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## Why Access Barriers to Primary Care Exist for People with Mobility Disabilities: A Mixed Methods Study of Health Care Administrators

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WHY ACCESS BARRIERS TO PRIMARY CARE EXIST FOR PEOPLE WITH  
MOBILITY DISABILITIES: A MIXED METHODS STUDY OF HEALTH CARE  
ADMINISTRATORS

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May, 2012



## THE GRADUATE COLLEGE

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entitled

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be accepted in partial fulfillment of the requirements for the degree of

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## Abstract

Previous studies have been conducted to assess the barriers that limit access to health care services for people with disabilities. However, no study has been conducted to understand why barriers exist. Do practice administrators lack knowledge of the Americans with Disabilities Act (ADA) or is cost the issue? The purpose of this study was to examine why structural and equipment barriers exist that limit access to primary health care for people with disabilities.

A convergent parallel mixed methods design was employed. Practice administrators were selected for this study because of their oversight of the budget, equipment purchasing, facility operations and patient flow. Primary care practices were selected for this study as they are typically the point of entry into the health care system for patients. Participants in this study were Southern Nevada primary care practice administrators or primary care practice administrators who were members of the Medical Group Management Association (MGMA). The survey was constructed using ADA construction guidelines, the ADA's *Access to Medical Care for Individuals with Mobility Disabilities*, the Adaptive Environment Center's *Checklist for Existing Facilities*, and published literature. Eighty-one practice administrators completed the survey. Mann-Whitney U, chi square, Guttman scale, and linear regression were utilized for the data analyses.

The total number of barriers for each practice was calculated. The mean number of barriers were calculated for the total sample and each group of administrators. Southern Nevada practice administrators reported significantly fewer barriers than MGMA administrators. There was no significant difference in total ADA knowledge

scores between groups and the proportions of affirmative answers did not show significant differences between groups. Total ADA knowledge scores for practice administrators conformed to a valid Guttman Scale and summed knowledge scores were found to be a significant predictor of the total number of barriers using linear regression ( $p = 0.01$ ). Administrators' knowledge of accessible equipment was significantly correlated with the amount of accessible equipment in their practices ( $p = 0.02$ ). Less than half of the administrators had inquired about the cost of bringing their practice into compliance with the ADA or about the cost of accessible equipment. From this study, it could not be determined if cost was a reason for access barriers reported in the clinics.

Multiple linear regression analyses were conducted using characteristics of the administrator and characteristics of the practice. A final model ( $p < 0.01$ ) was achieved that explained 36% of the variability in the total number of barriers using independent variables: group, ADA knowledge, building built before 1993, age of administrator and number of patients as significant independent variables. Hypotheses concerning knowledge were supported by the findings while hypotheses about cost and responsibility were not supported by the findings of this study.

This study revealed that administrators' lack of knowledge about the ADA was significantly related to the total number of barriers in their clinic while knowledge of accessible equipment was significantly related to the amount of accessible equipment in their clinic. Interventions to improve primary care practice administrators' knowledge of the ADA may result in a reduction in access barriers in their clinics and diminish health disparities experienced by people with disabilities.

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I would like to thank my mom and dad, Paulette and Steve Pharr. You are the inspiration behind this dissertation topic. You have always met obstacles with courage and determination, which not only makes you great parents but great role models. Throughout my life, you have believed in me and my dreams and cheered me on ... “go Pharr”, and for that, to simply say thank you could never be enough.

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## **Dedication**

This is dedicated to Paulette and Steve Pharr

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## Chapter 1 - Introduction

### Introduction

The Americans with Disabilities Act (ADA) became law in 1990. This act prohibits discrimination against people with disabilities in both public and private places of business. Legally, people with disabilities must be granted equal access to buildings and services (Americans with Disabilities Act, 2008). The ADA applies not only to commercial places of business but public and private health care facilities as well. As a result, it is a common perception that people with disabilities have equal access to buildings and services, especially to health care services. However, there are many barriers that keep people with disabilities from fully engaging in health care (Barr, Giannotti, Van Hoof, Mongoven, & Curry, 2008; Becker, Stuijbergen, & Tinkle, 1997; Drainoni et al., 2006; Kroll, Jones, Kehn, & Neri, 2006; Mele, Archer, & Pusch, 2005; Scheer, Kroll, Neri, & Beatty, 2003; Story, Schwier, & Kailes, 2009). Twenty years after the establishment of the ADA as a federal civil rights law, statements from people with disabilities describing their experiences in accessing health care reveal that access barriers are not uncommon. One woman expressed her concern about not being able to have an annual gynecological exam:

I haven't been able to find a doctor that can get me up on the exam table because they don't have the means to do that. They have no lift, no nothing, no manpower. That's just outrageous because women need to see their gynecologists once a year to have those tests done (Kroll et al., 2006, p. 290).

A twenty-five year old patient with cerebral palsy summarized his observation of the lack of accessible equipment at physicians' offices when asked about accessible weight scales:

The thing that I've noticed is just the lack of availability of accessible technology at a regular doctor's office... there's not very many times that I am able to get an accurate weight...the lack of availability is what frustrates me (Story et al., 2009, p. 176).

A woman with multiple sclerosis who uses a wheelchair for mobility described why she quit going for treatment because getting into her physician's office was physically exhausting:

...[the] parking lot was graded on two levels, with a steep ramp in between levels. Because of this, she had to traverse the hill in a zigzag pattern, which was exhausting for her arms and frustrating, "It was so upsetting, the thought of even having to go was distressing. I thought to myself, 'Screw it! If I'm not going to die, if nothing horrible is happening to me, never mind! I didn't follow through with the course of treatment that my gynecologist prescribed because it meant going to the office once a month...'" (Scheer et al., 2003, p. 224).

In addition to inaccessible exam tables, weight scales and parking lots, patients with disabilities have also identified narrow doorways, heavy doors, lack of elevators,

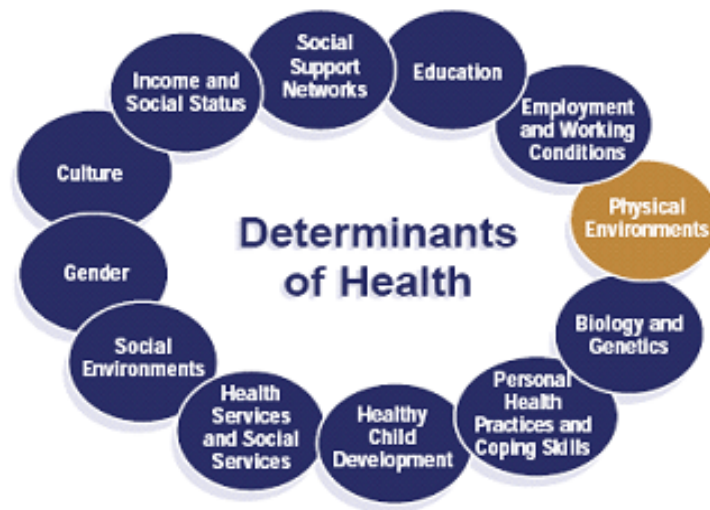
cramped exam rooms and inaccessible diagnostic equipment as barriers to accessing health care services (Barr et al., 2008; Becker et al., 1997; Drainoni et al., 2006; Kroll et al., 2006; Mele et al., 2005; Scheer et al., 2003; Story et al., 2009). Although barriers that limit access to health care services for people with disabilities have been identified through qualitative interviews, few quantitative studies have been conducted to evaluate the prevalence of the barriers (Grabois, Nosek, & Rossi, 1999; Graham & Mann, 2008; Harrington, Hirsch, Hammond, Norton, & Bockenek, 2009; Sanchez et al., 2000).

### **Statement of the Problem**

A gap in the literature was identified concerning health disparities that people with disabilities experience. Barriers that limited access to preventive health care services for people with disabilities are known; however, we did not know why they existed or how people with disabilities are accommodated when a barrier was encountered. This mixed methods study addressed the reasons why structural (office building) and equipment barriers existed, limiting access to health care services for people with disabilities. This study also sought to identify how medical practices accommodated people with disabilities when a barrier was encountered. A convergent parallel mixed methods design was employed with quantitative and qualitative data being collected concurrently, analyzed separately and then merged for results and interpretation. A goal of this study was to contribute to the body of literature regarding health disparities of people with disabilities and to provide data that can be used to shape disability policy.

## Background

This research explored access barriers as a social determinant of health disparities. The social determinants of health recognizes that a person's health is more than a product of his or her biology, genetics, personal health practices and coping skills. Other factors that shape the health of a person or a group of people include: educational attainment, employment and working conditions, social support and social connectedness, income and social status, culture, gender, the social environment, the availability of health and social services and the physical environment (Marmott, 2006). The physical environment many have facilitators that help to improve a person's health or impediments that make good health more difficult (Bandura, 1998; Bandura, 2004) . Impediments in the physical environment influence people and their behaviors which ultimately contribute to health disparities among vulnerable groups.



**Figure 1: Social Determinants of Health**

Health disparity has been defined by a number of authors and organizations (Braveman, 2006; Carter-Pokras & Baquet, 2002; Kilbourne, Switzer, Hyman, Crowley-Matoka, & Fine, 2006; National Institute of Health, 2000; Nelson, 2002). In its simplest form, health disparities can be described as the preventable “population-specific differences in the presence of disease, health outcomes or access to [health] care (Health Resources and Services Administration, 2000). Previously published literature has identified groups of people who suffer from disparities in health/health care. These groups include ethnic minorities, women, children, the elderly, people with disabilities, the poor, prisoners, and the gay, lesbian and transgendered populations (Dykes & White, 2009). People with disabilities are more likely to have chronic diseases and secondary conditions (Pharr & Moonie, 2011a; Reichard, Stolzle, & Fox, 2011). They are also less likely to engage in some preventive health services (Armour, Thierry, & Wolf, 2009; Diab & Johnston, 2004; Havercamp, Scandlin, & Roth, 2004; Iezzoni, McCarthy, Davis, & Siebens, 2000; Pharr & Moonie, 2011b).

Previous research has found that women with disabilities were significantly less likely to receive a papanicolaou (PAP) test, a breast exam or a mammogram compared to women without disabilities (Armour et al., 2009; Chan et al., 1999; Cheng et al., 2001; Diab & Johnston, 2004; Iezzoni et al., 2000; Nosek & Howland, 1997; Pharr & Moonie, 2011b; Ramirez, Farmer, Grant, & Papachristou, 2005; Thierry, 2000; Wei, Findley, & Sambamoorthi, 2006). Similarly, women with disabilities were often seen as asexual and not provided information about birth control (Earle & Church, 2004; Kaplan, 2006; Nosek, Rintala, Young, Foley, & Dunn, 1996). A study by Nosek et al. (1996) found that over half of the women with spinal cord injuries had a difficult time finding a physician



to manage their pregnancy and that their local hospital could not accommodate them due to their mobility limitations.

Studies have also shown that people with disabilities were significantly less likely to engage in some preventive services, to report good health or to report satisfaction with their health care provider when compared to people without disabilities. People with severe disabilities were significantly less likely to have had their height or cholesterol checked, to have received a tetanus shot, or have had their teeth cleaned (Havercamp et al., 2004; Iezzoni et al., 2000). Also, they were significantly less likely to engage in physical activity or to have been questioned about tobacco, alcohol, cocaine, marijuana or other drug use by their primary care physician (Iezzoni et al., 2000). People with disabilities were significantly more likely to rate their health as poor, to report dissatisfaction with their health care provided (Iezzoni, Davis, Soukup, & O'Day, 2002) and to delay health care due to cost (Chevarley, Thierry, Gill, Ryerson, & Nosek, 2006). People with disabilities were also significantly more likely to report chronic diseases such as cardiovascular disease (coronary artery disease and stroke), diabetes and asthma (Pharr & Moonie, 2011a; Reichard et al., 2011). People with disabilities who also identified as having racial minority status had significantly greater odds of having severe depression, hypertension and obesity (Jones & Sinclair, 2008).

Several qualitative research studies have been conducted on people with disabilities to identify the causes of health disparities among this vulnerable group (Barr et al., 2008; Becker et al., 1997; Center for Disease Control and Prevention, 2006; Drainoni et al., 2006; Mele et al., 2005; Scheer et al., 2003; Story et al., 2009). Three main categories of barriers emerged during these qualitative studies and include

structural, financial and personal/cultural barriers. Structural barriers included: the physical environment, transportation, communication with providers, health plans / insurance, policies and procedures of insurance companies, time constraints and care coordination / continuity of care. Financial barriers emphasized a lack of coverage, lack of insurance, and/or high co-pays that made provider care and services, medication and durable medical equipment too expensive. Personal / cultural barriers included: physician's insufficient disability specific knowledge; misconceptions about people with disabilities; insensitivity and disrespect from physicians, nurses and staff; a failure to take patients or caregivers seriously and a reluctance or unwillingness to provide care by both physicians and dentists (Drainoni et al., 2006).

Of interest for this study are those barriers that have been identified in the built environment, more specifically, those barriers in the built environment that limit or impede access to health care offices or health care services. Barriers that limit access to health care offices include inadequate disability parking (number of spaces or size of spaces), lack of ramps or ramps with of a steep grade, narrow doorways, doors that swing inward, heavy doors without automatic opening capabilities, lack of elevators, and cramped waiting rooms (Drainoni et al., 2006; Kroll et al., 2006; Scheer et al., 2003). Barriers that limited access to health care services include examine rooms that are too small in which to maneuver a wheelchair, scales that could not accommodate a wheelchair, examination tables that were not height adjustable, inaccessible diagnostic equipment and inaccessible restrooms (Becker et al., 1997; Kroll et al., 2006; Mele et al., 2005; Scheer et al., 2003; Story et al., 2009). These barriers in the built environment

compromise patient safety, health care worker safety and the quality of care that is delivered (Kirschner, Breslin, & Iezzoni, 2007).

### **Significance of the Study**

Both qualitative and quantitative research has indentified barriers in the built environment that impede access to health care for people with disabilities. The growing number of people with disabilities in the United States makes this a public health concern rather than just a person with disabilities concern. According to the US Census report for 2000, about 49.7 million Americans reported some form of disability with 21.2 million having a physical disability. In the sixteen to sixty-four age group, 11.2 million people reported having a physical disability while in the sixty-five and older population, 9.5 million reported having a disability (U.S. Census Bureau, 2003). In 2005, the US Census Bureau estimated that 54.4 million people in the United States had some form of disability, an increase of 4.7 million in five years. Of the 54.4 million, 34.9 million had a severe disability, 3.3 million used a wheelchair and 10.2 million used a cane, crutches or walker (Brault, 2008). Between 2009 and 2010, there was a 2% increase in the number of people in the US eighteen years and older who reported having a disability (Houtenville & Ruiz, 2011). Information from the 2006 American Community Survey conducted by the U.S. Census Bureau estimated that 288,000 or 12.9% of non-institutionalized Nevadans had a disability (Brault, 2008). The highest prevalence of disability in Nevada was ambulatory disability with 141,400 reporting this type of disability. Between 2009 and 2010, the percent of Nevadans 18 and older who reported having a disabilities increased by 1.7% (Houtenville & Ruiz, 2011).

It is estimated that the number of Americans reporting a disability will continue to increase due to the increasing age of Americans, the increasing number of people with diabetes in America and an increase in the number of disabled military veterans. The number of older Americans is increasing as the Baby Boomers age. In 2011, the first Baby Boomers reached age 65. The median age in America is anticipated to peak in 2035 (Day, 2005). Increasing age increases the risk of being disabled. In 2005, 16.5% of people age 21 – 64 reported a disability while 51.8% of those over the age of 65 reported a disability (Brault, 2008). The number of people with diabetes more than tripled between 1980 and 2009 (Center for Disease Control and Prevention, 2011) with 5.6 million non-institutionalized Americans reporting having diabetes in 1980 and 19.7 reporting having diabetes in 2009. A study by Gregg et al. found that “diabetes is associated with a major burden of physical disability in older U.S. adults... (2000, p. 1272).

Finally, the number of US soldiers injured in the Iraq and Afghanistan wars has been unprecedented. The number of soldiers who suffered a non-fatal wound was 50,500 as of September 2006. The wound-to-fatality ration in the Iraq and Afghanistan wars has been reported as 16:1 compared to 2.6:1 in Vietnam and 2.8:1 in the Korean wars (Bilmes, 2007) . The increased survival rate has been a credit to improved technology and military medicine; however, it has also led to an increase in the number of disabled veterans.

### **Purpose of the Study**

The purpose of this study was to understand why barriers exist that limit access to health care for people with disabilities. Primarily, this study sort to determine if the

cause of access barriers was lack of ADA knowledge on the part of primary care administrators or a result of additional cost bringing a practice into ADA compliance or purchasing accessible equipment. To conduct this research, the accessibility of each medical practices being surveyed was first established. Two questions utilized in the initial stage of the research were:

1. What is the accessibility (office and equipment) of each clinic?
2. What is the prevalence of accessibility?

Once accessibility was established, the main research questions were addressed.

#### *Research Question 1*

Why do structural (office building) barriers exist that limit access to health care for people with disabilities?

#### *Hypotheses for Question 1*

1. The Practice manager did not know that his/her medical offices had to comply with ADA standards. (Knowledge)
2. The Practice managers thought that the responsibility of ADA compliance rests on the building owner rather than a tenant (if medical practice is in a building owned by someone else). (Responsibility)
3. The cost to remodel the office to bring the practice into ADA compliance was too great. (Cost)

#### *Research Question 2*

Why do equipment barriers exist that limit access to health care for people with disabilities?

### *Hypotheses for Question 2*

1. The Practice Manager did not know that accessible equipment existed (height adjustable exam tables or scales that will accommodate a wheelchair).  
(Knowledge)
2. The cost of accessible equipment was too great compared to standard equipment.

### *Research Question 3*

How do medical practices accommodate a person with disabilities when a barrier to services is encountered?

### *Hypotheses for Question 3*

1. If a patient encounters barriers to services at the practice, then the patient was referred to another practice that could accommodate him/her. (Refer)
2. If a patient encounters barriers to services at the practice, then related parts of the examination were skipped. (Skip)
3. If a patient was not able to transfer to an examination table, the practice used alternatives.
4. If a patient was not able to maneuver sufficiently inside the medical practice or if they took longer to be examined, the practice refused to treat the patient. (Refuse treatment)

## **Methodology**

Because this study explored both quantitative (prevalence of barriers) and qualitative (reasons why barriers exist) concepts, the study design was a mixed methods

research approach. Mixed methods “involves the collection, analysis and integration of both qualitative and quantitative data in a single study” (Schiffedercker & Reed, 2009). A quantitative research design is appropriate when questions about ‘how many’ or ‘how often’ are asked while a qualitative research design is preferred when questions about ‘what’, ‘how’ or ‘why’ a phenomenon exists are asked (Green & Thorogood, 2009). Because both types of questions were addressed in this study, a mixed methods research design was warranted.

There are several mixed methods research designs available including: convergent design (triangulation), explanatory design, exploratory design, embedded design, transformative design, and multiphase design (Creswell & Clark, 2007). All six designs were considered for this study; however, the convergent design was deemed to be the most appropriate research design. This research design allows for both qualitative and quantitative data to be collected simultaneously and for the data collection to involve a single population (i.e. health care practice administrators) (Creswell & Clark, 2007).

Health care administrators of primary care clinics in Southern Nevada and health care administrators of primary care clinics who were members of the Medical Group Management Association were the population selected for this study. Primary care clinics included general practice clinics, family practice clinics, internal medicine and obstetrics / gynecology clinics. Primary care clinics were chosen because primary physicians’ scope of care is more traditionally focused on health maintenance and disease prevention (Harrington et al., 2009), and this study concentrated on barriers to preventive health services. Practice administrators / health care administrators were selected for this study because of their oversight of the budget, equipment purchasing, facility operations

and patient flow (Handbook, 2004). Administrators were be asked to complete a phone survey or an on-line survey which includes both closed-ended (quantitative) and open-ended (qualitative) questions.

The survey used for this study was developed using ADA construction guidelines, the ADA's *Access to Medical Care for Individuals with Mobility Disabilities*, the Adaptive Environment Center's *Checklist for Existing Facilities*, and published literature. Once the surveys were complete, the data were prepared for analysis and analyzed by separate means, either quantitative (statistical software) or qualitative (coding and development of themes). Data sets were then merged for further analysis and to produce a more complete understanding of the phenomenon. Findings from the analyses were interpreted and the accuracy was validated. Because of the sensitive nature of this study, ethical considerations for confidentiality and anonymity were maintained throughout the research and publication processes and Internal Review Board approval was obtained prior to data collection.

### **Assumptions, Delimitations, Limitations**

This study assumed that barriers in the built environment that limit access to primary health care for people with disabilities were a problem that warranted study. Health care administrators were selected as participants for this study because they are most often charged with the operational management of the clinic and were in the best position to provide answers to the research questions. This study assumed that the health care administrators who were surveyed provided honest and open answers to the survey questions.



Previous research has categorized barriers that people with disabilities experience when trying to access health care services as structural, financial or personal / cultural. This study was limited in scope to only the structural barriers and more specifically, only the barriers that existed in the built environment surrounding (parking lot and building entrance) and inside the medical office / clinic. Financial and personal / cultural barriers were not considered in this study. Additionally, this study was also limited to barriers that people with mobility disabilities experience when accessing health care. Barriers that people with mental or sensory (vision/hearing) disabilities were not included in the scope of this study.

This study was limited to the experiences, perceptions and opinions of the health care administrators interviewed. Because the size of the study was limited due to the mixed methods research design, there may be limitations to the generalization of the results. Further, primary care physicians' practice administrators were surveyed and results may not be generalized to other specialty providers (i.e. cardiology, oncology, etc). As a final limitation, it should be noted that the researcher has a strong interest in promoting equal access to health care for people with disabilities. This interest may be of use in understanding some of the unique aspects of this area of research; however, this interest presented the possibility of research bias, especially when considering the qualitative aspects of the research design.

### **Definition of Key Terms**

For the context of this study, definitions of relevant terms are provided below.

Accessible – allows for full participation by people with disabilities and people without disabilities equally.

Americans with Disabilities Act (ADA) – federal, civil rights law that prohibits the discrimination against people with disabilities in public or private places of business (Americans with Disabilities Act, 2008).

Built Environment – encompasses all of the building, spaces and products that are created or significantly modified by people (Schulz & Northridge, 2004).

Completion rate – the number of completed surveys out of the number of initiated surveys (Beerten, Lynn, Laiho, & Martin, 2000; Lynn, Beerten, Laiho, & Martin, 2001)

Contact rate – the proportion of contacted study participants out of the number of eligible participants (Beerten et al., 2000; Lynn et al., 2001).

Cooperation rate – the number of initiated surveys out of the number of contacted study participants (Beerten et al., 2000; Lynn et al., 2001).

Environmental barriers - Items in the build environment that impede access to a facility (internal and external) or transportation. Examples include: inadequate disability parking, lack of ramps, narrow doorways, doors that swing inward, and cramped waiting and examination rooms (Kroll et al., 2006).

Equipment barriers – Medical equipment that is inaccessible to patients with mobility limitations. Examples include: exam tables that do not lower to the height of a wheelchair and weight scales that could accommodate wheelchairs (Kroll et al., 2006).

Health Disparities - population-specific differences in the presence of disease, health outcomes or access to [health] care (Health Resources and Services Administration, 2000).

Inaccessible – does not allow for full participation by people with disabilities and people without disabilities equally.

Knowledge – familiarity or conversance, as with a particular subject; acquaintance or familiarity gained by sight, experience or report (Dictionary.com).

Mobility disability – the need to use a wheelchair, scooter, walker, crutches or cane for mobility assistance (U.S. Department of Justice (USDJ) & U.S. Department of Health and Human Rights (DHHR), 2010)

Natural Environment – encompasses everything not included in the built environment (topography, climate, weather) (Schulz & Northridge, 2004).

People with disabilities- “physical or mental impairment that substantially limits one or more major life activities” with major life activities including but not limited to: “caring for oneself, performing manual tasks, seeing, hearing, eating, sleeping, walking, standing, lifting, bending, speaking, breathing, learning, reading, concentrating, thinking, communicating, and working” (Americans with Disabilities Act, 2008).

Physical Environment – consists of the built environment and the natural environment (Schulz & Northridge, 2004).

Response rate – the number of initiated surveys from eligible participants (Beerten et al., 2000; Lynn et al., 2001).

Structural barriers – impediments to medical care directly related to the number, type, concentration, location, or organizational configuration of health care providers (Nelson, 2002; Institute of Medicine, 1993). Structural barriers are impediments in the built environment, transportation, communication with providers, health plans / insurance, policies and procedures of insurance companies, time constraints and care coordination / continuity of care (Drainoni et al., 2006).

Qualified Individuals - an individual who, with or without reasonable modifications to rules, policies, or practices, the removal of architectural, communication, or transportation barriers, or the provision of auxiliary aids and services, meets the essential eligibility requirements for the receipt of services or the participation in programs or activities provided by a public entity (Americans with Disabilities Act, 2008).

## **Summary**

Qualitative and quantitative studies have been conducted to assess the barriers that limit access to preventive health care services for people with disabilities. The majority of these studies have been qualitative in nature and were conducted by interviewing people with disabilities. A smaller number of quantitative studies have been published that measure the prevalence of barriers that limit access to health care for people with disabilities. To date, no study has been conducted to identify why barriers exist. Becker et al. suggested that future research is needed to understand “why providers do not use modified equipment that is currently available. Do providers not use more accessible equipment because they are unaware of it, or because it is more costly?” (1997, p. S-31). Additionally, new objectives have been added to Healthy People 2020.

One of which is to “reduce the proportion of people with disabilities reporting delays in receiving primary and periodic preventive care due to specific barriers” (U.S. Department of Health and Human Services, 2002b; U.S. Department of Health and Human Services, 2009). An understanding of why barriers in the built environment exist is fundamental to developing strategies to eliminate the barriers and improve access for people with disabilities.

Chapter II provides background information and a review of scientific literature relevant to this study. The background information gives reader an understanding of health disparities and a historical perspective of how the people with disabilities have been viewed in the United States. Chapter II also illustrates how the Social Cognitive Theory provided a theoretical framework for this study and provides information about the ADA and its purpose to eliminate barriers in the built environment for people with disabilities. Health disparities that people with disabilities experience and the barriers that cause health disparities are illustrated through a review of scientific literature of both qualitative and quantitative studies. Chapter III provides detailed information regarding the methods used for this study. This chapter will expand the research questions and hypotheses to include predictors of the hypotheses utilized for this study. Chapter III will also provide an explanation of the research population and research design, a description of the survey instrument and survey development. Dispositions of the samples, statistical analyses and ethical considerations are also included in this chapter. Chapter IV presents the results of the data analyses. This chapter begins with the descriptive statistics of the sample then provides the results from the accessibility analyses. Following the results for the descriptive and accessibility analyses, qualitative results from open-ended questions

are provided. The remainder of the chapter focuses on the results of the analyses of the merged data (qualitative and quantitative) as it applies to the research questions and hypotheses. This chapter concludes with multiple linear regression analyses to determine which characteristics of the administrator or practice are significant predictors of the total number of barriers. Chapter V includes a discussion of the key findings, practical implications, limitations of this study and recommendations for future research.

## Chapter 2 - Literature Review

*"Off all the forms of inequality, injustice in health care is the most shocking and inhumane."*

*Martin Luther King, Jr.*

### Health Disparities

For the purpose of this study, health disparities have been defined as the preventable “population-specific differences in the presence of disease, health outcomes or access to [health] care (Health Resources and Services Administration, 2000).

However, it is important to have an understanding of how other researchers and organizations define health disparities. In *Unequal Treatment: Confronting Racial and Ethnic Disparities in Health Care*, the Institute of Medicine defined health disparities as “differences in the quality of treatment that are not due to access-related factors or clinical need, preferences or appropriateness of intervention” (Nelson, 2002, p. 4).

Kilbourn, Switzer, Hyman et al. (2006) define health disparities as “observed clinically and statistically significant differences in health outcomes or health care use between socially distinct vulnerable and less vulnerable populations that are not explained by the effects of selection bias” (p. 2114). Braveman (2006) further defines health disparities as

particular difference in health or in the most important influences on health that could potentially be shaped by policies; it is a difference in which disadvantaged social groups (such as the poor, racial/ethnic minorities, women, or other groups that have persistently experienced social disadvantage or discrimination) systematically experience worse

health or greater health risk than more advantaged groups (Braveman, 2006, p. 180-181).

In the United States, there have been tremendous advancements in health care since the mid 1900's, resulting in improvements in quality of life and life expectancy. However, not all Americans have benefited equally from advancements in health care. As early as the 1920's, there was a study by Children's Bureau in Baltimore that found Black babies had more than double the death rate of White babies (Higginson & Widerburg, 2009). Since then, groups of Americans have been identified in the literature as receiving disparate health care. These groups include: ethnic minorities, women, children, the elderly, people with disabilities, the poor, prisoners, gays and lesbians and transgendered populations (Dykes & White, 2009). Drum et al. (2009) have stated that "many of the health risk and health conditions experienced by people with disabilities people are preventable and/or treatable" (p. 197). Health disparities or the "differences in the quality of healthcare attributable to variability in the operation of healthcare systems or to discrimination at the patient-provider level" (Dykes & White, 2009, p. 2598) are often a reality for people with disabilities.

As an acknowledgement of the impact of health disparities on a community and on our nations, Healthy People 2000 was designed to achieve three major goals: 1) increase quality and years of healthy life, 2) eliminate health disparities and 3) improve access to preventive services. Healthy People 2000 identified mental health and mental disorders as a priority area; however, physical disabilities were not considered a priority at that time (US Department of Health and Human Services, 2001). This changed with



Healthy People 2010. The two main goals of Healthy People 2010 continued to be 1) increase quality and quantity of health life and 2) eliminate health disparities. The focus of the second goal of Healthy People 2010 was the elimination of health disparities among different segments of the population (U.S. Department of Health and Human Services, 2002b), with one identified segment being people with disabilities. Chapter six of Healthy People 2010 focused on Disability and Secondary Conditions with an overarching goal to “promote the health of people with disabilities, prevent secondary conditions, and eliminate disparities between people with and without disabilities in the U.S. population” (U.S. Department of Health and Human Services, 2002a). Even more specifically, section ten of chapter six advocates for an increased number of health, wellness, treatment programs and facilities that are fully accessible for people with disabilities citing:

For people with disabilities to have the opportunity for healthy lives, both physically and emotionally, programs and facilities that offer wellness and treatment services must be fully accessible. (U.S. Department of Health and Human Services, 2002a, p. 06-20).

The focus on reducing health disparities that people with disabilities experience will continue in Healthy People 2020. New objectives have been added to Healthy People 2020 list of proposed objectives. One of which is to “reduce the proportion of people with disabilities reporting delays in receiving primary and periodic preventive care due to specific barriers” (U.S. Department of Health and Human Services, 2009). These barriers could include: lack of health insurance, lack of transportation or lack of accessibility of providers/providers’ offices.

## **A Historical Perspective of Disability**

Historically, people with disabilities have often been viewed negatively, as inferior both economically and socially. In prehistoric times, people with disabilities often died early in life as they were unable to hunt or gather food or defend themselves against an enemy (human or animal) (Ward, 2009). In Greco-Roman times, physical and mental disabilities were thought to be signs of evil. This image of people with disabilities continued into the Christian Era, when physical disabilities were thought to be outward signs of sin against God by either the person or the person's parents and mental disabilities were thought to be symptoms of demonic possession (Ward, 2009). Early in the Twentieth century America, people with disabilities were seen as an economic burden and often institutionalized and kept out of main stream society. However, World War I and World War II helped to change the way that people with disabilities were viewed in America. As soldiers returned home from war with disabilities, they were seen as deserving of public support (Ward, 2009). They began to take advantage of vocational education opportunities and employers had positive experiences with hiring veterans with disabilities.

By the end of the twentieth century, people with disabilities began to be viewed as a minority group with civil rights. During this time, "the model of service for people with disabilities shifted from a charity-focused model ... to a rights-oriented model" (Ward, 2009, p. 52). In 1990, the Americans with Disabilities Act became a federal civil rights law with the intention to protect people with disabilities from discrimination in places of public and private business. Additional federal legislation was passed during the late twentieth century to protect the rights of people with disabilities. In the 1970's

Public Law 94-142, the Education of All Handicapped Children Act was passed to ensure the right to education of children with disabilities (Ward, 2009).

Disabilities can be defined in many different ways; however, the two most common ways of defining disabilities are either by functional impairment/limitation or by diagnostic condition. Functional impairment/limitation is usually assessed through self-report while diagnostic condition is usually assessed through medical records, registries or other external reporting sources (Adams, Krahn, Horner-Johnson, & Leman, 2009). Disability is defined by the American Disability Amendments (ADA) Act of 2008 as “a physical or mental impairment that substantially limits one or more major life activities” with major life activities including but not limited to: “caring for oneself, performing manual tasks, seeing, hearing, eating, sleeping, walking, standing, lifting, bending, speaking, breathing, learning, reading, concentrating, thinking, communicating, and working” (Americans with Disabilities Act, 2008, p. 7).

Both the WHO and ADA definition of disability are functional impairment/limitation based and have been used to inform questionnaires employed to assess the prevalence of disability in the U.S. The incidence of disability (the number of new cases occurring in a specific period of time) is difficult to determine because a certain number of cases of disability can only be detected over time and/or are attributed to chronic disease with long latency periods (Adams, Krahn, Horner-Johnson, & Leman, 2009). Prevalence (the number of cases in a given population at a specific time) is more often reported and is estimated by using national cross-sectional surveys. According to the US Census report for 2000, about 49.7 million Americans reported some form of disability with 21.2 million having a physical disability. In the age group sixteen to

sixty-four, 11.2 million people reported having a physical disability while in the sixty-five and older population, 9.5 million reported having a disability (U.S. Census Bureau, 2003). In 2005, the US Census Bureau estimated that 54.4 million people in the United States had some form of disability, an increase of 4.7 million in five years. Of the 54.4 million, 34.9 million had a severe disability, 3.3 million used a wheelchair and 10.2 million used a cane, crutches or walker (Brault, 2008). Between 2009 and 2010, there was a 2% increase in the number of people in the US eighteen years and older who reported having a disability (Houtenville & Ruiz, 2011). Information from the 2006 American Community Survey conducted by the U.S. Census Bureau estimated that 288,000 or 12.9% of non-institutionalized Nevadans had a disability (Brault, 2008). The highest prevalence of disability in Nevada was ambulatory disability with 141,400 reporting this type of disability. Between 2009 and 2010, the percent of Nevadans 18 and older who reported having a disabilities increased by 1.7% (Houtenville & Ruiz, 2011).

It is estimated that the number of Americans reporting a disability will continue to increase due to the increasing age of Americans, the increasing number of people with diabetes in America and an increase in the number of disabled military veterans. The number of older Americans is increasing as the Baby Boomers age. In 2011, the first Baby Boomers reached age 65. The median age in America is anticipated to peak in 2035 (Day, 2005). Increasing age increases the risk of being disabled. In 2005, 16.5% of people age 21 – 64 reported a disability while 51.8% of those over the age of 65 reported a disability (Brault, 2008). The number of people with diabetes more than tripled between 1980 and 2009 (Center for Disease Control and Prevention, 2011) with 5.6 million non-institutionalized Americans reporting having diabetes in 1980 and 19.7 reporting having

diabetes in 2009. A study by Gregg et al. found that “diabetes is associated with a major burden of physical disability in older U.S. adults...” (Gregg et al., 2000, p. 1272).

Finally, the number of US soldiers injured in the Iraq and Afghanistan wars is unprecedented. The number of soldiers who have suffered a non-fatal wound was 50,500 as of September 2006. The wound-to-kill ration in the Iraq and Afghanistan wars has been reported as 16:1 compared to 2.6:1 in Vietnam and 2.8:1 in the Korean wars (Bilmes, 2007). The increased survival rate is a credit to improved technology and military medicine; however, it has also led to an increase in the number of disabled veterans.

### **Americans with Disabilities Act**

As a means to eliminate discrimination and disparities experienced by people with disabilities, the Americans with Disabilities Act (ADA) became a federal civil rights law in 1990. It celebrated its twentieth anniversary in 2010. The ADA was amended in 2008 and the amendments became effective January 2009 (Americans with Disabilities Act, 2008). The ADA is published in the United States Code which has titles and chapters that organize laws based on their subject matter. Title II and Title III of the ADA, which relate to health care services and facilities, are found in Title 42, Chapter 126 of the United States Code (Americans with Disabilities Act, 2008).

Title II of the ADA (Subchapter II in the United States Code) prohibits discrimination against qualified individual with disabilities at public entities. A public entity defined as: “A) any State or local government, B) any department, agency, special purpose district or other instrumentality of a State or local government” (Americans with

Disabilities Act, 2008, p. 16). Under the provisions of Title II, “no qualified individual with a disability shall, by reason of such disability, be excluded from participation in or be denied the benefits of services, programs or activities of a public entity, or be subjected to discrimination by any such entity” (Americans with Disabilities Act, 2008, p. 16). Title II of the ADA applies to any public hospitals or clinics and any health care clinics operated by a State or local government.

Title III of the ADA (Subchapter III in the United States Code) prohibits discrimination in public accommodation and services operated by private entities. Physician offices and non-public hospitals are private entities that are considered to provide public accommodations and services. The provision of Title III states that “no individual shall be discriminated against on the basis of disability in the full and equal enjoyment of the goods, services, facilities, privileges, advantages, or accommodations of any place of public accommodation by any person who owns, leases (or leases to), or operates a place of public accommodation” (Americans with Disabilities Act, 2008, p. 32).

Both Title II and Title III of the ADA require that public (Title II) and private (Title III) entities make ‘reasonable accommodations’ to ensure that people with disabilities are not discriminated against. Title II and Title III require health care providers (private and public; private practices and hospitals) provide people with disabilities with:

- full and equal access to their health care services and facilities; and
- reasonable modifications to policies, practices and procedures when necessary to make health care services fully available to individuals with disabilities,

unless the modification would fundamentally alter the nature of the services (U.S. Department of Justice (USDJ) & U.S. Department of Health and Human Rights (DHHR), 2010, p. 1).

Further, the ADA has requirements for new construction after 1993 and building alterations. Title II requires public entities and Title III requires private entities in buildings built prior to 1993 to remove architectural barriers “where such removal is readily achievable” can be completed without “much difficulty or expense” (U.S. Department of Justice (USDJ) & U.S. Department of Health and Human Rights (DHHR), 2010, p. 1). If removal of architectural barriers is not readily achievable, then services need to be made available through an alternate method. Construction after 1993 is required to be compliant with ADA requirements.

Following a discussion about the ADA requirements for both public and private health care facilities, a question that arises is, ‘are there health care facilities that do not accommodate people with disabilities?’ The answer is yes. The reason that there are health care facilities that do not provide adequate accommodations people with disabilities is that the “ADA is not self-executing; when compliance is not voluntary, enforcement is dependent on complaints or litigation” (Kirschner et al., 2007, p. 1122). This process has not been effective in eliminating access barriers that people with disabilities encounter because “filing a legal complaint is generally burdensome and unrealistic for” for people with disabilities and litigation can be “expensive, contentious and time-consuming” for the patient (Kirschner et al., 2007, p. 1122).

If a person feels that they have been discriminated against in receipt of health care services because they are a person with disabilities, a complaint can be filed with the

Department of Health and Human Services (HHS) Office of Civil Rights (OCR). The complaint can be file electronically, by mail or by fax. It is recommended that a Civil Rights Discrimination Complaint form be used, which can be downloaded from the American's with Disabilities Act website. The complaint must be filed within 180 days of the occurrence unless there is 'good cause' for the delay. The complaint form consists of two pages of fill-in-the-blank or check-box questions and a consent form. Although consent is voluntary and does not have to be given for a complaint to be investigated, non-consent may impede the investigation and result in closure of the case. To give consent means that the person filing the complaint agrees to 1) let the HHS OFC receive medical and personal information about them, 2) that the OCR may release the identity of the person filing the complaint to the entity being investigated, and 3) that the OCR may release personally and medical information about the person filing the complaint to be compliant with the Freedom of Information act (Health and Human Services, 2010). These three issues may detour people with disables from filing a complaint, especially if they depend on the entity for on-going health care.

The US Department of Justice issues a quarter status report regarding the enforcement of the ADA Title II and Title III. The report provides updates on ADA litigation and formal settlements. It also includes examples of informal settlements and mediation that have occurred during that quarter. Kirschner, Breslin and Iezzoni (2007) reviewed these reports from 1994 to 2005 and found one hundred and fifty-seven cases which were related to accessibility of health care or denial of health care services during the time period.



## **Health Disparities Experienced by People with Disabilities**

Several published studies have identified health disparities experienced by people with disabilities. Studies have shown that women with severe disabilities and/or major mobility problems were significantly less likely to receive papanicolaou (PAP) test, a breast exam or a mammogram (Armour et al., 2009; Chan et al., 1999; Cheng et al., 2001; Diab & Johnston, 2004; Iezzoni et al., 2000; Nosek & Howland, 1997; Pharr & Moonie, 2011b; Ramirez et al., 2005; Thierry, 2000; Wei et al., 2006). Women with lower extremity mobility difficulties had an odds ratio of 0.6 (0.4-0.9) for having had a Pap smear and 0.7 (0.5-0.9) for having had a mammogram when compared to women without disabilities (Iezzoni, McCarthy, Davis, Harris-David, & O'Day, 2001). Women with disabilities were often seen as asexual by physicians and not given adequate information about birth control or infertility services (Earle & Church, 2004; Kaplan, 2006; Nosek et al., 1996). When women with disabilities became pregnant, they often had a difficult time finding a physician to manage their pregnancy. Nosek et al. (1996) found that over fifty percent (53.8%) of women with spinal cord injuries had a difficult time finding a physician to manage their pregnancy when they became pregnant and that the hospital selected for the birth could not accommodate them due to their disability.

People with severe disabilities were significantly less likely to have been questioned about tobacco, alcohol, cocaine, marijuana or other drug use by their physician (Iezzoni et al., 2000), to have engaged in physical exercise, to have seen a dentist or have had their teeth cleaned (Havercamp et al., 2004). People with severe disabilities were significantly less likely to have had their height or cholesterol checked, or a tetanus shot (Iezzoni et al., 2000) when compared to people without disabilities.

In addition to the lower utilization of preventive health care services, people with disabilities utilized other health services at a lower rate, had poorer self reported health and lower satisfaction with health care providers. People with disabilities were also more likely to delay health care due to cost than people without disabilities (Chevarley et al., 2006). People with disabilities were significantly more likely to rate their health as poor compared to people without disabilities. People with disabilities also had a significantly higher adjusted odds ratio of dissatisfaction with the quality of their health care in the following areas: access to specialists, follow-up care, and ease of getting to doctors (Iezzoni et al., 2002).

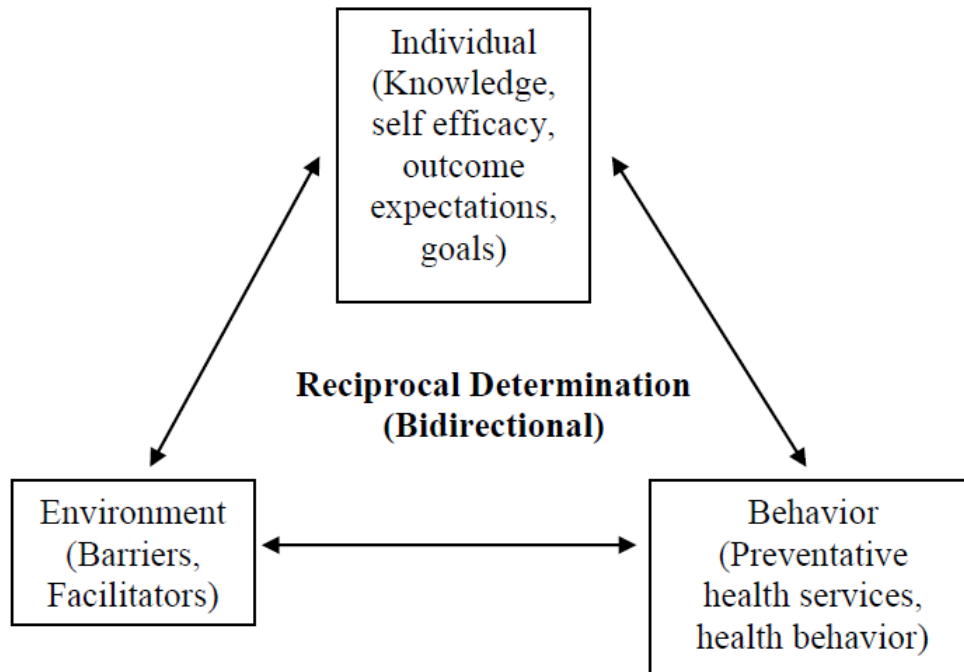
Jones and Sinclair (2008) further evaluated chronic disease health disparities experienced by minority adults with mobility limitations. When compared to people without mobility limitation and of a non-minority status, people with mobility limitations and minority status were 17.2 times more likely to have severe depressive symptoms, 5.5 times more likely to have diabetes, 3.4 times more likely to have hypertension and 3.3 times more likely to be obese.

Iezzoni, McCarthy, Davis and Siebens (2000) conducted a quantitative study to identify the use of screening and prevention services by patients with mobility limitation. They found that “although people with mobility problems in this sample were as likely as others to receive some services (e.g. certain immunizations), they were less likely to receive other services” (p. 960). They found that women with major mobility problems were 40% less likely to have had a Pap smear and 30% less likely to have had a mammogram. They concluded that physically inaccessible offices and equipment including exam tables that do not adjust, may reduce a physician’s ability to provide

comprehensive care to patients with mobility limitations. Having inaccessible equipment would have a greater impact on some services, i.e. mammogram or pap, while other services that did not require accessible equipment, i.e. flu shot, would not be impacted.

### **Theoretical Framework - Social Cognitive Theory**

The social cognitive theory (SCT) was introduced by Bandura in 1977 as an extension of the social learning theory. Keys to the SCT are the reciprocal or bidirectional relationship between a person, his/her environment and behavior and that “human behavior is a product of the dynamic interplay of personal, behavioral and environmental influences” (McAlister, Perry, & Parcel, 2008, p.170). Further, SCT emphasizes that a society or group of people have the capability to interact with the environment to realize environmental changes that benefit the entire society. According to Bandura (2004), there are five core determinants of the SCT. These core determinants are 1) knowledge, 2) self efficacy, 3) outcome expectations, 4) goals, 5) facilitators and social/structural impediments in the built environment (see Figure 2).



**Figure 2: Social Cognitive Theory with Core Determinants of Behavior**

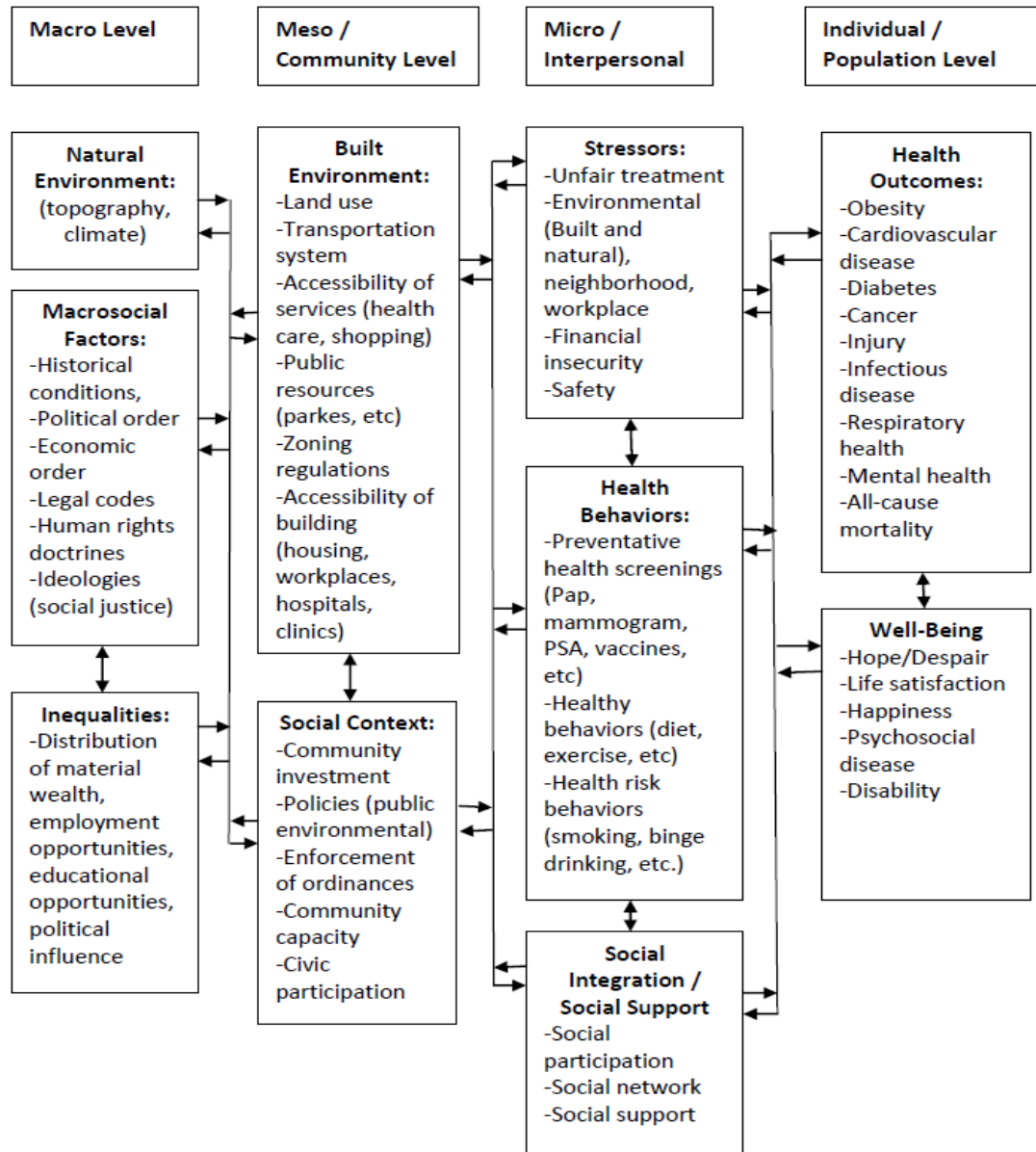
To make a change, a person must have knowledge about the benefits and risks of different health practices. Without this knowledge, a person is unlikely to make a change. He/she must believe (self efficacy) that he/she has control over his/her health habits and the ability to make a change. A person’s adaptation to a new healthy habit is also dependent on the outcomes that the person believes the new habit will bring to his/her life. For example, improved health or improved quality of life that would be an expected outcome associated with exercise. Personal goals provide self-incentive to adopt a new behavior. Goals can be both short and long term. Lastly, social and structural barriers or impediments must be removed and facilitators need to be in place for a person to engage in a health behavior. As Bandura states “personal change would be easy if there were no impediments to surmount” (2004, p. 145).

By examining these core determinants, a researcher can begin to explain why people engage in healthy behaviors and why they do not. A person is not likely to engage in a health behavior that he/she has no knowledge of, does not believe he/she can accomplish and that is not supported by his/her environment (Bandura, 1998). The SCT recognizes that barrier/impediments in the built environment reduce health behaviors and that the only way to improve health behaviors is to reduce or eliminate those barriers. For example Evenson et al. (2007) found children are more likely to engage in physical activity if the built environment supports physical activity: well lit streets, walking and biking trails, low crime, etc. Bandura (2004) emphasizes that health behaviors are not sole a personal matter and that some of the barriers or enablers to healthy behaviors exist in the built environment rather than in the individual.

For people with disabilities to engage in preventive services and health behaviors, 1) they must have knowledge of the importance of the preventive services or health behaviors, 2) they need to believe they can access the services or participate in the behavior, and 3) barriers or impediments to the preventive services or health behaviors must be removed (Bandura, 2004). Qualitative studies with people with disabilities have identified barriers in the build environment that limit access to health care, preventive services and health behaviors. Although the people with disabilities in these studies seemed to have knowledge of the important of preventive services (i.e. mammography) and health behavior, barriers in the build environment impacted not only their ability to access the service or behavior, but also their belief that they could access the service or behavior.

Schulz and Northridge (2004) illustrated this concept of the connectivity and bi-directionality of the environment, the individual and behavior in their conceptual model of the social determinants of health. The model outlines the “multiple and dynamic pathways through which underlying social, political, and economic conditions influence aspects of the [built] environment, thereby affecting individual and population health and well-being” (Schulz & Northridge, 2004, p.456). Figure 3 is an adapted version of the model presented by Schulz and Northridge (2004).

In following Figure 3 from left to right, one could see how enforcement of the ADA building and construction requirements (macro) would impact the built environment (meso) and improve accessibility of medical office buildings and clinics. Enforcement of ordinances and public policy (meso) could also improve medical office accessibility. Having access to medical care can decrease stress (micro) and improve compliance with preventive health screenings and healthy behaviors (micro). Additionally, having access to care can improve social integration and social participation (micro) of people with disabilities. Decreased stress, improved health behavior and social integration can all lead to improved health outcomes and well-being.



**Figure 3: Social Determinants of Health – Adapted from Schulz and Northridge, 2004**

Follow Figure 3 from right to left and one can see how poor health outcomes (i.e. chronic disease, infectious disease, etc) and reduced well-being can diminish a people with disabilities social integration and social participation and increase stress levels.

When people with disabilities are not participating in society, they are less likely to be

considered in the social context with regard to policy development and enforcement of ordinances. As mentioned previously, ADA compliance issues require a person who has experienced discrimination to file a complaint with the Department of Health and Human Services (HHS), Office of Civil Rights (OCR). If people with disabilities are not integrated and participating in the social context, there a reduced chance that this group can exert influence on the built environment and improve access to health care services. To improve the health and wellbeing of people with disabilities, interventions should occur at the macro, meso and micro levels.

### **Barriers to Accessing Health Care Services – Qualitative Research**

As illustrated above, many studies have identified the health disparities that people with disabilities experience. The next logical question in this course of research is ‘why do people with disabilities experience these disparities in health’. A qualitative research design is preferred when questions about ‘what’, ‘how’ or ‘why’ a phenomenon exists rather than ‘how often’ or ‘how many’ are asked (Green & Thorogood, 2009). The majority of studies regarding barriers to accessing health care services that people with disabilities encounter have been qualitative in nature. These studies have typically been conducted using focus groups or interviews. Categories and subcategories of barriers have emerged from the in-depth discussions with people with disabilities. Categories include: structural, financial and personal/cultural. The Institute of Medicine defined these three categories in the publication *Access to Health Care in America*.

Structural barriers are impediments to medical care directly related to the number, type, concentration, location, or organizational configuration of



health care providers. Financial barriers may restrict access either by inhibiting the ability of patients to pay for needed medical services or by discouraging physicians and hospitals from treating patients of limited means. Personal and cultural barriers may inhibit people who need medical attention from seeking it or, once they obtain care, from following recommended post treatment guidelines ((Millman, 1993. p. 39).

Drainoni et al. (2006) conducted a qualitative study of eight focus groups of six to fifteen people representing a broad range of disabilities. Through this qualitative study of diverse groups of people with disabilities, they found specific structural, financial and personal/cultural barriers to accessing health care. Structural barriers included: the built environment, transportation, communication with providers, health plans / insurance, policies and procedures of insurance companies, time constraints and care coordination / continuity of care. Financial barriers emphasized a lack of coverage, lack of insurance, and/or high co-pays that made provider care and services, medication and durable medical equipment too expensive. Personal / cultural barriers included: physician's insufficient disability specific knowledge; misconceptions about people with disabilities; insensitivity and disrespect from physicians, nurses and staff; a failure to take patients or caregivers seriously and a reluctance or unwillingness to provide care by both physicians and dentists.

A qualitative study by Kroll et al. (2006) further illustrated the two subcategories of structural barriers. The study examined barriers that impact the utilization of primary preventive services by people with physical disabilities. Five focus groups of adults with physical disabilities were conducted. The focus group topics included: "1) general

experiences with primary preventive services, 2) barriers to receiving primary preventive services, 3) suggested strategies to overcome consumer and provider related barriers to primary preventive services and 4) suggestions for the content, layout and delivery format of the Primary Preventive Services Resource Kit” (Kroll et al., 2006, p. 286). Transcripts were analyzed and two types of barriers emerged: process barriers and environmental barriers. Process barriers included: “appointment scheduling, patient-provider communication, professional manner, disability-specific knowledge, personal motivation, having a personal doctor/usual source of care, cognitive issues, and information and self-education” (Kroll et al., 2006, p. 287). Environmental barriers included: facility, “procedural accessibility issues and transportation” (Kroll et al., 2006, p. 287). Specific environmental barriers were identified as “inadequate disability parking, lack of ramps, narrow doorways, doors that swing inward, and cramped waiting and examination rooms” (Kroll et al., 2006, p. 288). Equipment barriers included the “lack of height adjustable exam tables and weight scales that could accommodate wheelchairs, as well as inaccessible diagnostic equipment” (Kroll et al., 2006, p. 288).

For the purpose of this study, the scope was limited to the category of structural barriers to health care that people with disabilities experience. Even more specifically, this study focused on the structural barrier or barrier in the built environment that limit access for people with disabilities when seeking medical care.

Scheer et al. (2003) conducted a qualitative study using telephone interviews to identify access barriers to health care experienced by people with disabilities. Thirty participants who had previously self-identified as a person with disabilities and as a person who experiences access problems when trying to obtain health care participated in

this study. Three main groups of access barriers were identified: environmental, structural and process barriers. Environmental barriers were further categorized as transportation and office accessibility. Office accessibility barriers identified by the participants included inaccessible “parking (location, condition, and topography of pavement and curb cuts); office entry (whether there were lightweight and usable handles and/or automatic doors, low doorway thresholds, rest rooms (entry and use) and diagnostic equipment (exam tables, x-ray and mammography machines, scales)” (Scheer et al., 2003, p. 224

A survey of people with disabilities in Los Angeles, California between 2002 and 2003 found that patients with disabilities had difficulty accessing health care due to the physical layout or location of their physicians’ office (Center for Disease Control and Prevention, 2006). The proportion of people not being able to access health care due to structural barriers increased as the severity of disability increased. Of those with a slight disability, 13.8% (95% CI 9.9 – 17.6%) had difficulty accessing their physicians’ office while 20.6% (95% CI 16.1-25.2%) of those with moderate disability had difficulty and 30.9% (95% CI 25.7-36.1%) of those with severe disability had difficulty accessing their physicians’ office. Additionally, a significantly higher proportion 33.0% (95% CI 26.2-40.0) of black people with disabilities reported difficulty accessing their physicians office due to structural barriers as compared to white people, 14.4% (95% CI 10.8-18.1%). People with disabilities and an income less than one hundred percent of the federal poverty level were significantly more likely to report difficulty accessing health care due to structural barriers than those with disabilities and an income greater than the federal poverty level. Of those, 31.1% (95% CI 26.1-36.6) of people with disabilities and a low

income reported difficulty accessing health care compared to 17.4% (95% CI 14.6-20.2) of people with disabilities and a higher income.

Becker, Stuijbergen and Tinkle (1997) conducted a qualitative study focused on barriers to reproductive health care that women with physical disabilities experience. The study consisted of semi-structured interviews of ten women. Eight major themes emerged from the interviews and included: equipment barriers, “facilitators, issues regarding birth control, pregnancy and STDs, menopause and aging, sexuality and suggestions for improvement” (p. S-28). Equipment barriers identified by the women were “physically inaccessible tables, stirrups, and examining instruments not designed for women with impairments” (Becker et al., 1997, p. S-28).

Barr et al. (2009) and Mele, Archer and Pusch (2005) conducted qualitative studies of women with disabilities to identify environmental barriers that keep them from participating in mammography. Barr et al’s (2009) study included six focus groups (n = 42) of women with disabilities: physically, psychiatric, vision, hearing, cognitive (living independently and living in a group home). Common barriers experienced by the women were categorized as: access, belief, social support and comfort/accommodations. Physical access barriers were identified by all groups of women in the study. Mele et al. (2005) conducted a study that consisted of face-to-face interview in the homes of twenty women with disabilities. Twelve of the subjects had mobility limitations and eight had sensory limitations. The women in this study verbalized issues with transportation, adequate accessible parking, doors that were too heavy to open without assistance from another person and restrooms that were not accessible. When the researchers asked the women with mobility limitations about the use of accessible exam tables that would

facilitate an easier transfer, none of the subjects could remember ever seeing or using such a table.

### **Removing Access Barriers – Practitioner Based Information**

Practitioner based articles have also been written which address service barriers that patients with disabilities experience and strategies for barrier removal. These articles have called for practitioners to consider the hindrance that an inaccessible office creates for their provision of care. An inaccessible office and/or inaccessible equipment can cause a physician to “forgo, omit or not recommend procedures or portions of procedures for people with disabilities that would otherwise be commonplace” (Mace, 2000, para. 6). In their article, Piotrowski and Snell (2007) made recommendations to address the health care access barrier experienced by women with disabilities. These suggestions include: “ensure adequate handicapped parking spaces, wheelchair accessible hallways, waiting rooms, examination rooms and restrooms; install sufficient elevators and ramps; modify examination tables for ease in transfers and positioning; use mammography equipment and scales that accommodate women in wheelchairs” (Piotrowski & Snell, 2007, p. 84).

Kaplan (2006) published an article that addressed contraception and caring for women with disabilities. The target audience for this article was obstetric and gynecological physicians, nurses and nurse practitioners as the article provides specific information about positioning of women with disabilities to provide gynecological care. Additionally, Kaplan emphasizes the need for examination rooms to be accessible for women with physical disabilities as well as laboratory facilities and restrooms. Kaplan also acknowledges that health care providers do not receive reimbursement other than a

tax credit for the purchase of accessible equipment, which in turn creates a barrier for physicians.

Welner (1998) published an article focused on screening for gynecological malignancies in women with disabilities. Welner pointed out that women with disabilities are at an equal risk for developing breast, ovarian, endometrial and cervical cancer as women without disabilities. To screen for ovarian, endometrial and cervical cancer and to perform a breast exam, a wheelchair accessible exam table is critical. Additionally, because weight loss is a hallmark sign of undiagnosed cancer, wheelchair accessible scales are an important feature of a medical practice.

Currently, providers can qualify for a Disability Access Tax Credit through the Internal Revenue Service. This credit is available to eligible small businesses to offset the cost of making the business more accessible (Kailes & Donald, 2009). The tax credit can be applied to half of the cost of making eligible accommodation that cost more than \$250, but not to exceed \$10,000 in credit. Two issues with the Disability Access Tax Credit are 1) it only applies to small practices with less than thirty employees and 2) only applies to practices with gross receipts of less than one million dollars. An accessible exam table cost between \$3,000 and \$5,000. With the current tax credit, a practice would have to pay \$1,625 to \$2,625 for an accessible table  $[(3,000 - 250)/2] + 250$  (Internal Revenue Service, 2006). A standard exam table cost \$600 - \$800. For small physician groups or independent practitioners, the cost difference between a standard exam table and an accessible table is not offset by the tax credit and may be too large of an expense in times of decreasing reimbursements.

Despite the potential cost barrier for practitioners to equip their practice with accessible equipment, Schopp et al. (2002) recognize that physicians can improve the accessibility of their clinics by adherence to ADA standards. In their article, they provide physicians with strategy to improve accessibility such as ensuring that: there are ramps at the entrances to their practice and that the ramps are constructed at the appropriate grade, door openings are at least 36 inches wide, doors open easily, there is a route through the facility that is accessible, counters at the reception area have a low section and restrooms are accessible.

In an article published in the Journal of the American Medical Association in 2007, Kirschner, Breslin and Iezzoni addressed the structural barriers that limit access to health care for people with disabilities people. While acknowledging that access to health care services is a civil right, this article focused on three areas that are impacted by structural barriers to health care: 1) patient safety, 2) quality of care and 3) health care worker safety. Inaccessible health care services compromise patients' safety in three ways. First, diagnoses of disease may be delayed and/or treatment may be inadequate due to the inaccessibility of physician offices or diagnostic equipment. Second, patients have been injured by health care workers who are not trained in proper lifting techniques or from falling off of examine tables that are too high. Third, inaccessibility of health care services further stigmatizes those with disabilities and communicates a lack of value for them as a person. This can result in psychological harm.

As mentioned earlier in this paper, people with disabilities experience disparities in health care resulting in a lower quality of care when compared to those without disabilities. Women with mobility limitations are less likely to receive Pap test, breast

exams or mammograms (Armour et al., 2009; Diab & Johnston, 2004; Iezzoni et al., 2000; Pharr & Moonie, 2011b). People with severe disabilities are significantly less likely to receive tetanus shot (Diab & Johnston, 2004), or to be questioned about tobacco, alcohol, cocaine, marijuana or other drug use by their physician (Iezzoni et al., 2000).

Health care workers are also put at risk by health care services that are not accessible. Back injuries are common among health care workers and are caused mainly from transferring patients. A study by Hart (2006) found that thirty-eight percent of nurses and forty-two percent of radiology technicians had experienced an injury due to moving, lifting or repositioning a patient in a two year time period (Hart, 2006).

### **Barriers to Accessing Health Care Services – Quantitative Research**

As qualitative research is appropriate for determining what barriers exist, quantitative research is important to understand the prevalence of barriers that limit access to health care. As Kirschner, Breslin and Iezzoni (2007) stated in their article:

Although no direct evidence currently exists about the population prevalence of these problems [access barrier] nationwide, increasing numbers of legal cases, small studies and circumstantial evidence point to widespread access barriers for patients with disabilities within the US health care setting (p. 1121).

Grabois, Nosek and Rossi (1999) conducted a quantitative study to determine the extent of ADA compliance in primary care physicians' offices. The study design was a cross-sectional survey sent to general practitioners, family practitioners, internist and



obstetrician-gynecologists. Questions used in the survey were based on the ADA statute, the Code of Federal Regulations and published articles. The survey was designed to determine compliance with Title III of the ADA and compliance with the ADA requirements for new construction and renovations. Additionally, the survey was designed to see how many physicians' offices were able to completely accommodate a people with disabilities.

The researchers found that eighteen percent of the physicians had been unable to treat a people with disabilities in the last twelve months. Of those physicians in this study who had an office constructed after the ADA Title III went into effect in 1993 mandating that new construction be accessible, 88% indicated that they had a consultant (builder, contractor, etc) oversee ADA compliance. Of those physicians who had remodeled their office since 1993, only 55% indicated that they had an unobstructed path to the outside entrance of the building and at least one accessible feature (wheelchair accessible restroom, water fountain or telephone).

Physicians were then asked more specifically about how they accommodated for patients with disabilities in their offices. Physicians were asked if they examine their people with disabilities patients while they remain in their wheelchairs. Nineteen percent respond that they had examine their patients with disabilities while they remain in their wheelchairs while thirty four percent responded that they sometimes examined their patients with disabilities while they remain in their wheelchairs. Physicians were asked if they have ever 1) used or had purchased a wheelchair accessible exam table, 2) had an examine table that is at the height of a wheelchair seat or 3) had a platform scale. Only thirty-nine percent answered that they had used or purchased a wheelchair accessible

exam table, thirteen percent that they had an exam table at the same height as a wheelchair and two percent that they had a platform scale.

Although this study did present useful information for the development of the current study, there are limitations that need to be taken into consideration. First, researchers requested that physicians respond to the survey. The response rate from physicians was twenty-eight percent. In follow-up, the researchers asked why surveys were not returned. Some physicians stated that they did not have patients with disabilities, some indicated that they did not see patients at all because they had an academic position, while other physicians said that they were too busy to complete the survey. Still, the researchers “surmise[d] that some of the non-respondents were wary of the legal implications of responding to the questionnaire” (Grabois et al., 1999, p. 49) even though the researchers had “promised complete confidentiality” (Grabois et al., 1999, p. 49).

Sanchez, Byfield, Brown et al. (2000) conducted a study to assess the perceived accessibility of health care clinics versus the actual accessibility of health care clinics. Health care clinics were randomly selected from a list of clinics in a Midwestern city. Of the clinics randomly selected, forty agreed to participate. Office managers were asked seven questions to ascertain perceived office accessibility for wheelchair patients. Questions included: “Does the site consider itself to be wheelchair accessible? Does the site have a wheelchair accessible bathroom, an examination table that can be lowered to wheelchair level and handicapped parking available? Has the staff ever treated anyone with a spinal cord injury? Has the staff had experience assisting with wheelchair transfers? Has the staff had experience in assisting with management of autonomic

dysreflexia?” (Sanchez et al., 2000, p. 7). Two weeks after the telephone survey, an on-site evaluation was conducted to assess the accessibility of the surveyed clinics with regard to the “parking area, entrance to the building, entrance to the clinic, lobby, examination room and bathroom” (Sanchez et al., 2000, p.7). Parking areas and building entrances were evaluated for parking space width and signage, slope and width of ramps, and exterior door width. Exam rooms were evaluated for width of door into the exam room and an exam table that lowered to the height of a standard wheelchair. Restrooms were assessed based on door width, stall door width, height of toilet paper dispenser, length and positioning of grab bars, lavatory height and clearance and hand towel dispenser location and height.

Results of the study found actual accessibility to be less than perceived accessibility. While 97% of the clinics reported accessible parking only 87% actually met the requirements for handicapped parking. Although 93% of the clinics reported having accessible restrooms only 60% met the guidelines for accessibility. Whereas 38% reported having an exam table that lowered to wheelchair height, only 17.5% actually had such an exam table. Although 100% of the clinics reported being wheelchair accessible, significant items of inaccessibility were found.

The major limitation of this study was the limited number of clinics willing to participate. Although Sanchez et al (2000) did not report the number of clinics that refused to participate; they did list some of the reasons given for non-participation. These included: “building under construction, not interested, too busy, inaccessible, short staffed, provide services to people without disabilities only” (Sanchez et al., 2000, p. 8). One of the most shocking responses for refusal was that “serving people in wheelchairs

would not bring in new business” (Sanchez et al., 2000, p.8). Sanchez et al. (2000) also speculated that some managers may have declined participation out of fear of consequence that may have resulted if their clinic was found to be inaccessible. Another limitation of this study not articulated by Sanchez et al. was the difference in the questions asked of the managers versus the items surveyed during the on-site evaluation. Questions asked of the managers were very general, such as – do you consider your clinic to be wheelchair accessible? Had the managers been asked more specific questions, for example – what is the width of the doorway into your clinic? They may have found different results comparing perceived and actual accessibility.

Graham and Mann (2008) conducted site evaluations at primary care practices in South Carolina. They used a modified assessment form tailored after the ADA Accessibility Guidelines. A rehabilitation engineer used ADA guidelines to determine accessibility by measuring and counting the number of handicap parking places; measuring doors ways, hallways and exam rooms; measuring the slope of ramps, and the weight of doors. Each item on the modified form was rated as accessible or non-accessible based on its compliance with the ADA guidelines. Even though wheelchair accessible scales and height adjustable exam tables are not specifically required by the ADA, Graham and Mann included these in the study. Sixty-eight primary care physician practices were evaluated based on accessibility for patients with mobility limitations.

Findings from this study were that the majority of the physician practices were not fully accessible. Accessibility prevalence for categories included: 51% for handicap appropriate parking space size/ number, 43% for handicap van parking, 50% for appropriate grade (slope) of ramp, 43% for door weight less than five pounds, 10% for

check-in tables between 28-34 inches high, 12% for one fully accessible bathroom, 44% for one height adjustable exam table and 1% for a wheelchair accessible scale. Graham and Mann found that physician practices in building built prior to 1988 and that were not hospital owned were less accessible than those built more recently or that were hospital owned.

Six months after the evaluation, each practice was contacted to determine if modification had been made to the office based on the results from the evaluation. One practice had applied for a federal grant to complete a full renovation. Others had used their own funds to make modifications to increase accessibility. Several practices had not made modification and did not intend to make modifications because they did not want to invest money into a leased space.

Graham and Mann acknowledged limitations of their study. First the study was conducted using primary care practices in South Carolina. Information from this study cannot be generalized to different practices (i.e. specialty physicians) or to different parts of the country. Several practices that were initially contacted to participate in the study declined to participate mostly due to fear of losing federal funding if they were not ADA compliant.

The most recently published article to assess the barriers to primary care serves that people with disabilities people face did have some encouraging results, though these results must be viewed cautiously because of the group of subjects studied. Harrington et al. (2009) surveyed patients receiving care at a hospital based rehabilitation clinic. The survey included questions about demographics, disability diagnosis, mobility status (wheelchair, cane or walker), primary care physician (PCP) and frequency of visits,

routine screening and health maintenance exams and barriers to primary physician care. Routine screening and health maintenance exams included 1) question about depression, alcohol use, nonprescription medication use, domestic violence, healthy eating, exercise and smoking, 2) and question about preventive health screenings - pap, mammogram, tetanus booster, influenza and pneumococcal vaccine, cholesterol test, stool test, sigmoidoscopy or colonoscopy. Barriers to primary physician's care focused on transportation, office accessibility, equipment accessibility and ability of PCP staff to transfer the subject onto the exam table.

Harrington et al (2009) study found relatively high rates of subject receiving routine screening and health maintenance exams and low rates for office inaccessibility. This result might be skewed in this study because the questions on the survey asked subjects if they have had the services over the past two to ten years. Because the subjects were all participants in rehabilitation, it is more likely that they have been recently disabled and they may have received the preventive services prior to becoming disabled. Although all subjects were receiving rehabilitation services, 32.93% of the subject reported that they did not use mobility devices. Of those who did use mobility devices, 48.5% used a wheelchair, 13.47% used a cane and 5.09% used a walker. Only 2.68% of subjects reported problems with physically getting into their PCP's office. This is an encouraging statistic; however, it would have been more relevant to know what percentage of subjects with mobility limitations reported problems getting their into PCP's office. Additionally, previous studies have found that hospital based PCP offices are more likely to be accessible compared to PCP offices not associated with a hospital (Graham & Mann, 2008). Because the subjects were receiving rehabilitation at a hospital

based rehabilitation center, there is a chance that they were more likely to see a PCP at a hospital based office.

Barriers to accessing primary care services were still found in this study (Harrington et al., 2009). Of those who used a wheelchair, 29.13% indicating that exam rooms were not large enough to maneuver a wheelchair, 41.06% reporting having to be examined in their wheelchair because they could not transfer onto their PCP's exam table and 44.44% indicating that their PCP's staff did not know how to transfer them onto the exam table.

## **Conclusion**

Twenty years after the Americans with Disabilities Act went into effect, people with disabilities continue to experience health disparities as a result of barriers that limit access to health care services. Qualitative and quantitative studies have assessed the barriers that limit access to preventive health care services for people with disabilities. Both forms of research have been employed in studies with people with disabilities. Few quantitative studies have been used to measure the prevalence of barriers by surveying people with disabilities, physicians and managers. As Kirschner, Breslin and Iezzoni (2007) stated in their article, "although no direct evidence currently exists about the population prevalence of these problems [access barrier] nationwide, increasing numbers of legal cases, small studies and circumstantial evidence point to widespread access barriers for patients with disabilities within the US health care setting" (p. 1121). More research is needed to determine how wide spread the problems are and which barriers limit access to health care services the most. With this data, policies/strategies can be

developed to target those areas that will result in the greatest improvements in access for people with disabilities.

To date no research has been conducted to identify why barriers exist. Becker et al. suggested that future research is also needed to understand “why providers do not use modified equipment that is currently available. Do providers not use more accessible equipment because they are unaware of it, or because it is more costly?” (1997, p. S-31). With an understanding of why barriers exist, policies and strategies can be developed to eliminate the barriers. For example, if providers do not know about accessible equipment or the requirements of the ADA, education interventions can be developed to fill the gap in knowledge. If providers do not purchase accessible equipment or modify office space due to cost, policies to increase tax credit to offset the cost may be required to eliminate barriers.

New objectives have been added to Healthy People 2020. One of which is to “reduce the proportion of people with disabilities reporting delays in receiving primary and periodic preventive care due to specific barriers” (U.S. Department of Health and Human Services, 2009). To achieve this objective, more research is needed to identify the prevalence of barriers to health care experienced by the people with disabilities and to ascertain why the barriers exist. With this information, there could be the development of specific policy/strategies to reduce or eliminate the barriers that will yield the highest results in improving access.



## Chapter 3 -Methods

### Introduction

Qualitative studies with people with disabilities have helped to identify categories of barriers that limit access to health care services. These categories include: structural, financial and personal/cultural barriers. This study was limited in scope to structural barriers that limit access to preventive health care services for people with disabilities. These structural barriers included: inadequate disability parking (number of spaces or size of spaces), lack of ramps or ramps with steep grades, narrow doorways, doors that swung inward, heavy doors without automatic opening capabilities, lack of elevators, cramped waiting rooms, examine rooms that were too small to maneuver a wheelchair, scales that cannot accommodate a wheelchair, examination tables that were not height adjustable, inaccessible diagnostic equipment and inaccessible restrooms (Becker et al., 1997; Drainoni et al., 2006; Kroll et al., 2006; Mele et al., 2005; Scheer et al., 2003).

Health disparities experienced by people with disabilities and the barriers that create the health disparities are of concern for public health due to the increasing number of people with disabilities. In 2005, 54.4 million people in America reported having a disability. This was an increase of 4.7 million from 2000. This number is expected to continue to increase in the coming decade. As people age, the likelihood of having a disability increases. Additionally, the increasing number of people with diabetes and military personnel returning from Iraq and Afghanistan with disabilities will add to the number of Americans with disabilities.

## **Problem and Purpose**

Studies have been conducted to assess the barriers that limit access to preventive health care services for people with disabilities. To date, no study has been conducted to identify why these barriers still exist despite federal law mandating accessibility. An understanding of why barriers in the built environment exist is fundamental to develop strategies to eliminate the barriers and improve access for people with disabilities. A gap in the literature exists concerning health disparities that people with disabilities experience. We know what barriers existed that limited access to preventive health care services for people with disabilities, but we do not know why they exist or how people with disabilities were accommodated when a barrier was encountered.

This mixed methods study addressed the reasons why structural (office building) and equipment barriers exist that limit access to health care services for people with disabilities. This study also sought to identify how medical practices accommodate people with disabilities when a barrier was encountered. A convergent parallel mixed methods design was employed with quantitative and qualitative data being collected concurrently, analyzed separately and then merged for results interpretation. The goal of this study was to contribute to the body of literature regarding health disparities of people with disabilities and to provide data that could be used to shape disability policy.

## Research Questions, Hypotheses and Predictions

To conduct this research, the accessibility of each medical practices being surveyed was first established. Two questions utilized in the initial stage of the research were:

1. What is the accessibility (office and equipment) of each clinic?
2. What is the prevalence of accessibility?

If a practice did not meet an accessibility requirement, then that item was considered to be a barrier to accessing health care. The total number of barriers per clinic was calculated. Once accessibility was established, the main research questions were addressed. Included with each research question were hypotheses and predictors (P) for each hypothesis.

### *Research Question 1*

Why do structural (office building) barriers exist that limit access to health care for people with disabilities?

### *Hypotheses for Question 1*

1. The Practice administrator did not know that his/her medical offices had to comply with ADA standards. (Knowledge)
  - P1. The Practice administrator did not know about the ADA.
  - P2. The Practice administrator did not know that the ADA applies to medical offices.
  - P3. The Practice administrator did not know which title of the ADA applies to his/her medical offices.

P4. The Practice administrator did not know the consequences of not being compliant with ADA standards.

P5. The Practice administrator had not received education (college course, CME training) regarding the ADA and how it applies to medical offices.

P6. The Practice administrator had not considered that the ADA applied to his/her clinic.

P7. The Practice administrator did not know that there is a federal tax credit available to bring medical offices into ADA compliance.

2. The Practice administrators thought that the responsibility of ADA compliance rests on the building owner rather than a tenant (if medical practice is in a building owned by someone else). (Responsibility)

P1. The Practice administrator did not know that the space they use and control is the practice's responsibility for ADA compliance.

P2. The Practice administrator did not know that the common space is the building owner's responsibility for ADA compliance.

3. The cost to remodel the office to bring the practice into ADA compliance was too great. (Cost)

P1. The Practice administrator has inquired about the cost to bring the practice into ADA compliance but the cost was prohibitive.

P2. The Practice administrator has not inquired about the federal tax credit to offset the cost to remodel.

P3. The practice was not eligible for the federal tax credit to remodel.

P4. The federal tax credit amount was not great enough to encourage the practice to remodel.

P5. The number of patients in the practice with disabilities was not great enough to off-set the cost of remodeling the practice to be ADA compliant.

### *Research Question 2*

Why do equipment barriers exist that limit access to health care for people with disabilities?

### *Hypotheses for Question 2*

1. The Practice administrator did not know that accessible equipment existed (height adjustable exam tables or scales that will accommodate a wheelchair).

(Knowledge)

P1. The Practice administrator did not know that accessible equipment exists.

P2. The Practice administrator did not know what accessible equipment exists.

P3. The Practice administrator had not considered purchasing accessible equipment.

P4. The Practice administrator did not know that there is a federal tax credit available to off-set the cost of purchasing accessible equipment.

2. The cost of accessible equipment was too great compared to standard equipment.

- P1. The Practice administrator inquired about the cost of accessible equipment but the cost was prohibitive.
- P2. The Practice administrator has not inquired about the federal tax credit to offset the cost of accessible equipment.
- P3. The practice was no eligible for the federal tax credit to purchase accessible equipment.
- P4. The federal tax credit amount was not great enough to encourage the practice to purchase accessible equipment.
- P5. The number of patients in the practice with disabilities was not great enough to off-set the cost of purchasing accessible equipment.

### *Research Question 3*

How do medical practices accommodate a person with disabilities when a barrier to services is encountered?

### *Hypotheses for Question 3*

1. If a patient encounters barriers to services at the practice, then the patient was referred to another practice that could accommodate him/her. (Refer)
  - P1. The Practice administrator knows of other practices that are accessible.
  - P2. Patients were referred to other accessible practices.
2. If a patient encounters barriers to services at the practice, then related parts of the examination were skipped. (Skip)
  - P1. The physician skipped parts of an exam if a barrier was encountered.

3. If a patient was not able to transfer to an examination table, the practice used alternatives.

P1. The physician examined the patient in his/her wheelchair.

P2. The Practice administrator or physician asked the patient to bring someone with him/her to help him/her transfer.

P3. The practice had employees who were properly trained to lift the patient onto the examination table.

P4. The practice had a lift to transfer patients onto the exam table.

4. If a patient is not able to maneuver sufficiently inside the medical practice or if they took longer to be examined, the practice refused to treat the patient. (Refuse treatment)

P1. Patients with disabilities were refused treatment because the medical practice was not accessible

P2. Patients with disabilities were refused treatment because it took longer to examine them and insurance did not reimburse for additional time.

### **Research Design**

Because this study explored both quantitative (prevalence of barriers) and qualitative (reasons why barriers exist: knowledge, cost responsibility) questions, the study design employed a mixed methods research approach. Mixed methods “involves the collection, analysis and integration of both qualitative and quantitative data in a single study” (Schifferdecker & Reed, 2009, p. 637). A quantitative research design is appropriate when questions about ‘how many’ or ‘how often’ are asked while a qualitative research design is preferred when questions about ‘what’, ‘how’ or ‘why’ a

phenomenon exists are asked (Green & Thorogood, 2009). Because both types of questions were addressed in this study, a mixed methods research design was warranted.

There were several mixed methods research designs available including: convergent design (triangulation), explanatory design, exploratory design, embedded design, transformative design, and multiphase design (Creswell & Clark, 2007). All six designs were considered for this study; however, the convergent design was deemed to be the most appropriate research design. This research design allowed for both qualitative and quantitative data to be collected simultaneously and for the data collection to involve a single population (i.e. health care practice administrators). The convergent design allowed for the synthesis of quantitative results and qualitative results for a more complete understanding of why barriers exist that limit access to health care for people with disabilities.

Four steps were involved in developing this convergent research design (Creswell & Clark, 2007). Both quantitative and qualitative data were collected regarding access to health care. Data collection was concurrent but separate, meaning that collection of knowledge, cost, and responsibility data were not dependent on the collection of accessibility prevalence data or vice versa. Data collection was parallel but independent, meaning that knowledge, cost and responsibility data were collected at the same time as accessibility data but data collections were not dependent upon each other. The two sets of data were analyzed separately. Once the data were analyzed, results were merged. Lastly, the merger results were interpreted to produce a more complete understanding of the phenomenon.



## **Population and Sampling**

Purposeful sampling was utilized in this study. Purposeful sampling means that the “researchers intentionally select (or recruit) participants who have experienced the central phenomenon or key concept being explored” (Creswell & Clark, 2007, p. 173). Primary care practice administrators in Southern Nevada and primary care practice administrators who were members of the Medical Group Management Association (MGMA) were the population for this study. Primary care physician practices included general practice, family practice, internal medicine and obstetrics-gynecology practices (Grabois et al., 1999). Primary care physician practices were selected for this study because they are typically the point of entry into the health care system for patients and because health maintenance and disease prevention traditionally has been within the scope of care of primary care physicians (Harrington et al., 2009).

Practice administrators / health care administrators were selected for this study because of their oversight of the budget, equipment purchasing, facility operations and patient flow. Practice administrators typically have the responsibility of planning, directing, coordinating and supervising the medical practice. Based on the job description of a practice administrator / health care administrator by the US Department of Labor, practice administrators “manage personnel, finances [including equipment purchase] and facility operations...” (Handbook, 2004, para. 4). In a small medical practice (10-15 physicians), a single practice administrator usually oversees the employees, the budget and future planning, the layout of equipment and patient flow. In

larger practices, there may be a chief administrator with a number of assistant administrators (Handbook, 2004).

Primary care physician practices in Southern Nevada (Clark County) were identified by using an internet search for general medicine practices, internal medicine practices, family medicine practices and obstetrics / gynecology practices. The list was cross referenced to ensure that no practice is listed twice and 312 clinics were identified in Clark County. At least three attempts were made to invite the practice administrators of all primary care clinics to participate in the telephone version of the survey conducted by the Cannon Survey Center.

Primary care practice administrators from the MGMA were identified through the MGMA website. Practice administrators who self-identified as primary care administrators were contacted through the MGMA website e-group communication portal. The MGMA e-group communication portal allowed for a message to be sent to each administrator's communication page inviting them to participate in an on-line survey. In total, 1,637 MGMA practice administrators were sent a message through the e-group communication system on three separate dates. The goal of this study was to have at least 50 primary care practice administrators participate in the study.

### **Data Instrumentation**

Administrators were surveyed using a questionnaire which included both closed-ended (quantitative) and open-ended (qualitative) questions. The survey used for this study was developed using ADA construction guidelines, the ADA's *Access to Medical Care for Individuals with Mobility Disabilities*, the Adaptive Environment Center's

*Checklist for Existing Facilities*, and published literature (Adaptive Environment Center, 1995; U.S. Department of Justice (USDJ) & U.S. Department of Health and Human Rights (DHHR), 2010). Barrier prevalence questions were derived mainly from the *Checklist for Existing Facilities* which is based on the ADA construction guidelines. Questions selected from the checklist were specific to accessibility for people with mobility disabilities. Questions that focused on accessibility for people with sensory disabilities (hearing or vision) were not included in the survey. To ensure that the survey could be completed in the time allotment, barrier prevalence questions were limited to barriers that have been identified in previous studies (Grabois et al., 1999; Graham & Mann, 2008; Harrington et al., 2009; Sanchez et al., 2000). ADA construction guidelines items that have a high compliance rate were not included in this survey. Additionally, checklist items that are difficult to measure or required special equipment to measure (slope of a ramp or pounds required to open a door) were not included in this survey. Although wheelchair accessible examination tables, scales and other diagnostic equipment are not specifically required by the ADA construction guidelines, they are each recommended in the ADA's *Access to Medical Care for Individuals with Mobility Disabilities* and were included in this survey.

Survey questions developed for the knowledge and cost portion of the survey were specifically written to address dimensions of knowledge about the ADA / accessible equipment and cost of bringing a practice into ADA compliance / purchase accessible equipment. Both closed-ended and open-ended questions were included in this section of the survey. For open-ended questions, administrators either spoke (telephone survey) or typed (on-line survey) their answers. Questions were designed to be hierarchical in nature

and to be analyzed using a Guttman scalogram analysis. A Guttman scalogram analysis is a method used to organize responses by order of degree in which a single, hierarchical pattern is achieved (Liao & Tu, 2006). The Guttman scale is useful when two questions are asked: “(1) if a unit of analysis (a person, a household, an organization, a county, etc.) exhibits some trait, then does that unit of analysis have certain other traits as well? (2) is there a particular *order* in which these traits are accumulated or manifested?” (Guest, 2000, p.347). For example, if a practice administrator has considered the application of the ADA to his/her practice, would that administrator also know about the ADA and would that knowledge have come before consideration of the application of the ADA to his/her practice? Guttman scales have been used in anthropology (Guest, 2000), social science (Liao & Tu, 2006) and health research (LaPlant, 2010). Guttman scale’s hierarchical ranking can be validated through the calculation of a coefficient of reproducibility and a coefficient of scalability. Establishment of a valid Guttman scale “helps to legitimize the use of a summed score because the rank ordering of the scale items have been confirmed (Gothwal, Wright, Lamoureux, & Pesudovs, 2009, p. 4496). A copy of the survey is included in the Appendix.

### **Data Collection**

**Cannon Survey Center.** Data were collected via telephone using a CATI system. Data collection was conducted with the assistance of the Cannon Survey Center (CSC), located on the campus of the University of Nevada Las Vegas. The CSC provides the management, staff, and facilities required to conduct all phases of telephone, internet, and mail surveys. The CSC operates a computer-aided telephone interviewing (CATI)

system. CATI technology allows interview questions to be entered into a programmable sequence and displayed for each interviewer on a video display terminal. Interviewers enter answers received by telephone survey directly into computer memory. The CATI system promotes scientific and technical rigor by eliminating a separate data entry step, thereby minimizing data processing errors. Interviewer errors are also reduced because the CATI system controls the order in which questions are asked, skipping those that were not applicable to a particular respondent based on his/her earlier responses. With the CATI system, CSC is able to design and execute surveys targeted to specific populations and handle issues in a timely manner. The CSC also works with Qualtrics to produce on-line surveys.

**Southern Nevada Practice Administrators.** The CSC conducted telephone surveys with practice administrators from a list of 312 primary care (general medicine, internal medicine, family practice and OB/GYN) clinics in Southern Nevada between October 10, 2011 and January 17, 2012. Reverse look-up of the provided list was used to obtain telephone numbers for all listed practice administrators. A formal pretest of the telephone survey was conducted by a group of senior interviewers to pilot the survey within the programmed framework and also assess general field procedures. Data for the telephone surveys were collected using the CATI methodology discussed above. The survey was programmed into the CATI network, which included an automated skip pattern and automatically coded close-ended questions. The interviewers administered the telephone survey from individual computer stations and recorded the respondents' answers and other interview information in database files as the interview occurred. The phone numbers were preloaded into the CATI system and the call dispositions were entered and

tracked by the CATI system. Up to three attempts were made to each practice administrator.

The CSC attempted to contact all 312 practice administrators in Southern Nevada. Of the 312 practice administrators, 120 were considered not eligible to participate in the survey because: the phone number was wrong or had been disconnected, the practice had closed or was no longer in business or the practice was not truly primary care (i.e. primarily a chiropractic clinic, surgical center, or wellness center). Additionally, twenty-five administrators referred the interviewer to the corporate office of their health care system as it was against their corporate policy to allow individual clinics to participate in surveys. These were considered to be ineligible because one goal of this study was to assess the relationship between ADA knowledge of the practicing administrator with the number of barriers in his/her clinic. The CSC could not accommodate the request of twenty-eight administrator who wanted the survey faxed to them because the CSC did not have a secure fax line for the confidential return of completed surveys. Request that could not be accommodated were considered to be ineligible.

CSC was not able to contact the administrators for 118 clinics. This was either because the interviewer could not get past the gatekeeper in the clinic or because they left messages that were not returned. Administrators who could not be contacted were considered eligible, non-contact. Of the administrators contacted, fifty-four refused to participate in the survey and twenty agreed to participate in the survey. Twenty-five of the administrators who refused to participate gave a hard refusal stating that they did not wish to participate in the survey. Twenty-nine gave a soft refusal by asking that the survey to be emailed to them and then not initiating the survey. A survey was considered

complete if eighty percent or more of the survey questions were answered. It was considered partially complete if it was started but less than eighty percent of the questions were answered. Of those who agreed to participate, eighteen completed the survey.

Disposition summary for Southern Nevada administrators is found in Table 1.

**Table 1: Disposition for Southern Nevada Primary Care Administrators**

		Frequency	Percent
IE	INELIGIBLE	120	38.5
	Disconnected/No longer in business	21	
	Not primary care	15	
	Wrong number	10	
	No Answer	21	
	Referred to corporate	25	
	Could not accommodate (fax)	28	
NC	NON-CONTACT (attempted 3x)	118	37.8
RF	REFUSED TO PARTICIPATE	54	17.3
	Hard refusal	25	
	Soft refusal	29	
	AGREED TO PARTICIPATE	20	6.4
CS	Complete survey ( $\geq 80\%$ )	18	
PS	Partial survey ( $< 80\%$ )	2	
	Total	312	100

Contact, cooperation, response and survey completion rates were calculated for the Southern Nevada practice administrator survey (Table 2). Contact rate was defined as the proportion of contacted participants out of the number of eligible participants  $((RF+CS+PS)/(NC+RF+CS+PS))$ . Cooperation rate was calculated as the number of initiated surveys out of the number of contacted participants  $((CS + PS)/(CS+PS+RF))$ . Response rate was calculated as the number of initiated surveys from eligible participants  $((CS+PS)/ (NC+RF+CS+PS))$ . And finally, survey completion rate was the number of

completed surveys out of the number of initiated surveys ((CS/(CS+PS)) (Beerten et al., 2000; Lynn et al., 2001).

**Table 2: Contact, Response, Cooperation and Completion Rates for Southern Nevada Primary Care Administrators**

	Percent
Contact Rate	38.5
Response Rate	10.4
Cooperation Rate	27.0
Completion Rate	90.0

**MGMA Practice Administrators.** The CSC utilized Qualtrics to produce an on-line version of the telephone survey. Primary care practice administrators from the MGMA were invited to participate in the on-line survey via the e-group communication portal. The MGMA e-group communication portal allowed for a message to be sent to each administrator's personal communication page, inviting them to participate in an on-line survey. In total, 1,637 MGMA practice administrators were sent a message through the e-group communication system on three separate dates between December 20, 2011 and January 17, 2012. The CSC programmed the on-line survey with the same skipping pattern as the telephone survey to ensure that administrators were not asked irrelevant questions. The data from the on-line survey automatically populated into the data base, which also eliminated a data entry step and minimized data processing errors.

Request for participation of MGMA practice administrators was through the MGMA website communication portal. To view the request, a member/administrator needed to login to the MGMA website, go to their personal communications portal and



click on the message link. The system did not allow for tracking of information regarding how many administrators viewed the message. The number of administrators who viewed the message and refused to participate or the number of administrators who did not view the message (non-contact) could not be determined. Because of this, it was not possible to calculate an accurate contact, cooperation or response rate. Eighty-six administrators initiated the survey through the survey link. Of those who initiated the survey, Sixty-three completed the survey for a completion rate of 73.3%.

Responses to the both surveys were processed with minimal data reduction or coding. Individual answers to questions were entered into the data base which was then merged into a larger data file representing all respondents' answers. These data files were then converted into SPSS data files. The data were checked on a daily basis while the survey was in the field, to ensure that procedures were being followed and to check for unforeseen problems in the survey instrument or procedures.

### **Data Analysis**

Descriptive statistics were computed for the total sample, Southern Nevada administrators and MGMA administrators. Chi square and Mann-Whitney U tests were utilized to determine if there was a significant difference in descriptive characteristics between Southern Nevada administrators and MGMA administrators.

Accessibility and barrier prevalence data (quantitative data) were analyzed separately from the knowledge, cost and accommodations data (quantitative/qualitative). Proportions of accessibility and total number of barriers were then calculated. Chi square was used to determine if there was a difference in accessibility between Southern Nevada

practices and MGMA practices. Mann-Whitney U tests were utilized to determine if there was a significant difference between the rank scores in barriers of the two groups.

Knowledge, cost and accommodations data (quantitative/qualitative data) were analyzed separately from accessibility data (quantitative data). During this part of the analysis, the researchers did not have access to the accessibility data and did not know what accessibility issues were found in the quantitative analysis of each practice.

Answers to qualitative questions were analyzed for major themes. Themes were grouped into categories. Categories and answers to close-ended question were merged for further analyses. Proportions of positive responses (yes) for each question were calculated and chi square tests were utilized to determine if there was a difference in responses between Southern Nevada administrators and MGMA administrators. Variables were placed in a rank order (hierarchical scale) based on positive (yes) responses and this information was entered into AnthroPac software. The AnthroPac software was used to produce a Guttman Scale for each hypothesis and a coefficient of reproducibility (CR) and a coefficient of scalability (CS) for each scale. The Guttman Scales provided a score for each respondent with a higher score equaling a higher position on the hierarchy compared to a lower score.

Because no scale is perfect, the values of CR and CS were considered. CR is the ratio of successful reproduction to total responses (Menzel, 1953) and is calculated:

$$CR = 1 - \text{number of errors/number of entries (Guest, 2000, p. 350).}$$

A CR of .90 or higher is considered acceptable in terms of reproducibility. CS indicates the proportion of the total possible improvement which is achieved by the scale. CS is

the most important criterion because it is used to validate the scale. If the CS  $\geq .60$ , then the scale is considered to be valid and use of the summed Guttman score is appropriate (Gothwal et al., 2009; Liao & Tu, 2006). Using the CR and CS, variables can be rearranged or omitted to produce a reliable scale. An example of a perfect Guttman scale is provided in Figure 4.

ID #	V 1	V 2	V 3	V 4	V 5	V 6	V 7	Score
23	1	1	1	1	1	1	1	7
12	1	1	1	1	1	1	1	7
3	1	1	1	1	1	1		6
47	1	1	1	1	1			5
9	1	1	1	1	1			5
1	1	1	1	1				4
7	1	1	1					3
38	1	1	1					3
27	1	1						2
21	1	1						2
14	1							1
8								0

**Figure 4: Hypothetical Guttman Scale Representing a Perfect Guttman Scale.**

Summed scores from valid Guttman Scales were used for further analyses. From the merged data set, linear regression was used to determine the relationship between practice administrators' knowledge or cost and the number of accessibility barriers. Linear regression was appropriate because the number of barriers (y) could be coded as continuous and the score produced by the Guttman scale for knowledge /cost (x) could be coded as continuous. It was hypothesized that a negative linear relationship would be found between the number of barriers and knowledge score / cost score (i.e. the greater the practice administrator knowledge was of the ADA, the fewer barriers existed).

The equation representing this relationship was:

$$y = \beta_0 + \beta_1 x_1 + \varepsilon$$

Grabois et al. (1999) found that medical practices in older buildings were more likely to not be compliant with ADA standards. Multiple linear regression was used to control for the age of the building in which the medical practice operates. Data analysis was conducted with the use of SPSS 18 and AnthroPac version 4.98.

### **Human Subjects Protections**

The purpose of the Institutional Review Board (IRB) at UNLV is to ensure that participants in a research study are adequately informed about the nature of the study, that participation in a study is voluntary, and to ensure that study protocols protect the rights of participants through consideration of confidentiality and anonymity (Research and Graduate Studies, ). Because of this, IRB approval was obtained prior to participant recruitment and data collection. IRB approval and IRB approved consent forms are located in the Appendix.

Non-compliance with ADA standards can result in law suits, fines or penalties (Americans with Disabilities Act, 2008). Because of this, confidentiality and anonymity was ensured throughout the study. Confidentiality is an ethical responsibility in social research (Green & Thorogood, 2009). Participant confidentiality was considered during informed consent, collection of data, data storage, and data analysis. To ensure confidentiality, signed informed consents were not collected as they would have been the only link between the practice administrator and his/her response. Practice administrators

were read (telephone survey) or asked to read (on-line survey) the consent form. They were told that agreeing to continue with the survey constituted consent to participate in the study.

Only the researchers viewed or analyzed the data. All data and data analyses were kept completely confidential. All computer records were kept on a password protected computer on the UNLV campus. All written records were stored in a locked facility in the BSH building on the UNLV campus. After three years, the documents will be destroyed. No reference will be made in future publications or presentations that could link the participants to the study.

## **Summary**

The purpose of this study was to investigate the reasons that structural (office building) and equipment barriers exist that limit access to health care services for people with disabilities. This study also identified how medical practices accommodate people with disabilities when a barrier was encountered. Because the goal was to develop a more complete understanding of why barriers exist that limit access to health care for people with disabilities and how people with disabilities were accommodated if a barrier was encountered, a mixed method research design was warranted. Purposeful sampling was employed to select participants; primary care practice administrators in Southern Nevada and members of MGMA. Quantitative and qualitative data were gathered concurrently, analyzed separately then merged for further analysis. The results were interpreted to produce a more complete understanding of the phenomenon (Creswell & Clark, 2007). Because of the sensitive nature of this study, ethical considerations such as

IRB approval, confidentiality and anonymity were integrated throughout the research and publication process.

## Chapter 4 – Results

### Introduction

People with disabilities experience unmet health care needs which lead to health disparities. Barriers in the built environment contribute to the health disparities experienced by this vulnerable population. To date, no study has been conducted to understand why these barriers exist. The purpose of this mixed methods study was to address the reasons why structural (office building) and equipment barriers existed, limiting access to health care services for people with disabilities. This study also sought to identify how medical practices accommodated people with disabilities when a barrier was encountered.

The study design was a convergent parallel mixed methods approach. Purposeful sampling was employed. Practice administrators were selected for this study because of their oversight of clinical operations including the budget, equipment purchases, facility operations and patient flow. Primary care practices were selected for this study because they are typically the point of entry into the health care system for patients. Primary care practice administrators for Southern Nevada or who were members of the Medical Group Management Association (MGMA) were recruited to participate. In total, 101 primary care practice administrators were surveyed. Of the 101 administrators surveyed, 81 completed more than eighty percent of the questions and were used for statistical analysis.

The survey utilized for this study was developed using ADA construction guidelines, the ADA's *Access to Medical Care for Individuals with Mobility Disabilities*, the Adaptive Environment Center's *Checklist for Existing Facilities*, and published literature (Adaptive Environment Center, 1995; U.S. Department of Justice (USDJ) & U.S. Department of Health and Human Rights (DHHR), 2010). The survey included demographic questions and questions that 1) assessed accessibility of structure and equipment in each clinic, 2) measured the administrator's knowledge of the ADA, 3) determined if cost was a reason for non-compliance with the ADA and 4) illustrated how patients were accommodated when a barrier to service was encountered. Results presented in this chapter will follow the general format of the survey with descriptive statistics presented first followed by practice accessibility, administrator ADA knowledge and cost of accessibility and accommodations for patients. The final analyses presented in this chapter are multiple linear regressions to predict the number of access barriers by characteristics of the practice administrator or characteristics of the practice.

### **Descriptive Characteristics of the Sample**

Descriptive characteristics of the sample are provided in Table 3. Variables were evaluated for the total group, Southern Nevada administrators and MGMA administrators. Mann-Whitney U tests and chi square tests were performed to determine if there was a significant difference for descriptive characteristics between groups. For continuous variables, Mann-Whitney U tests were utilized. The null hypotheses for these tests were that the mean of the variable for the MGMA group equaled the mean of the variable for Southern Nevada group ( $H_0$ : mean MGMA = mean



SN). The alternate hypotheses were that the means of the two groups were not equal. The alpha for determining significance was 0.05.

For dichotomous and categorical variables, chi square tests were performed to determine if there were differences in the proportions of the variables of interest between groups. The null hypotheses for these tests were that proportions would be equal between the groups (Ho: proportion MGMA = proportion SN) and the alternate hypotheses were that the proportions would not be equal between the groups. Chi square tests were used for all dichotomous and categorical variables with the exception of gender. Because only two of the Southern Nevada administrators were male, thus violating an assumption of chi square, a Fisher's exact test was used for that variable. The alpha for determining significance was set at 0.05.

**Table 3: Descriptive Characteristics of the Sample**

Variable	Combined Groups n = 81		Southern Nevada Practice Administrators n = 18		MGMA Practice Administrators n = 63		Mann-Whitney U tests
	Mean	SD	Mean	SD	Mean	SD	
Age	48.7	9.8	40.2	11.2	49.6	8.3	<0.01†
Years as administrator	14	9.2	9	7.8	14.9	9.3	0.02†
Years at current practice	6.5	5.6	6.4	6.1	5.9	4.7	0.95
Years practice in operation	23.9	17.6	9.7	7.2	27	18.6	<0.01†
Number of providers	10.8	12.8	1.6	1	12.7	12.2	<0.01†
Number of patients	22,290	40,908	4,675	6,734	29,561	48,47	<0.01†

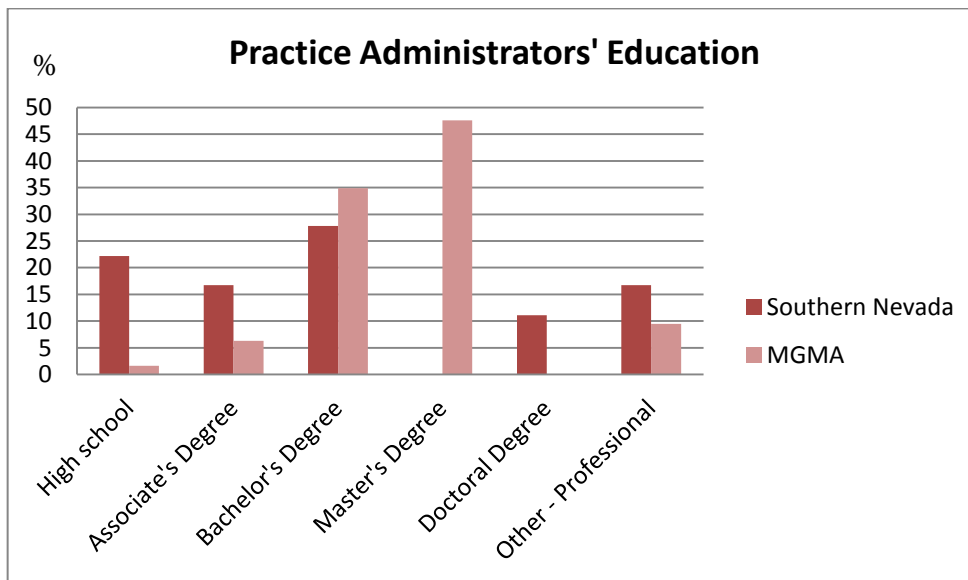
% Patients with disabilities	7.1	12.4	6.8	9.9	7.8	14.6	0.62
Variable	n	%	n	%	n	%	$\chi^2$ p-value
Gender *							0.21
Female	60	74.1	16	88.9	44	69.8	
Male	20	24.7	2	11.1	18	28.6	
Education							<0.001†
High school	5	6.2	4	22.2	1	1.6	
Associate's Degree	7	8.6	3	16.7	4	6.3	
Bachelor's Degree	27	33.3	5	27.8	22	34.9	
Master's Degree	30	37	0	0	30	47.6	
Doctoral Degree	2	2.5	2	11.1	0	0	
Other - Professional	9	11.1	3	16.7	6	9.5	
Type of Practice							0.08
Family Medicine	23	28.4	8	44.4	15	23.8	
Internal Medicine	16	19.8	6	33.3	10	15.9	
General Medicine	1	1.2	0	0	1	1.6	
OB/GYN	33	40.7	3	16.7	30	47.6	
Other	8	9.9	1	5.6	7	11.1	
Building Built							0.24
Before 1993	37	45.7	5	27.8	32	50.8	
After 1993	41	50.6	11	61.1	30	47.6	
Building Ownership							0.96
Owned	31	38.3	6	33.3	25	39.7	
Leased	49	60.5	11	61.1	38	60.3	
Building Operations							0.31
Practice only	48	59.3	9	50	22	34.9	
Other businesses	31	38.3	8	44.4	40	63.5	

\* = Fisher Exact Test one sided hypothesis

† = Statistically significant at  $p \leq 0.05$

**Characteristics of the Administrator.** The mean age of the administrators surveyed was 48.7 years. MGMA administrators were significantly older than Southern Nevada administrators ( $p = .01$ ) with means ages 49.6 and 40.2, respectively. The practice administrators had been practice administrators for an average of fourteen years; however there was a significant difference ( $p = 0.02$ ) between the groups with MGMA administrator having an average of 14.9 years of experience as a practice administrator

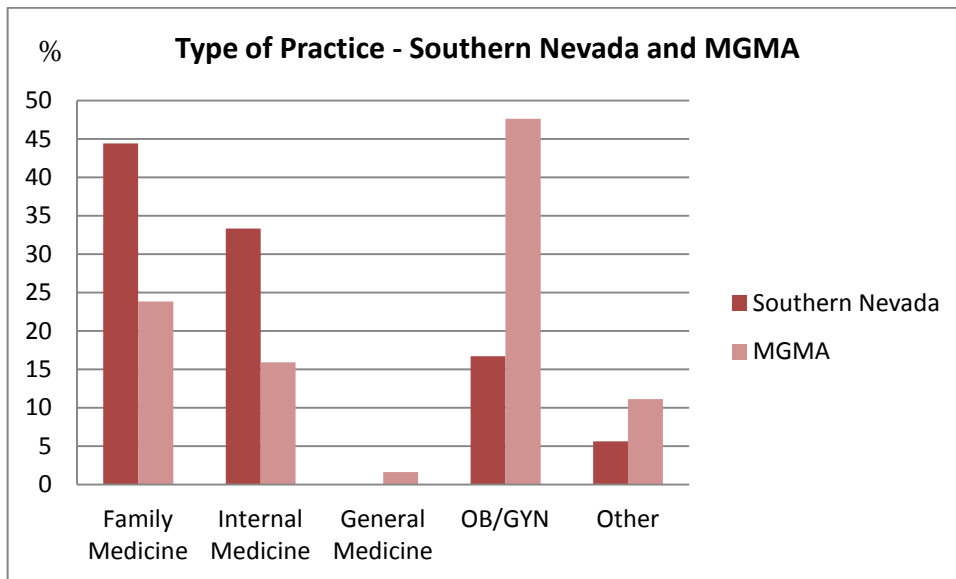
and Southern Nevada administrators having an average of nine years of experience. The practice administrators had been in their current location an average of six and a half years with no significant differences between the groups. The majority of the administrators were female (74% total group, 88.9% Southern Nevada and 69.8% MGMA) without a significant difference between groups. The Southern Nevada administrators were significantly ( $p < 0.001$ ) more likely to have lower levels of education (high school diploma or Associate's degree compared to Bachelor's or Master's degree) than MGMA administrators (Figure 5).



**Figure 5: Education Levels Practice Administrators**

**Characteristics of the Practice.** MGMA practices were significantly more likely ( $p < 0.001$ ) to have been in operations longer than Southern Nevada practices (27 year and 9.7, year respectively). MGMA practices had a significantly higher ( $p = 0.001$ ) number of providers (12.7 and 1.6, respectively) and a significantly higher ( $p = 0.04$ ) number of

patients (29k and 4.5K, respectively) compared to Southern Nevada practices. The majority of the practices were Family Medicine, Internal Medicine or OB/GYN with no significant differences between groups (Figure 6). A higher percentage of Southern Nevada practices were built after 1993 compared to MGMA practices (61.1% and 47.6%, respectively); however, the difference was not significant ( $p = 0.24$ ). The majority of the practices (60%) leased the space in which the office was located without a significant difference between the groups.



**Figure 6: Type of Practice for Southern Nevada and MGMA**

### Practice Accessibility - Barrier Prevalence

Two questions asked in the initial stage of the research were:

1. What is the accessibility (office and equipment) of each clinic?
2. What is the prevalence of accessibility?

Frequency counts and proportions of accessibility were calculated for the total group, the Southern Nevada practices and MGMA practices and broken out by: 1) accessibility

outside of the clinic, 2) accessibility within the clinic and 3) accessibility of restrooms (Table 4, 5, 6). If a practice did not meet an accessibility requirement, then that item was considered to be a barrier to accessing health care. Finally, the total number of barriers per clinic was calculated. Chi square tests were utilized to determine if there were significant differences in variables of accessibility between the two groups. Mann-Whitney U test was used to determine if there was a significant difference in the total number of barriers between Southern Nevada practices and MGMA practices.

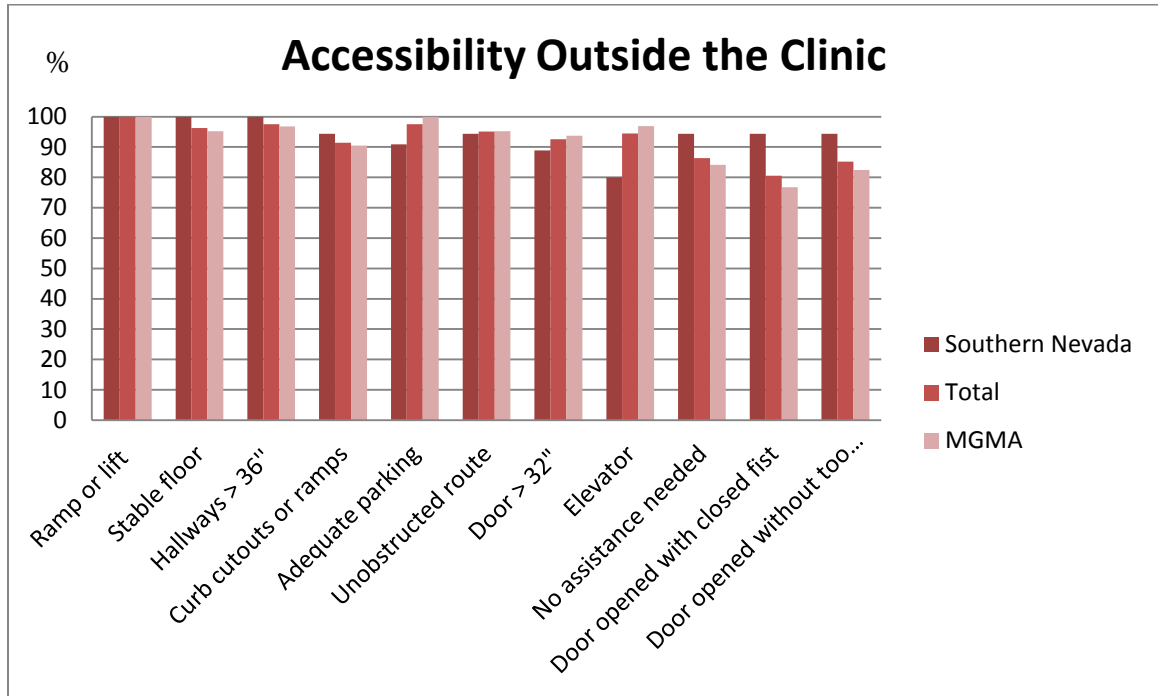
**Accessibility Outside of the Clinic.** As seen in Table 4 and Figure 7, practice administrators reported high levels of accessibility outside the clinic. Accessibility outside of the clinic consisted of questions related to items from the parking lot to the door entering into the clinic. There were no significant differences between the groups with regard to these variables. The majority of accessibility questions were answered positively (accessible) greater than ninety percent of the time. The three questions that had less than a ninety percent affirmative response rate for the total group were: 1) can a person with mobility disabilities get into practice without assistance, 2) can the door to the clinic be opened with closed fist, 3) can the door to the clinic be opened without too much force? These questions had total group response rates of 86.4%, 80.6% and 85.2%, respectively. Eighty percent of Southern Nevada administrators reported that there was not an elevator available when the practice was on a floor other than the ground floor. Eighteen percent of the practice administrators affirmed that patients had reported difficulty getting into their clinic.

**Table 4: Frequency Counts and Proportions of Accessibility Outside the Clinic.**

Variable	Combined Groups n = 81		Southern Nevada Practice Administrators n = 18		MGMA Practice Administrators n = 63		$\chi^2$ p-value
	n	%	n	%	n	%	
Adequate # of handicapped parking spaces*	39	97.5	10	90.9	29	100	0.28
Curb cutouts or ramps for curbs*	74	91.4	17	94.4	57	90.5	0.51
Ramp or lift for stairs into main entrance	7	100	2	100	5	100	1
Elevator if practice not on ground floor	35	94.5	4	80.0	31	96.9	0.09
Floor stable, firm slip resistant*	78	96.3	18	100	60	95.2	0.60
Unobstructed route to clinic*	77	95.1	17	94.4	60	95.2	0.64
Hallways to clinic 36" or wider - yes*	79	97.5	18	100	61	96.8	0.6
I don't know	2	2.5			2	3.2	
Person with mobility disabilities can get into practice without assistance*	70	86.4	17	94.4	53	84.1	0.24
Door to clinic can be opened with closed fist	58	80.6	17	94.4	43	76.8	
Door can be opened without too much force*	69	85.2	17	94.4	52	82.5	0.19
Door into clinic 32" or wider - Yes	75	92.6	16	88.9	59	93.7	0.54
I don't know	5	6.2	2	11.1	3	4.8	

Patient report difficulty getting into practice*	15	18.5	1	5.6	14	22.2	0.09
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\* = Fisher Exact Test one sided hypothesis



**Figure 7: Prevalence of Accessibility outside the Clinics**

**Accessibility Inside the Clinic.** Practice administrators were more likely to report issues of inaccessibility inside the clinic (Table 5, Figure 8). While structural accessibility (unobstructed path, width of door, width of halls, size of exam room) responses remained high (>90%), equipment accessibility responses tended to be low. Sixty-four percent of the total group of administrators reported having a low check-in counter for wheelchair patients. There was a significant difference between groups ( $p = 0.01$ ) with 88.9% of Southern Nevada practices having a low check-in counter and 57.1% of MGMA practices having a low check-in counter. Although ninety-four percent of administrators reported that they had at least one restroom that was fully accessible, when individual components

required for a restroom to be considered fully accessible were evaluated (Table 6), only 49.4% of the total group actually had a fully accessible restroom. There was a significant difference ( $p = 0.01$ ) between groups with regard to actually having a fully accessible restroom. Seventy-two percent of Southern Nevada practices had a fully accessible restroom while only 42.9% of MGMA practices had a fully accessible restroom. Eighty-six percent of the total group of administrators reported having a height adjustable exam table. MGMA practices were significantly ( $p = 0.05$ ) more likely to have a height adjustable exam table compared to Southern Nevada practices (90.5% and 72.2%, respectively). In practices where gynecological exams were performed, 56.2% reported having padded leg supports for patients with low extremity disabilities. There was not a significant difference between groups for having padded leg supports. Only 12.3% of the total group reported having a platform scale that could accommodate a wheelchair. While 22.2% of Southern Nevada administrators reported having a platform scale compared to 9.5% of MGMA practices, this difference was not significant.

**Table 5: Frequency Counts and Proportions of Accessibility within the Clinic.**

Variable	Combined Groups n = 81		Southern Nevada Practice Administrators n = 18		MGMA Practice Administrators n = 63		$\chi^2$ p-value
	n	%	n	%	n	%	
Unobstructed path within clinic*	75	92.6	17	94.4	58	92.1	0.65
Low check-in counter*	52	64.2	16	88.9	36	57.1	0.01†
Wheelchair space in waiting room*	66	81.5	17	94.1	49	77.8	0.12



Fully accessible restroom - perceived*	76	93.8	17	94.4	59	93.7	0.69
Fully accessible restroom - actual*	40	49.4	13	72.2	27	42.9	0.01†
Hallways in clinic 36" or wider	78	96.3	18	100	60	95.2	0.54
I don't know	1	1.2			1	1.6	
Door to exam rooms 32" or wider	75	92.5	18	100	57	90.5	0.46
I don't know	1	1.2			1	1.6	
At least 1 exam room large enough for a wheelchair*	76	93.8	17	94.4	59	93.7	0.69
Height adjustable exam table in at least 1 exam room	70	86.4	13	72.2	57	90.5	0.05†
Platform scale that can accommodate a wheelchair*	10	12.3	4	22.2	6	9.5	0.15
Padded leg supports for GYN exams*	41	56.2	9	60	32	55.2	0.52

\* = Fisher Exact Test one sided hypothesis

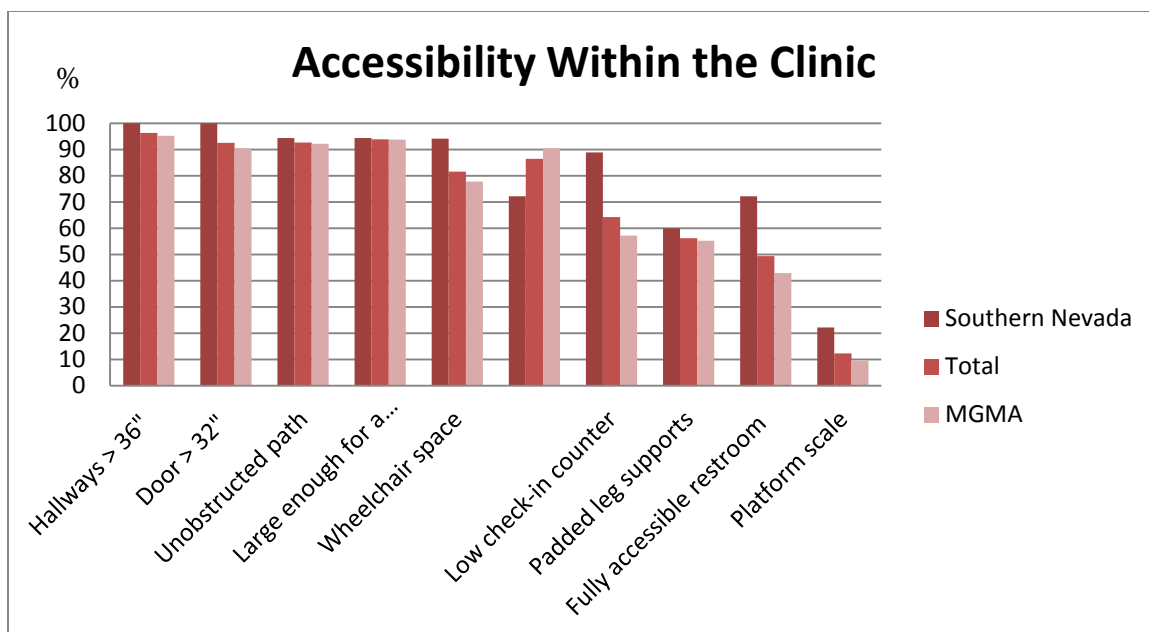
† = Statistically significant at  $p \leq 0.05$

There were no significant differences in restroom accessibility items between groups. While several variables had accessibility rates of 90% or greater, there were a few variables that had affirmative response rates of less than 90%. Seventy-nine percent of the practices had raised toilets, 88.9% had an open space in front of the sink for a wheelchair, 59.3% had pipe protectors and 86.4% had soap dispenser and hand driers that could be reached from a wheelchair.

**Table 6: Accessibility of Restrooms within the Clinic.**

	Combined Groups n = 81		Southern Nevada Practice Administrators n = 18		MGMA Practice Administrators n = 63		
Variable	n	%	n	%	n	%	$\chi^2$ p-value
Doorway into restroom 32" or wider	76	97.4	18	100	58	96.6	0.47
Wheelchair accessible stall*	74	91.4	18	100	56	88.9	0.21
Grab bars behind and on side wall*	74	91.4	17	94.4	57	90.5	0.59
Raised toilet*	64	79	14	77.8	50	79.4	0.37
Toilet paper dispenser reached without bending forward*	74	91.4	17	94.4	57	90.5	0.37
Lavatory accessible to a person sitting in a wheelchair*	76	93.8	17	94.4	59	93.7	0.48
Open space in front of lavatory*	72	88.9	15	83.3	57	90.5	0.54
Pipe protectors under sink*	48	59.3	12	66.7	36	57.1	0.2
Soap dispenser and hand driers that can be reached from a wheelchair*	70	86.4	17	94.4	53	84.1	0.08

\*Fisher Exact Test one sided hypothesis



**Figure 8: Prevalence of Accessibility within the Clinics**

**Total Number of Barriers:** If a practice did not meet an accessibility requirement, then that item was considered to be a barrier to accessing health care. The total number of barriers per clinic was calculated (Table 7). The average number of barriers reported in the total group was 4.06. There was a significant difference between groups ( $p = 0.03$ ) with MGMA practices reporting more barriers than Southern Nevada practices (4.32 and 3.17, respectively).

**Table 7: Total Number of Barriers**

Variable	Combined Groups n = 81		Southern Nevada Practice Administrators n = 18		MGMA Practice Administrators n = 63		Mann-Whitney U tests
	mean	SD	mean	SD	mean	SD	
Total number of barriers	4.06	2.12	3.17	1.58	4.32	2.19	0.03†

† = Statistically significant at  $p \leq 0.05$

### **Knowledge, Cost and Accommodations Data - Guttman Scale**

Because both qualitative and quantitative data were collected during the knowledge, cost, and accommodation section of the survey, several steps were involved in the data analysis. First, qualitative data was analyzed for major themes. Themes were categorized and the categorized data was merged with the quantitative data for further analysis. The merged data set was utilized to create Guttman scales with regard to knowledge, cost and accommodations

**Qualitative Results.** During this part of the analysis, the researcher did not have access to the accessibility data and did not know what accessibility issues were found in the quantitative analyses of each practice. Answers to qualitative questions from the telephone survey were transcribed in the data base. For the on-line survey, administrators typed their answers to the qualitative questions and those answers were included in the data base. Answers to qualitative questions were analyzed for major themes. Themes that emerged from each qualitative question are included below.

*Question 1:* Can you, briefly describe the purpose of the ADA as you understand it?

Four themes emerged from this question. Three of the themes were consistent with a general explanation of the ADA: 1) to eliminate discrimination, 2) provide accommodations and 3) ensure accessibility. The fourth theme to emerge was an inability to describe the ADA. Example responses included:

*Respondent 4: Civil rights law that does not allow discrimination based upon disability. (December, 2011)*

*Respondent 36: To make sure that people with physical disabilities are afforded the same accessibility that non-disabled patients are. To remove all barriers to access. (December, 2011)*

*Respondent 52: To provide reasonable accommodations for people with physical or mental disabilities. (January, 2012)*

*Respondent 81: No aware. (November 2011)*

Administrators who answered with one of the first three themes were considered to have a general understanding of the ADA. Administrators whose response was not consistent with one of the first three themes were categorized as not being able to describe the purpose of the ADA.

*Question 2: Describe how the ADA applies to medical practices?*

The four themes that emerged from this question included: accommodations for patients with disabilities (PWD), accessibility for PWD, access to employment for people with disabilities, and not being able to describe. Example responses were:

*Respondent 25: Patients must be able to access healthcare facilities and receive health care that is appropriate to their needs. Facilities must be easily accessible. (December, 2011)*

*Respondent 30: That all resources, including policies and procedures, accommodate to all persons, regardless of handicap and that reasonable accommodation be made to ensure that access. (December, 2011)*

*Respondent 27: Making our facility accessible to employees and patients with disabilities without assistance. (December, 2011)*

*Respondent 37: Don't know. (January, 2012)*

Administrators whose answer to this question was consistent with one of the first three themes were categorized as having a general understanding of how the ADA applies to a medical practice as each of the themes describes a component of the ADA. Administrators who did not answer the question with one of the first three themes were categorized as not having a general understanding of the ADA as it applies to a medical practice.

*Question 3: Which title of the ADA would apply to your practice?*

Title I of the ADA prohibits discrimination against people with disabilities as employees while Title II and Title III prohibit discrimination against people with disabilities in accessing health care in either public or private practices. Administrators who answered with Title I, II or III were considered to have knowledge about which title of the ADA applied to his/her medical practice. Other responses were categorized as the administrator not knowing which titles of the ADA applied to his/her practice.

Example responses were:

*Respondent 18: Title I - employment and Title III the facilities and accommodations. (December, 2011)*

*Respondent 31: Don't know, titles of ADA? (December, 2011)*

*Question 4: Describe ADA training?*

Administrators who affirmed that they had received ADA training were asked to describe their training. Administrators had received ADA training through webinars, conference presentations, MGMA courses, CME and CEU training, or graduate school. One administrator reported that they had attended an entire class regarding ADA. Employers were also a source of training through meetings, orientation and management training.

*Question 5: Is the number of patients with mobility disabilities in your practice sufficient to justify bringing your practice into ADA compliance? If no please explain.*

Administrators were asked if the number of patients with mobility disabilities was sufficient to justify bringing their practice into ADA compliance. If they answered no, they were then asked to explain their reason. Two major themes emerged from their answers: 1) not enough patients and 2) cost. Example responses were:

*Respondent 12: More economical to lose the patient than spend the money. (December, 2011)*

*Respondent 63: We have very few, less than 2%, of our patients that use a cane/wheelchair or have other disabilities that limit their mobility. (November, 2011)*

*Question 6: If the space that your practice occupies is leased, who is responsible for ADA compliance from the parking lot to the door of your practice?*

Administrators were asked who had the responsibility for ADA compliance outside of their practice if their practice was leased. The ADA requires that the building owner ensure ADA compliance of common space. If the administrator answered that the building owner, lessor, landlord or building management were responsible, then they were categorized as knowing who had the responsibility for ADA compliance. If the administrator answered that tenant, lessee or practice was responsible for ADA compliance or that they did not know, then they were categorized as not knowing who was responsible for ADA compliance of common space in the building.

*Question 7:* If the space that your practice occupies is leased, who is responsible for ADA compliance within your practice?

Administrators were asked who had responsibility for ADA compliance within their practice. The ADA requires that the lessee or tenant of the leased space ensures ADA compliance. If the administrator answered that they were, their practice was, the lessee, or the tenant was, then they were considered to understand the ADA responsibility. If they answered that the building owner, leaser, or landlord was responsible for ADA compliance within their practice, then they were categorized as not knowing the responsibility for ADA compliance within their practice.

*Question 8:* Is the number of patients with mobility disabilities in your practice sufficient to justify purchasing accessible equipment? If no please explain.

Administrators were answered if the number of patients with mobility disabilities was sufficient to justify the purchase of accessible equipment. If they answered no, they were then asked to explain their reason. Two major themes emerged from their answers:



1) not enough patients and 2) already had accessible equipment. Example responses were:

*Respondent 63: The majority of our patients are not disabled. There are only a few patients of ours that have a disability, they come once per year for their annual exam. (November, 2011)*

*Respondent 18: We already have facilities and grounds that are ADA compliant. Our exam tables are hi-low's [height adjustable] and we have bariatric hi lo's as well. (December, 2011)*

*Question 9: Describe the consequences for not being compliant with the ADA?*

Administrators were asked if they knew the consequences of not being ADA compliant. If they answered yes, then they were asked to describe the consequences. If they answered that the consequences were fines, law suits, monetary penalties, loss of Medicare or Medicaid reimbursement or that a person could file a complaint against them, then they were considered to be able to describe the consequences.

*Question 10: Do you have any additional comments that you would like to add regarding this survey?*

Major themes that emerged for qualitative question ten were: 1) there needs to be improvement in this area or 2) every clinic does not need to be accessible. Example responses were:

*Respondent 12: While people with disabilities need access to care (my wife is disabled), they do not need access to every single practice in their area. Requiring compliance for every single practice is a very inefficient*

*way to fund health care as a scare resource with dramatic budget constraints. (December, 2011)*

*Respondent 66: I think what the federal government did was wrong because they put the burden on private practices for things that might happen once a year. (November, 2011)*

*Respondent 31: My opinion is that this is an area where much improvement is needed. Many offices are older and built prior to these ADA requirements and have for whatever reason, likely cost, not yet updated space and equipment. (December, 2011)*

**Quantitative Results.** Once the qualitative analysis was complete, major themes were categorized and merged with quantitative data for further analyses and to address each research question. Chi square tests were utilized to determine if there was a significant difference in responses between the Southern Nevada administrators and the MGMA administrators. Variables (predictors) for each hypothesis were ordered based on the number of positive (yes) answers to form a rank order. Ordered data were entered into the Anthropac software. The Anthropac software was used to produce a Guttman scale with a coefficient of reproducibility (CR), minimal marginal reproducibility (MMR) and coefficient of scalability (CS) for each Guttman scale.

#### *Research Question 1*

Why do structural (office building) barriers exist that limit access to health care for people with disabilities?

*Hypothesis 1.* The Practice administrator did not know that his/her medical offices had to comply with ADA standards. (Knowledge)

Nine questions were used to ascertain the practice administrators' knowledge of the ADA. Frequencies and proportions for affirmative (yes) answers are provided in Table 8.

**Table 8: Practice Administrators' Knowledge of the ADA**

	Combined Groups n = 81		Southern Nevada Practice Administrators n = 18		MGMA Practice Administrators n = 63		
Variable	n	%	n	%	n	%	$\chi^2$ p-value
Practice administrator knew about the ADA	81	100	18	100	63	100	
Practice administrator knew that the ADA applies to medical offices*	76	93.8	16	88.9	60	95.2	0.21
Practice administrator could describe the ADA generally	68	84	10	55.6	58	92.1	0.02†
Practice administrator could describe the ADA as it applied to their practice generally	64	79	10	55.6	54	85.7	0.01†
Practice administrator had taken action to assess or insure ADA compliance	47	58	9	50	38	60.3	0.78
Practice administrator received education regarding the ADA	35	43.2	7	38.9	28	44.4	0.84

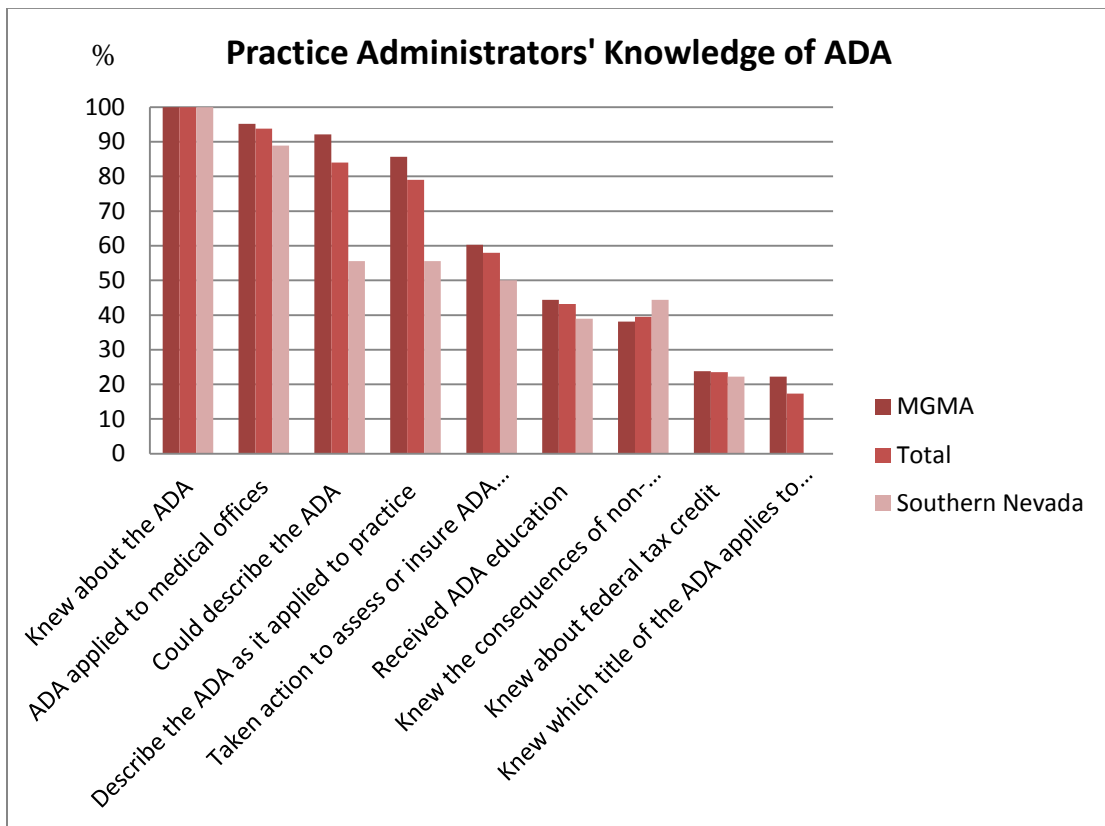
Practice administrator knew the consequences of not being compliant with ADA standards	32	39.5	8	44.4	24	38.1	0.46
Practice administrator knew that there is a federal tax credit to bring medical offices into ADA compliance.*	19	23.5	4	22.2	15	23.8	0.58
Practice administrator knew which title of the ADA applies to his/her medical offices*	14	17.3	0	0	14	22.2	0.02†
	mean	SD	mean	SD	mean	SD	Mann-Whitney U tests Rank Difference p value
Total Knowledge score (mean, SD)	5.3	1.8	4.7	2.2	5.7	1.7	0.11

\* = Fisher Exact Test one sided hypothesis

† = Statistically significant at  $p \leq 0.05$

All practice administrators had heard of the ADA and the majority (93.8%) knew that the ADA applied to medical offices. There was not a significant difference between groups for these two questions. When asked to describe the ADA, significantly fewer ( $p = 0.02$ ) Southern Nevada administrators (55.6%) were able to correctly describe the ADA compared to the MGMA administrators (95.2%). Significantly fewer ( $p = 0.01$ ) Southern Nevada administrators (55.6%) were able to describe how the ADA applied to a medical practice compared to MGMA administrators (92.1%). There was not a significant difference between the two groups for the next four questions in Table 8. Fifty-eight percent of the administrators had taken action to insure or assess ADA compliance within

their clinic. Forty-three percent of the administrators had received education regarding the ADA and its application to medical practices. Forty percent of the administrators knew the consequences for their practice being incompliant with the ADA while 24% knew that there is a federal tax credit to help defer the cost of bringing a medical practice into compliance with the ADA. There was a significant difference ( $p = 0.02$ ) between groups when asked which title of the ADA applied to his/her practice. Twenty-two percent of the MGMA administrators were able to correctly answer this question while none of the Southern Nevada administrators were able to answer this question. Figure 9 graphically depicts the proportions of each group of administrators' affirmative response to ADA knowledge questions.



**Figure 9: Practice Administrators' Knowledge of the ADA**

A valid Guttman scale (Table 9) was constructed using the nine knowledge variables. Variables were entered into Anthropac in the same order as listed in Table 8. Statistical results were: errors = 76, coefficient of reproducibility (CR) = 0.9, minimal marginal reproducibility (MMR) = 0.8, coefficient of scalability (CS) = 0.6. The mean Guttman scores for the administrators were calculated and are presented in Table 8. There was not a significant difference in the mean knowledge score between the groups. Southern Nevada administrators had a mean score of 4.7 and MGMA administrators had a mean score of 5.7. Because a valid Guttman scale was produced, the ADA knowledge score could be utilized for further analyses.

**Table 9: Guttman Scale for Administrators' Knowledge of the ADA (Anthropac)**

# of Responses	V1	V2	V3	V4	V5	V6	V7	V8	V9	Score
3	1	1	1	1	1	1	1	1	1	9
6	1	1	1	1	1	1	1	1		8
2	1	1	1	1	1	1	1	-	+	8
2	1	1	1	1	1	1	-	1	+	8
10	1	1	1	1	1	1	1			7
5	1	1	1	1	1	-	1	+		7
1	1	1	1	1	1	1	-	+		7
1	1	1	1	1	1	-	-	+	+	7
8	1	1	1	1	1	1				6
3	1	1	1	1	1	-			+	6
3	1	1	1	1	-	1	+			6
3	1	1	1	1	1					5
2	1	1	1	1	-		+			5
2	1	1	1	1	-	+				5
1	1	1	1	1	-				+	5
1	1	1	-	-	1	+	+			5
19	1	1	1	1						4
1	1	1	-	-		+	+			4
1	1	1	-	-	+				+	4
3	1	1	-			+				3
1	1	1	-						+	3
2	1	-	-		+		+			3
1	1	-	-				+	+		3

1	1	1								2
2	1									1

V1 = Knew about ADA  
V2 = Knew ADA applied to medical practices  
V3 = Could describe the ADA  
V4 = Could describe as it applies to medical practices  
V5 = Taken action to assess or insure ADA compliance  
V6 = Received education regarding the ADA  
V7 = Knew the consequences of not being compliant with the ADA  
V8 = Knew there was a federal tax credit  
V9 = Knew which title of the ADA applied to their medical practice  
+ = Error

**Linear Regression:** The range for total number of barriers was 0 to 10 and the range for knowledge was 1 to 9. Because of this, both variables were coded as continuous and a linear regression analysis was performed. The total knowledge score was not significantly different between the Southern Nevada administrators and the MGMA administrators; however, the total number of barriers was significantly different. Because of this, the group variable was entered into the linear regression model as a dummy code with MGMA as the reference. The linear regression model was significant ( $F = 7.72$ ,  $p < 0.01$ ) and explained 17% ( $R^2 = .17$ ) of the variance in the number of barriers (Table 22, Appendix). Both the group variable and ADA knowledge variable were significant in the model ( $p < 0.01$  and  $p < 0.01$ , respectively) (Table 23, Appendix). The regression equations generated by the linear regression were:

$$\text{Southern Nevada total \# barriers} = 4.94 - 0.39 (\text{total ADA knowledge score})$$

$$\text{MGMA total \# barriers} = 6.49 - 0.39 (\text{total ADA knowledge score})$$

The regression model indicates that there was an inverse relationship between the knowledge that an administrator has of the ADA and the number of barriers found in the clinics (i.e. administrators with higher knowledge scores tended to have few barriers in

their clinic). This finding supports the hypothesis that barriers exist because administrators have low levels of knowledge about the ADA.

*Hypothesis 2.* The Practice administrators thought that the responsibility of ADA compliance rests on the building owner rather than a tenant (if medical practice is in a building owned by someone else). (Responsibility)

Two questions were presented to the practice administrators to determine if they knew the party responsible for ADA compliance both inside and outside of their medical practice if their office space was leased (Table 10). Eighty percent of practice administrators were able to correctly identify that the leaser, landlord or building owner was responsible for ADA compliance outside of their practice. Eighty percent of the practice administrators were also able to correctly state that they or the practice were responsible for ADA compliance within their practice. There was not a significant difference between the groups. These findings reject the hypothesis that the practice administrators did not know who was responsible for ADA compliance within their practice.



**Table 10: Practice Administrators' Understanding of ADA Responsibility**

	Combined Groups n = 81		Southern Nevada Practice Administrators n = 18		MGMA Practice Administrators n=63		
Variable	n	%	n	%	n	%	$\chi^2$ p-value
Practice administrator knew that the space they use and control is the practice's responsibility for ADA compliance*	36	80	8	61.5	28	87.5	0.06
Practice administrator knew that the common space is the building owner's responsibility for ADA compliance*	39	79.6	10	71.4	29	82.9	0.29

\* = Fisher Exact Test one sided hypothesis

*Hypothesis 3.* The cost to remodel the office to bring the practice into ADA compliance was too great. (Cost)

Six questions were asked to determine if the cost of remodeling medical offices to be ADA compliant was a barrier to ADA compliance (Table 11). No significant differences were found between the two groups with regard to affirmative answers to these questions. Fifty-seven percent of the practice administrators indicated that their practice was already compliant with the ADA and had not inquired about the cost bringing their office into compliance. These administrators had also not considered the number of patients with disabilities was sufficient to justify the cost to bring their practice into ADA compliance because they reported they were already compliant. Of the 43% of the administrators who did not consider their practice ADA compliant, 34% thought that the number of patients with disabilities was sufficient to justify the cost of bringing their

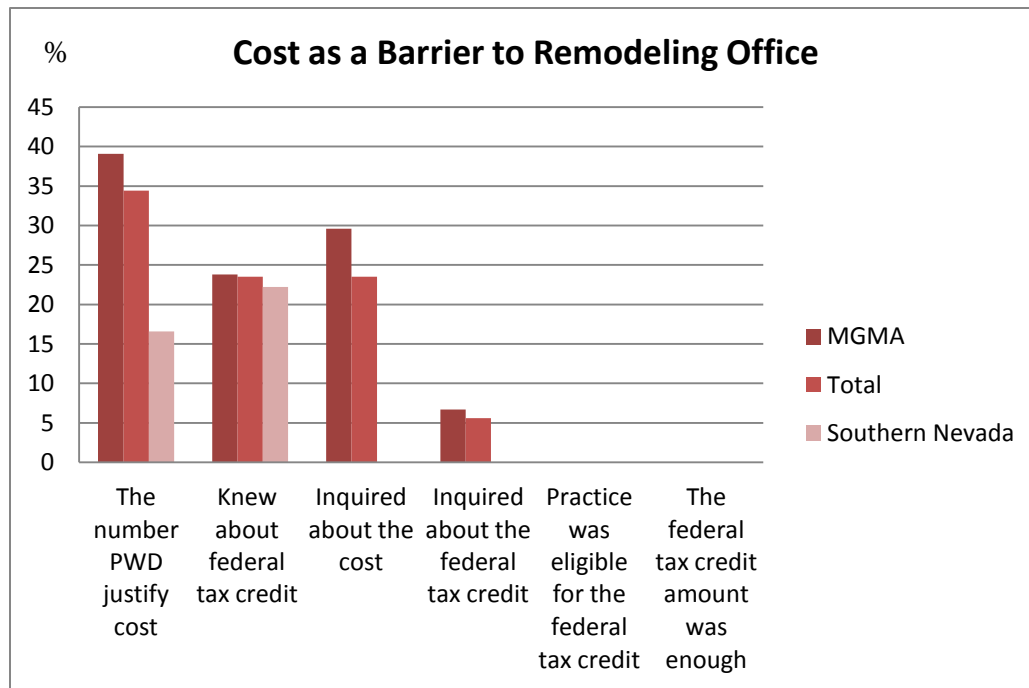
practice into compliance while 66% did not think that the number was sufficient to justify the cost. Twenty-four percent of the administrators knew about the federal tax credit to offset the cost of remodeling and had inquired about the cost of bringing their office into compliance. Only one administrator had inquired about the federal tax credit; however that practice was not eligible for the federal tax credit. Figure 10 graphically illustrates the proportions of affirmative answers to the questions presented.

**Table 11: Cost of Remodeling Office as a Barrier**

	Combined Groups n = 81		Southern Nevada Practice Administrators n = 18		MGMA Practice Administrators n = 63		
Variable	n	%	n	%	n	%	$\chi^2$ p-value
The number of patients in the practice with disabilities was sufficient to justify cost to bring practice into compliance if not compliant*	10	34.4	1	16.7	9	39.1	0.30
Practice administrator indicated practice compliant with ADA	46	56.8	12	66.7	34	54.0	0.08
Practice administrator knew that there is a federal tax credit available to bring medical offices into ADA compliance.*	19	23.5	4	22.2	15	23.8	0.58
Practice administrator had inquired about the cost to bring the practice into ADA compliance if practice was not compliant*	8	23.5	0	0	8	29.6	0.24

Practice administrator indicated practice compliant with ADA	46	56.8	12	66.7	34	54.0	0.08
Practice administrator had inquired about the federal tax credit to offset the cost to remodel.*	1	5.6	0	0	1	6.7	0.83
The practice was eligible for the federal tax credit to remodel.	0	0	0	0	0	0	NA
The federal tax credit amount was great enough to encourage the practice to remodel	0	0	0	0	0	0	NA

\* = Fisher Exact Test one sided hypothesis



**Figure 10: Cost as a Barrier to Remodeling for ADA Compliance**

A valid Guttman scale could not be constructed using the cost to remodel variables, so further analysis with the summed score was not feasible. Statistical results were: errors = 30, CR = 0.9, MMR = 0.9, CS = 0.2. Because a low percentage (43%) of

practice administrators considered their practice to not be compliant with the ADA and because a low percentage (23.5%) of the administrators had inquired about the cost of bringing their practice into ADA compliance, the hypothesis that the cost of remodeling was a barrier to ADA compliance was rejected.

### *Research Question 2*

Why do equipment barriers exist that limit access to health care for people with disabilities?

*Hypothesis 1.* The Practice Administrator did not know that accessible equipment existed (height adjustable exam tables or scales that will accommodate a wheelchair).

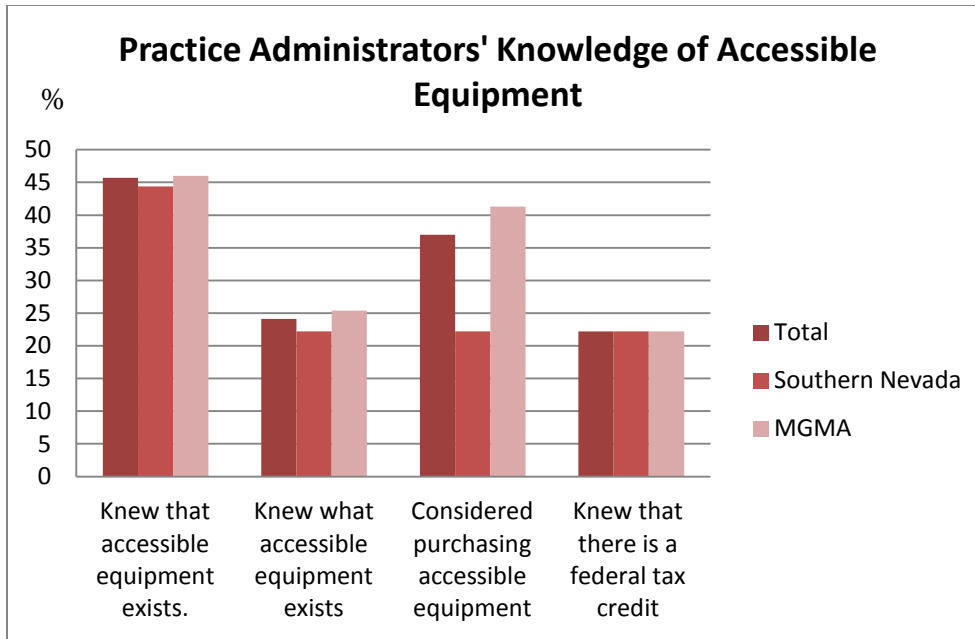
(Knowledge)

Four questions were asked to evaluate the administrators' knowledge of accessible equipment that is available for medical practices (Table 12, Figure11). There were no significant differences in the proportions for affirmative answers between the groups. Less than half (45.7%) of the administrators knew that accessible equipment existed and only 24.1% indicated that they knew what accessible equipment existed. Twenty-two percent of the administrators knew that there is a federal tax credit to offset the cost of accessible equipment. Thirty seven percent of the administrators had considered purchasing accessible equipment. Rates of affirmative responses are presented in Figure 13.

**Table 12: Practice Administrators' Knowledge of Accessible Equipment**

	Combined Groups n = 81		Southern Nevada Practice Administrators n = 18		MGMA Practice Administrators n = 63		
Variable	n	%	n	%	n	%	$\chi^2$ p-value
Practice administrator knew <b>that</b> accessible equipment existed	37	45.7	8	44.4	29	46	0.94
Practice administrator knew <b>what</b> accessible equipment existed*	20	24.1	4	22.2	16	25.4	0.53
The Practice administrator knew that there is a federal tax credit available to offset the cost of purchasing accessible equipment.*	18	22.2	4	22.2	14	22.2	0.91
Practice administrator had considered purchasing accessible equipment*	30	37.0	4	22.2	26	41.3	0.14

\* = Fisher Exact Test one sided hypothesis



**Figure 11: Practice Administrators' Knowledge of Accessible Equipment Available for Medical Practices.**

A valid Guttman scale (Table 13) was constructed using all four accessible equipment knowledge variables. Variables were entered into Anthropac in the same order as found in table 12. Statistical results for the Guttman scales were: errors = 32, CR = 0.9, MMR = 0.7, CS = 0.7. Because 32 administrators had a Guttman scale score of zero and because there were only four variables, the summed score was not appropriate to use for further analysis using linear regression. Instead, Sperman's Rho correlation was used to determine if the amount of accessible equipment was correlated with the Guttman Score. Sperman's Rho was used because accessible equipment knowledge was not normally distributed. The amount of accessible equipment for each practice could be zero to three. The three pieces of accessible equipment were an accessible exam table, a platform scale or padded leg supports for a gynecological (GYN) exam. There was a significant positive correlation between the Guttman Score for knowledge of accessible equipment and the amount of accessible equipment in the

practice ( $R = 0.27$ ,  $p = 0.02$ ). This hypothesis was supported because a low percentage of the administrators had knowledge that accessible equipment existed (45.7%) and a low percentage of administrators knew what equipment existed (24.1%) and because of the positive correlation between knowledge of accessible equipment and accessible equipment availability.

**Table 13: Guttman Scale for Administrators' Knowledge of Accessible Equipment**

# of Respondents	V1	V2	V3	V4	Score
9	1	1	1	1	4
2	1	-	1	+	3
7	1	1	1		3
1	1	1	-	+	3
7	1	1			2
3	1	-	+		2
1	1	-		+	2
8	1				1
5	-		+		1
6	-	+			1
32					0

V1 = Knew that accessible equipment existed  
V2 = Knew what accessible equipment existed  
V3 = Knew about the federal tax credit to offset cost of equipment  
V4 = Considered purchasing accessible equipment  
+ = Error

*Hypothesis 2.* The cost of accessible equipment was too great compared to standard equipment.

Practice administrators were asked seven questions to determine if the cost of accessible equipment was a barrier to purchasing accessible equipment (Table 14).

Thirty-seven percent of the administrators had considered purchasing accessible equipment while thirty percent considered the number of patients with disabilities

sufficient to justify the cost of accessible equipment. Twenty percent of the practices had already purchased accessible equipment and 22.2% of the administrators knew about the federal tax credit to offset the cost of the equipment. Only two administrators had inquired about the tax credit to offset the cost, one practice was eligible for the tax credit; however, they did not purchase the equipment because the cost was too great.

Proportions of affirmative responses are represented in Figure 12.

**Table 14: Cost to Purchase Accessible Equipment as a Barrier**

	Combined Groups n = 81		Southern Nevada Practice Administrators n = 18		MGMA Practice Administrators n = 63		
Variable	n	%	n	%	n	%	$\chi^2$ p-value
Practice administrator had considered purchasing accessible equipment*	30	37.0	4	22.2	26	41.3	0.14
The number of patients in the practice with disabilities was great enough to off-set the cost of purchasing accessible equipment.*	24	29.6	3	16.7	21	33.3	0.16
The practice purchased the equipment considered*	16	19.8	3	16.7	20	31.1	0.68
The Practice administrator knew that there is a federal tax credit available to off-set the cost of purchasing accessible equipment*	18	22.2	4	22.2	14	22.2	0.91



Practice administrator inquired about the federal tax credit to offset the cost of accessible equipment	2	2.5	0	0	2	3.2	0.57
The practice was eligible for the federal tax credit to purchase accessible equipment	1	1.2	0	0	1	1.6	NA
The federal tax credit amount was enough to offset the cost	0	0	0	0	0	0	NA

\* = Fisher Exact Test one sided hypothesis

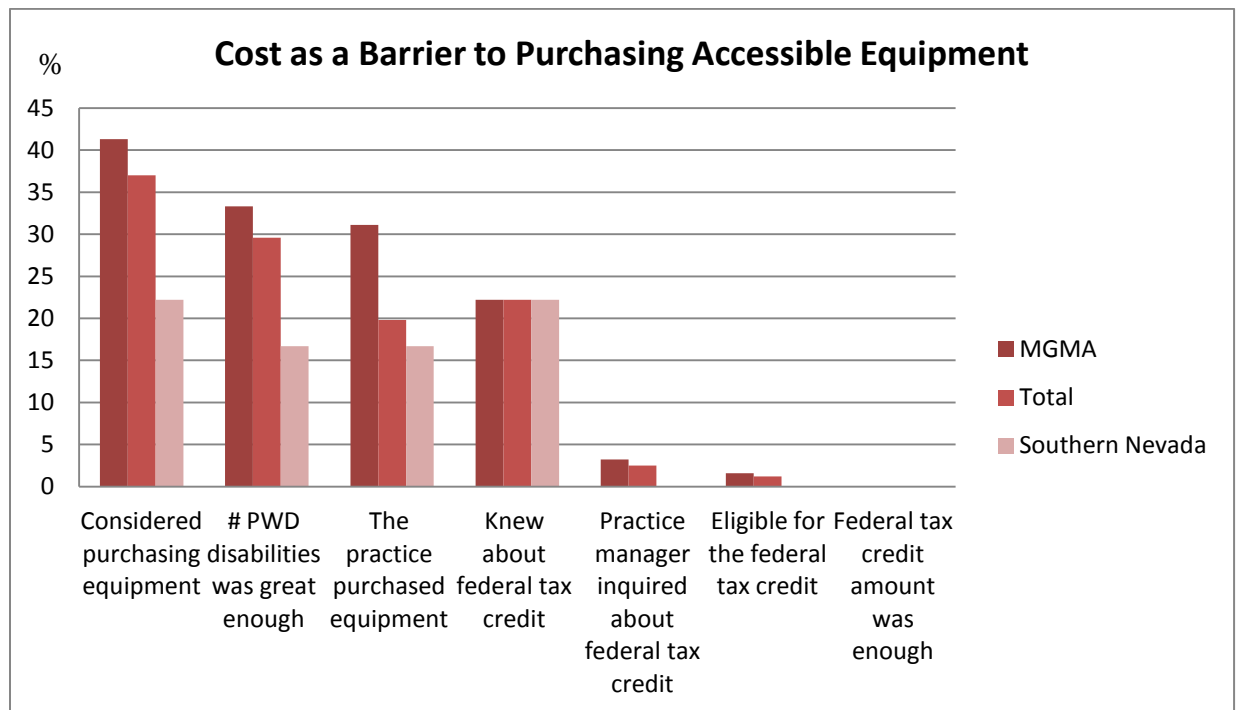


Figure 12: Cost as a Barrier to Purchasing Accessible Equipment

To produce a valid Guttman scale for equipment cost, the second variable (number of patients sufficient to justify cost) was dropped from the scale (Table 15). The remaining variables were entered into Anthropac in the same order as found in table 14. Statistical results for the Guttman scale were: errors = 0, CR = 1.0, MMR = 0.8, CS = 1.0. Because no respondents had a Guttman score of 6 and over half of the respondents had a Guttman score of zero, the summed score was not appropriate for further evaluation using linear regression. The hypothesis was rejected because a low proportion (37%) of administrators had considered purchasing accessible equipment.

**Table 15: Guttman Scale for Equipment Cost**

# of Respondents	V1	V2	V3	V4	V5	V6	Score
0	1	1	1	1	1	1	6
1	1	1	1	1	1		5
1	1	1	1	1			4
15	1	1	1				3
6	1	2					2
7	1						1
41							0

V1 = Considered purchasing accessible equipment  
V2 = Purchased accessible equipment  
V3 = Knew about the federal tax credit to offset the cost of equipment  
V4 = Inquired about the federal tax credit  
V5 = Practice eligible for the federal tax credit  
V6 = Federal tax credit was enough

### *Research Question 3*

How do medical practices accommodate a person with disabilities when a barrier to services is encountered?

*Hypothesis 1.* If a patient encounters barriers to services at the practice, then the patient was referred to another practice that could accommodate him/her. (Refer)

Administrators were asked if patients were referred to another practice if a barrier to services was encountered at their practice. Fifty-one percent of the administrators responded 'yes' to this question with no significant difference between the Southern Nevada and MGMA administrators (Table 16).

**Table 16: Practices that Refer Patients with Disabilities When Barrier Encountered**

	Combined Groups n = 81		Southern Nevada Practice Administrators n = 81		MGMA Practice Administrators n = 81		
Variable	n	%	n	%	n	%	$\chi^2$ p-value
Patient is referred to another clinic*	41	50.6	11	61.1	30	47.6	0.53

\* = Fisher Exact Test one sided hypothesis

*Hypothesis 2.* If a patient encounters barriers to services at the practice, then related parts of the examination were skipped. (Skip)

Administrators were asked if parts of an exam were skipped when a barrier to service was encountered when examining a patient with disabilities. Forty-two percent of the administrators acknowledged that parts of an exam were skipped with no significant difference between the two groups (Table 17).

**Table 17: Practices that Skip Parts of an Exam When a Barrier is Encountered.**

	Combined Groups n = 81		Southern Nevada Practice Administrators n = 81		MGMA Practice Administrators n = 81		
Variable	n	%	n	%	n	%	$\chi^2$ p-value
That part of the exam is skipped	34	42	6	33.3	28	44.4	0.43

\* = Fisher Exact Test one sided hypothesis

† = Statistically significant at  $p \leq 0.05$

*Hypothesis 3.* If a patient was not able to transfer to an examination table, the practice used alternatives.

Practice administrators were asked what alternatives were used if a patient was not able to transfer onto an exam table (Table 18). There were significant differences in the proportions of clinics that examine patients in their wheelchairs ( $p = 0.02$ ) and clinics that ask patients with disabilities to bring someone to help them transfer ( $p = 0.02$ ). One hundred percent of practices in Southern Nevada examine patients in their wheelchair compared to 76.2% of MGMA practices. A greater proportion (83.3%) of Southern Nevada practices ask patients who could not transfer onto an exam table on their own to bring someone with them compared to 52.4% of MGMA practices. Seventy-six percent of practice administrators indicated that their employees were trained to lift a patient while 6.2% of practices have a lift available to transfer patients.

**Table 18: Alternatives Used with a Barrier is Encountered**

Variable	Combined Groups n = 81		Southern Nevada Practice Administrators n = 81		MGMA Practice Administrators n = 81		$\chi^2$ p-value
	n	%	n	%	n	%	
Patient is examined in their wheelchair*	66	81.5	18	100	48	76.2	0.02†
Employees trained to lift patient	62	76.5	13	72.2	49	77.8	0.68
Pt asked to bring someone with them to help transfer*	48	59.3	15	83.3	33	52.4	0.02†
Lift available*	5	6.2	2	11.1	3	4.8	0.33

\* = Fisher Exact Test one sided hypothesis

† = Statistically significant at  $p \leq 0.05$

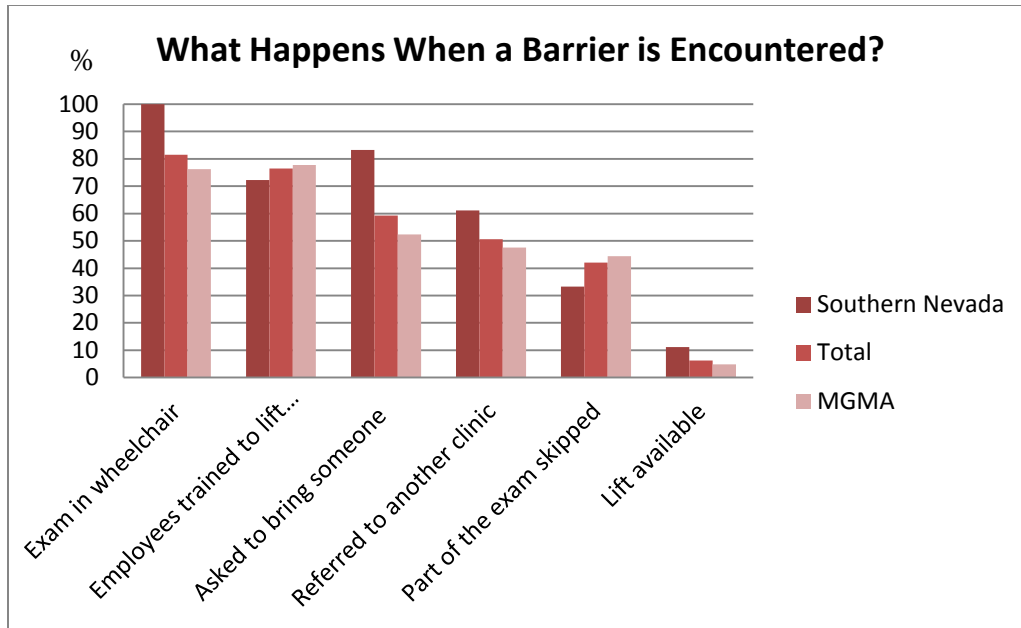
*Hypothesis 4.* If a patient is not able to maneuver sufficiently inside the medical practice or if they took longer to be examined, the practice refused to treat the patient. (Refuse treatment)

Practice administrators were asked if patients were refused treatment if they could not maneuver sufficiently within the clinic or because it took longer to examine patients with disabilities (Table 19). Only 2.5 percent (2 practices) indicated that they have refused treatment for patients with disabilities due to an inaccessible clinic while no administrators reported refusing treatment because it took longer to examine patients with disabilities.

**Table 19: Practices that Refuse to Treat Patients**

	Combined Groups n = 81		Southern Nevada Practice Administrators n = 81		MGMA Practice Administrators n = 81		
Variable	n	%	n	%	n	%	$\chi^2$ p-value
Refused treatment because:							
Practices was inaccessible*	2	2.5	0	0	2	3.2	0.6
It took longer to examine them	0	0	0	0	0	0	NA
Practice not reimbursed for longer exam	0	0	0	0	0	0	NA

\* = Fisher Exact Test one sided hypothesis



**Figure 13: Accommodations for Patients with Disabilities When a Barrier is Encountered**

Figure 13 graphically illustrates how patients are accommodated when a barrier to medical services was encountered. Over half of the administrators reported that they examine patients in their wheelchairs, have employees trained to lift patients and ask patients with disabilities to bring someone with them to help with the transfer onto the exam table. Half of the clinics (50.2%) refer patients to another clinic when a barrier to care was experienced. Less than half of the clinics (42%) skip parts of an exam when a barrier was encountered. Very few clinics (11%) had a lift available to help transfer a patient and none of the clinics refuse to treat patients with disabilities because it took longer to examine them.

Further analyses were conducted to determine if there was a difference in accommodations between administrators who could describe how the ADA applied to their practice and administrators who could not. No significant differences were found between groups with regard to skipping part of the exam, examining patients in their

wheelchairs, asking patients to bring someone with them, referring patients to another practice, having employees trained to assist patients or having a lift (Table 20).

**Table 20: How the ADA Applies to Medical Practices**

	Administrator Could Describe	Administrator Could not Describe	
	n	n	$\chi^2$ p-value
Refer patients	31	10	0.54
Skip part of exam	24	9	0.38
Examine pt in wheelchair	49	16	0.06
Pt asked to bring someone	38	10	0.58
Employee trained	48	13	0.52
Lift available	3	2	0.25

### Multiple Linear Regression

The last part of the data analysis for this study used multiple linear regression to determine if more of the variance in the total number of barriers could be accounted for by including characteristics of the administrator or characteristics of the practice.

Characteristics of the administrator were age, gender, education, number of years as an administrator and number of years as an administrator in their current practice in addition to ADA knowledge score and group (Southern Nevada or MGMA). Characteristics of the practice included the number of years the practice had been in operation, if the building was built before 1993, the number of providers and the number of patients.

**Characteristics of the Administrator:** Prior to initiating the MLR for the characteristics of the administrator, independent variables were checked for high levels of correlation.

The number of years that administrators had been in administration and their age was highly correlated ( $R = 0.61$ ) so the number of years in administration was eliminated as

an independent variable (correlation matrix, Table 25, Appendix). The purpose of this step was to prevent multicollinearity which violates an assumption of MLR (Weisberg, 2005).

Because education was a categorical variable, dummy codes were created with Bachelor's degree as the reference. Variables were entered into SPSS in the order: group, ADA knowledge, gender, age, years at current practice, high school diploma, Associate's degree, Master's degree, Doctoral degree and other professional. Results from the MLR were significant ( $F = 2.54$ ,  $p = .01$ ) and explained 28% of the variability ( $R^2 = .28$ ) in the total number of barriers (Table 26, Appendix). Significant independent variables were: group ( $p = .05$ ), ADA knowledge ( $p < 0.01$ ), and age of the administrator ( $p = 0.03$ ) (Table 27, Appendix). The MLR met the assumptions of linear regression including normality, no multicollinearity and homoscedasticity (diagnostic tests included in Appendix) (Weisberg, 2005).

**Characteristics of the Practice:** Prior to initiating the MLR for the characteristics of the practice, independent variables were checked for high levels of correlation. The number of patients and the number of providers were highly correlated ( $R = 0.69$ ) so the number of providers was eliminated as an independent variable (correlation matrix, Table 28, Appendix).

Because practice type was a categorical variable, dummy codes were created with OB/GYN as the reference group. Variables were entered into SPSS in the order: group, years in operation, built before or after 1993, number of patients, family medicine, internal medicine, general medicine, other. Results from the MLR were significant ( $F =$



2.4,  $p = 0.03$ ) and explained 24% of the variability ( $R^2 = .24$ ) in the total number of barriers (Table 28, Appendix). Significant independent variables were: group ( $p = 0.01$ ), built before 1993 ( $p = 0.01$ ) and number of patients ( $p = 0.04$ ) (Table 30, Appendix). The MLR met the assumptions of linear regression including normality, no multicollinearity and homoscedasticity (diagnostic tests included in Appendix).

**Final Multiple Linear Regression Model:** Significant independent variables from the characteristics of the administrator and the characteristics of the practice were entered into a final MLR model. The results were significant (model  $F = 6.7$ ,  $p < 0.01$ ) and explained 36% of the variability in the total number of variables (Table 21). Variables that were significant in previous models remained significant (Table 22): group ( $p < 0.01$ ), ADA knowledge ( $p = 0.04$ ), building built before 1993 ( $p < 0.01$ ), age of administrator ( $p < 0.01$ ) and number of patients ( $p = 0.06$ ). The MLR met the assumptions of linear regression including normality, no multicollinearity and homoscedasticity (diagnostic tests included in Appendix). Results for the final model are presented in Table 22. Four equations for predicting the total number of barriers were generated:

### **Practices built after 1993**

1. SN total # barriers =  $7 - .26(\text{ADA knowledge}) - .08(\text{age}) - 9.490\text{E-}6 (\# \text{ of pts})$

2. MGMA total # barriers =  $9.57 - .26(\text{ADA knowledge}) - .08(\text{age}) - 9.490\text{E-}6 (\# \text{ of pts})$

### **Practices built before 1993**

3. SN total # barriers =  $8.24 - .26(\text{ADA knowledge}) - .08(\text{age}) - 9.490\text{E-}6 (\# \text{ of pts})$

4. MGMA total # barriers = 10.81 - .26(ADA knowledge) - .08(age) – 9.490E-6 (# of pts)

The four equations were reduced to one equation with group = 1 for Southern Nevada, group = 0 for MGMA, building = 1 for built before 1993, and building = 0 for built after 1993:

Total # barriers = 9.57 – 2.57(group) + 1.24(building) - .26(ADA knowledge) - .08(age) – 9.490E-6 (# of pts)

**Table 21: Multiple Linear Regression Results for Final Model**

R	R Square	Adjusted R Square	F	P
.60	.36	.30	6.72	<0.001†

† = Statistically significant at  $p \leq 0.05$

**Table 22: Multiple Linear Regression Coefficients for Final Model**

	B Coefficient	t	p	95% Confidence Interval $\beta$		Collinearity Statistics	
Constant	9.57	6.71	>0.001	6.71	12.42		
Group	-2.57	-3.38	0.01	-4.08	-1.05	0.80	1.26
ADA Knowledge	-.26	-2.12	0.04	-0.51	-0.01	0.92	1.08
Year Built (before/after 1993)	1.24	2.81	>0.01	0.36	2.13	0.99	1.01
Age	-0.08	-3.27	>0.01	-0.13	-0.03	0.84	1.20
Number of Patients	-9.490E-6	-1.93	0.06	0.00	0.00	0.94	1.07

† = Statistically significant at  $p \leq 0.05$

## Summary

This chapter provided a summary of results from the study. Descriptive statistics were provided for the total sample, the Southern Nevada administrators and the MGMA administrators. Accessibility of the practices was provided and items that were inaccessible were considered to be barriers. The total number of barriers for each practice were calculated and mean number of barriers were calculated for the total sample and each group of administrators. Southern Nevada practice administrators reported significantly fewer barriers than MGMA administrators.

Both qualitative and quantitative data for ADA knowledge, cost of bringing a practice into ADA compliance, knowledge of accessible equipment, cost of equipment and accommodations were presented. Data for the total group, Southern Nevada administrators and MGMA administrators were reported. Throughout the data analyses, significant differences between the Southern Nevada and MGMA administrators were determined using chi square for dichotomous variables or Mann-Whitney U for continuous variables. There was not a significant difference in total ADA knowledge score between groups and the majority of proportions of affirmative answers did not show significant differences between groups. Hypotheses concerning knowledge were supported by the findings while hypotheses about cost and responsibility were not supported by the findings of this study.

Total ADA knowledge scores for practice administrators conformed to a valid Guttman Scale and summed knowledge scores were used as an independent variable in linear regression to predict total number of barriers. Multiple linear regression analyses were conducted using characteristics of the administrator and characteristics of the practice. A final model was achieved that explained 36% of the variability in the total

number of barriers using independent variables: group, ADA knowledge, building built before 1993, age of administrator and number of patients as independent variables.

Chapter 5 will discuss the findings of this study.

## Chapter 5 - Discussion

### Summary of the Study

The number of people with disabilities is expected to continue to grow in the United States as the baby boomers age and as the prevalence of diabetes increases (Brault, 2008; Center for Disease Control and Prevention, 2011; Day, 2005; Houtenville & Ruiz, 2011). This is a public health problem because people with disabilities have been identified as a group that has unmet health care needs resulting in health disparities (Dykes & White, 2009). People with disabilities are less likely to engage in important preventive health services (Armour et al., 2009; Diab & Johnston, 2004; Havercamp et al., 2004; Iezzoni et al., 2000; Pharr & Moonie, 2011b). They are more likely to have chronic diseases and secondary conditions and to experience a lower quality of care. (Chevarley et al., 2006; Iezzoni et al., 2002; Pharr & Moonie, 2011a; Reichard et al., 2011).

Qualitative studies have been utilized to understand why differential utilization of preventive health services occurs between those with and without disabilities. Three categories of barriers have been identified that prevent people with disabilities from engaging in preventive health services. These include structural, financial and personal/cultural (Drainoni et al., 2006; Millman, 1993). The focus of this study was structural barriers that people with disabilities experience when accessing healthcare. Structural barriers have been categorized as: 1) barriers to accessing the clinic (inadequate disability parking, lack of ramps, narrow doorways, doors that were too heavy), 2) barriers within the clinic (cramped waiting and examination rooms, inaccessible restrooms) and 3) equipment barriers (exam tables, x-ray and mammography

machines and scales) (Kroll et al., 2006; Scheer et al., 2003). A limited number of quantitative studies have been conducted to evaluate the prevalence of structural barriers. No studies have been conducted to understand why structural barriers exist. Do practice administrators lack knowledge of the ADA or is the cost of improving accessibility too great? The purpose of this mixed methods study was to address the reasons why structural (office building) and equipment barriers existed, limiting access to health care services for people with disabilities. This study also sought to identify how medical practices accommodated people with disabilities when a barrier was encountered. The initial questions asked in this study were to determine the accessibility and barrier prevalence within each clinic. Then the three research questions were addressed:

- 1) Why do structural (office building) barriers exist that limit access to health care for people with disabilities?
- 2) Why do equipment barriers exist that limit access to health care for people with disabilities?
- 3) How do medical practices accommodate a person with disabilities when a barrier to services is encountered?

The survey utilized in this study was created using the ADA construction guidelines, the ADA's *Access to Medical Care for Individuals with Mobility Disabilities*, the Adaptive Environment Center's *Checklist for Existing Facilities*, and published scholarly literature. Primary care administrators were the population for this study. Administrators were selected because of their oversight of clinical operations including equipment purchases and patient flow (Handbook, 2004). Primary care clinics were selected because they are the foremost provider of preventive health services (Harrington

et al., 2009). Primary care administrators from Southern Nevada and the Medical Group Management Association (MGMA) were surveyed. In total, 81 administrators completed the survey. Eighteen administrators from Southern Nevada completed a telephone survey with a response rate of 10.4% and a survey completion rate of 90%. Sixty-three administrators from the MGMA completed an on-line survey with a survey completion rate of 73.3%. Response rate could not be calculated for the MGMA practice administrators.

## **Key Findings and Discussion**

**Accessibility and Barrier Prevalence.** Practice administrators reported higher rates of compliance with ADA standards outside of their clinic compared to inside their clinic. This finding is consistent with previous research which found greater accessibility getting into the medical practice than within a medical practice (Graham & Mann, 2008; Harrington et al., 2009; Sanchez et al., 2000). In Harrington et al.'s (2009) survey of patients with disabilities, only 2.67% of the patients had problems physically getting into their primary care physician's office. Sanchez et al. (2000) evaluation of primary care clinics found high rates of compliance with ADA standards for handicapped parking, ramps, and door-widths. In this study, the majority of items outside of the clinic had rates of compliance that were ninety percent or higher.

Rates of compliance within the clinic were lower than rates of compliance outside of the clinic. For structural items within the clinic such as door and hall widths or size of exam rooms, rates were greater than ninety percent. However, rates of compliance were lower for a height adjustable exam table, a low check-in counter, padded leg supports for

gynecological exam, an actual fully accessible restroom and a platform scale. These findings support Graham and Mann's (2008) research which also found low rates for platform scales, fully accessible restrooms, height adjustable exam tables and low check-in counters within clinics. In the current study, higher rates were reported for height adjustable exam tables, scales and accessible restrooms than in previous studies. The difference may indicate improvements in these areas. However, a study by Sanchez et al. (2000) found that practice administrators reported higher rates of accessible equipment and facilities than were actually found in follow-up, on-site evaluations (Sanchez et al., 2000).

In this study, practice administrators indicated that they had a fully accessible restroom 93.8% of the time. However, when individual items that the ADA requires for a restroom to be fully accessible were examined, 49.4% of the practices actually had a fully accessible restroom. This finding is similar to that of Sanchez et al. (2000) who found that practice managers' perceptions of accessibility within their clinic were higher than actual accessibility with their clinic.

Results of better structural access compared to equipment access illustrate how perceived accessibility on the part of practice administrators does not reflect the actual needs and issues of patients with disabilities. For patients with disabilities to fully engage in the health care available in primary care clinics, it is more than a matter of simply being able to get through the front door or into an exam room (Story et al., 2009). A clinic or a restroom is not necessarily accessible because the door ways or stalls have been made wider. To fully accommodate patients with disabilities, every aspect of the clinical operation needs to be evaluated from the perspective of a patient with disabilities.



This includes accessing the clinic from the parking lot; maneuvering inside the clinic, exam room, restroom; and interacting with equipment such as a scale, exam table or other medical equipment. Practice administrators need to consider all aspects of health care delivery from the perspective of a patient with disabilities.

Southern Nevada practices had a significantly lower number of access barriers when compared to MGMA practices ( $p = 0.03$ ). Two reasons may explain this difference. First, Southern Nevada practices were more likely to be built after 1993 compared to MGMA practices. The Americans with Disabilities Act of 1990 required that all buildings built after 1993 comply with ADA standards. Buildings built prior to 1993 were required to be modified to be brought into compliance unless it was cost prohibitive (Americans with Disabilities Act, 2008). In this study, a higher percentage of the Southern Nevada respondents' buildings were built after 1993 as compared to MGMA respondents' buildings. Graham and Mann (2008) reported the year a building was built was a significant predictor of the total accessibility score of a primary care practice. Multiple linear regression models for this study found buildings built prior to 1993 were a significant predictor ( $p < 0.001$ ) for the total number of barriers found in the clinics.

Secondly, the Southern Nevada practice administrators were surveyed via telephone while the MGMA practice administrators answered an on-line survey. Studies have found that participants were more likely to complete a survey over the telephone compared to an on-line survey; however, they were more likely to honestly answer questions in an on-line survey as compared to a telephone survey (Chang & Krosnick, 2010; Fricker, Galesic, Tourangeau, & Yan, 2005; Roster, Rogers, Albaum, & Klein,

2004; Turner et al., 2005). This study found higher rates of survey completion for the telephone (Southern Nevada) survey compared to the on-line (MGMA) survey; however, it is not possible to authenticate the answers of the administrators for either survey type.

**Research Question 1: Why do structural (office building) barriers exist that limit access to health care for people with disabilities?** The hypotheses for the first research questions were: 1) there was a lack of knowledge about the ADA, 2) there was confusion about responsibility for ADA compliance or 3) the costs of making modifications to a practice to bring it into compliance were too great. Findings from this study support the hypothesis that practice administrators lacked knowledge about the ADA. The hypothesis of practice administrators not knowing ADA compliance was their responsibility in a leased space was not supported by findings from this study. Cost as a barrier to compliance was also not supported by the findings.

To evaluate the practice administrators' knowledge of the ADA, nine questions were asked regarding ADA knowledge. Questions were hierarchical in nature, starting with relatively simple questions and progressing to more difficult questions. The mean score for knowledge was 5.3 on a scale of one to nine with no significant difference in mean scores between the groups. A high percentage of practice administrators had general knowledge of the ADA; however, a low percentage of administrators had specific knowledge of the ADA as it applies to their practice. The majority of the administrators reported that they had heard of the ADA and that they knew the ADA applied to medical practices. High rates of administrators were able to generally describe the purpose of the ADA. Themes that emerged from the qualitative question about the general purpose of

the ADA were to eliminate discrimination against people with disabilities, provide accommodations or ensure accessibility to services for people with disabilities. Fewer administrators were able to articulate how the ADA applied to their practice with emerging themes of, ensuring that practices provide accommodations and accessibility for patients with disabilities or access to employment for people with disabilities. A minority of the administrators knew the consequences of being out of compliance with the ADA, about the federal tax credit to offset the cost of bringing an office into compliance or which title of the ADA applied to their practice.

While few studies have been conducted to assess the ADA knowledge of health care professionals or administrators in general, findings from this study are consistent with findings of previous studies. Hernandez, Keys and Balcazar (2003) conducted an ADA knowledge survey with managers, business owners and social services providers. The mean survey score was 8.2 on a scale of zero to twenty. Participants had a higher success rate when answering general questions about the ADA and a lower success rate when answering specific questions about the ADA (Hernandez, Keys, & Balcazar, 2003). Redick, McClain and Brown (1999) found that occupational therapists had a low level of knowledge regarding the ADA. The participants had a mean score of 1.85 out of a possible 10 points on an ADA knowledge quiz (Redick, McClain, & Brown, 2000). A study of mental health professionals revealed that they were least competent in their knowledge of disabilities (Strike, Skovholt, & Hummel, 2004). In more general studies of other administrators, Griffin and Cooper (2002) found that superintendents, principals and teachers had a low knowledge of the ADA as it applied to schools (Griffith & Cooper, 2002). Pate and Waller (2011) surveyed athletic facility managers to determine

their level of knowledge of the ADA. They found that facility managers had a good understanding of requirements such as door widths or counter height, but did not have a good knowledge regarding issues that their patrons with disabilities experienced such as parking, seating, entranceways or sightlines (Pate & Waller, 2011).

Findings from this study and previous studies regarding health care professionals and other administrators' knowledge of the ADA as it applied to their business environment were concerning but not surprising. Few educational programs exist that provide disability training for health professionals (Iezzoni, Ramanan, & Drews, 2005; Shakespeare, Iezzoni, & Groce, 2009; Tervo, Azuma, Palmer, & Redinius, 2002). This leaves practice administrators and other health professionals with little to no knowledge about how to best care for or accommodate their patients with disabilities (Yee & Breslin, 2010). The void in disability education also results in a lack of awareness regarding the issues that patients with disabilities experience when trying to access health care. As patients with disabilities have stated, health professionals just do not understand the consequences of inaccessibility for their patients with disabilities (Drainoni et al., 2006; Story et al., 2009a). Without education to create awareness of the challenges faced by patients with disabilities and a determination to improve access, barriers will continue to exist.

The nine knowledge questions conformed to a valid Guttman scale. Linear regression was performed and the administrators' knowledge score was a significant predictor of the total number of barriers. The beta coefficient was negative for the knowledge score, indicating an inverse relationship. As administrators' knowledge of the ADA increased the total number of barriers in their clinic decreased. Knowledge of the

ADA or a lack thereof, was found to be a reason why barriers exist that limit access to health care for people with disabilities. Findings from the knowledge questions and linear regression illustrate the need for practice administrators to have higher levels of awareness about the ADA in order to better meet the needs of their patients with disabilities.

A second hypothesis for why barriers exist that limit access to health care services was that administrators did not know that ADA compliance was their responsibility in clinics where the space is leased. Eighty percent of the administrators who managed clinics in leased space were able to correctly articulate in a qualitative question that the responsibility of ADA compliance within their clinic was theirs, the practice's, the tenant's or the lessee's. This result indicates that administrator understood the responsibility of ADA compliance within their practice was theirs and did not support the second hypothesis. Practice administrators in this study were not looking to others to improve ADA compliance within their clinic. Instead, the majority perceived their clinic to be in compliance with the ADA.

The third hypothesis for the question of why structural access barriers exist was that the cost of remodeling the office to be compliant with the ADA was too great. Fifty-seven percent of the administrators surveyed indicated that they had not inquired about the cost of bringing their clinic into ADA compliance because their practice was already compliant with the ADA. However, of those who indicated that their practice was already compliance, the number of access barriers ranged from zero to seven with a mean of 3.2. Less than one-fourth of the administrators had inquired about the cost of bringing their practice into compliance with the ADA or knew about the federal tax

credit. Only one administrator had inquired about the tax credit. Because such a low percentage of administrators had ever inquired about the cost of bringing their practice into compliance, it can be reasoned that cost was not a cause of structural barriers. Rather, questions about cost help to support the hypothesis that the administrators lack knowledge of the ADA because respondents indicated that their practices were compliant with the ADA when, in actuality, issues of non-compliance were identified.

This study sought to determine if the federal tax credit was sufficient to offset the cost of modifying a practice to be ADA compliant. Practice administrators' low knowledge of the federal tax credit illustrates that information about the tax credit has been inadequately disseminated among the group. The federal tax credit exists to defray some of the cost of ADA compliance for small practices. Medical practices with less than thirty full-time employees or less than one million dollars in gross receipts are eligible for a tax credit for half of expenditures over \$250.00 but not to exceed a maximum credit of \$5,000.00. For example, if a practice made \$10,000.00 in modifications, it may be eligible for a tax credit of \$4,750.00. Eligible expenditures include barrier removal or purchase of accessible equipment (Internal Revenue Service, 2006). Because only one administrator had inquired about the federal tax credit, it was inconclusive if the tax credit was sufficient.

Administrators were asked if the number of patients with disabilities in their practices was sufficient to justify bringing their practice into compliance if their practice was not already compliant. Administrators whose response was 'no' were asked to explain. The main themes which emerged from this question were that their practice had a very low number of patients with disabilities or that the cost was too great. Title II and

Title III of the ADA require that public and private health care facilities offer full and equal access to their health care services and facilities (U.S. Department of Justice (USDJ) & U.S. Department of Health and Human Rights (DHHR), 2010). This law is not based on the number of patients with disabilities in a practice but is a requirement if the practice has any patient with disabilities. Additionally, Section 504 of the Rehabilitation Act of 1973 prohibits any organization that receives federal funding from denying services to people with disabilities. Any health care organization that has one or more patients with disabilities and receives funding from Medicare, Medicaid or other federal funding sources must provide full and equal access to their services and facilities(U.S. Department of Justice (USDJ) & U.S. Department of Health and Human Rights (DHHR), 2010). When administrators stated that there were not enough patients with disabilities to justify bringing their practice into compliance, they were illustrating their lack of knowledge regarding ADA legal requirements for compliance.

The second theme to emerge was cost. One administrator explained that it was more economical to lose a patient with disabilities than to spend the money to bring his/her office into compliance with the ADA. This response illustrates the lack of awareness of administrators about their legal obligation to provide access to their services under the ADA as well as attitudes about patients with disabilities. When patients with disabilities encounter barriers to care, they experience feelings of anger, frustration, fear, overwhelm and embarrassment (Story et al., 2009). They feel like they are not viewed as a whole person and often forgo necessary medical care (Story et al., 2009). However, the feelings and experiences of patients with disabilities seem to be out of the consciousness of practice administrators. This theme illustrates how decisions about modifying a

practice are sometimes based on economics or business decisions rather than quality of care.

Results for research question one highlight practice administrators' need for specific knowledge of the ADA as it applies to their medical practice as well as information about their practices' accessibility. A study by Hernandez et al. (2006) found that private business owners were willing to make significant improvements in accessibility of their establishments once they were presented with information regarding the barriers found in their establishments. However, knowledge about deficiencies may not be the only information that administrators need to take action to improve compliance with the ADA. Graham and Mann (2008) found that when managers of physician clinics were provided with feedback regarding barriers found in their clinics, some made the recommended changes while others did not. In addition to knowledge of the ADA and knowledge of deficiencies in their clinics, practice administrators need a more comprehensive understanding of the array of challenges encountered by patients with disabilities throughout that health care process. They need to understand that compliance with the ADA is not a choice or business decision to be made in simple economic terms. Compliance with the ADA is a legal obligation (Graham & Mann, 2008) as well as a moral obligation. These issues could be addressed through more comprehensive disabilities education for practice administrators.

**Research Question 2: Why do equipment barriers exist that limit access to health care for people with disabilities?** Hypotheses for research question two were: 1) the practice administrator did not know that accessible equipment existed or 2) the cost of



accessible equipment was too great compared to standard equipment. The lack of knowledge that accessible equipment existed hypothesis was supported by the findings in this study; however the cost hypothesis was not supported. Less than half of the administrators knew accessible equipment existed. Less than a fourth of the administrators could describe what accessible equipment was available for medical practices or knew there was a federal tax credit to offset the cost of accessible equipment. The correlation test showed that there was a significant positive correlation between the administrators' knowledge of the accessible equipment and the number of pieces of accessible equipment in their practice. The low percentage of administrators who had knowledge that accessible equipment existed, what accessible equipment existed or that there is a federal tax credit supported the hypothesis that administrators did not know about accessible equipment. Additionally the positive correlation between knowledge of accessible equipment and amount of accessible equipment supports the hypothesis that a lack of knowledge about accessible equipment results in a lack of accessible equipment.

The second hypothesis suggested the cost of accessible equipment was too great compared to standard equipment. Thirty-seven percent of administrators surveyed had considered purchasing accessible equipment and twenty percent had purchased accessible equipment. Because a low percentage of administrators had considered purchasing equipment, it can be concluded that cost was not a barrier to purchasing accessible equipment.

When administrators were asked to describe the ADA in general and how the ADA applied to their practice, they utilized terms such as “completely accessible”, “reasonable accommodations”, “full access”, “non-discrimination”, “full and equal

enjoyment of goods and services” or “to make sure that people with physical disabilities are afforded the same accessibility that non-disabled patients are”. However, the results from research question two demonstrate that there is a disconnect between how practice administrators describe the ADA and their knowledge of what constitutes true and equal accessibility and accommodations for people with disabilities. In qualitative studies with people with disabilities, a consistent barrier to health care services that participants identified was inaccessible equipment (Becker et al., 1997; Drainoni et al., 2006; Kroll et al., 2006; Scheer et al., 2003; Story et al., 2009). Not being able to transfer onto an exam table, to be weighed or have diagnostic testing is a primary reason why important parts of an examination are skipped or why patients with disabilities stop seeking preventive care (Story et al., 2009). Practice administrators’ low level of awareness about accessible equipment emphasizes the need for not only more education about the availability of accessible equipment for medical practices but also the importance of accessible equipment for their patients with disabilities and for their physicians who provide care to patients with disabilities.

The U.S Department of Justice released *Access to Medical Care for Individuals with Mobility Disabilities* in 2010. The document is available on the ADA website ([www.ada.gov](http://www.ada.gov)) and provides detailed information about accessible equipment that is available for medical practices as well as information about the tax credit to offset the cost of accessible equipment. Goals of this document are to increase awareness of accessible equipment and to help with the understanding of the importance of accessible equipment for patients and providers. Additionally, this document highlights some of the legal requirements for making medical practices accessible. Purchasing an adjustable

exam table or platform scales would be considered to be a 'reasonable modification' required under the ADA (U.S. Department of Justice (USDJ) & U.S. Department of Health and Human Rights (DHHR), 2010).

**Research Question 3: How do medical practices accommodate a person with disabilities when a barrier to services is encountered?** The hypotheses for research question three were that when a barrier to service was encountered, practices: 1) referred patients to clinics that could accommodate them, 2) skipped part of the exam, 3) had other alternatives or 4) refused treatment. Hypotheses about referring a patient, skipping part of an exam or using other alternative methods to accommodate patients were supported by this study. The refusing treatment hypothesis was not supported. Based on Title II and Title III of the ADA, services offered at a medical practice must be fully accessible to patients with disabilities. If there are architectural barriers that cannot be reasonably modified, then activities can be relocated to an accessible location (U.S. Department of Justice (USDJ) & U.S. Department of Health and Human Rights (DHHR), 2010). Fifty percent of the administrators reported referring their patient to a clinic that could accommodate them when a barrier was encountered. Based on Title II and Title III of the ADA, this was an acceptable accommodation if the barrier to service was not readily modifiable such as an architectural barrier. However, this accommodation would not be acceptable if the barrier was readily modifiable, such the lack of a height adjustable exam table (U.S. Department of Justice (USDJ) & U.S. Department of Health and Human Rights (DHHR), 2010).

There are additional ways of accommodating a patient with disabilities when a barrier to service is encountered that are consistent with the ADA guidelines. These include having employees trained to assist patients or providing a lift to help the patient transfer onto an exam table (U.S. Department of Justice (USDJ) & U.S. Department of Health and Human Rights (DHHR), 2010). Seventy-seven percent of the administrators reported that their employers were trained to assist patients while only six percent reported have a lift available. The low percentage of lifts in this study may be justified by the relatively high percent of administrators affirming that their practice had a height adjustable exam table.

There are accommodations that are often used by medical practices which are not in compliance with ADA guidelines. These include skipping the part of the exam where the barrier is encountered, examining the patient in their wheelchair, or asking a patient to bring someone with them or refusing treatment. In this study, forty-two percent of the administrators acknowledge that part of an exam was skipped when a barrier was encountered. This finding supports previous research which found that patients with disabilities were less likely to have preventive services when a barrier was encountered such as a lack of accessible scales, exam tables or equipment (Armour et al., 2009; Chan et al., 1999; Cheng et al., 2001; Diab & Johnston, 2004; Havercamp et al., 2004; Iezzoni et al., 2000; Kroll et al., 2006; Mele et al., 2005; Pharr & Moonie, 2011b; Reichard et al., 2011). Eighty-two percent of the administrators acknowledged that patients were examined in their wheelchair which is also consistent with previous research (Grabois et al., 1999; Mele et al., 2005). In surveying primary care physicians, Grabois et al. (1999) found that over half of physicians believed they could perform an adequate examination

with a patient in his/her wheelchair. This finding supports the need for a better understanding of the ADA's requirement for medical services to be fully accessible on the part of health care administrators and physicians.

Only two of the administrators reported that they had refused treatment for a patient with disabilities because their practice was not accessible and none of the administrators acknowledged that they refused to treat patients with disabilities because it takes longer to examine them. These findings were in compliance with the ADA as medical practices cannot refuse to treat patients because they do not have accessible equipment or because it takes longer to examine them (U.S. Department of Justice (USDJ) & U.S. Department of Health and Human Rights (DHHR), 2010)

An analysis was performed to determine if there was a difference in accommodations between administrators who could or could not describe how the ADA applied to their clinic. No significant difference was found between the groups. Clinics that had administrators who could describe how the ADA applied to their clinic were equally likely to skip parts of an exam, examine patients in their wheelchairs or ask patients to bring someone with them. This illustrates a gap in knowledge between administrators' general understanding of the ADA and specifics regarding how their practice should accommodate patients with disabilities that are in compliance with the ADA. This may also illustrate the complexity of the ADA. Title II and Title III require that patients with disabilities have full and equal access to health care facilities and services (U.S. Department of Justice (USDJ) & U.S. Department of Health and Human Rights (DHHR), 2010). The ADA's *Accessibility Guidelines for Buildings and Facilities*, provide clear-cut guidelines for building

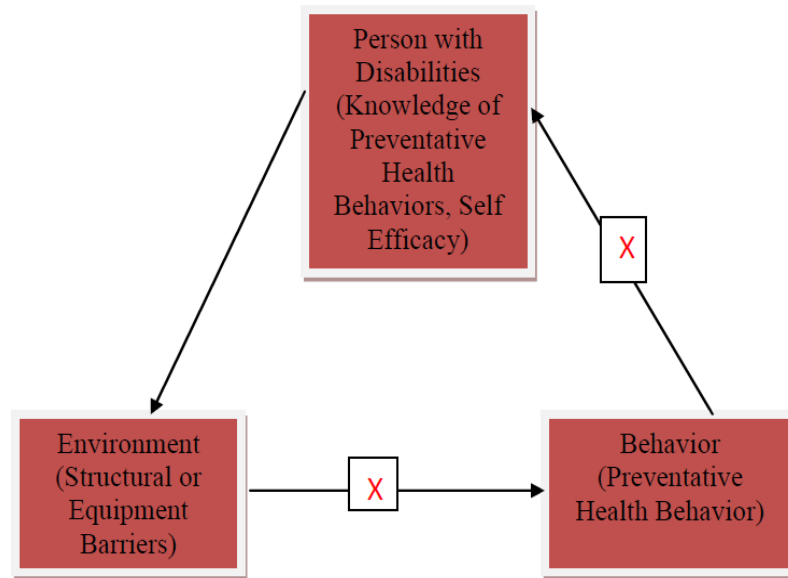
construction and renovation. For example, doors must be 32” or wider, halls must be 36” or wider, or the maximum slope of a ramp is 1:12 (Adaptive Environment Center, 1995). Equal access to services might be a more difficult concept to understand, especially for those who are not disabled. Health care administrators who have little or no disability knowledge may not be aware of how profoundly access barriers compromise the quality of care that is provided in their practice (Yee & Breslin, 2010). The ADA does not explicitly require a medical practice to have an accessible exam table. However, when litigation has been brought against health care organizations because of inaccessible equipment, the resulting settlements have required the organizations to purchase accessible equipment (Disability Rights Advocates, 2001; Disability Rights Advocates, 2008; Disability Rights Advocates, 2011; Kirschner et al., 2007; Mudrick & Schwartz, 2010)

As mentioned previously, in 2010, the U.S Department of Justice released *Access to Medical Care for Individuals with Mobility Disabilities*. This document was intended to provide health care professionals with information regarding how the ADA applies to their practice. The document includes an overview of the ADA and general requirements for medical practices including accessible equipment that is available for medical practices. It also includes a section of commonly asked questions that provides answers to the more difficult conceptual requirements of the ADA.

**Social Cognitive Theory – Theoretical Framework.** In chapters one and two, the Social Cognitive Theory provided the framework to demonstrate how barriers in the environment influence the preventive care behaviors of people with disabilities. The

same theory can be used to conceptualize the influence of a practice administrators' disability knowledge on barriers in the environment. One of the concepts of the Social Cognitive Theory which sets it apart from other behavior theories is reciprocal determinism (McAlister, Perry, & Parcel, 2008). While many behavioral theories focus on the influence that the environment has on people's behavior, the Social Cognitive Theory recognizes the reciprocal relationship of people and their environment. The environment, with facilitators and impediments (barriers) influences people and their behavior. However, people and their behavior also influence the environment and the facilitators or impediments within it (reciprocal determinism) (McAlister, Perry, & Parcel, 2008).

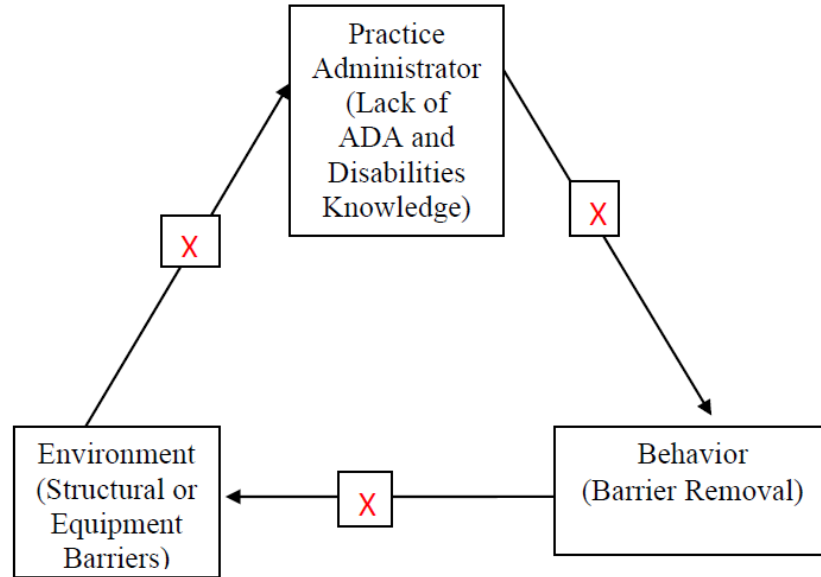
Figure 2 was used to illustrate the Social Cognitive Theory. This figure can be modified to illustrate the influence of barriers in the environment on preventive health behaviors among people with disabilities (Figure 14). Starting at the top of Figure 14 and moving counterclockwise around the figure, people with disabilities have knowledge of the importance of preventive health care (Kroll et al., 2006). However, when they interact with an environment that has substantial barriers, they are prevented from engaging in that behavior (as represented by the X across the arrow) (Kroll et al., 2006; Scheer et al., 2003). Because they are not able to access preventive services, their belief or self efficacy that they can achieve the wanted behavior is reduced.



**Figure 14: People with Disabilities Participation in Preventive Health Behavior**

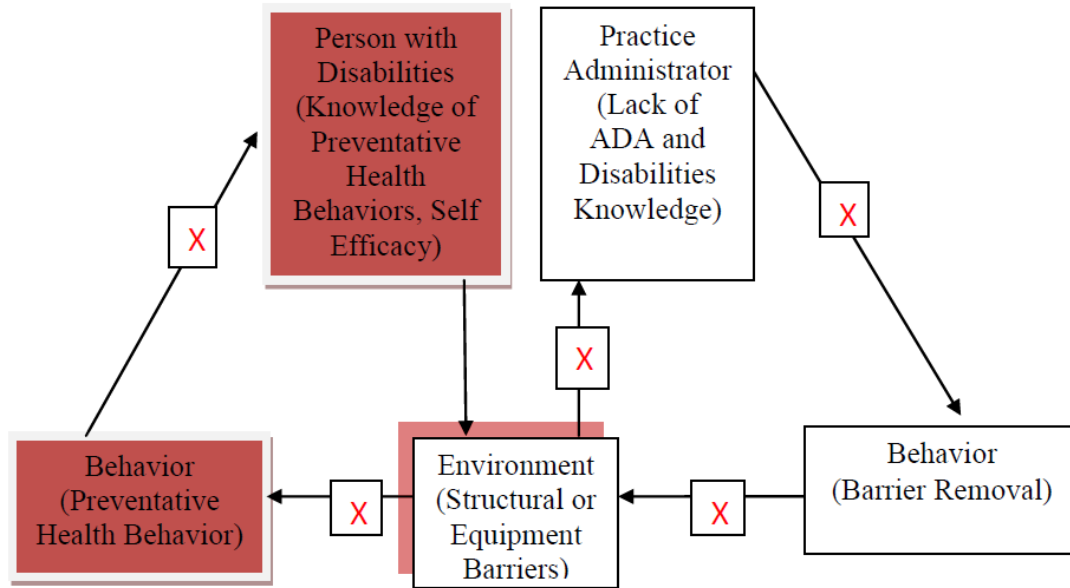
Figure 2 can also be modified to show how practice administrators' lack of knowledge about the ADA or disabilities results in a continuation of barriers in the environment. Starting at the top of Figure 15 and moving clockwise around the figure, when practice administrators have low or no knowledge of the ADA or disability, they do not engage in behaviors to reduce the number of barrier (as represented by the X). As a result, the number of barrier remains consistent. When the number of barriers is consistent and the status quo seems sufficient, the administrators' knowledge of the ADA or disabilities remains low.





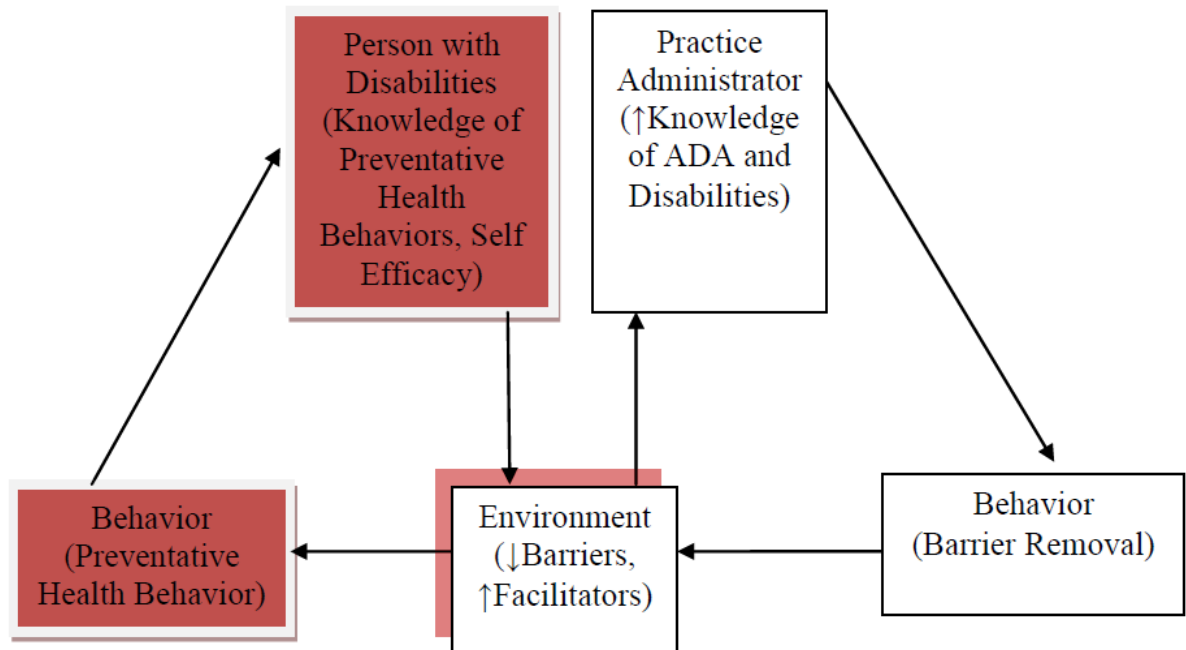
**Figure 15: Impact of Administrators’ ADA Knowledge on Barriers**

Figure 14 and 15 can be combined to illustrate how practice administrators’ lack of knowledge about the ADA influences people with disabilities’ participation in preventive health behaviors (Figure 16, starting with the practice administrator and moving clockwise). Administrators’ lack of ADA or disability knowledge results in environmental barriers remaining constant (as represented by X). When a person with disabilities interacts with an environment that has substantial barriers and they do not engage in the desired health behavior (as represented by X).



**Figure 16: Impact of Administrators' Lack of Knowledge on People with Disabilities Behavior**

Figure 14 and 15 can also be combined to illustrate how this dynamic could change when a practice administrators' knowledge of the ADA or disabilities increases (Figure 17, starting with the practice administrator and moving clockwise). When an administrators' ADA and disabilities knowledge increases, they are more likely to engage in the behavior of reducing barriers in their clinics (i.e. replace a standard exam table with an accessible exam table). As barriers reduce and facilitators increase, people with disabilities are able to participate in preventative health behaviors, which in turn, increases their self efficacy (Figure 17).



**Figure 17: Increased Knowledge Increases Behaviors for Administrators and People with Disabilities**

**Predicting the Number of Access Barriers in a Primary Care Setting.** Multiple linear regression analyses from this study demonstrated that the practice administrator’s ADA knowledge score was a significant predictor of the number of barriers reported in the practice, along with the age of the administrators, the number of patients in the practice and buildings built before 1993. The coefficient for ADA knowledge was negative, indicating that the greater the administrators’ knowledge of the ADA, the lower the number of barriers reported in their clinics. This finding is supportive of behavior theories which posit that a person must have knowledge before they take action (Montano & Kasprzyk, 2008; Prochaska, Redding, & Evers, 2008; Weinstein, Sandman, & Blalock, 2008). The greater a person’s knowledge, the more likely they are to adopt a behavior.

In this case, the greater the administrators' knowledge of the ADA, the more likely they were to be in compliance with the requirements of the ADA.

Age of the administrator had a negative coefficient. As the age of the administrator increased, few barriers were reported in their clinics. The age of the administrators and their number of years as an administrator were highly correlated ( $R^2 = .61$ ). Administrators who have been in charge of a practice longer are more likely to have had experience with patients with disabilities and to have had educational opportunities to learn about the ADA as it applies to medical practices.

The number of patients in the practice also had a negative coefficient. As the number of patients increased, the number of barriers was reduced. In this study, the number of patients and the number of providers were highly correlated ( $R^2 = 0.68$ ). Based on economies of scale, practices with higher numbers of patients and providers would be more accessible because the cost of compliance could be spread over many providers/patients in a large practice versus over a few providers/patients in a small practice. For example, the cost of an accessible exam table may be spread over five to ten providers and their patients in a larger practice or one to two providers and their patients in a smaller practice, thus substantially reducing the cost per provider/patient of the accessible exam table in the larger clinic.

Practices that operated in buildings built before 1993 was a significant predictor for an increased number of barriers. This is consistent with previous research which found a greater number of accessibility issues in practices located in older buildings (Graham & Mann, 2008). Buildings built after 1993 are required to be in compliance with ADA construction guidelines. Buildings built prior to 1993 must be modified to

meet ADA guidelines when modifications are readily achievable. Modifications are readily achievable when they can be easily accomplished or “carried out without much difficulty or expense” (U.S. Department of Justice (USDJ) & U.S. Department of Health and Human Rights (DHHR), 2010, p. 1) Based on the building architecture, modifications to meet ADA guidelines may not be readily achievable (i.e. a weight bearing wall cannot be removed) or may be cost prohibitive resulting in lower rates of compliance with the ADA in older buildings.

The multiple linear regression analyses helped to identify medical practices that are more likely to have access barriers and in the greatest need for interventions. To increase accessibility to health care, ADA compliance interventions should focus on primary care practices located in buildings built before 1993, smaller practices with low patient volumes, practices with administrators who have little experience and administrators with low levels of ADA knowledge. By focusing intervention efforts on practices with the greatest risk for compliance issues, the results may be a dramatic decrease in the number of access barriers for patients with disabilities.

### **Implications**

The most important finding resulting from this study demonstrated that practice administrators’ ADA knowledge was a significant predictor of the number of barriers in their clinics. Additionally, practice administrators’ knowledge of accessible equipment was significantly correlated with the amount of accessible equipment in their clinic. Increasing practice administrators’ knowledge of the ADA and knowledge about accessible equipment could reduce the number of barriers to

health care services reported in their clinics.

Findings from this study have implications for health care administrators, academic institutions that offer degrees in health care administration or other professional health care degrees, professional associations such as the MGMA, regulatory and quality control agencies, insurers such as Medicaid and Medicare and people with disabilities. Health care administrators need in-depth knowledge of the requirements of the ADA for medical practices. However, mere knowledge of the application of the ADA to medical practices may not be enough. Graham and Mann (2008) found that even when practice administrators were provided detailed information regarding access issues in their clinics, some were unwilling to make modifications to bring their practice into compliance. Reasons for not making the modifications were that they did not want to spend money to modify leased space or that their patients with disabilities had not complained about access barriers and that the “status quo was acceptable” (Graham & Mann, 2008, p. 213). In this study, administrators reported a sentiment that a low number of patients with disabilities was justification for not incurring the cost of bringing a practice into compliance with the ADA. These findings illustrate the need to educate administrators about their legal obligation to provide full and equal access to their health care services and facilities for patients with disabilities, the burden that an inaccessible clinic creates for patients with disabilities, in addition to the requirements of the ADA as applied to medical practices.

To date, few disability education courses have been developed for medical professionals (Iezzoni et al., 2005; Shakespeare et al., 2009; Tervo et al., 2002). Less than half of the administrators in this study had received any education regarding the

ADA. The majority of the education was through webinars or presentations at a professional conference. Only two administrators had received education about the ADA through a college course. This leaves health care professionals with little or no training about how to work with individuals with disabilities to improve their overall health including participation in preventive health services. Health professionals in turn are more likely to forego preventive examinations or services when a barrier is encountered. There is “insufficient targeted dissemination of information” regarding technical assistance or best practices for caring for patients with disabilities (Yee & Breslin, 2010), p. 255). The Patient Protection and Affordable Care Act (PPACA), also known as Pub Las 111-148 or the Health Care Reform Bill, may help change the trajectory of current health professional’s education. PPACA became law on March 23, 2010. Title V, Section 5307, *Cultural Competency, Prevention, and Public Health and Individuals with Disabilities Training* amends Title VII Section 741 and Title VIII Section 807 of the Public Health Services Act to include grant funding for:

the development, evaluation and dissemination of research, demonstration projects, and model curricula for cultural competency, prevention, public health proficiency, reducing health disparities, and aptitude for working with individuals with disabilities training for use in health professions schools and continuing education programs (Association of University Centers on Disability, 2010, p. 6).

Dissemination of disability curricula to schools that offer health care administration or other health professional degrees and professional associations like the MGMA that provide continuing education programs for health care administrators may be key to

reducing barriers to health care and eliminating health disparities among patients with disabilities.

In this study, forty percent of the administrators knew that the consequences of not being compliant with the ADA included law suits, fines or loss of Medicare/Medicaid reimbursement (Table 8). However, only thirty-four percent of the administrators thought that the number of patients with disabilities in their practice justified the cost of bringing their practice into compliance and only twenty-four percent of the respondents had inquired about the cost of bringing their practice into compliance (Table 11). Section 504 of the Rehabilitation Act of 1973 requires that all health care facilities receiving federal financial assistance (Medicare and Medicaid reimbursement) be fully accessible for patients with disabilities (U.S. Department of Justice (USDJ) & U.S. Department of Health and Human Rights (DHHR), 2010). Enforcement of the Rehabilitation Act of 1973 and the ADA, as with other civil rights laws, relies on the reporting of discrimination by the person(s) being discriminated against. For people with disabilities, this is often a daunting task. They may be fear of retribution from a health care provider whose services they need, lawsuits are time consuming and taxing, and lawsuits typically are not a quick resolution for barrier removal (Kirschner et al., 2007; Yee & Breslin, 2010). Title XXXI, Section 3101 of the PPACA requires no later than two years after the date of enactment (March 23, 2012):

any federally conducted or supported health care or public health program, activity or survey (including the Current Population Surveys and American Community Survey conducted by the Bureau of Labor Statistics and the Bureau of the Census) ...:



(D) survey health care providers and establish other procedures in order to assess access to care and treatment for individuals with disabilities and to identify (i) locations where individuals with disabilities access primary, acute (including intensive) and long-term care; (ii) the number of providers with accessible facilities and equipment that meet the needs of individuals with disabilities, including medical diagnostic equipment that meets the minimum technical criteria set forth in section 510 of the Rehabilitation Act of 1973; and (iii) the number of employees of health care providers trained in disability awareness and patient care of individuals with disabilities (U.S. Congress, 2010, Public Law 11-148, p. 578-579).

Information collected will be sent to the Secretary of Health and Human Services who will disseminate the information to: the Center for Medicare and Medicaid; the Agency for Healthcare Research and Quality; the National Center on Minority Health; and Health Disparities and the Center for Disease Control and Prevention (U.S. Congress, 2010). Perhaps, the data collection and dissemination requirements of Title XXXI of the PPACA will take some of the responsibility of enforcement for the Rehabilitation Act of 1973 and the ADA off the person with a disability who to this point has had to report a case of discrimination for an investigation to be initiated. However, it remains to be seen how implementation of the PPACA will be carried out by federal agencies or how/if PPACA will change due to the 2012 Presidential election.

## **Mixed Methods Research Design**

A mixed methods research design was utilized in this study. There are advantages and disadvantages to mixed methods research. This design allowed for more in-depth answers than a strictly quantitative design would have provided. However, because qualitative questions are included in the design, a smaller sample size is typical and does not allow for as robust a statistical analysis as the larger sample size of a purely quantitative study. Additionally, because the sample size is larger than an entirely qualitative study and because both quantitative and qualitative questions are included, the qualitative data may not be as in-depth as a typical qualitative study. Practice administrators were asked many quantitative and qualitative questions throughout the survey. Qualitative questions were used to have the administrators explain topics in their own words rather than simply replying ‘yes’ or ‘no’ or to elicit more comprehensive answers to a quantitative response. For example, administrators were asked to describe the purpose of the ADA in general. Administrators’ answers to this question provided a more thorough understanding of their knowledge of the ADA than would have been generated if administrators were asked ‘do you know the general purpose of the ADA (yes/no)?’ or ‘is the general purpose of the ADA to prevent discrimination against people with disabilities (yes/no)?’. An example of how a qualitative question was utilized to elicit a more comprehensive answer to a quantitative response was when administrators who affirmed that there were not enough patients in their practice to justify the cost of bringing their practice into compliance with the ADA were then asked to explain their answer. Their explanation gave the researchers more insight into their thought process

and understanding of the ADA than would have been achieved by only asking the quantitative question.

The challenge with the mixed methods research design was time. Answering qualitative questions takes longer than answering quantitative, yes/no type, questions. When practice administrators were recruited for the study, they were told the estimated amount of time that it would take to complete the survey. Several administrators who refused to participate stated that they did not have time. Additionally, administrators who partially completed the survey indicated that they ran out of time and of the some administrators who completed the survey stated that it took a long time to complete.

### **Limitations**

This study is not without limitations. The response rate of the Southern Nevada Health practice administrators was low (10.4%). Studies with low response rates are susceptible to self-selection bias (Aschengrau & Seage, 2003). Previous studies concerning office accessibility have also encountered low response rates and the researchers have posited that administrators of practices not in compliance with the ADA refuse to participate due to concerns of repercussions for being non-compliant (Grabois et al., 1999; Graham & Mann, 2008; Sanchez et al., 2000). Although the reason for refusal was not specifically tracked in this study, it is possible that administrators who knew that their practice was non-compliant self-selected out of participation. This could have biased the results by underestimating the number of barriers found in primary care clinics.

There was also a possibility of bias resulting from self reported information. The participants may have under or over reported information if they perceived the response to be socially desirable (Adams, Soumerai, Lomas, & Ross-Degnan, 1999)

Again, although not specifically tracked, many of the Southern Nevada practice administrators who refused to participate indicated they did not have time. In Southern Nevada, there is one primary care physician per 1,244 population while the national benchmark is 1 PCP per 631 population (County Health Rankings, 2011). Primary care physicians and physician offices in Southern Nevada are among the busiest in the nation. This may have resulted in the low participation rate and small sample size of practice administrators in Southern Nevada.

Even though the sample size for mixed methods research tends to be lower than purely quantitative research, the sample size for this study was relatively low for the quantitative analysis portion of the study (Creswell & Clark, 2007). A sample size of a hundred or more would have been better for the multiple linear regression analyses performed.

The current study only focused on primary care. Thus, results cannot be generalized to specialty practices. However MGMA practice administrators were from across the United States making the results more generalizable to primary care practices in locations other than Southern Nevada. The current study only included practice administrators. Clinical staff, such as nurses or physicians, may have had better insight into the accessibility of the clinic than the practice administrator as they have direct patient contact (Sanchez et al., 2000).

The survey was sixty-one questions long with some questions having multiple layers. Qualitative questions appeared towards the end of the survey. Many of the answers to the qualitative questions were short and without much depth. This may have been due to survey length or the time constraints of the administrators completing the survey. Additionally, there was not an opportunity to follow up with the participants to elicit more in-depth qualitative answers.

The survey included a modified version of the ADA Checklist for office compliance which focused on structural and equipment barriers most often encountered by patients with mobility disabilities. Barriers that are encountered by patients with other disabilities (sensory and mental) were not included in this survey. This decision was made based on the research questions and to reduce the length of the survey.

### **Future Research**

Few studies have been conducted to determine knowledge of the ADA of people in positions to make compliance changes in their organization, i.e. administrators, owners or managers. Studies that have been conducted have found that knowledge of the ADA is quite limited among those who are responsible for implementation of the law (Griffith & Cooper, 2002; Hernandez et al., 2003; Pate & Waller, 2011; Redick et al., 2000). More research is needed to understand where the gaps in knowledge are and what educational interventions are most appropriate to fill the gaps.

The current study only included outpatient primary care clinics. Other studies regarding access barriers to health care have also only focused on primary care (Grabois et al., 1999; Graham & Mann, 2008). Research is needed to determine if the same

barriers to health care services are found in specialty practices and if they are found to the same extent as in primary care clinics. Potential research questions include: Do specialty clinics like cardiology or orthopedics tend to be more accessible because their patients are older or more likely to be disabled? Do practice managers or physicians in specialty practices have different degrees of knowledge regarding the ADA and the implications of compliance than primary care administrators or physicians? Are specialty clinics more likely to have accessible equipment?

Previous research has shown that clinics associated with a hospital are more likely to be accessible than clinics that are not associated with a hospital (Harrington et al., 2009). More research is needed to understand this phenomenon. Additionally, research is needed to determine if there are differences in accessibility between private or public clinics (private practice compared to the Veterans Administration clinics for example).

It was not possible to determine if cost was a barrier to accessibility in this study because few administrators had ever inquired about the cost of bringing their practice into compliance or purchasing accessible equipment. More research is needed to determine if cost is a barrier to ADA compliance. Additionally, few practice managers knew about the federal tax credit to offset the cost of office modifications or accessible equipment purchase. One administrator had inquired about the federal tax credit to bring his/her office into compliance and two administrators had inquired about the federal tax credit to purchase accessible equipment. Because of this, it could not be determined if the federal tax credit amount is sufficient to offset the cost of compliance and more research is needed in this area.

A person's attitude towards people with disabilities may affect their willingness to adapt his/her practice to accommodate them (Graham & Mann, 2008). Research concerning physicians' and office managers' attitudes towards people with disabilities could shed light on important issues affecting office accessibility and additional areas for educational interventions.

Information regarding the type of degree (RN, MD, health care administration, other allied health professional) or previous work experience was not collected in this study. Practice administrators who were clinical health professionals prior to becoming administrators may have had more experiences with people with disabilities. Studies have found that people who have had more positive interactions with people with disabilities often have a more favorable attitude towards them (Au & Man, 2006). A more favorable attitude held by the practice administrator may impact the accessibility of his/her clinic, therefore this is an area that warrants further study.

Implementation of the PPACA is graduated with requirements becoming effective between 2010 and 2014. PPACA requires collection of data concerning the accessibility of medical facilities and equipment and training in disability awareness for medical personnel. However, the Act does not specify how the data will be collected, if the data will be made public or how terms like 'access' or 'disability awareness' will be defined. More research will be needed to determine if the PPACA improves access to health care for people with disabilities.

## Conclusion

The unmet health care needs and resulting health disparities that people with disabilities experience is a public health concern due to the increasing number of people with disabilities in America. The study sought to identify why barriers exist that limit access to health care for people with disabilities. The findings demonstrated primary care practice administrators had low knowledge of the ADA and low knowledge of accessible equipment. These findings were significantly related to the number of barriers and the amount of accessible equipment in their clinics. Through disability education, administrators' knowledge of the ADA and accessible equipment as well as their understanding of the unique needs of patients with disabilities can be increased. This would result in a reduction in the number of barriers health care. When access barriers are removed, patients with disabilities will be able to more fully participate in all preventive health services offered, thus improving their overall health status.

A majority of Americans will either experience a disability or have a family member who becomes disabled. They may not realize it, but the support they give today to improve access to health care for people with disabilities is a statement about the support they can expect when they experience a disability (Field & Jette, 2007).



## Appendix

### Multiple Linear Regression Exhibits

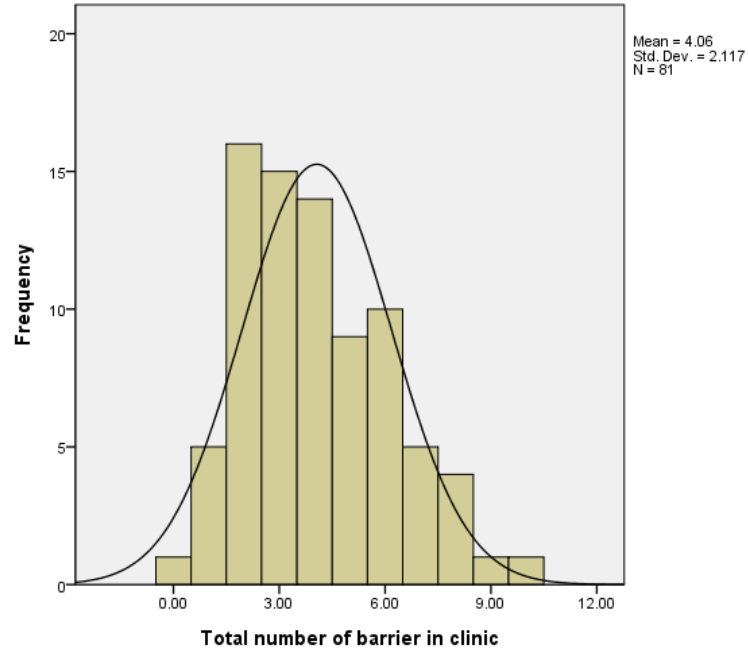


Figure 18: Histogram for Total Number of Barrier for Total Sample

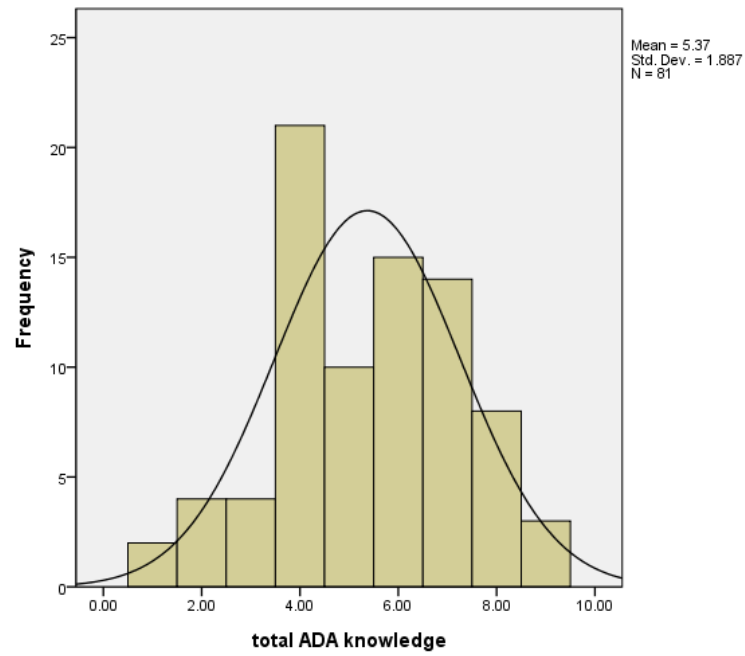


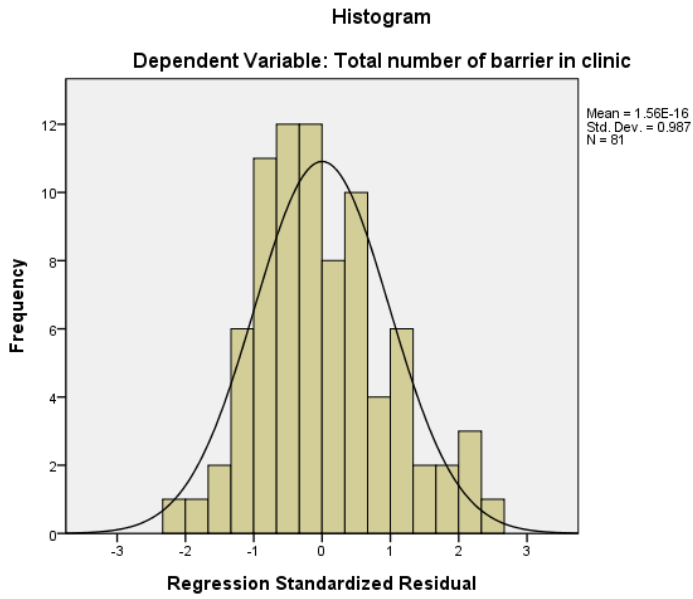
Figure 19: Histogram for Total Knowledge Score for Total Sample

**Table 23: Linear Regression Model of Group, ADA Knowledge and Total # Barriers**

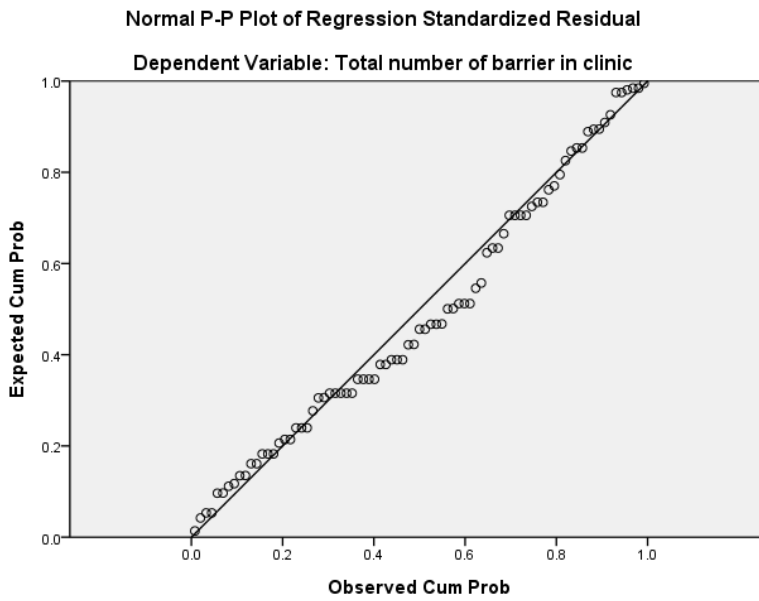
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	F	p
1	.406 <sup>a</sup>	.165	.144	1.95938	7.715	.001

**Table 24: Linear Regression Coefficients for Group, ADA Knowledge and Total # Barriers**

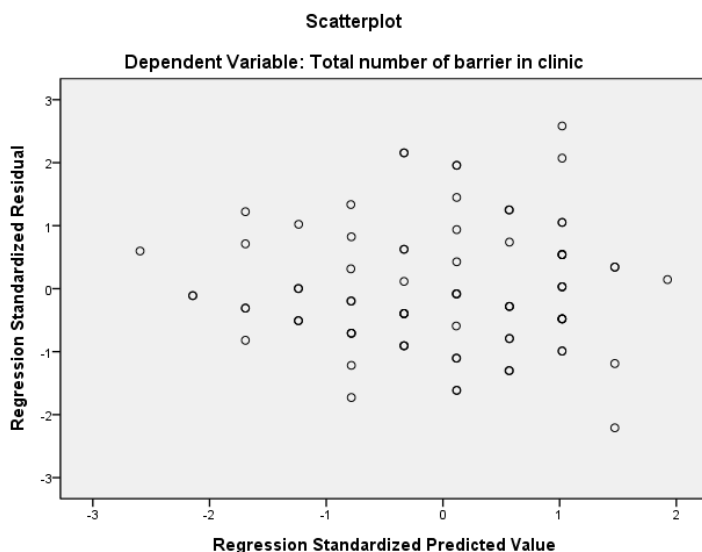
Model	Unstandardized Coefficients		t	p	95.0% Confidence Interval for B	
	B	Std. Error			Lower Bound	Upper Bound
(Constant)	6.495	.713	9.111	.000	5.076	7.914
Group1	-1.558	.538	-2.894	.005	-2.630	-.486
total ADA knowledge	-.389	.119	-3.256	.002	-.626	-.151



**Figure 20: Histogram of Residuals for Linear Regression Model**



**Figure 21: Normality Plot of Residuals for Linear Regression Model**



**Figure 22: Scatterplot of Residuals for Linear Regression Model**

**Table 25: Correlation Matrix for Characteristics of the Administrator Variables**

		Age:-Years	How long have you been a practice administrator? - Years	How many years have you been a practice administrator at your current practice? -Years
Age:-Years	Pearson Correlation	1	.613**	.252*
	Sig. (2-tailed)		.000	.029
	N	77	74	75
How long have you been a practice administrator? - Years	Pearson Correlation	.613**	1	.349**
	Sig. (2-tailed)	.000		.002
	N	74	78	77
How many years have you been a practice administrator at your current practice? -Years	Pearson Correlation	.252*	.349**	1
	Sig. (2-tailed)	.029	.002	
	N	75	77	79

\*\* . Correlation is significant at the 0.01 level (2-tailed).

\* . Correlation is significant at the 0.05 level (2-tailed).

**Table 26: Model Summary MLR for Characteristics of the Administrator**

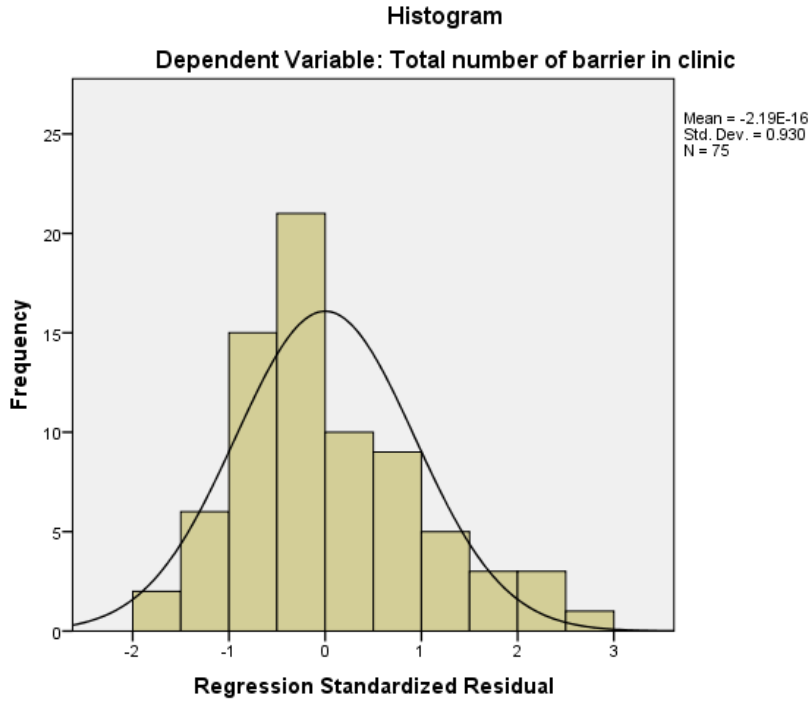
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	F	p
1	.533 <sup>a</sup>	.284	.173	1.95763	2.544	.012

- a. Predictors: (Constant), Pro, Gender:, Doc, Asso, How many years have you been a practice administrator at your current practice? - Years, HS, total ADA knowledge, Age:-Years, Master, Group1
- b. Dependent Variable: Total number of barrier in clinic

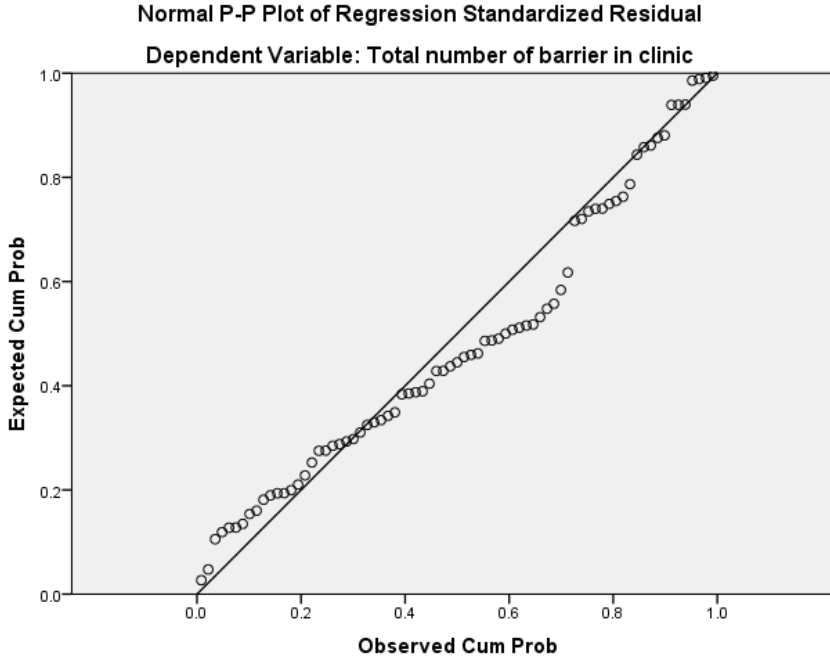
**Table 27: MLR Coefficient for Characteristics of the Administrator**

Model	Unstandardized Coefficients		Standardized Coefficients	t	p	95.0% Confidence Interval for B		Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1 (Constant)	9.406	1.579		5.957	.000	6.251	12.560		
Group1	-1.649	.808	-.292	-2.041	.045	-3.263	-.035	.546	1.830
total ADA knowledge	-.386	.130	-.340	-2.975	.004	-.646	-.127	.855	1.169
Gender:	.074	.580	.015	.128	.898	-1.085	1.234	.832	1.202
Age:-Years	-.061	.028	-.271	-2.193	.032	-.117	-.005	.732	1.367
How many years have you been a practice administrator at your current practice? - Years	-.062	.048	-.147	-1.298	.199	-.157	.033	.870	1.149
HS	-.216	1.149	-.023	-.188	.851	-2.511	2.078	.767	1.303
Asso	.636	.910	.081	.699	.487	-1.182	2.453	.839	1.193
Master	.878	.566	.200	1.551	.126	-.253	2.009	.672	1.487
Doc	2.111	2.131	.113	.991	.326	-2.146	6.369	.855	1.169
Pro	.266	.787	.040	.338	.736	-1.306	1.838	.781	1.280

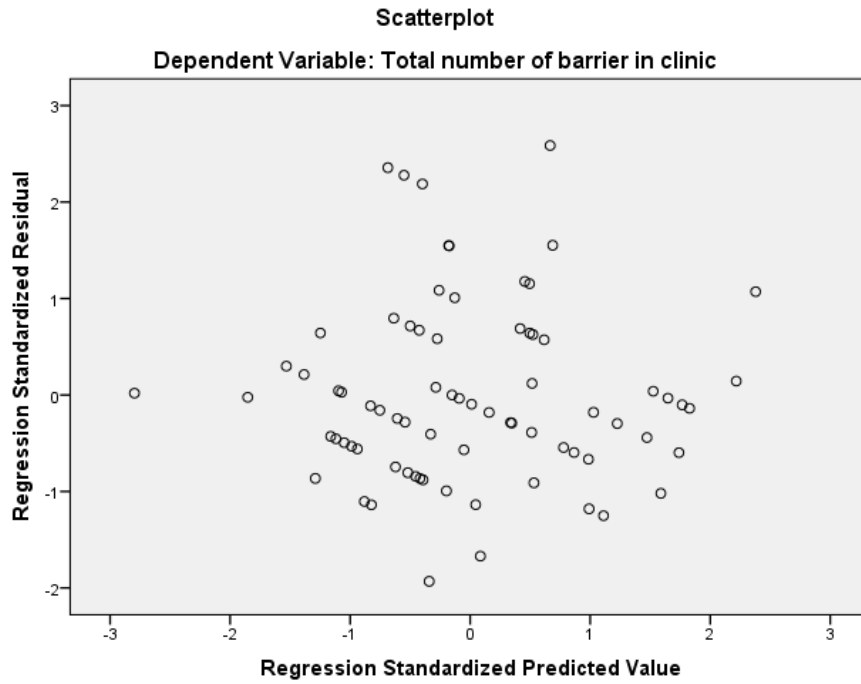
a. Dependent Variable: Total number of barrier in clinic



**Figure 23: Histogram of Residuals for MLR of Characteristics of the Administrator**



**Figure 24: Normality Plot of Residuals for MLR of Characteristics of the Administrator**



**Figure 25: Scatterplot of Residuals for MLR of Characteristics of the Administrator**



**Table 28: Correlation Matrix for Characteristics of the Practice**

		How many years has your practice been in operation? - Years	total providers	Approximately how many patients does the practice serve? - Number	Approximately how many of those patients have mobility limitations (i.e. use a wheelchair, cane, cru... - Percentage
How many years has your practice been in operation? - Years	Pearson Correlation	1	.213	.166	-.134
	Sig. (2-tailed)		.057	.163	.263
	N	80	80	72	72
total providers	Pearson Correlation	.213	1	.685**	-.014
	Sig. (2-tailed)	.057		.000	.908
	N	80	81	73	73
Approximately how many patients does the practice serve? - Number	Pearson Correlation	.166	.685**	1	.031
	Sig. (2-tailed)	.163	.000		.801
	N	72	73	73	67
Approximately how many of those patients have mobility limitations (i.e. use a wheelchair, cane, cru... - Percentage	Pearson Correlation	-.134	-.014	.031	1
	Sig. (2-tailed)	.263	.908	.801	
	N	72	73	67	73

\*\* . Correlation is significant at the 0.01 level (2-tailed).

**Table 29: Model Summary MLR for Characteristics of the Practice**

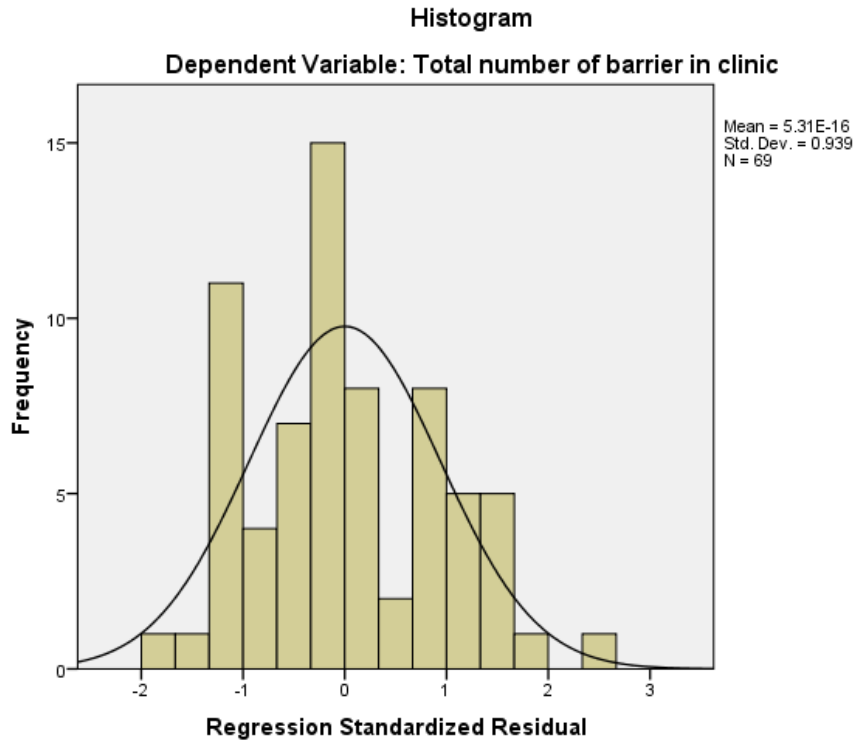
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	F	p
1	.490 <sup>a</sup>	.240	.139	1.99976	2.372	.027 <sup>a</sup>

- a. Predictors: (Constant), other, Group1, GM, Before or after 1993, Approximately how many patients does the practice serve?-Number, IM, FM, How many years has your practice been in operation?-Years
- b. Dependent Variable: Total number of barrier in clinic

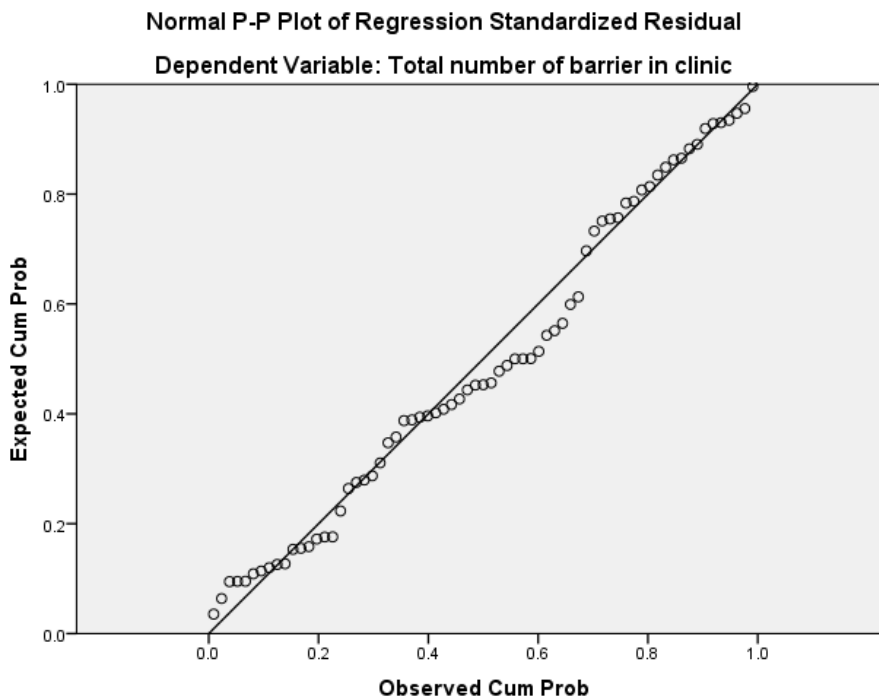
**Table 30: MLR Coefficients for Characteristics of the Practice**

Model	Unstandardized Coefficients		Standardized Coefficients	t	p	95.0% Confidence Interval for B		Collinearity Statistics		
	B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF	
1	(Constant)	4.683	.673		6.964	.000	3.338	6.028		
	Group1	-1.863	.724	-.319	-2.574	.013	-3.310	-.415	.826	1.211
	How many years has your practice been in operation?- Years	-.022	.016	-.184	-1.360	.179	-.053	.010	.694	1.440
	Before or after 1993	1.391	.513	.325	2.714	.009	.366	2.416	.883	1.133
	Approximately how many patients does the practice serve?- Number	1.131E-5	.000	-.242	-2.085	.041	.000	.000	.942	1.061
	FM	.073	.634	.016	.116	.908	-1.194	1.341	.701	1.426
	IM	-.348	.739	-.062	-.471	.640	-1.826	1.130	.739	1.354
	GM	-1.483	2.094	-.083	-.709	.481	-5.671	2.704	.926	1.080
	other	-.727	.879	-.109	-.828	.411	-2.485	1.030	.732	1.366

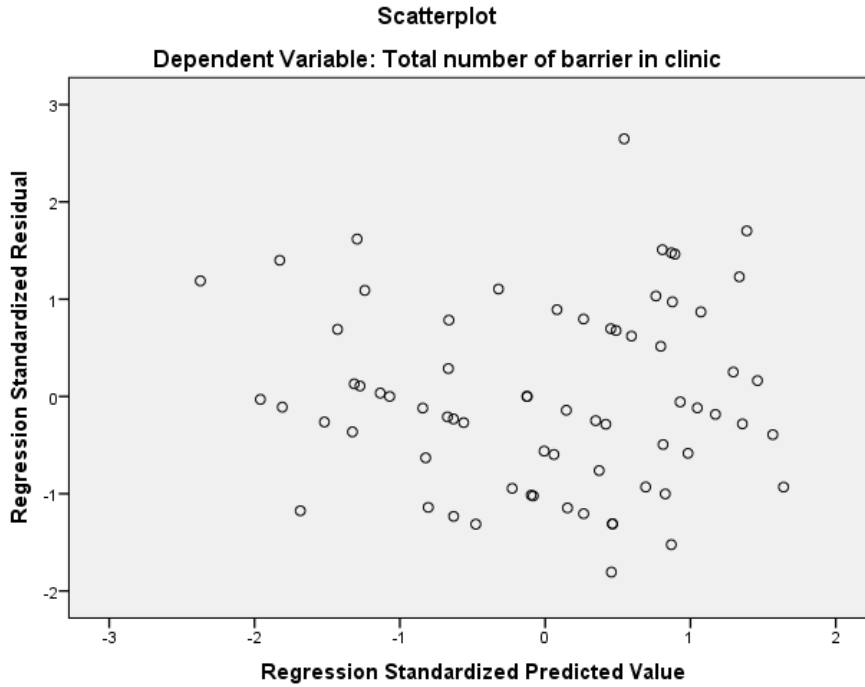
a. Dependent Variable: Total number of barrier in clinic



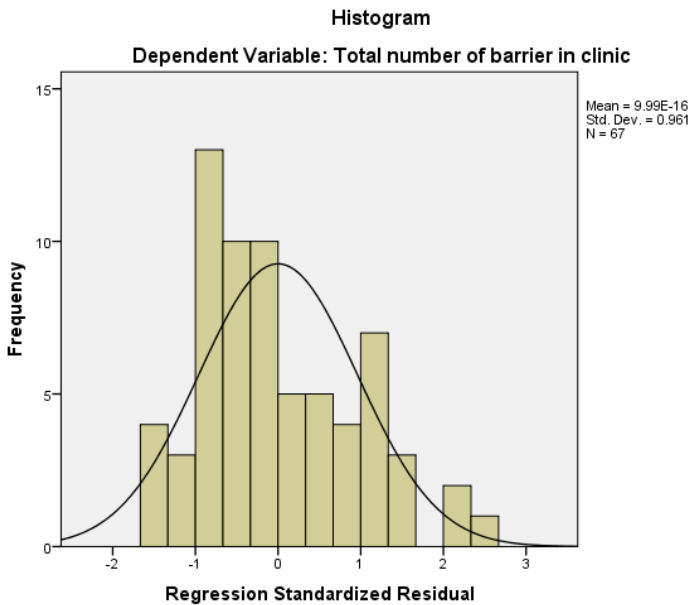
**Figure 26: Histogram of Residuals for MLR Characteristics of the Practice**



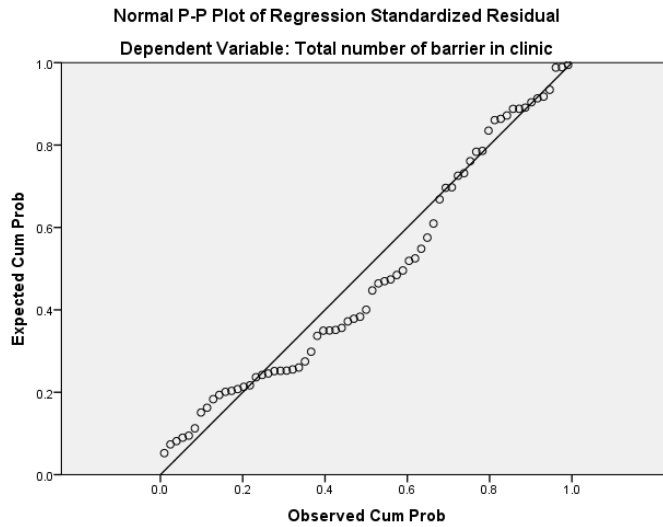
**Figure 27: Normality Plot of Residuals for MLR of Characteristics of the Practice**



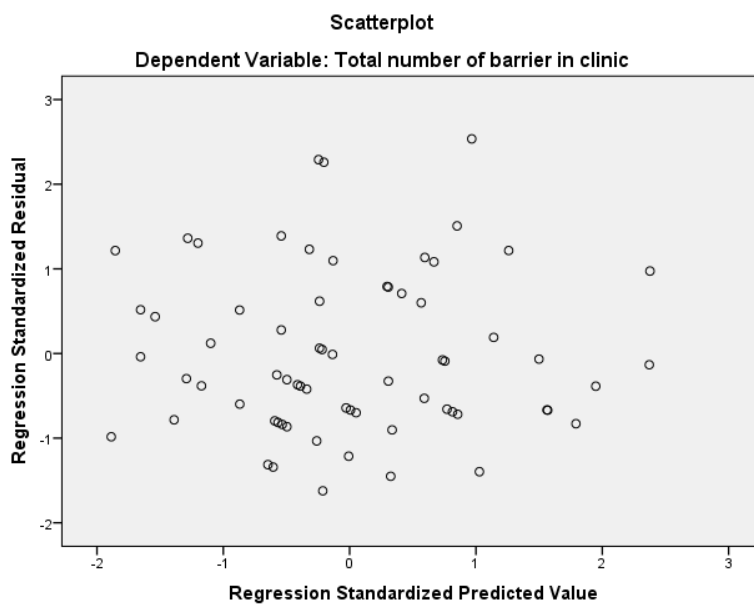
**Figure 28: Scatterplot of Residuals for MLR of Characteristics of the Practice**



**Figure 29: Histogram of Residuals for MLR of the Final Model**



**Figure 30: Normality Plot of Residuals for MLR of the Final Model**



**Figure 31: Scatterplot of Residuals for MLR of Final Model**



Office Accessibility Survey

1. Gender: \_\_\_\_\_ Male \_\_\_\_\_ Female

2. Age: \_\_\_\_\_ Years

3. What is the highest level of education that you have obtained?

\_\_\_\_\_ High School \_\_\_\_\_ Associate's Degree \_\_\_\_\_ Bachelor's Degree \_\_\_\_\_ Master's Degree \_\_\_\_\_ Doctoral Degree \_\_\_\_\_ Other Professional Certification

4. What type of Practice do you manage? (Check the type that most accurately reflects your practice type)

\_\_\_\_\_ Family Medicine \_\_\_\_\_ Internal Medicine \_\_\_\_\_ General Medicine \_\_\_\_\_ OB / GYN  
\_\_\_\_\_ Other (Please list)

5. How long have you been a practice administrator? \_\_\_\_\_ Years

6. How many years have you been a practice administrator at your current practice?

\_\_\_\_\_ Years

7. How many years has your practice been in operation? \_\_\_\_\_ Years

8. What year was the building in which the practice operates built? \_\_\_\_\_ Year \_\_\_\_\_ I don't know

9a. If I don't know, was the build built before or after 1993? \_\_\_\_\_ Before \_\_\_\_\_ After

9. How many physician / providers see patients in your practice?

\_\_\_\_\_ Physicians \_\_\_\_\_ Other Providers (Nurse Practitioners / Physician Assistants)

10. Approximately how many patients does the practice serve? \_\_\_\_\_ Number

11. Approximately how many of those patients have mobility limitations (i.e. use a wheelchair, cane, crutches, walker or scooter): \_\_\_\_\_ %

**12. Is the space in which your practice operates owned or leased?**

\_\_\_\_\_ Owned                      \_\_\_\_\_ Leased                      \_\_\_\_\_ Don't know

**13. Do other businesses operate out of the building or just your practice?**

\_\_\_\_\_ Other businesses                      \_\_\_\_\_ Practice only

**14. Have you ever had a patient with disabilities report that they had difficulty getting into your practice?** (For example, a patient said that there was not enough handicap parking or that the spaces were too small, or a patient said that there needed to be ramps so that they could get into the building or that the ramps were too steep, etc.)

Yes      No

**14a. If yes, please elaborate.**

How often do you get reports of difficulties?      Rarely, regularly, often

What type of difficulties are reported (i.e. parking space, entry into the building, etc)

**15. Do you know how many parking places are available at your practice?**      Yes      No

**15a. If Yes**      \_\_\_\_\_ Number

**16. Do you know how many of these are handicap parking places?**      Yes      No

**16a.1 If Yes**      \_\_\_\_\_ Number

**Think about the route from the parking lot into your practice as you answer the questions the following questions.**

17. Do curbs or steps from the parking lot have curb cutouts or ramps?      Yes      No

18. Does the main entrance to the building have stairs?      Yes      No

18a. If **Yes**, is a ramp or lift available?      Yes      No

19. Is there a route of travel to your practice from the building entrance that does not require the use of stairs?

Yes      No

20. If your practice is on a floor other than the ground floor, is there an elevator?



Yes No NA  
(practice on ground floor)

21. Is the flooring leading to your practice stable, firm and slip-resistant? Yes No
22. Is the route to your clinic unobstructed? (i.e. there is nothing that blocks the route of a wheelchair into your practice from the parking lot to the door to your practice) Yes No
23. Is the route 36 inches or wider? Yes No I don't know
24. Can a person with a mobility disability get into your practice without assistance? Yes No
25. Can the door handle be operated with a closed fist (is it a lever rather than a knob)? Yes No NA  
(automatic door)
26. Can the door be opened without too much force (i.e. door weighs less than 5 lbs)? Yes No
27. Does the door to your clinic open in or out? In Out
28. Is the doorway into your practice 32 inches or wider? Yes No I don't know

**Think about the space within your practice as you answer the questions below.**

29. Is there an unobstructed path from the door of your clinic to the check-in counter (a route that a wheelchair patient can travel without difficulty) Yes No
30. Is there a low check-in counter that a patients can access from a wheelchair? Yes No
31. Is there an unobstructed path from the check-in counter to the waiting room? Yes No
32. Is there a space for wheelchair seating within the waiting room (empty space for a wheelchair patient to pull into and **be out of the flow of traffic**)? Yes No
33. Is there a fully accessible restroom available for your patients that can be used by both genders?

	Yes	No	
If yes, continue with a-i. If no, skip to 34.			
33a. Is the doorway into your restroom 32 inches or wider?	Yes	No	I don't know
33b. Is the restroom or the wheelchair accessible stall at least 5 ft by 5 ft?	Yes	No	
33c. Are there grab bars <b>behind</b> and <b>on the side wall</b> nearest the toilet?	Yes	No	
33d. Is the toilet raised (i.e. 17-19 inches)?	Yes	No	
33e. Can the toilet paper dispenser be reached without having to bend forward?	Yes	No	
33f. Is the lavatory accessible to a person sitting in a wheelchair (rim no higher than 34 inches)?	Yes	No	
33g. Does the lavatory have an open space in front?	Yes	No	
33h. Is there an open space beneath the sink	Yes	No	
33i. Are there pipe protectors underneath the sink?	Yes	No	
33j. Are soap dispensers and hand dryers at a height that a person seated in a wheelchair can reach (less than 48 inches)?	Yes	No	
34. Are the hallways in your practice 36 inches or wider?	Yes	No	I don't know
35. Are the doorways into the exam rooms 32 inches or wider?	Yes	No	I don't know
36. Do you have an exam room with enough room for a wheelchair patient to turn?	Yes	No	
37. Do you have a height adjustable examination table in at least one exam room?			

Yes No

38. Do you have a platform weight scale that can accommodate a wheelchair?

Yes No

39. If your providers do gynecological examinations, do you have adjustable, padded leg supports instead of typical stirrups in at least one exam room? Yes No NA

40. If your practice has mammography equipment, does it adjust to the height of a person seated in a wheelchair? Yes No NA

**The next set of questions are designed to assess your knowledge of the Americans with Disabilities Act (ADA). The ADA became a federal law in 1990.**

41. Have you heard of the Americans with Disabilities Act?

41a. If yes, can you, briefly describe the purpose of the ADA as you understand it.

42. Are you aware that the ADA applies to medical practices? Yes No

42a. If Yes, describe how the ADA applies to medical practices?

42b. Which title of the ADA would apply to your practice?

43. Have you received education or training regarding the ADA and how it applies to a medical practice?

Yes No

43a. If Yes, describe the training (examples could be in a college course, during CME/CEU training, a presentation at a conference, a webinar).

44. Have you ever taken action to assess or insure ADA compliance with regard to your practice?

Yes No

If **Yes**, have you:

45a 1. Conducted an ADA audit or used an ADA checklist to check for compliance?

Yes No

45 2. Consulted with an ADA specialist?

Yes No

45 3. Provided ADA training for your staff?

Yes No

45 4. Discussed ADA issues with your boss or the board of directors?

Yes No

45e. Other, please describe:

46. Have you ever inquired about the cost of bringing your practice into ADA compliance or enhancing accessibility?

Yes No

46a. If **Yes**, did the practice make the changes that you inquired about? Yes No

46b. If **No**, why did the practice decide not to make the changes that you inquired about?

47. Do you know that there is a federal tax credit to off-set the cost of bringing a medical practice into ADA compliance?

Yes No

47a. If **Yes**, have you inquired about the federal tax credit to offset the cost of bringing you practice into ADA compliance?

Yes No

47b. If **Yes**, was your practice eligible for the tax credit? Yes No

47c. If **Yes**, did the practice make the changes that you inquired about?

Yes No

47d. If **No**, why did the practice decide not to make the changes that you inquired about (i.e. the federal tax credit was not enough to cover the cost)?

48. Is the number of patients with mobility disabilities in your practice sufficient to justify bringing your practice into ADA compliance? Yes No

49. If **No**, please explain.

49a. If the space that your practice occupies is leased, who is responsible for ADA compliance from the parking lot to the door of your practice (put NA if space is not leased)?

50. If the space that your practice occupies is leased, who is responsible for ADA compliance within your practice (put NA if space is not leased)?

51. Are you familiar with equipment for medical practices that grants accessibility to people with mobility disabilities? Yes No

51a. If **Yes**, what accessible equipment is available?

52. Have you considered purchasing accessible equipment for your practice?

Yes No

52a. If **Yes**, what equipment have you considered purchasing?

52b. Did the practice purchase the equipment?

Yes No

52c. If **No**, why did the practice decide not to purchase the equipment?

53. Are you aware of the federal tax credit available to off-set the cost of purchasing accessible equipment? Yes No

53a. If **Yes**, have you inquired about the federal tax credit to offset the cost of purchasing accessible equipment? Yes No

53b. If **Yes**, was your practice eligible for the tax credit? Yes No

53c. If **Yes**, did the practice purchase the equipment?

Yes No

53d. If **No**, why did the practice decide not to purchase the equipment (i.e. the federal tax credit was not enough to cover the cost)?

54. Is the number of patients with mobility disabilities in your practice sufficient to justify purchasing accessible equipment? Yes No

54a. If **No**, please explain

If a patient with mobility limitations encounters a barrier to services in your practice, which of the following ways might the patient be accommodated?

55a. Patient may be referred to another practice: Yes No

55b. That part of the exam may be skipped by the physician Yes No

55c. The patient is examined in his/her wheelchair Yes No

55d. Patients might be asked to bring someone with them to help transfer onto an exam table

Yes No

55e. Employees have been trained to lift patients onto an exam table

Yes No

55f. There is a lift to transfer patients onto an exam table Yes No

55g. Please list any other ways that patients are accommodated in your practice.

56. Have patients with mobility limitations been refused treatment in your practice because it was not accessible? Yes No

57. Have patients with mobility limitations been refused treatment because it takes longer to examine them? Yes No

58. Have patients with mobility limitations been refused treatment because insurance does not reimburse for the additional time? Yes No

59. Do you know what the consequences are for not being compliant with the ADA?

Yes No

59a. If **Yes**, describe the consequences.

60. In your opinion, do you think that primary care practices in the area meet the needs of people with disabilities?

61. Additional comments

Thank you for your participation in this survey!



## Biomedical IRB – Expedited Review Approval Notice

**NOTICE TO ALL RESEARCHERS:**

*Please be aware that a protocol violation (e.g., failure to submit a modification for any change) of an IRB approved protocol may result in mandatory remedial education, additional audits, re-consenting subjects, researcher probation, suspension of any research protocol at issue, suspension of additional existing research protocols, invalidation of all research conducted under the research protocol at issue, and further appropriate consequences as determined by the IRB and the Institutional Officer.*

**DATE:** August 11, 2011

**TO:** Dr. Michelle Chino, Community Health Sciences

**FROM:** Office of Research Integrity - Human Subjects

**RE:** Notification of IRB Action by /John Mercer/ Dr. John Mercer, Chair  
Protocol Title: **Accessibility of Primary Care for Patients with Mobility Disabilities: A Mixed Methods Study of Health Care Administrators**  
Protocol #: 1108-3885  
Expiration Date: August 10, 2012

---

This memorandum is notification that the project referenced above has been reviewed and approved by the UNLV Biomedical Institutional Review Board (IRB) as indicated in Federal regulatory statutes 45 CFR 46 and UNLV Human Research Policies and Procedures.

The protocol is approved for a period of one year and expires August 10, 2012. If the above-referenced project has not been completed by this date you must request renewal by submitting a Continuing Review Request form 30 days before the expiration date.

**PLEASE NOTE:**

Upon approval, the research team is responsible for conducting the research as stated in the protocol most recently reviewed and approved by the IRB, which shall include using the most recently submitted Informed Consent/Assent forms and recruitment materials. The official versions of these forms are indicated by footer which contains approval and expiration dates.

Should there be *any* change to the protocol, it will be necessary to submit a **Modification Form** through ORI - Human Subjects. No changes may be made to the existing protocol until modifications have been approved by the IRB. Modified versions of protocol materials must be used upon review and approval. Unanticipated problems, deviations to protocols, and adverse events must be reported to the ORI – HS within 10 days of occurrence.

If you have questions or require any assistance, please contact the Office of Research Integrity - Human Subjects at [IRB@unlv.edu](mailto:IRB@unlv.edu) or call 895-2794.

Office of Research Integrity - Human Subjects  
4505 Maryland Parkway • Box 451047 • Las Vegas, Nevada 89154-1047  
(702) 895-2794 • FAX: (702) 895-0805





## Biomedical IRB – Expedited Review Modification Approved

### NOTICE TO ALL RESEARCHERS:

Please be aware that a protocol violation (e.g., failure to submit a modification for any change) of an IRB approved protocol may result in mandatory remedial education, additional audits, re-consenting subjects, researcher probation, suspension of any research protocol at issue, suspension of additional existing research protocols, invalidation of all research conducted under the research protocol at issue, and further appropriate consequences as determined by the IRB and the Institutional Officer.

**DATE:** September 23, 2011

**TO:** Dr. Michelle Chino, Community Health Services

**FROM:** Office of Research Integrity – Human Subjects

**RE:** Notification of IRB Action by /Cindy Lee-Tataseo/ Ms. Cindy Lee-Tataseo, BS, CIP, CIM  
Protocol Title: **ACCESSIBILITY OF PRIMARY CARE FOR PATIENTS WITH MOBILITY DISABILITIES: A MIXED METHODS STUDY OF HEALTH CARE ADMINISTRATORS**  
Protocol #: 1108-3885  
Expiration Date: August 10, 2012

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The modification of the protocol named above has been reviewed and approved.

Modifications reviewed for this action include:

- Revise survey administration from mail survey to telephone interview with Cannon Survey Center.
- Informed Consent will be verbal over the phone rather than physical form.

This IRB action will not reset your expiration date for this protocol. The current expiration date for this protocol is August 10, 2012.

### PLEASE NOTE:

Upon approval, the research team is responsible for conducting the research as stated in the protocol most recently reviewed and approved by the IRB, which shall include using the most recently submitted Informed Consent/Assent forms and recruitment materials. The official versions of these forms are indicated by footer which contains approval and expiration dates.

Should there be *any* change to the protocol, it will be necessary to submit a **Modification Form** through ORI - Human Subjects. No changes may be made to the existing protocol until modifications have been approved by the IRB. Modified versions of protocol materials must be used upon review and approval. Unanticipated problems, deviations to protocols, and adverse events must be reported to the ORI – HS within 10 days of occurrence.

Should the use of human subjects described in this protocol continue beyond August 10, 2012, it would be necessary to submit a **Continuing Review Request Form** 30 days before the expiration date.

Office of Research Integrity – Human Subjects  
4505 Maryland Parkway • Box 451047 • Las Vegas, Nevada 89154-1047  
(702) 895-2794 • FAX: (702) 895-0805



## Biomedical IRB – Expedited Review Modification Approved

### NOTICE TO ALL RESEARCHERS:

*Please be aware that a protocol violation (e.g., failure to submit a modification for any change) of an IRB approved protocol may result in mandatory remedial education, additional audits, re-consenting subjects, researcher probation, suspension of any research protocol at issue, suspension of additional existing research protocols, invalidation of all research conducted under the research protocol at issue, and further appropriate consequences as determined by the IRB and the Institutional Officer.*

**DATE:** December 20, 2011  
**TO:** Dr. Michelle Chino, Community Health Services  
**FROM:** Office of Research Integrity – Human Subjects  
**RE:** Notification of IRB Action by /Charles Rasmussen/ Dr. Charles Rasmussen, Co-Chair  
Protocol Title: **Accessibility Of Primary Care For Patients With Mobility Disabilities: A Mixed Methods Study Of Health Care Administrators**  
Protocol #: 1108-3885  
Expiration Date: August 10, 2012

---

The modification of the protocol named above has been reviewed and approved.

Modifications reviewed for this action include:

- Increase total subjects by 50 by soliciting 100 MGMA Administrators, who will be offered a \$10 gift card.

This IRB action will not reset your expiration date for this protocol. The current expiration date for this protocol is August 10, 2012.

### PLEASE NOTE:

Upon approval, the research team is responsible for conducting the research as stated in the protocol most recently reviewed and approved by the IRB, which shall include using the most recently submitted Informed Consent/Assent forms and recruitment materials. The official versions of these forms are indicated by footer which contains approval and expiration dates.

Should there be *any* change to the protocol, it will be necessary to submit a **Modification Form** through ORI - Human Subjects. No changes may be made to the existing protocol until modifications have been approved by the IRB. Modified versions of protocol materials must be used upon review and approval. Unanticipated problems, deviations to protocols, and adverse events must be reported to the ORI – HS within 10 days of occurrence.

Should the use of human subjects described in this protocol continue beyond August 10, 2012, it would be necessary to submit a **Continuing Review Request Form** 30 days before the expiration date.

Office of Research Integrity – Human Subjects  
4505 Maryland Parkway • Box 451047 • Las Vegas, Nevada 89154-1047  
(702) 895-2794 • FAX: (702) 895-0805



## INFORMED CONSENT

Department of Public Health

---

**TITLE OF STUDY: ACCESSIBILITY OF PRIMARY CARE FOR PATIENTS WITH MOBILITY DISABILITIES: A MIXED METHODS STUDY OF HEALTH CARE**

**ADMINISTRATORS**

**INVESTIGATOR(S): Michelle Chino, PhD., Jennifer Pharr, M.S.**

**CONTACT PHONE NUMBER: 702-895-2649**

---

**Purpose of the Study**

You are invited to participate in a research study. The purpose of this study is to identify the reasons why some barriers may exist that limit access to primary care services for people with disabilities and to understand how patients with mobility disabilities are accommodated when a barrier to care is encountered.

**Participants**

You are being asked to participate in the study because you fit the criteria: Practice Administrator / Health Care Administrator in a Primary Care Clinic in Southern Nevada.

**Procedures**

If you volunteer to participate in this study, you will be asked to do the following: Answer questions to a telephone survey. You will not be asked to sign a consent form. Agreeing to answer the survey questions constitutes informed consent to participate in this research study.

**Benefits of Participation**

There may be direct benefits to you as a participant in this study. You will receive a summary report of the results of this study.

**Risks of Participation**

There are risks involved in all research studies. This study will include only minimal risks. You will be asked to answer questions about your practice. You may be uncomfortable answering some questions. Non-compliance with ADA standards can result in litigation, fines or penalties. However, only people with disabilities who have been discriminated against may file a complaint with the Office of Civil Rights. Because of this and because data will be kept strictly confidential, there is minimal legal risk with participation in this study.

**Cost /Compensation**

*Approved by the UNLV IRB. Protocol #1108-3885  
Received: 09-21-11 Approved: 09-23-11 Expiration: 09-22-12*

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**TITLE OF STUDY: Accessibility of Primary Care for Patients with Mobility Disabilities: A Mixed Methods Study of Health Care Administrators**

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There will not be financial cost to you to participate in this study. The study will take 45 minutes of your time. You will not be compensated for your time.

**Contact Information**

If you have any questions or concerns about the study, you may contact Dr. Michelle Chino at **702-895-2649**. For questions regarding the rights of research subjects, any complaints or comments regarding the manner in which the study is being conducted you may contact **the UNLV Office of Research Integrity – Human Subjects at 702-895-2794 or toll free at 877-895-2794 or via email at IRB@unlv.edu.**

**Voluntary Participation**

Your participation in this study is voluntary. You may refuse to participate in this study or in any part of this study. You may withdraw at any time without prejudice to your relations with the university. You are encouraged to ask questions about this study at the beginning or any time during the research study.

**Confidentiality**

All information gathered in this study will be kept completely confidential. No reference will be made in written or oral materials that could link you to this study. All records will be stored in a locked facility at UNLV for 3 years after completion of the study. After the storage time the information gathered will be shredded.

**Participant Consent:**

I understand the information and agree to participate in this study. I am at least 18 years of age. A copy of this form has been given to me. By agreeing to participate in the survey, I am consenting to be in this study.

*Approved by the UNLV IRB. Protocol #1108-3885  
Received: 09-21-11 Approved: 09-23-11 Expiration: 09-22-12*

2 of 2



## INFORMED CONSENT

Department of Public Health

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**TITLE OF STUDY: ACCESSIBILITY OF PRIMARY CARE FOR PATIENTS WITH MOBILITY DISABILITIES: A MIXED METHODS STUDY OF HEALTH CARE**

**ADMINISTRATORS**

**INVESTIGATOR(S): Michelle Chino, PhD., Jennifer Pharr, M.S.**

**CONTACT PHONE NUMBER: 702-895-2649**

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**Purpose of the Study**

You are invited to participate in a research study. The purpose of this study is to identify the reasons why some barriers may exist that limit access to primary care services for people with disabilities and to understand how patients with mobility disabilities are accommodated when a barrier to care is encountered.

**Participants**

You are being asked to participate in the study because you fit the criteria: Practice Administrator / Health Care Administrator in a Primary Care Clinic.

**Procedures**

If you volunteer to participate in this study, you will be asked to do the following: Answer questions to a on-line survey. You will not be asked to sign a consent form. Agreeing to answer the survey questions constitutes informed consent to participate in this research study.

**Benefits of Participation**

There may be direct benefits to you as a participant in this study. You will receive a summary report of the results of this study.

**Risks of Participation**

There are risks involved in all research studies. This study will include only minimal risks. You will be asked to answer questions about your practice. You may be uncomfortable answering some questions. Non-compliance with ADA standards can result in litigation, fines or penalties. However, only people with disabilities who have been discriminated against may file a complaint with the Office of Civil Rights. Because of this and because data will be kept strictly confidential, there is minimal legal risk with participation in this study.

**Cost /Compensation**

There will not be financial cost to you to participate in this study. The study will take 15 minutes of your time. You will receive a \$10 Starbucks gift card for participating in this study.

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*Received: 12-19-11 Approved: 12-20-11 Expiration: 08-10-12*

1 of 2

**Contact Information**

If you have any questions or concerns about the study, you may contact Dr. Michelle Chino at **702-895-2649**. For questions regarding the rights of research subjects, any complaints or comments regarding the manner in which the study is being conducted you may contact **the UNLV Office of Research Integrity – Human Subjects at 702-895-2794 or toll free at 877-895-2794 or via email at IRB@unlv.edu.**

**Voluntary Participation**

Your participation in this study is voluntary. You may refuse to participate in this study or in any part of this study. You may withdraw at any time without prejudice to your relations with the university. You are encouraged to ask questions about this study at the beginning or any time during the research study.

**Confidentiality**

All information gathered in this study will be kept completely confidential. No reference will be made in written or oral materials that could link you to this study. All records will be stored in a locked facility at UNLV for 3 years after completion of the study. After the storage time the information gathered will be shredded.

**Participant Consent:**

I understand the information and agree to participate in this study. I am at least 18 years of age. By agreeing to participate in the survey, I am consenting to be in this study.



## BIBLIOGRAPHY

- Adams, A. S., Soumerai, S. B., Lomas, J., & Ross-Degnan, D. (1999). Evidence of self-report bias in assessing adherence to guidelines. *International Journal for Quality in Health Care*, 11(3), 187.
- Adams, W., Krahn, G., Horner-Johnson, W., & Leman, R. (2009). Fundamentals of disability epidemiology. In Drum, C., Krahn, G., & Bersani, H. (Ed.), *Disability and public health*. Washington DC: American Public Health Association.
- Adaptive Environment Center, I. (1995). *Checklist for existing facilities*. Retrieved, 2011, from [http://adaptiveenvironments.org/neada/site/pub\\_307](http://adaptiveenvironments.org/neada/site/pub_307)
- Americans with Disabilities Act. (2008). *Americans with disabilities amended act of 2008*. Retrieved 2010 from <http://www.access-board.gov/about/laws/ada-amendments.htm>
- Armour, B. S., Thierry, J. A. M., & Wolf, L. A. (2009). State-level differences in breast and cervical cancer screening by disability status: United states, 2008. *Women's Health Issues*, 19(6), 406-414.
- Aschengrau, A., & Seage, G. R. (2003). *Essentials of epidemiology in public health*. Sudbary, MA: Jones & Bartlett Learning.
- Association of University Centers on Disability. (2010). *Title V of the patient protections and affordable care act*. Retrieved, 2012, from [http://www.aucd.org/docs/policy/health\\_care/Section%20by%20Section%20Summary%20of%20Health%20Care%20Workforce.pdf](http://www.aucd.org/docs/policy/health_care/Section%20by%20Section%20Summary%20of%20Health%20Care%20Workforce.pdf)

- Au, K. W., & Man, D. W. K. (2006). Attitudes toward people with disabilities: A comparison between health care professionals and students. *International Journal of Rehabilitation Research*, 29(2), 155.
- Bandura, A. (1998). Health promotion from the perspective of social cognitive theory. *Psychology and Health*, 13, 623-649.
- Bandura, A. (2004). Health promotion by social cognitive means. *Health Education & Behavior*, 31(2), 143.
- Barr, J. K., Giannotti, T. E., Van Hoof, T. J., Mongoven, J., & Curry, M. (2008). Understanding barriers to participation in mammography by women with disabilities. *American Journal of Health Promotion*, 22(6), 381-385.
- Becker, H., Stuifbergen, A., & Tinkle, M. (1997). Reproductive health care experiences of women with physical disabilities: A qualitative study. *Archives of Physical Medicine and Rehabilitation*, 78(12), S26-S33.
- Beerten, R., Lynn, P., Laiho, J., & Martin, J. (2000). *Response Rates as a Measure of Survey Quality*, Retrieved, 2011, from [http://epp.eurostat.ec.europa.eu/cache/ITY\\_PUBLIC/NTTS2001/61.pdf](http://epp.eurostat.ec.europa.eu/cache/ITY_PUBLIC/NTTS2001/61.pdf)
- Bilmes, L. (2007). Soldiers returning from iraq and afghanistan: The long-term costs of providing veterans medical care and disability benefits. *John F. Kennedy School of Government Working Paper*.
- Brault, M. (2008). Americans with disabilities: 2005. *Current Population Reports*, 70.



Brault, W. (2008). *Disability status and the characteristics of people in group quarters: A brief analysis of disability prevalence among the civilian noninstitutionalized and total population in the american community survey.*

Retrieved, 2011, from <http://www.census.gov/hhes/www/disability/GQdisability.pdf>

Braveman, P. (2006a). Health disparities and health equity: Concepts and measurement. *Annu.Rev.Public Health, 27*, 167-194.

Braveman, P. (2006b). Health disparities and health equity: Concepts and measurement. *Annu.Rev.Public Health, 27*, 167-194.

Carter-Pokras, O., & Baquet, C. (2002). What is a " health disparity"? *Public Health Reports, 117*(5), 426.

Center for Disease Control and Prevention. (2006). Environmental barriers to health care among persons with disabilities – los angeles county, california. *Morbidity and Mortality Weekly Report, 55*(48), 1293-1320.

Center for Disease Control and Prevention. (2011). *Diabetes data and trends.* Retrieved, 2011, from <http://www.cdc.gov/diabetes/statistics/prev/national/figpersons.htm>

Chan, L., Doctor, J. N., MacLehose, R. F., Lawson, H., Rosenblatt, R. A., Baldwin, L. M., & Jha, A. (1999). Do medicare patients with disabilities receive preventive services? A population-based study. *Archives of Physical Medicine and Rehabilitation, 80*(6), 642-646.

Chang, L., & Krosnick, J. A. (2010). Comparing oral interviewing with self-administered computerized questionnaires: An experiment. *Public Opinion Quarterly, 74*(1), 154-167.

- Cheng, E., Myers, L., Wolf, S., Shatin, D., Cui, X. P., Ellison, G., & Vickrey, B. (2001). Mobility impairments and use of preventive services in women with multiple sclerosis: Observational study. *BMJ: British Medical Journal*, 323(7319), 968.
- Chevarley, F. M., Thierry, J. M., Gill, C. J., Ryerson, A. B., & Nosek, M. A. (2006). Health, preventive health care, and health care access among women with disabilities in the 1994–1995 national health interview survey, supplement on disability. *Women's Health Issues*, 16(6), 297-312. doi:10.1016/j.whi.2006.10.002
- County Health Rankings. (2011). *County health rankings: Mobilizing action toward community health*. Retrieved, 2011, from <http://www.countyhealthrankings.org/>
- Creswell, J. W., & Clark, V. L. P. (2007). *Designing and conducting mixed methods research*. Los Angeles, CA: Sage Publications, Inc.
- Day, J. (2005). *Population profile of the united states. US census bureau*. Retrieved 2011 from <http://www.census.gov/population/www/pop-profile/natproj.html>
- Diab, M. E., & Johnston, M. V. (2004). Relationships between level of disability and receipt of preventive health services. *Archives of Physical Medicine and Rehabilitation*, 85(5), 749-757.
- Dictionary.com. *Knowledge*. Retrieved, 2011, from <http://dictionary.reference.com/browse/knowledge>
- Disability Rights Advocates. (2001). *Settlement agreement: Metzler et al. v. kaiser foundation health plan, inc. et. al.* Retrieved, 2012, from <http://www.drlegal.org/downloads/cases/metzler/settlement.pdf>

- Disability Rights Advocate (2008). *Thompson v. Sutter*. Retrieved, 2012 from [http://www.dralegal.org/cases/health\\_insurance/Thompson\\_v\\_Sutter.php](http://www.dralegal.org/cases/health_insurance/Thompson_v_Sutter.php)
- Disability Rights Advocate (2011) *Massachusetts general hospital and brigham & women's hospital in boston, massachusetts (structured negotiations)*. Retrieved, 2012 from [http://www.dralegal.org/cases/health\\_insurance/Boston.php](http://www.dralegal.org/cases/health_insurance/Boston.php)
- Drainoni, M. L., Lee-Hood, E., Tobias, C., Bachman, S. S., Andrew, J., & Maisels, L. (2006). Cross-disability experiences of barriers to health-care access. *Journal of Disability Policy Studies, 17*(2), 101.
- Dykes, D. C., & White, A. A. (2009). Getting to equal: Strategies to understand and eliminate general and orthopaedic healthcare disparities. *Clinical Orthopaedics and Related Research, 467*(10), 2598-2605.
- Earle, S., & Church, S. (2004). Disability and reproduction. *Practising Midwife, 7*(8), 32-34.
- Field, M. J., & Jette, A. M. (2007). *The future of disability in america*. Washington D.C.: National Academy Press.
- Fricke, S., Galesic, M., Tourangeau, R., & Yan, T. (2005). An experimental comparison of web and telephone surveys. *Public Opinion Quarterly, 69*(3), 370-392.
- Gothwal, V. K., Wright, T. A., Lamoureux, E. L., & Pesudovs, K. (2009). Guttman scale analysis of the distance vision scale. *Investigative Ophthalmology & Visual Science, 50*(9), 4496.

- Grabois, E. W., Nosek, M. A., & Rossi, C. D. (1999). Accessibility of primary care physicians' offices for people with disabilities: An analysis of compliance with the americans with disabilities act. *Archives of Family Medicine*, 8(1), 44.
- Graham, C. L., & Mann, J. R. (2008). Accessibility of primary care physician practice sites in south carolina for people with disabilities. *Disability and Health Journal*, 1(4), 209-214.
- Green, J., & Thorogood, N. (2009). *Qualitative methods for health research*. Los Angeles, CA: Sage Publications.
- Gregg, E. W., Beckles, G., Williamson, D. F., Leveille, S. G., Langlois, J. A., Engelgau, M. M., & Narayan, K. (2000). Diabetes and physical disability among older US adults. *Diabetes Care*, 23(9), 1272.
- Griffith, K. G., & Cooper, M. J. (2002). Are educational administrators prepared to meet the needs of employees with disabilities? *Rural Special Education Quarterly*, 21(3), 21-28. Retrieved from <http://ezproxy.library.unlv.edu/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=aph&AN=11409944&site=ehost-live>
- Guest, G. (2000). Using guttman scaling to rank wealth: Integrating quantitative and qualitative data. *Field Methods*, 12(4), 346.
- Handbook, O. O. (2004). US department of labor, bureau of labor statistics. *Bulletin*, 2540
- Harrington, A. L., Hirsch, M. A., Hammond, F. M., Norton, H. J., & Bockenek, W. L. (2009). Assessment of primary care services and perceived barriers to care in

persons with disabilities. *American Journal of Physical Medicine & Rehabilitation*, 88(10), 852.

Hart, P. (2006). *Safe patient handling: A report based on quantitative research among nurses and radiology technicians*. Retrieved 2010 from <https://www.aft.org/pdfs/healthcare/safepatienthandling0306.pdf>

Havercamp, S. M., Scandlin, D., & Roth, M. (2004). Health disparities among adults with developmental disabilities, adults with other disabilities, and adults not reporting disability in north carolina. *Public Health Reports*, 119(4), 418.

Health and Human Services. (2010). *Civil rights discrimination complaint form*. Retrieved 2010 from <http://www.hhs.gov/ocr/civilrights/complaints/discrimhowtofile.pdf>

Health Resources and Services Administration. (2000). *Eliminating health disparities in the united states. prepared by HRSA workgroup for the elimination of health disparities*. Retrieved, 2009, from <http://www.hrsa.gov/omh/omh/disparities>.

Herandez, B., Balcazar, F., Keys, C., Hidalgo M.A., & Rosen, J. (2006). Taking it to the streets: Ethnic minorities with disabilities seek community inclusion. *Community Development*. 37(3), 13-25.

Hernandez, B., Keys, C., & Balcazar, F. (2003). The americans with disabilities act knowledge survey: Strong psychometrics and weak knowledge. *Rehabilitation Psychology*, 48(2), 93.

- Higginson G., & Widerburg, B. (2009). A brief history of public health. In Drum, C., Krahn, G., & Bersani, H. (Ed.), *Disability and public health*. Washington DC: American Public Health Association.
- Houtenville, A. J., & Ruiz, T. (2011). *Annual disability statistics compendium: 2001*. Durham, NH: University of new hampshire, institute on disability. Retrieved from <http://disabilitycompendium.org/pdf/Compendium2011.pdf>
- Iezzoni, L., Ramanan, R. A., & Drews, R. E. (2005). Teaching medical students about communicating with patients who have sensory or physical disabilities. *Disability Studies Quarterly*, 25(1)
- Iezzoni, L. I., Davis, R. B., Soukup, J., & O'Day, B. (2002). Satisfaction with quality and access to health care among people with disabling conditions. *International Journal for Quality in Health Care*, 14(5), 369.
- Iezzoni, L. I., McCarthy, E. P., Davis, R. B., Harris-David, L., & O'Day, B. (2001). Use of screening and preventive services among women with disabilities. *American Journal of Medical Quality*, 16(4), 135.
- Iezzoni, L. I., McCarthy, E., Davis, R., & Siebens, H. (2000). Mobility impairments and use of screening and preventive services. *American Journal of Public Health*, 90(6), 955.
- Internal Revenue Service. (2006). *Disability access credit, form 8826*. Retrieved, 2011, from <http://www.ada.gov/f8826.pdf>

- Jones, G. C., & Sinclair, L. B. (2008). Multiple health disparities among minority adults with mobility limitations: An application of the ICF framework and codes. *Disability & Rehabilitation, 30*(12-13), 901-915.
- Kailes, J., & Donald, C. (2009). *Importance of accessible examination tables, chairs and weight scales: Edition 3*. Retrieved, 2010, from <http://www.cdihp.org/products.html#tables>
- Kaplan, C. (2006). Special issues in contraception: Caring for women with disabilities. *The Journal of Midwifery & Women's Health, 51*(6), 450-456.
- Kilbourne, A. M., Switzer, G., Hyman, K., Crowley-Matoka, M., & Fine, M. J. (2006). Advancing health disparities research within the health care system: A conceptual framework. *American Journal of Public Health, , AJP*H. 2005.077628 v1.
- Kirschner, K. L., Breslin, M. L., & Iezzoni, L. I. (2007). Structural impairments that limit access to health care for patients with disabilities. *JAMA: The Journal of the American Medical Association, 297*(10), 1121.
- Kroll, T., Jones, G. C., Kehn, M., & Neri, M. T. (2006). Barriers and strategies affecting the utilisation of primary preventive services for people with physical disabilities: A qualitative inquiry. *Health & Social Care in the Community, 14*(4), 284-293.
- LaPlant, M. (2010). The classic measure of disability in activities of daily living is biased by age but an expanded IADL/ADL measure is not. *Gerontology Series B: Psychological Science and Social Science, 68*(6), 720-732.
- Liao, P. S., & Tu, S. H. (2006). Examining the scalability of intimacy permissiveness in taiwan. *Social Indicators Research, 76*(2), 207-232.

- Lynn, P., Beerten, R., Laiho, J., & Martin, J. (2001). Recommended standard final outcome categories and standard definitions of response rate for social surveys. *Colchester, Essex: The Institute for Social and Economic Research*,
- Mace, R. (2000). *Removing barriers to health care: A guide for health professionals. the center for universal design and the north carolina office on disability and health*. Retrieved, 2010, from <http://www.fpg.unc.edu/~ncodh/rbar/>
- McAlister, A., Perry, C., Parcel, G. (2008). How individuals, environments and health behaviors interact: Social cognitive theory. In Glanz, K., Rimer, K., Viswanath, K. (Ed.), *Health behavior and health education*. San Francisco: Jossey-Bass.
- Mele, N., Archer, J., & Pusch, B. D. (2005). Access to breast cancer screening services for women with disabilities. *Journal of Obstetric, Gynecologic, & Neonatal Nursing*, 34(4), 453-464.
- Menzel, H. (1953). A new coefficient for scalogram analysis. *Public Opinion Quarterly*, 17(2), 268.
- Millman, M. L. (1993). *Access to health care in america*. Washington D.C.: National Academies Press.
- Montano, D. E., & Kasprzyk, D. (2008). Theory of reasoned action, theory of planned behavior, and the integrated behavioral model. In Glanz, K., Rimer, K., Viswanath, K. (Ed.), *Health behavior and health education*. San Francisco: Jossey-Bass.
- Mudrick, N. R., & Schwartz, M. A. (2010). Health care under the ADA: A vision or a mirage? *Disability and Health Journal*, 3(4), 233-239.  
doi:10.1016/j.dhjo.2010.07.002



- National Institute of Health. (2000). *NIH strategic research plan to reduce and ultimately eliminate health disparities*. Retrieved, 2011, from <http://www.nih.gov/about/hd/strategicplan.pdf>
- Nelson, A. (2002). Unequal treatment: Confronting racial and ethnic disparities in health care. *Journal of the National Medical Association*, 94(8), 666.
- Nosek, M., Rintala, D., Young, M., Foley, C. & Dunn, F. (1996). *Findings on reproductive health and access to health care national survey of women with physical disabilities*. Retrieved, 2009, from <http://www.bcm.edu/crowd/finding4.html>.
- Nosek, M. A., & Howland, C. A. (1997). Breast and cervical cancer screening among women with physical disabilities. *Archives of Physical Medicine and Rehabilitation*, 78(12), S39-S44.
- Pate, J. R., & Waller, S. N. (2011). Athletic facility managers' knowledge of access and the americans with disabilities act. *Published by University of South Carolina Department of Sport & Entertainment Management*,
- Pharr, J., & Moonie, S. (2011a). Chronic disease and risk factors among nevadans with disabilities: A 2009 brfss study. *Nevada Journal of Public Health*, 8, 20-27.
- Pharr, J., & Moonie, S. (2011b). Utilization of preventive health services by nevadans with disabilities. *Nevada Journal of Public Health*, 8, 7-12.
- Piotrowski, K., & Snell, L. (2007). Health needs of women with disabilities across the lifespan. *Journal of Obstetric, Gynecologic, & Neonatal Nursing*, 36(1), 79-87.

- Prochaska, J. O., Redding, C. A., & Evers, K. E. (2008). The transtheoretical model and stages of change. In Glanz, K., Rimer, K., Viswanath, K. (Ed.), *Health behavior and health education*. San Francisco: Jossey-Bass.
- Ramirez, A., Farmer, G. C., Grant, D., & Papachristou, T. (2005). Disability and preventive cancer screening: Results from the 2001 california health interview survey. *American Journal of Public Health, 95*(11), 2057.
- Redick, A. G., McClain, L., & Brown, C. (2000). Consumer empowerment through occupational therapy: The americans with disabilities act title III. *The American Journal of Occupational Therapy, 54*(2), 207-213.
- Reichard, A., Stolzle, H., & Fox, M. (2011). Health disparities among adults with physical disabilities or cognitive limitations compared to individuals with no disabilities in the united states. *Disability and Health Journal, 4*, 59-67.
- Research and Graduate Studies. *Office of research integrity – human subjects research*. Retrieved, 2011, from <http://research.unlv.edu/ORI-HSR/>
- Roster, C. A., Rogers, R. D., Albaum, G., & Klein, D. (2004). A comparison of response characteristics from web and telephone surveys. *International Journal of Market Research, 46*, 359-374.
- Sanchez, J., Byfield, G., Brown, T. T., LaFavor, K., Murphy, D., & Laud, P. (2000). Perceived accessibility versus actual physical accessibility of healthcare facilities. *Rehabilitation Nursing : The Official Journal of the Association of Rehabilitation Nurses, 25*(1), 6-9.

- Scheer, J., Kroll, T., Neri, M. T., & Beatty, P. (2003). Access barriers for persons with disabilities. *Journal of Disability Policy Studies, 13*(4), 221.
- Schifferdecker, K. E., & Reed, V. A. (2009). Using mixed methods research in medical education: Basic guidelines for researchers. *Medical Education, 43*(7), 637-644.
- Schulz, A., & Northridge, M. E. (2004). Social determinants of health: Implications for environmental health promotion. *Health Education & Behavior, 31*(4), 455.
- Shakespeare, T., Iezzoni, L. I., & Groce, N. E. (2009). Disability and the training of health professionals. *The Lancet, 374*(9704), 1815-1816.
- Story, M. F., Schwier, E., & Kailes, J. I. (2009a). Perspectives of patients with disabilities on the accessibility of medical equipment: Examination tables, imaging equipment, medical chairs, and weight scales. *Disability and Health Journal, 2*(4), 169-179.
- Story, M. F., Schwier, E., & Kailes, J. I. (2009). Perspectives of patients with disabilities on the accessibility of medical equipment: Examination tables, imaging equipment, medical chairs, and weight scales. *Disability and Health Journal, 2*(4), 169-179.e1.  
doi:10.1016/j.dhjo.2009.05.003
- Strike, D. L., Skovholt, T. M., & Hummel, T. J. (2004). Mental health professionals' disability competence: Measuring self-awareness, perceived knowledge, and perceived skills. *Rehabilitation Psychology, 49*(4), 321.
- Tervo, R. C., Azuma, S., Palmer, G., & Redinius, P. (2002). Medical students' attitudes toward persons with disability: A comparative study. *Archives of Physical Medicine and Rehabilitation, 83*(11), 1537-1542.

- Thierry, J. M. (2000). Observations from the CDC: Increasing breast and cervical cancer screening among women with disabilities. *Journal of Women's Health & Gender-Based Medicine*, 9(1), 9-12.
- Turner, C. F., Villarroel, M. A., Rogers, S. M., Eggleston, E., Ganapathi, L., Roman, A. M., & Al-Tayyib, A. (2005). Reducing bias in telephone survey estimates of the prevalence of drug use: A randomized trial of telephone audio-CASI. *Addiction*, 100(10), 1432-1444.
- U.S. Census Bureau. (2003). *Disability status 2000*. Retrieved, 2010, from <http://www.census.gov/prod/2003pubs/c2kbr-17.pdf>
- U.S. Congress. (2010). *Public law 111-148 - march 23, 2010. patient protection and affordable care act*. Retrieved, 2012, from <http://www.gpo.gov/fdsys/pkg/PLAW-111publ148/pdf/PLAW-111publ148.pdf>
- U.S. Department of Health and Human Services. (2002a). *Healthy people 2010. chapter 6: Disability and secondary conditions*. Retrieved, 2010, from <http://www.healthypeople.gov/Document/tableofcontents.htm#parta>
- U.S. Department of Health and Human Services. (2002b). *Healthy people 2010. what are its goals?* Retrieved, 2010, from <http://www.healthypeople.gov/About/goals.htm>
- U.S. Department of Health and Human Services. (2009). *Healthy people 2020. disability and secondary conditions*. Retrieved, 2010, from <http://www.healthypeople.gov/HP2020/Objectives/ViewObjective.aspx?Id=457&TopicArea=Disability+and+Secondary+Conditionsping&Objective=DSC+HP2020%e2%80%9114&TopicAreaId=17>

- U.S. Department of Justice (USDJ), & U.S. Department of Health and Human Rights (DHHR). (2010). *Access to medical care for individuals with mobility disabilities*. Retrieved, 2010, from [http://www.ada.gov/medicare\\_mobility\\_ta/medicare\\_ta.pdf](http://www.ada.gov/medicare_mobility_ta/medicare_ta.pdf)
- US Department of Health and Human Services. (2001). *Healthy people 2000. final review*. Retrieved, 2010, from <http://www.cdc.gov/nchs/data/hp2000/hp2k01.pdf>
- Ward, M. J. (2009). A personal perspective on historical views of disability. In C. E. Drum, G. L. Krahn & H. Bersani (Eds.), *Disability and public health* (pp. 45). Washington, D.C.: American Public Health Association.
- Wei, W., Findley, P. A., & Sambamoorthi, U. (2006). Disability and receipt of clinical preventive services among women. *Women's Health Issues, 16*(6), 286-296.
- Weinstein, N. D., Sandman, P. M., & Blalock, S. J. (2008). The precaution adoption process model. In Glanz, K., Rimer, K., Viswanath, K. (Ed.), *Health behavior and health education*. San Francisco: Jossey-Bass.
- Weisberg, S. (2005). *Applied linear regression (3<sup>rd</sup> ed)*. Hoboken, New Jersey: John Wiley & Son.
- Yee, S., & Breslin, M. L. (2010). Achieving accessible health care for people with disabilities: Why the ADA is only part of the solution. *Disability and Health Journal, 3*(4), 253-261. doi:10.1016/j.dhjo.2010.07.006

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EDUCATION

- University of Nevada, Las Vegas  
Doctor of Philosophy, Public Health, PhD Candidate, expected graduation May, 2012  
Dissertation Title: *Why Do Barriers Exist that Limit Access to Health Care for People with Disabilities?: A Mixed Methods Study of Health Care Administrators*
- University of Phoenix  
MBA: August 2004
- Texas A&M University  
Master's of Science, Kinesiology with emphasis in Exercise Physiology: May 1993
- Stephen F Austin State University  
Bachelor's of Science, Nutrition with minor in Combined Science: May 1991

RESEARCH INTERESTS

Health disparities, disability and chronic disease epidemiology, environmental barriers to physical activity and health care

TEACHING

**Graduate Level Courses:**

HCS 539 Health Care Marketing  
EAB 703 Biostatistics – teaching assistant

**Undergraduate Level Courses:**

HCS 490 Health Care Consumer Trends – Undergraduate course

**Public Health Training Center on-line tutorials:**

Behavioral Risk Factor Surveillance System  
Health Disparities Experienced by People with Disabilities

## PROFESSIONAL EXPERIENCE

### Adjunct Faculty

The University of Phoenix

12/08 – Present

- Marketing for Health Care: examination of marketing principles as they are applied within various health delivery systems - graduate course
- Health Care Consumer Trends and Marketing: examination of traits, trends and needs of today's health care consumer – undergraduate course

### Graduate Assistant

The Lincy Institute

1/2010 – Present

- Research Assistant – health/healthcare
- Responsible for the research, data analysis and publication of Healthy Community Briefs. Working with a multidisciplinary team to complete a comprehensive Community Health Needs Assessment for Southern Nevada. Partners on the project include: faculty from education, public health, and social work; community stakeholders; Nevada State Health Division; Southern Nevada Health Department; LISC; San Francisco Federal Reserve

### Teaching Assistant

UNLV

1/2011 – Present

- Biostatistics

### Associate Director of Clinical Operations

Novum Pharmaceutical Research Services

1/09 – 6/09

- Responsible for the day-to-day clinical and operational management of a 24 hour/day, seven day a week, Phase I Clinical Trials facility.

### Director of Practice Development

Cenegenics Medical Institute

12/07 – 12/08

- Performed operations management including account development and strategic planning based on company business model. Worked closely with physicians and their staff as liaison and trainer. Supervised physicians' marketing and advertising. Managed Practice Development staff. Assisted with physician recruitment.

### Director of Operations

Cardiovascular Consultants of Nevada

4/06 – 10/07

- Leadership and operations management for a dynamic cardiology practice. Responsibilities included management of the administrative and health care staff at all CCN's clinics, building strategic clinical relationships with physicians, ensuring the highest standards of quality and service were maintained, writing and updating procedure manuals, maintain OSHA compliance, and overseeing and directing the responsibilities of the Office Managers. Reported to the Chief Executive Officer.

### Director of Cardiology Services

Lovelace Health System

3/05-4/06

- Responsibilities included the operational management, financial accountability, strategic planning and personnel aspects of Cardiology Service including cardiology clinic, cath/electrophysiology lab, cardiac rehab, non-invasive lab, nuclear lab and echocardiography lab.

Interim Manager of Cardiology Services  
Lovelace Health System

7/04-3/05

- Responsibilities included the daily management of the Cardiology Services including the cardiology clinic, echocardiography lab and nuclear cardiology lab

Technical Director of the Non-Invasive Lab / Echocardiographer:

Lovelace Health System

7/98-7/04

- Responsibilities include the daily management of the non-invasive lab, echocardiography lab and echocardiography accreditation.

Echocardiographer

Iowa Methodist Medical Center

6/97-7/98

- Main responsibility included performance of echocardiograms.

Clinical Exercise Physiologist

North Texas Heart Center

5/95—6/97

- Responsibilities included exercise testing and exercise prescriptions for patients in the cardiology practice

Director of Cardiac Rehabilitation Program / Clinical Exercise Physiologist

The University of Texas Health Center at Tyler

5/94-5/95

- Responsibilities included oversight of the cardiac rehabilitation program and exercise testing

Exercise Specialist

Johnson City Medical Center Hospital

5/93-5/94

- Responsibilities included exercise rehabilitation for cardiac patients and wellness program administration for fitness members

Graduate Assistant

Texas A&M University

8/91-5/93

- FITLIFE Fun Run Director / Coordinator of the Fitness Testing Laboratory

## PUBLICATIONS

### *Refereed Journal Publications*

**Pharr, JR**, Lough NL (in press). Differentiation of Social and Cause-Related Marketing in Professional Sport. *Sport Marketing Quarterly*.

**Pharr, J.**, Moonie, S; Bungum, T. (2012). The Impact of Unemployment on Mental and Physical Health, Access to Health Care and Health Risk Behaviors. *ISRN Public Health*.vol. 2012. 7 pages.

**Pharr, J;** Moonie, S. (2011). Chronic Disease and Risk Factors among Nevadans with Disabilities: A 2009 BRFSS Study. *Nevada Journal of Public Health*. 8, 20-27.

**Pharr, J;** Moonie, S. (2011). Utilization of Preventive Health Services by Nevadans with Disabilities. *Nevada Journal of Public Health*. 8, 7-12.



Lough, NL; **Pharr, JR.** (2010). Use of a Multi-tiered Framework to Analyze Commercial, Cause and Social Marketing Strategies in Sport. *Journal of Applied Marketing Theory*. 1(2), 8-23

**Pharr, JR.** (2010). Carbohydrate Consumption and Fatigue – A Review. *Nevada Journal of Public Health*. 7, 39-45.

**Pharr JR,** Kusumoto F, West MB, Figueredo VM. (2002). Prominent crista terminalis appearing as a right atrial mass on transthoracic echocardiogram. *American Journal of Echocardiography*, 15(7), 753-755.

**Pharr JR,** Figueredo VM. (2002) Lipomatus hypertrophy of the atrial septum and prominent crista terminalis appearing as a right atrial mass on transthoracic echocardiogram. *The European Journal of Echocardiography*, 3(2), 159-161

#### *Refereed Abstract Publications*

**Pharr, J;** Lough, N. (2011). Comparison of Girls Sports Participation in an Urban, Southwest Community. *Research Quarterly for Exercise and Sport*. 82(1 suppl), A-61 - A-62

#### *Refereed Journal Article Submissions*

Bungum, T., **Pharr J.** (in review) Environmental Correlates of Physical Activity Among African-American Adults.

**Pharr, J.,** Bungum, T. (in review). Health Disparities Experienced by People with Disabilities: A Behavioral Risk Factor Surveillance System Study.

**Pharr, JR,** Lough, NL (in review). Sport Participation by Gender, Ethnic Group and Grade in an Urban Southwest School District.

#### *Invited Publications*

Tanata-Ashby, Denise, **Pharr, Jennifer.** (January 2012). Building Health Communities in Southern Nevada. Available at: <http://lincyinstitute.unlv.edu/>

## PRESENTATIONS

#### *Refereed Presentations*

Lough,N; **Pharr, J;** Peetz, T; Owen, J. (2011, October 28) Nike, Livestrong and Gamechangers: Does Cause and Social Marketing Impact Consumer Behavior? Presented at the Sport Marketing Association's Annual Conference. Houston, TX.

Lough, N; **Pharr, J;** Owen, J. (2011, October 28) Runner Identity and Sponsorship: Evaluating the "Rock and Roll" Marathon. Presented at the Sport Marketing Association's Annual Conference. Houston, TX.

**Pharr, J;** Moonie, S. (2011, September 15). Chronic Disease and Risk Factors among Nevadans with Disabilities: A 2009 BRFSS Study. Presented at the Nevada Public Health Association Annual Conference. Reno, NV.

**Pharr, J;** Moonie, S; Bungum, T. (2011, September 15). The Impact of Unemployment on Mental and Physical Health, Access to Health Care and Health Risk Behaviors. Presented at the Nevada Public Health Association Annual Conference. Reno, NV.

**Pharr, J;** Moonie, S. (2011, September 15) Health Disparities Experienced by Nevadans with Disabilities. Presented at the Nevada Public Health Association Annual Conference. Reno, NV.

**Pharr, J;** Lough, N. (2011, September 15). Comparison of Girls Sports Participation in an Urban, Southwest Community. Presented at the Nevada Public Health Association Annual Conference. Reno, NV.

**Pharr, J;** Peetz, T. (2011, April 21). Use of a Multi-tiered Marketing Strategy in Sport. Presented at Graduate and Professional Student Association Research Forum. Las Vegas, NV.

Lough, N; **Pharr, J;** Peetz, T. (2010, October 29). Use of a Multi-tiered Marketing Strategy in Sport. Presented at the Sport Marketing Association's Annual Conference. New Orleans, LA.

**Pharr, J** (2010, March 20). Carbohydrate Consumption and Fatigue – A Review. Presented at Graduate and Professional Student Association Research Forum. Las Vegas, NV.

#### *Invited Presentation*

**Pharr, J.** ( November 2011). Health Disparities Experienced by People with Disabilities. The Southern Nevada Chapter of the Nevada Public Health Association.

**Pharr, J.** (2011, March). Cardiovascular Disease Epidemiology. Chronic Disease Epidemiology Course

**Pharr, J.** (2010, June). Statistical Analysis of Health Indicators for Diverse Populations. Diversity Management in Sport Organizations Course

#### AWARDS AND HONORS

Public Health Training Center Scholarship (2012). \$1000.00

UNLV / School of Community Health Sciences Funding (2011) - \$500.00 – Conference travel

Graduate and Professional Student Grant Funding (2010) - \$500.00 – Conference travel

Phi Kappa Phi Academic Honor Society (2011)

Excellence in Research Productivity with a Faculty Member (2011) – University of Nevada Las Vegas - School of Community Health Sciences

Outstanding Nutrition Student (1991) – Stephen F. Austin State University - Department of Home Economics, College of Education

Lady Jack Athlete of the Year (1991) – Stephen F. Austin State University

ASSOCIATIONS / SERVICE

American Public Health Association – Member

Medical Group Management Association – Member

Nevada Public Health Association – Member

Graduate and Professional Student Association, University of Nevada Las Vegas –  
Representative