Circle ONE)

Out of Pocket 1
(pay entire amount with own money)

Co-pay 2
(insurance pays some and family pays the rest)

Pay nothing 3
(Insurance pays for all prescriptions)

Other (specify) _____ 4

Appendix E (Continued)

Please circle your choice:

47. In general, what language(s) do you read and speak?

1	2	3	4	5
_____:	_____:	_____:	_____:	_____:
Only Spanish	Spanish better than English	Both Equally	English better than Spanish	Only English

48. What was the language(s) you used as a child?

1	2	3	4	5
_____:	_____:	_____:	_____:	_____:
Only Spanish	More Spanish than English	Both Equally	More English than Spanish	Only English

49. What language(s) do you usually speak at home?

1	2	3	4	5
_____:	_____:	_____:	_____:	_____:
Only Spanish	More Spanish than English	Both Equally	More English than Spanish	Only English

50. In which language(s) do you usually think?

1	2	3	4	5
_____:	_____:	_____:	_____:	_____:
Only Spanish	More Spanish than English	Both Equally	More English than Spanish	Only English

51. What language(s) do you usually speak with your friends?

1	2	3	4	5
_____:	_____:	_____:	_____:	_____:
Only Spanish	More Spanish than English	Both Equally	More English than Spanish	Only English

Appendix E (Continued)

52. In what language(s) are the T.V. programs you usually watch?

1	2	3	4	5
: _____ :	: _____ :	: _____ :	: _____ :	: _____ :
Only Spanish	More Spanish than English	Both Equally	More English than Spanish	Only English

53. In what language(s) are the radio program you usually listen to?

1	2	3	4	5
: _____ :	: _____ :	: _____ :	: _____ :	: _____ :
Only Spanish	More Spanish than English	Both Equally	More English than Spanish	Only English

54. In general, in what language(s) are the movies, T.V. and radio programs you prefer to watch and listen to?

1	2	3	4	5
: _____ :	: _____ :	: _____ :	: _____ :	: _____ :
Only Spanish	More Spanish than English	Both Equally	More English than Spanish	Only English

55. Your close friends are:

1	2	3	4	5
: _____ :	: _____ :	: _____ :	: _____ :	: _____ :
All Latinos/ Hispanics	More Latinos than American	About Half & Half	More American than Latinos	All Americans

Appendix E (Continued)

56. You prefer going to social gatherings/parties at which people are:

1	2	3	4	5
_____:	_____:	_____:	_____:	_____:
All Latinos/ Hispanics	More Latinos than American	About Half & Half	More American than Latinos	All Americans

57. The persons you visit or who visit you are:

1	2	3	4	5
_____:	_____:	_____:	_____:	_____:
All Latinos/ Hispanics	More Latinos than American	About Half & Half	More American than Latinos	All Americans

58. If you could choose your children's friends, you would want them to be:

1	2	3	4	5
_____:	_____:	_____:	_____:	_____:
All Latinos/ Hispanics	More Latinos than American	About Half & Half	More American than Latinos	All Americans

59. How often does your child suffer from asthma symptoms?

(Circle your choice)

1. Under or equal to 2 days a week/ under or equal to 2 nights a month
2. Over 2 times a week but less than 1 time a day/ over 2 nights a month
3. Over 1 night week
4. Continuous daily symptoms and frequent night symptoms

60. In the last 6 months, did you call a doctor's office or clinic during regular office hours to get help or advice for your child?

- ¹ Yes
² No ->if No go to question 62

Appendix E (Continued)

61. In the last 6 months, when you called during regular office hours, how often did you get the help or advice you needed for your child?
- ¹ Never
 - ² Sometimes
 - ³ Usually
 - ⁴ Always
62. In the last 6 months, did your child have an illness, injury or condition that needed care right away in a clinic, emergency room or doctor's office?
- ¹ Yes
 - ² No → If No, Go to Question 64
63. In the last 6 months, when your child needed care right away for an illness, injury, or condition how often did your child get care as soon as you wanted?
- ¹ Never
 - ² Sometimes
 - ³ Usually
 - ⁴ Always
64. A health provider could be a general doctor, a specialist doctor, a nurse practitioner, a physician assistant, a nurse or anyone else your child would see for health care.
- In the last 6 months, not counting the times your child needed health care right away, did you make any appointments for your child with a doctor or other health provider for health care?
- ¹ Yes
 - ² No → If No, Go to Question 66
65. In the last 6 months, not counting the times you needed health care right away, how often did your child get an appointment for health care as soon as you wanted?
- ¹ Never
 - ² Sometimes
 - ³ Usually
 - ⁴ Always

Appendix E (Continued)

66. In the last 6 months, how many times did your child go to an emergency room?

- None
- 1
- 2
- 3
- 4
- 5 to 9
- 10 or more

67. In the last 6 months (not counting times your child went to an emergency room), how many times did your child go to a doctor's office or clinic?

- None
- 1
- 2
- 3
- 4
- 5 to 9
- 10 or more

68. In the last 6 months, did you or a doctor believe your child needed any care, tests or treatment?

- Yes
- No → If No, Go to Question 70

69. In the last 6 months, how much of a problem, if any, was it to get care for your child that you or a doctor believed necessary?

- A big problem
- A small problem
- Not a problem

70. In the last 6 months, how often did you have a hard time speaking with or understanding your child's doctors or other health providers because they spoke different languages?

- Never
- Sometimes
- Usually
- Always

71. Please write in your zip code _____

Appendix E (Continued)

72. What ethnic group do you most identify with?
- a. Puerto Rican
 - b. Mexican
 - c. Cuban
 - d. Dominican
 - e. Ecuadorian
 - f. Spaniard
 - g. South America
 - h. Other _____(please write in)

THANK YOU FOR YOUR COOPERATION IN THIS STUDY!!

About the author

Mrs. Rose Marie Nieves was born and raised in Brooklyn New York and relocated to Florida in 1992. Mrs. Nieves, graduated from the University of South Florida with her bachelors degree in nursing in 1996 and continued her education directly to received her

Master's in Science in Nursing in 1999 from the same University. She is currently completing her dissertation in the area of minority health studies, with a focus on health care disparities. Mrs. Nieves was a distinguished student through her academic career and received such honors as the USF Hispanic Scholar Award, the National Dean's list and Sigma Theta Tau Scholarship recipient. She currently is employed as a nurse practitioner in a private office setting serving many minority clients.