

RURAL AND HISPANIC DISPARITIES IN PARENTS' EVALUATIONS
OF THEIR CHILDREN'S CARE

by

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ABSTRACT

The primary purpose of this study was to assess whether disparities exist between Hispanic and non-Hispanic white parents' evaluations of their children's access to health care and the odds of visiting a physician. The secondary purpose was to evaluate whether there are rural/urban disparities in parents' reports of their children's care and whether rural residence is associated with the odds of visiting a physician.

Reports of children's health care access were measured with items from the U.S. Agency for Healthcare Research and Quality's Consumer Assessment of Health Plans Study (CAHPS) instrument. A telephone survey of over 5,000 adults age 18 years and older who had at least one child between the ages of 3 and 18 and resided in the 109 counties comprising West Texas was conducted to assess various ratings and reports of health status and health care access for children. Access-related items in the Childhood Diabetes Survey include parents' reports of their ability to receive appointments for routine/regular health care for their child when needed, ability to receive immediate care for a child's illness or injury when needed, receive advice or help needed over the phone, not having to wait more than 15 minutes past the appointment time in the physician's office, and whether the child visited a physician in the past 12 months.

Andersen and Aday's behavioral model of health services was used to determine how predisposing, enabling, and need factors are associated with parents' evaluations of specific aspects of their children's access to care and the likelihood that their children made a physician visit in the 12 months preceding the survey.

The first hypothesis was that when predisposing, enabling and need factors are controlled for, Hispanics have lower evaluations of their children's access to health care, including getting appointments for routine care when needed, getting an appointment for immediate care when needed, getting the medical advice or help needed, getting care in a timely manner, and their children have a lower odds of visiting a physician than their non-Hispanic white counterparts. The second hypothesis was that when predisposing, enabling, and need factors are controlled for, parents living in rural areas have worse evaluations of their children's access to health care, including getting appointments for routine care when needed, getting appointments for immediate care when needed, getting the medical advice or help needed over the phone, getting care in a timely manner, and their children have a lower odds of visiting a physician than their urban counterparts.

Hispanic parents were significantly less likely than non-Hispanic whites to obtain an appointment for their child for regular/routine care, obtain an appointment for immediate care for a child's illness or injury, obtain needed advice over the phone, to report that their child 'never' had an excessive wait time when they did visit a physician, and to have made a physician visit in the past 12 months. While Hispanic parents had worse evaluations of all aspects of their children's access to care, rural residence was only associated with parents' reports of being able to obtain an appointment for immediate care for a child's illness or injury and of not having excessive wait times in the physician's office. However, the association was in the opposite direction than originally hypothesized. Urban residents were significantly less likely to report that their child

'never' had an excessive wait time and significantly less likely to report that their child always received immediate care for an illness or injury.

This thesis serves as an example of how a population-based study of parents' reports of their children's access to care can help policy makers evaluate how to improve access for vulnerable subpopulations. For example, Hispanic residents reported greater difficulty obtaining an appointment for regular/routine care for their children than did their non-Hispanic white counterparts, even when controlling for predisposing and enabling factors. Moreover, urban residents reported greater instances of their children having to wait more than 15 minutes past the appointment time than did their rural counterparts. Additional research is needed to determine how access to health care services could be made more attainable to those subgroups reporting problems.

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CHAPTER 1

INTRODUCTION AND SPECIFIC AIMS

1.1 Understanding Access

According to Andersen (1995) and Rohrer (1999), access is a very complex, multidimensional concept that has taken on a variety of definitions over the years. For example, the Institute of Medicine has proposed that access be defined as “the timely use of personal health services to achieve the best possible health outcomes” (1993, p. 4). Williams and Torrens suggested that access was the actual use of health care services and includes everything that either facilitates or impedes the use of those services (1999). Rohrer suggested that access to health care was the degree of fit between an individual’s need for services and the services they actually received (1999) and suggested that accessibility to care can refer to the quantitative adequacy of resources, the affordability of care, the amenability of the system to service use by people who need care, the acceptability of care once it is received, and the distance to care (1999). Penchansky and Thomas also suggested that access to care consists of five dimensions, including availability, accessibility, accommodation, affordability, and acceptability (1981).

In his 1968 model of health services use, Andersen suggested that there were two components of access, realized and potential. His Behavioral Model was designed to explain realized access, which showed that people’s use of health care services is a function of their predisposition to use services, factors that enable or impede use, and people’s need for care. Furthermore, Andersen discusses the difference between

equitable and inequitable access. Equitable access to a health care system is said to occur when demographic and need variables account for most of the variance in utilization rates, whereas inequitable access occurs when social structure, health beliefs, and enabling resources determine rates of use (1995).

1.2 Specific Aims

The primary purpose of this study was to assess whether disparities exist between Hispanic and non-Hispanic white parents' evaluations of their children's access to health care and the odds of visiting a physician. The secondary purpose was to evaluate whether there are rural/urban disparities in parents' reports of their children's care and whether rural residence was associated with the odds of visiting a physician.

A telephone survey of over 5,000 adults age 18 years and older who had at least one child between the ages of 3 and 18 and resided in the 109 counties comprising West Texas was conducted to assess various ratings and reports of health status and health care access for children. Reports of children's health care access were measured with items from the U.S. Agency for Healthcare Research and Quality's Consumer Assessment of Health Plans Study (CAHPS) instrument (Crofton, Lubalin, and Darby, 1999). Access-related items in the Childhood Diabetes Survey include parents' reports of their children's ability to receive immediate care for an illness or injury when needed, receive the advice or help needed when calling the physician during regular office hours, and receive appointments for routine/regular health care when needed, as well as reports of

not having to wait more than 15 minutes past the appointment time in the physician's office.

Andersen and Aday's (1995) behavioral model of health services was used to determine how predisposing, enabling, and need factors are associated with parents' evaluations of specific aspects of their children's access to care.

Principal aims and hypotheses are listed below:

AIM 1. To determine if there are Hispanic and non-Hispanic white disparities in parents' reports of their children's access to health care.

Hypothesis 1. When predisposing, enabling and need factors are controlled for, Hispanics have worse evaluations of their children's access to health care, including getting immediate care when needed, getting care in a timely manner, getting the medical advice or help needed, and getting appointments for routine care when needed, and their children have a lower odds of visiting a physician than their non-Hispanic white counterparts.

AIM 2. To determine if there are rural/urban disparities in parents' reports of their children's access to health care.

Hypothesis 2. When predisposing, enabling, and need factors are controlled for, parents living in rural areas have worse evaluations of their children's access to health care, including getting immediate care when needed, getting care in a timely manner, getting the medical advice or help needed, and getting appointments for routine care when needed, and their children have a lower odds of visiting a physician than their urban counterparts.

The ultimate goal of this particular study was to identify barriers to realized access among children living in West Texas. The results may enable health services researchers, policy makers, managers, and health care providers to better understand the actual and perceived barriers parents, specifically those of Hispanic ethnicity, face when trying to access health care for their children. It may also allow the assessment and degree of rural and urban differences in parents' reports of their children's access to health care and the role health insurance plays. A better understanding of the factors associated with poor assessments of children's access may, in turn, lead to the implementation of effective programs and policies targeting the improvement of access for Hispanic children and children living in rural areas.

CHAPTER 2

REVIEW OF LITERATURE

2.1 Introduction

Many researchers, policy-makers, and health care professionals believe that disparities in health among racial, ethnic, and social class groups can be eliminated primarily by improving access to health care for vulnerable groups (Andersen et al., 1983; Andrulis, 1998; Cooper, Hill, and Powe, 2002; Penchansky and Thomas, 1981; Weissmann, Stern, Fielding, and Epstein, 1991). Health care, as defined by Cooper, Hill, and Powe (2002, p.447), “reflects the total societal effort, whether public or private, to provide, organize, and finance services that promote the health status of individuals and the community.” It has further been suggested that a question of great importance to health services researchers, primary care clinicians, and public health practitioners is what proportion of the observed disparities in health among racial, ethnic, and social class groups is actually caused by disparities in health care, and is therefore able to yield improvements in the delivery of health care (Cooper, Hill, and Powe, 2002).

2.2 Hispanic Ethnicity and Children’s Access to Care

The Hispanic population of the United States in 1996 was estimated at more than 28 million, a number larger than the total population of most Latin American countries (Flores, Abreu, Olivar, and Kastner, 1998). Almost 11 million U.S. Hispanics, or approximately 39% of the American Hispanic population, are children (US Census,

2000). In fact, Hispanics are the largest minority group of children in the United States, comprising 16% of the population younger than age 18 (US Census, 2000).

Hispanic children experience a disproportionate burden of health risk factors, including a high prevalence of risk factors for future type 2 diabetes, a high prevalence of obesity, an increased tendency to eat foods high in saturated fat, and eat only half the daily fruit and vegetable recommendations (Flores et al., 1998; Flores and Vega, 1998; Flores, Bauchner, Feinstein, and Nguyen, 1999; Zambrana and Logie, 2000). They have also been shown to have lower physical fitness scores, greater exposure to outdoor and indoor pollutants, and lower rates of health services use (Flores et al., 2002). Harrell and Carrasquillo found that Hispanic children were more than three times more likely than non-Hispanic white children to lack a usual source of care (2003). Increased morbidity, sub-optimal health status, and health disparities found may be associated with the number of barriers to access Hispanic children face (Flores et al., 1998; Flores and Vega, 1998; Flores et al., 1999; Zambrana and Logie, 2000; Zambrana and Carter-Pokras, 2001).

Although the number of studies evaluating parents' perceptions of their children's access to care is very limited, several barriers have been identified (Flores et al., 1998; Flores and Vega, 1998; Flores et al., 1999; Zambrana et al., 1994; Zambrana and Logie, 2000; Zambrana and Carter-Pokras, 2001). For example, several studies found that parents cited language barriers as problems of access to health care, while one study (Flores et al., 1998) reported it was the single greatest barrier to health care access for Hispanic children. Specifically, parents identified the lack of Spanish-speaking health care staff and inadequate interpreter services as the principal problems. Other studies

evaluating the barriers faced by Hispanic children suggest that poverty, low parental educational attainment, transportation problems, excessive waiting times, cultural differences, health insurance status, and lack of a regular source of care are the major barriers affecting access to health care for these children (Flores et al., 1998, 1999, 2002; Flores and Vega, 1998; Zambrana and Logie 2000; Zambrana and Carter-Pokras, 2001). A few of these barriers are documented in greater detail below.

2.2.1 Insurance barriers

Hispanic children have consistently been found to be the most uninsured ethnic or racial group of children in the United States. In a survey conducted by the US Census Bureau in 1999, Hispanic children were 27% more likely to be uninsured than any other ethnic group of US children (US Census, 1999). A study by Cornelius found that 33% of Hispanic children were uninsured compared to 22% of African-American children and 14% of non-Hispanic white children (1993). Also, in the 1988 National Health Interview Study (NHIS), 28% of Hispanic adolescents were uninsured, with Mexican ethnicity independently associated with an increased risk of being uninsured (Flores and Vega, 1998). McCormick et al. found Hispanic children to be the largest racial/ethnic group of uninsured children (21.2%) in their study of access and health care utilization for children (2000). In addition, Wood, Donald-Sherbourne, and Halfon et al. documented that 30% of the Hispanic child population was uninsured compared to only 7% of the African-American children in their study of factors related to the immunization status of inner-city East Los Angeles and South Central Los Angeles children (1995). Arthur

Kellermann found Hispanics to be the largest ethnic/racial group of uninsured children, with Hispanic children being 3 times more likely than non-Hispanic white children to be uninsured (2002).

Other evidence suggests that financial barriers to insurance coverage are not the principal reason for the increased number of uninsured Hispanic children. In her comparison of socioeconomic factors of SCHIP-eligible children, Byck found that those who were uninsured but SCHIP-eligible were significantly more likely to be Hispanic (78.2% of uninsured-eligible) (2000). Similarly, Flores et al. documented that one-third of all Hispanic children were uninsured despite their eligibility for coverage under Medicaid and SCHIP (2002). Moreover, Davidoff and Garrett found that the effect of being Hispanic was positive for coverage by Medicaid, but there was a larger negative effect on private coverage, and a net positive effect on the probability of being uninsured compared to the other populations studied (2001).

2.2.2 Financial barriers

In addition to being the most uninsured racial/ethnic group of children in the United States, evidence clearly shows that Hispanic children are significantly more likely to be poor and/or living below the federal poverty level than non-Hispanic white children. In the 1979 NHIS, Hispanic children were more than twice as likely as non-Hispanic white children to be living in families with annual household incomes below \$7,000 (27% versus 10%) (Guendelman and Schwalbe, 1986). In the 1987 National Medical Expenditure Survey (NMES), Hispanic children were substantially more likely to be

living in poverty than non-Hispanic white children (40% versus 12%) (Cornelius, 1993). Among adolescents in this same survey, Hispanics were at least twice as likely as non-Hispanic whites to live in families with an annual income less than \$10,000 (20% versus 7%) (Lieu, Newacheck, and McManus, 1993). The 1999 census cited that 30% of Hispanic children live in families with annual household incomes below the federal poverty level (US Census, 1999). In addition, Wood et al. (1995) found that among those preschoolers living in poor, inner-city Los Angeles, more Hispanics (73%) than African-Americans (66%) had family incomes 133% below the poverty level.

Similarly, in a study of children who had chronic illnesses, Hispanic children were more likely than non-Hispanic white and African-American children to be living below the poverty level (McManus and Newacheck, 1993). More specifically, a study of Hispanic children with asthma showed that more than 61% of parents reported the inability to afford medicines as the most significant barrier to managing their child's condition (Lewis, Rachelefsky, Lewis, Leake, and Richards, 1994). In another study of Hispanic children with asthma, Wood, Hidalgo, Prihoda, and Kromer documented that the two most frequently cited barriers were payment for medicines (73%) and payment for physician visits (58%) (1993).

2.2.3 Excessive wait as a barrier

Excessive waiting times for health care plague everyone, but studies show that Hispanic children are at an increased risk of having to wait longer than any other racial/ethnic group. For example, Hispanic mothers in an emergency department study

named excessive waiting time in the clinic as the number one barrier to care for their child in the previous year (56% of Hispanic mothers) (Zambrana et al., 1994). Similarly, Hispanic parents almost always reported the highest percentages of waiting more than 30 minutes at their child's usual source of care, with the greatest differences among those with private insurance (Cornelius, 1993). Approximately 23% of privately insured Hispanics had to wait more than 30 minutes, compared to 14% of African-Americans and 13% of non-Hispanic whites. Also, 61.6% of Hispanic mothers reported long clinic waits as a barrier to access for their children (Manos et al., 2001). In addition, 24% of Hispanic mothers mentioned excessive waiting time at the office or clinic as one of the major barriers to care for their children, in a study of Arizona families on Medicaid (Moore and Hepworth, 1994). Newacheck, Hughes, and Stoddard (1996) found that children from poor families, with usual sources of care were three times more likely to wait 60 minutes or more than children who were not considered poor. Hispanic children were more than two and one-half times more likely and uninsured children were more than twice as likely to have long waiting times to obtain care.

Excessive waiting times until the next available appointment were also cited as a barrier to care by 50% of Hispanic mothers in a pediatric emergency department waiting room (Zambrana et al., 1994). Moreover, in a study of Arizona families on Medicaid, 30% of Hispanic mothers said that waiting too long to get an appointment was a major barrier (Newacheck, Stoddard, and McManus, 1993).

2.3 Hispanic Ethnicity and Reports of Access

Several recent studies on racial/ethnic minorities' assessments of care have shown that minorities are less satisfied with certain aspects of care (David and Rhee, 1998; Leigh et al., 1999; Weech-Maldonado and Morales et al., 2001; Weech-Maldonado et al., 2003). In their study examining racial/ethnic and language differences in parent's reports and ratings of pediatric care in six states, Weech-Maldonado et al. (2001) found that minority parents had more negative perceptions of their children's care than non-Hispanic white parents. More specifically, Hispanic-Spanish speaking parents had more negative reports for timeliness of care, provider communication, staff helpfulness, and managed care plan service. However, this group had more positive ratings than non-Hispanic whites of personal doctors, specialists, and plan service.

David and Rhee (1998) found that the language barrier Spanish-speaking Hispanics face correlated negatively with patient satisfaction. Spanish-speaking Hispanics were also less satisfied with care than English-speaking Hispanics and non-Hispanic whites in the Morales et al. study of Hispanic satisfaction with provider communication (1999). Moreover, in their study of patient's assessments of care in Medicaid managed care, Weech-Maldonado et al. (2003) found that Hispanic-Spanish speakers had more negative reports for timeliness of care, provider communication, and staff-helpfulness, while Hispanic-bilinguals had worse ratings for timeliness of care, and staff helpfulness than non-Hispanic whites. Hispanic-English speakers also had worse reports for timeliness of care and staff helpfulness. Morales, Reise, and Hays had similar findings in their evaluation of health care ratings by white and Hispanic patients (2000).

Hispanics were found to be significantly more dissatisfied with their overall care than non-Hispanic whites.

2.4 Rural Residence and Children's Access to Care

Rural areas, as classified by the Office of Management and Budget, are those counties that are non-metropolitan, or that are not in close proximity of a metropolitan city, and whose total population does not exceed 100,000 (Ricketts, Johnson-Webb, and Randolph, 1999). Urban areas, on the other hand, are considered metropolitan in nature and have greater than 100,000 residents. There are 109 counties comprising West Texas, most of which are considered rural (100 rural versus 9 urban).

In 1999, approximately 80.2% of Americans lived in urban areas compared to 19.8% living in rural communities (Blumenthal and Kagen, 2002). Studies show that during this same time period, 14.3% of rural Americans lived in poverty as compared to just 11.2% of urban Americans (Blumenthal and Kagen, 2002). Poverty has been shown to be more prevalent in rural areas and is often associated with higher health risks.

Blumenthal and Kagen (2002) documented that the highest death rates for children and young adults are found in the most rural areas, possibly due to the fact that rural communities suffer from a greater number of primary physician, nurse, and specialist shortages, as well as fewer hospital beds per capita and greater numbers of uninsured children (Blumenthal and Kagen, 2002; Heady and Byrd, 2002; Van Dis, 2002).

Despite the studies on the effects of rural residence to health care access, few have evaluated the effects of rurality on the access of children. Among the few studies

that have been conducted, there are inconsistent results. Some studies show that rural residence is a health risk factor, while others show that a larger percentage of children residing in urban areas are experiencing health risks.

In a study conducted by Gergen, Ezzati, and Russell, Mexican-American children residing in suburbs were significantly more likely to be up-to-date on DTP vaccinations (67%) than those residing in urban and rural areas (57%), but results were not adjusted for family income and health insurance (1988). In their study of using Geographic Information Systems to understand barriers to access, Phillips et al. found that those individuals residing in a rural area were more likely to utilize the community health center than were those urban residents who lived in close proximity to the facility (2000). The urban residents reported fewer visits to any type of health care professional than did their rural counterparts.

A few studies have documented the effects of rural residence on the insurance status of children. Again, inconsistent results exist. Some show that rural residence is a risk for children being uninsured, while others show that a larger percentage of children residing in urban areas are uninsured.

In a study based on hospital emergency department use by low-income children, Polivka et al. found that children living in rural areas were more likely to use the emergency department for sick care and be uninsured than urban or suburban children (2000). Moreover, in their study of access to care for the working poor, Guendelman and Pearl found that children in working poor families were far more likely to be uninsured (22%) than children in non-working poor families (12%) and moderate to affluent

families (5%) and were far more likely to reside in non-MSA areas than the other two groups (2001). McCormick et al. found similar results. Approximately 12.9% of children living in non-metropolitan statistical areas (MSA) were uninsured compared to 10.1% of children living in MSAs, according to data obtained from the Medical Expenditure Panel Survey (MEPS) and the Healthcare Cost and Utilization Project (HCUP) (2000). In contrast to those results which suggest rural residence to be a risk factor for being uninsured, Halfon, Newacheck, Wood, and St. Peter found that urban youth were 1.4 times more likely to be uninsured and to use an emergency department for sick care than uninsured rural or suburban youth (1996).

Studies of risk factors for those children eligible for federal or state insurance programs have also turned up inconsistent results regarding the effects geographic area of residence has on health care access for children. For example, Byck found that those uninsured children who were eligible for federal assistance for insurance under the State Children's Health Insurance Program (SCHIP) were more likely to live in an urban area than were those children who were privately insured. However, relative to the Medicaid-enrolled child population, those children who were uninsured and SCHIP-eligible were more likely to reside in a rural area (Byck 2000). In fact, Davidoff and Garrett found in their study of characteristics of uninsured Medicaid-eligible children that 71% of eligible uninsured children resided in urban areas, whereas only 16% resided in rural areas (2001).

Although area of residence was not consistently documented as an access barrier to children, living in a rural area might account for the increased number of parents

reporting transportation and long drives represented substantial barriers. It may also account for parent reports of their children's inability to receive care when needed or as promptly as they should.

2.5 Rural Residence and Reports of Access

Whether parents residing in rural areas are satisfied with their children's access to health care has not been studied to date, yet there are a few studies assessing rural residents' access to care in general. Borders and Warner found that rural residence was associated with accessibility of both medical and hospital care in a survey conducted in West Texas (2000). Rural residents were 38% less likely to rate their medical care accessibility as excellent when predisposing, enabling, and need factors were controlled for. In the same study, rural residents were 45% less likely to rate their accessibility to hospital care as excellent (2000). These findings are consistent with work done in the same region assessing satisfaction with medical care overall (Borders, Xu, Rohrer, and Warner, 2002). In this study, rural residents were significantly less satisfied with their medical care overall than urban residents. Moreover, Borders, Rohrer, Hilsenrath, and Ward (2000) documented that migration of rural residents to seek physician care was negatively associated with high ratings of the local health care system overall. Those individuals who were not satisfied with their local health care system traveled outside the area to obtain health care.

CHAPTER 3

SURVEYS AND METHODOLOGY

3.1 Study Setting and Sample

Data used in the present study were derived from the Childhood Diabetes Survey, a population-based survey done to identify risk factors for childhood diabetes in the 109 counties comprising West Texas. This region stretches from the U.S./Mexican border on the west, the Texas Panhandle region on the north, and the Permian Basin on the south. The department of Health Services Research and Management at the Texas Tech University Health Sciences Center (TTUHSC) drafted the survey. A list of the counties included in the study along with their county codes and population for the year 2000 can be found in the Appendix.

The sample for the diabetes survey included a telephone list-assisted random digit-dialing (RDD) sample of the area codes and telephone exchanges used in the 109 West Texas counties, which are served by the Texas Tech University Health Sciences Center System. The sample was generated by first identifying each area code and telephone exchange used in the geographic region. Using listed residential households as a guide, the last four numbers of a telephone number were randomly generated for telephone banks where the last three digits of the number, also known as the “100 block,” had at least two listed residential numbers. All West Texas residents over the age of 18 who had working telephones comprised the sampling frame.

A total of 114,519 telephone numbers were generated, including unlisted numbers. Many of those numbers were invalid for the purposes of the survey because they were either non-working, disconnected, business numbers, or fax lines. A total of almost 6,000 adults age 18 and older responded to questions about their children between the ages of 3 and 18. The response rate for this survey was determined by dividing the total number of respondents who participated in the initial screening of the telephone interview by the total number of valid telephone numbers in the sample. The response rate for the Childhood Diabetes Survey was approximately 54.7 percent. According to Rohrer, a response rate of 50 percent or greater is adequate for market research studies (1999).

The present study focused only on parents' reports of their children's access to health care. Reports of children's health care access were measured with items from the U.S. Agency for Healthcare Research and Quality's Consumer Assessment of Health Plans Study (CAHPS) instrument 1.0 (Crofton, Lubalin, and Darby, 1999). Access related items in the Childhood Diabetes Survey that were derived from the CAHPS include parents' reports of their children's ability to receive immediate care for an illness or injury, receive the advice or help needed when calling the physician during regular office hours, receive appointments for routine/regular care when desired, and reports of the frequency with which the child had to wait in the physician's office longer than 15 minutes past the appointment time.

3.2 Conceptual Model

The Behavioral Model of Health Services Use, described by Andersen (1995) in the 1960s suggests that people's use of health services is a function of their predisposition to use services, factors that enable or impede use, and the individual's need for care. The model was initially developed to enable a better understanding of why people use health services; to define and measure equitable access to care; and to serve as a guide when developing policies to promote equitable access. A major goal was to provide measures of access to medical care. It originally focused on the family as the unit of measurement. However, recent revisions have shifted the focus towards the individual. It is currently thought to be an explanatory process where predisposing factors, specifically demographic and social structure characteristics, are exogenous, some enabling resources are necessary, but not sufficient, and some need must be present for use to actually take place (Andersen, 1995).

For the purpose of analyzing whether rural/urban disparities and Hispanic/non-Hispanic white disparities exist in parent's reports of their children's access and in evaluating predictors of physician visits, a version of Andersen's behavioral model was used (Fig. 3.1).

Predisposing factors are those that reflect the fact that people with certain characteristics are more likely to use health services even though the characteristics are not directly responsible for health services use. Among predisposing factors are demographics, social structure, and health beliefs. Demographic factors such as age, race, and gender represent biological characteristics of an individual, which may

determine the likelihood that the individual will need and seek health care services.

Social structure characteristics, such as ethnicity, acculturation and social support networks determine the status of an individual in the community and the individual's ability to cope with health-related problems and secure resources to access services.

Health beliefs include attitudes, values, and knowledge that people have about health and health care services that might influence their perceptions of need and their utilization of services (Andersen, 1995).

Enabling factors, or factors that are believed to either enable or impede use of health care services, represent resources that must be present for use to occur and include both community and personal resources. Family resources include income and health insurance coverage, which might also affect an individual's access to care, while community resources include the region of the country and whether the region is classified as urban or rural. According to Andersen, people must have the resources and the know-how to utilize health care services. The extent and quality of social relationships might also be considered an enabling factor, since they can facilitate or impede an individual's utilization (Andersen, 1995).

The final function of individual's predisposition to use services is their need for care. Need, which can be further broken down into perceived need and evaluated need, is thought to be the primary determinant of use. Perceived need refers to how an individual views his/her own general health and functional state, how he/she interprets symptoms of illness and pain, and whether he/she believes the problem is sufficient enough to seek professional help. Evaluated need, on the other hand, represents a health professional's

judgment and diagnosis of an individual’s medical problem and his/her need for treatment (Andersen, 1995). The need variable that was included in the present study represents the respondent’s perception of his/her child’s health-related quality of life.

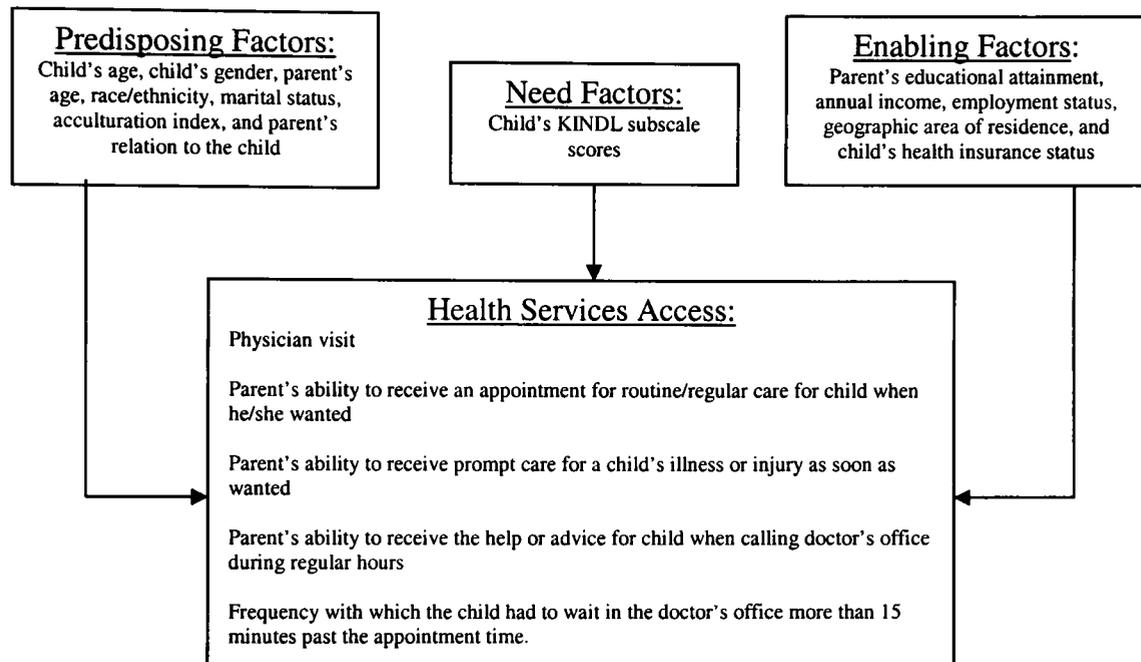


Figure 3.1 Behavioral Model of Health Services Use

Source: Excerpted from “Revisiting the Behavioral Model and Access to Medical Care: Does It Matter.” Ronald M. Andersen. *Journal of Health and Social Behavior* 1995, Vol. 36 (March): 1-10.

3.3 Dependent Variables

The group of outcome measures used in the present study assessed the parent’s perception of his/her child’s ability to receive care in a prompt manner (Zhan, Sangl, Meyer, and Zaslavsky, 2002). The items were chosen from the timeliness of care domain

in the CAHPS instrument and specifically measured the parent's evaluation of his/her ability to get help or advice for his/her child when calling the physician during regular office hours, ability to get an appointment for routine or regular care for the child as soon as the parent wanted, ability to get prompt care for a child's illness or injury as soon as the parent wanted, and the frequency with which the child had to wait in the doctor's office more than 15 minutes past the appointment time. The probability of having had a physician visit in the past twelve months was also analyzed in order to assess the degree to which access affects utilization rates, since patient evaluations of care have been associated with utilization (Rohrer, 1999; Weech-Maldonado et al., 2001).

Utilization rates (e.g., physician visits) are a valid measure of access, according to Rohrer, and are commonly used (1999). If an individual in need of health care does not obtain services when needed, receives a fewer amount of services than needed, or receives a poor quality service, barriers to access are said to exist.

The CAHPS was established by the Agency for Healthcare Research and Quality in 1995 through collaboration with Harvard Medical School, RAND, and the Research Triangle Institute (Crofton, Lubalin, and Darby, 1999). Its primary purpose was to provide a set of standardized surveys and report templates that would allow comparisons of the experiences of health plan enrollees with their health care provider and plan. The child version of the CAHPS asks parents or caretakers to rate the care their children receive (Homer et al., 1999; Weech-Maldonado et al., 2001, 2003).

The survey includes global questions asking respondents to rate his or her health plan, health care if he or she received care, his or her personal doctor if he or she has one,

and the specialist he or she has seen most often, on a 0 to 10 scale, with 0 representing the worst and 10 the best. In addition, the CAHPS includes 17 items that ask about specific experiences with care. These items are clustered into five groups: getting needed care (4 items); getting care quickly (4 items); doctor communication (4 items); helpfulness of office staff (2 items); and customer services (3 items) (Weech-Maldonado et al., 2001, 2003). Weech-Maldonado et al., using Cronbach alpha coefficients, estimated internal consistency/reliability for each of the five scales. Timeliness of care had an alpha value of 0.73 in the Maldonado et al. study of parents' assessments of pediatric care and an alpha value of 0.72 in the Maldonado et al. study of patients' assessments of care in Medicaid managed care (2001, 2003, respectively).

The CAHPS 1.0, as well as the Childhood Diabetes Survey, used a *Never, Sometimes, Usually, Always* response scale to rate items included in the timeliness of care category. *Never* was coded as '0', *Sometimes* was coded as '1', *Usually* was coded as '2', and *Always* was coded as '3'. However, the item assessing the frequency with which the child had to wait in the office more than 15 minutes past the appointment time was recoded with *Always* as a '0', *Usually* as a '1', *Sometimes* as a '2', and *Never* as a '3' due to the negative connotation of the question. The question in the diabetes survey that assessed whether the parent received the help/advice he or she needed was phrased as follows: "In the last 12 months, when you called during regular office hours, how often did you get the help or advice you needed for your child?" The question asked in order to evaluate ability to receive an appointment for routine/regular care was phrased as follows: "In the last 12 months, how often did your child get an appointment for regular

or routine health care as soon as you wanted?” “In the last 12 months, when your child needed care right away for an illness or injury how often did your child get care as soon as you wanted?” was the question asked in the Childhood Diabetes Survey to assess the parent’s ability to receive immediate care for an illness or injury. The final question included in the present study that was taken from the CAHPS was: “In the last 12 months, how often did your child wait in the doctor’s office or clinic more than 15 minutes past the appointment time to see the person your child went to see?”

The fifth outcome variable evaluated in the present study was whether the child had visited a physician in the previous 12 months. In the diabetes survey, the question was worded as follows: “About how many times in the last twelve months has your child seen a doctor, nurse, or other health professional?” For the purpose of this study, the response was dichotomized, with 0 representing ‘no visits’ and 1 representing ‘at least one visit in the past 12 months.’ Since this outcome variable was dichotomous, logistic regression analyses were used to test the hypotheses proposed.

3.4 Independent or Predictor Variables

Andersen and Aday’s Behavioral Model of Health Services (1995) was used to determine how predisposing, enabling, and need factors are associated with parents’ evaluations of aspects of their children’s access to care, specifically, receipt of care in a timely manner. The initial model proposed by Andersen in the 1960s, suggested that people’s use of health services was a function of their predisposition to use services, factors that enabled or impeded use, and the individual’s perceived need for care (1995).

3.4.1 Predisposing variables

Predisposing demographic factors that were included in the present study are age of the child, gender of the child, age of the parent, gender of the parent (determined by relation to the child), and race/ethnicity. Social structure variables presented include respondent's relation to the child, parent's marital status, and acculturation index. Since there were no questions in the original survey that pertained to health beliefs of the respondents, health belief variables were not included.

Age of the child was dichotomized and represented children ages 3 to 11 and children ages 12 to 18 (child versus adolescent) to determine if parents' perceptions differ for younger versus older children. Gender of the child was coded as '0' if the child was a male and '1' if the child was a female. Missing values for age of the child and gender of the child were imputed into the respective comparison groups (3 to 11 for age and male for gender). Age of the parent was treated as a continuous variable. Race/ethnicity was coded at three levels (non-Hispanic white, Hispanic, and other). The non-Hispanic white category represented the referent group, with the 'Hispanic' and 'Other' categories representing the remaining two. Those individuals who were not classified as either 'non-Hispanic white' or 'Hispanic' or who failed to place themselves into a race/ethnicity category were coded as 'other'.

The respondent's relation to the child was categorized as either 'mother' or 'father'. The small number of respondent's in the 'grandmother', 'grandfather', and 'other adult' categories were excluded from the analyses (n=462). The parent's marital

status was also made dichotomous by combining 'widowed', 'separated or divorced' 'single, never married' and 'other' into one group labeled 'single' (coded as 1). The 'married' group was coded as '0' and represented the referent group. Missing values were imputed into the 'single' group.

An acculturation index was created for those respondents who classified themselves as 'Hispanic' by summing the responses to the following questions: "What language did you first learn to speak as a child?"; "In your opinion, how well do you speak Spanish?"; "In your opinion, how well do you speak English?"; "In your opinion, how well do you read English?" Responses to each of the four questions ranged from one to four, with '1' representing the least amount of acculturation (not at all) and '4' representing the greatest acculturation (very well). The responses to each question were then added together to obtain a total acculturation index, which ranged from 0 to 16. A new variable was then created by subtracting the original value of the acculturation index from 16, so that '0' represented the highest acculturation and '16' represented the lowest. Those respondents who had a missing value for acculturation index (i.e., those who were not Hispanic) were assigned an original value of '16', since non-Hispanic whites should be highly acculturated.

3.4.2 Enabling factors

Independent or predictor variables that are considered to be enabling factors include both material and nonmaterial resources. Material resources in the present study

include the factors employment status and annual household income. Annual household income was classified as: 'less than \$20,000' (referent group); '\$20,001 to \$40,000'; and 'more than \$40,001'. A dummy variable was created for those individuals who failed to report their annual income. Employment status was dichotomized into employed (referent group) and unemployed by combining missing values, answers of 'homemaker', 'retired or disabled', and 'not employed at this time but want to be' and assigning them to the 'unemployed' group. 'Employed for wages' and 'self-employed' were combined to represent the 'employed' group. Health insurance coverage of the child was also considered a material resource and was included as an indicator of enabling health care services utilization. It was dichotomized into 'insured' (referent) and 'uninsured'. Those missing values were classified as 'uninsured'.

Nonmaterial resources that were included in the analyses are the area of residence and the educational attainment of the parent. Residence was classified as either 'rural' (referent) or 'urban'. Rural residence was defined as those West Texas counties whose total population did not exceed 100,000, and who were classified as non-metropolitan counties. Urban residence, on the other hand, was defined as those metropolitan counties whose total population exceeded 100,000. Education of the parent was also dichotomized into 'less than high school' and 'high school or beyond', with 'less than high school' acting as the comparison group. Missing values, those who answered '8th grade or less' and those who answered 'some high school', were grouped together to represent the 'less than high school' category, while those who answered 'high school

graduate or GED', '1 to 3 years of college', '4 year college graduate (bachelor's degree)', or 'more than 4 years of college' were categorized as 'high school or beyond'.

3.4.3 Need factors

Perceived physical functioning, emotional well-being, self-esteem, family life, friends, and everyday functioning of the child were assessed using items from a parent-issued revised version of the German KINDL (Ravens-Sieberer and Bullinger, 2000). The KINDL is a measure of health-related quality of life for children and adolescents and consists of twenty-four items that comprise six subscales. The subscale scores are calculated as the mean response for relevant items and are then transformed to a scale of 0 to 100. For purposes of the present study, however, the subscale measuring parents' reports of their children's everyday functioning was omitted from analyses (subscale 6).

The criteria by which quality of life measures, such as the KINDL, are evaluated have generally been summarized as appropriateness/practicability; reliability, including internal and test-retest; validity, including content and construct; responsiveness; precision; interpretability; acceptability; and feasibility (Eiser and Morse, 2001; Ravens-Sieberer and Bullinger, 1998; Ravens-Sieberer, Redegeld, and Bullinger, 2001; Schmidt, Garratt, and Fitzpatrick, 2002).

Schmidt et al. described reliability as whether an instrument was internally consistent or reproducible (2002). Test-retest reliability, according to Eiser and Morse, occurs when children respond similarly on different occasions (2001). Cronbach's alphas and test-retest correlation coefficients are generally used to determine the extent of

internal reliability and test-retest reliability, respectively. Ravens-Sieberer and Bullinger, as well as Eiser and Morse found the KINDL to be internally consistent (1998; 2001). A Cronbach's alpha of 0.95 was obtained for the reliability of the overall scale, while each subscale reached a coefficient greater than 0.75.

A measure's validity, on the other hand, is used to evaluate whether or not an instrument measures what it is intended to measure and to what extent it does so (content validity). Evaluating the correlation between the KINDL and other instruments measuring the same dimensions assesses construct validity. When assessed against a number of other instruments measuring health-related quality of life, the KINDL was found to possess both content and construct validity by Ravens-Sieberer et al. and Eiser and Morse (2001, 2001).

Even though the KINDL was determined to be both reliable and valid, it did not present independence between its subscales in previous studies. However, after assessing the correlation of the subscales to one another in the present study, it was found that the subscales were not correlated with one another. There was a significant degree of independence between all five of them ($p < 0.0001$).

The items contained in the five KINDL subscales used in the present study are described below:

- Physical functioning: my child felt ill, my child had a headache or a stomach-ache, my child was tired and worn-out, my child felt strong and full of energy

- Emotional well-being: my child had fun and laughed a lot, my child did not feel like doing anything, my child felt alone, my child felt scared or unsure of him/herself
- Self-esteem: my child was proud of him/herself, my child felt on top of the world, my child felt pleased with him/herself, my child had lots of good ideas
- Family: my child got on well with us as parents, my child felt fine at home, we quarreled at home, my child felt that I was bossing him/her around
- Friends: my child did things together with friends, my child was liked by other children, my child got along well with his/her friends, my child felt different from other children

The KINDL subscale assessing parents' reports of their children's everyday functioning, or their children's functioning at school (subscale 6), was not included in the present study. It does not appear that everyday school functioning is conceptually related to reports of access to care. Also, there was a relatively high amount of missing data (n=579).

Due to the number of missing values for each of the other five subscales, it was necessary to impute values for the missing data. The mean of each subscale was

calculated by race/ethnicity and a categorized child's age variable. The mean value was then assigned to all those missing values within the same category. For example, the mean score for a child who was classified as a non-Hispanic white in the age range of 3 to 5 years was calculated. The obtained mean value was then assigned to all non-Hispanic white children between 3 and 5 years of age who had a missing value for subscale 1.

3.5 Statistical Analyses

3.5.1 Descriptive analysis

All statistical analyses were performed using a STATA statistical software package (Stata Corporation, College Station, TX). The data were examined to determine if any missing values were present. If there were missing values, they were generally imputed into the referent group, unless otherwise specified. However, if there were a significant amount of missing values for any one independent variable, a dummy variable was created as to keep the highest number of observations possible.

3.5.2 Multivariate analyses

There were two different types of multivariate regression analyses performed for the present study. The first type of regression was a logistic regression and the second was an ordered logit regression. Multivariate logistic regression was performed on the physician visit outcome variable due to its binary nature ('0' versus 'at least one'), while

multivariate ordered logit regressions were run on the four dependent variables assessing promptness of care when care was accessed.

3.5.2.1 Multivariate logistic regression. The goal of logistic regression is to find the best fitting and most parsimonious model to describe the relationship between a dichotomous dependent variable and a set of independent variables. There are several assumptions of a logistic regression model, including: (1) the model is correctly specified, i.e., the true conditional probabilities are a logistic function of the independent variables, no important variables have been omitted, no extraneous variables have been included, and the independent variables have been measured without error; (2) the cases are independent, with each one having only one observation; and (3) the independent variables are not linear combinations of each other (Hosmer and Lemeshow, 2000).

All independent variables selected for evaluation in the univariate analyses were included in the multivariate model regardless of their statistical significance in order to ensure that all possible confounders were controlled for. Univariate analyses entailed regressing each independent variable on the probability of having had a physician visit.

After evaluation of the final model, regression diagnostics were performed in order to assess the fit of the logistic regression model. The sample size was sufficiently large enough to successfully run all diagnostics. Both the Pearson chi-square and the Hosmer-Lemeshow chi-square tests for goodness of fit were run and their p-values reported (Hosmer & Lemeshow, 2000). Plots of leverage versus residuals, residuals versus probability, leverage versus probability, influence versus probability, and residuals

versus probability with influence used as a weight, were examined to determine if there were any outliers that might have had large leverage, influence, and/or residual.

3.5.2.2 Multivariate ordered logit regression. Since four of the outcome variables were ordinal in nature, ordered logit regression analyses were performed. In the ordered logit model, an underlying probability score for an observation of being in a particular category is estimated as a linear function of the independent variables and a set of cut-points. The probability of observing the outcome corresponds to the probability that the estimated linear function, plus the random error, is within the range of the cut-points estimated for the outcome (Hosmer and Lemeshow, 2000).

Although there are several types of ordered logit models, the proportional odds model is the most common and the one that was utilized in the present study. The proportional odds model uses independent variables to explain the log odds ratio of one category to the adjacent category with a lower value. In the present study, the log odds ratios of *Always* to *Usually*, *Usually* to *Sometimes*, and *Sometimes* to *Never* were used. Since the magnitude or distance between categories is not important, the odds ratio is assumed to be constant for all categories.

A specification test of the models was performed in order to assess whether including the KINDL total score rather than each of the subscale scores would affect the results.

CHAPTER 4

RESULTS

4.1 Survey Sample Composition

Table 4.1 describes characteristics of the sample. The age distribution for children was 62.09% in the 3 to 11 age group and 37.91% in the 12 to 18 age group. Approximately 51% of children in the sample population were male. The majority of survey respondents were mothers (77.88%) and married (77.81%). Mean age of the responding parent was 37.60. Approximately 50% of respondents were non-Hispanic white, 43% were Hispanic, and the remaining 6% were of another race/ethnicity. In comparison, the US Census Bureau reported that approximately 53.86% of the child population in West Texas was Hispanic, while only 39.90% are non-Hispanic white (2000 census). Hispanic respondents in the study had a mean acculturation index of 2.97. The majority of the sample population had completed high school or some college (63.44%) and 65.42% were employed. Annual household income was broken into four categories with approximately 25% having an income less than \$20,000 a year, 29% having an annual income between \$20,001 and \$40,000, and 38% having an income of more than \$40,000 (the remaining 7.86% did not report an income). Approximately 84% of the children sampled had some form of health insurance coverage, while 16% did not. Almost 62% of respondents resided in an area classified as urban (61.82%), while approximately 38% resided in a rural area. The mean KINDL scores for subscales 1 through 5 were 8.17, 8.59, 7.48, 7.69, and 8.08, respectively.

4.2 Univariate Analyses

Univariate analyses were performed by regressing each independent variable on each of the five dependent variables, respectively. Although not all of the independent variables were found significant at the univariate level, all were included in the multivariate analyses. Results of the univariate analyses for each of the five dependent variables can be found in Tables 4.2 through 4.6.

4.2.1 Residence and access problems

Residence was significantly associated with three of the five outcomes variables at the univariate level. Those individuals living in an urban area reported more physician visits for their children than did respondents living in rural areas (OR= 1.26, Table 4.2). When evaluating the association between residence and whether or not the child had a visit to a physician/nurse/other health care professional in the past twelve months, residence was significant at the 0.01 level. In contrast, those respondents living in an urban area were significantly less likely to receive immediate care for a child's illness or injury than rural residents (OR= 0.80, $p < 0.001$, Table 4.4). Area of residence was most significant when evaluating parents' reports of the frequency with which their children had to wait in the doctor's office more than 15 minutes past the appointment time. Again, respondents living in urban areas were significantly more likely to report that their child had to wait more than 15 minutes past the appointment time before seeing a physician than were rural residents ($p < 0.0001$, Table 4.6). Rural residence was not significantly associated with parent's reports of receiving the advice/help needed when

calling during office hours or being able to get an appointment for routine/regular care when wanted at the univariate level.

4.2.2 Hispanic ethnicity and access problems

Hispanic ethnicity was significantly associated with each of the five outcome variables at the univariate level, with a p-value of <0.0001 for each dependent variable. Hispanic respondents reported that their children were significantly less likely to have seen a physician in the past twelve months (OR= 0.69, Table 4.2). According to the univariate analyses results, Hispanics were also significantly less likely to report that their children were able to obtain an appointment for regular or routine care (OR= 0.62, Table 4.3), to receive immediate care for a child's illness or injury (OR= 0.63, Table 4.4), and to receive the advice or help needed over the phone when calling during regular office hours (OR= 0.65, Table 4.5). Hispanics were also significantly less likely to report that their child 'never' had to wait longer than 15 minutes past the appointment time in the physician's office/clinic ($p < 0.0001$, Table 4.6).

4.3 Multivariate Regression Analyses

Table 4.7 presents estimated odds ratios, 95% confidence intervals, and p-values for all of the independent variables included in the multivariate logistic regression analysis for predictors of physician visits. Nine predictor variables were significantly associated with parent's reporting that their child had been to see a physician in the past 12 months.

Estimated odds ratios, 95% confidence intervals, and p-values for all analyses of parent's reports of their children's access to health care can be found in the tables at the end of the chapter. The two outcome measures included in Table 4.8 are parent's reports of their ability to obtain an appointment for their child for routine/regular care when needed and ability to receive immediate care for their child's illness or injury. The two have been included in the same table to enable easier comparisons. Also, parents' reports of their ability to receive the advice/help needed for a child when calling the physician during regular office hours are presented in Table 4.9. Results for the final ordered logit regression model, which presents the association between the predictor variables and the frequency with which the child had to wait in the physician's office more than 15 minutes past the appointment time can be found in Table 4.10.

4.3.1 Predisposing variables

Predisposing variables that were significant predictors of physician visits for a child included age of the child, age of the parent, and ethnicity (Table 4.7). Children ages 12 to 18 were significantly less likely to have had at least one physician visit in the past 12 months than were children ages 3 to 11 (OR= 0.68, p-value< 0.0001). Older parents were also significantly less likely (p< 0.0001) to report that their child had had a physician visit (OR= 0.98, 95% CI= 0.96, 0.99). In addition, Hispanic respondents were less likely to report that their child had made a visit to a physician in the past 12 months (OR= 0.74, p< 0.10).

Among the outcome measures assessing the receipt of prompt or timely care, age of the child was significant in one model, respondent's relation to the child was significant in three, Hispanic ethnicity/race was significant in four, 'other' ethnicity/race was significant in one, acculturation index of Hispanic respondents was significant in one, and marital status was significant in one. The child's gender and respondent's age were not significant in any of the multivariate ordered logit models.

Parents of children age 12 to 18 were significantly times more likely to report that their child did not have problems with an excessive wait of more than 15 minutes past the appointment time (OR= 1.20, $p < 0.01$, Table 4.10) than were parents of children ages 3 to 11. Fathers of children were significantly less likely to report being able to obtain an appointment for regular or routine care for their children (OR= 0.74, $p < 0.0001$, Table 4.8) and significantly less likely to report being able to get immediate care for a child's illness or injury (OR= 0.84, $p < 0.05$, Table 4.8) than mothers who responded to the survey were. Fathers were also significantly less likely than mothers to report that they were able to obtain the advice or help they needed for their child when calling the physician's office during regular hours (OR= 0.82, $p < 0.01$, Table 4.9). In addition, single parents were significantly less likely to report being able to obtain regular or routine care for their child when they wanted (OR= 0.83, $p < 0.05$, Table 4.8).

Hispanic respondents were significantly less likely than non-Hispanic whites to report that they were able to obtain an appointment for regular/routine care when they wanted (OR= 0.69, $p < 0.001$, Table 4.8) and significantly less likely to report that they were able to obtain immediate care for a child's injury or illness (OR= 0.66, $p < 0.001$,

Table 4.8). In addition, Hispanic respondents were significantly less likely to report being able to obtain needed advice/help over the phone when calling the physician's office during regular hours (OR= 0.64, $p < 0.0001$, Table 4.9) and less likely to report that their child 'never' had to wait longer than 15 minutes to see the physician (OR= 0.83, $p < 0.05$, Table 4.10). Moreover, Hispanic respondents who had a higher mean acculturation index were significantly less likely to report that their child 'never' had to wait longer than 15 minutes in the physician's office than Hispanic respondents with lower means (OR= 0.96, $p < 0.01$, Table 4.10). Also, respondents whose race/ethnicity was categorized as 'other' were significantly less likely to report that they were able to obtain advice/help over the phone when contacting the physician during regular office hours (OR= 0.55, $p < 0.05$, Table 4.9).

4.3.2 Enabling predictors

Insurance status of the child, annual income of the parent(s), and area of residence were all significant enabling predictors of children's physician visits. Only one of the five enabling variables included in the present study was not significant in at least one of the outcome measures assessing promptness of care. Employment status of the parent was the only independent variable that was not significantly associated with any of the outcome measures. Two income categories were significant in at least one: "more than \$40,001" and "did not report income," however, the category of people earning \$20,000 to \$40,000 a year was not significant in any of the models.

Parents' reports of their children's visits to a physician/nurse/other health care provider were significantly associated with an annual income of more than \$40,001, uninsurance of the child, and urban residence (Table 4.7). Respondents whose income was greater than \$40,001 were significantly more likely to report that their child had visited a physician (OR= 1.25, $p < 0.10$), while urban residents were significantly more likely than rural residents to have reported a physician visit for their child (OR= 1.16, $p < 0.10$). However, parents of uninsured children were significantly less likely to report that their child had visited a physician in the past year than parents of insured children (OR= 0.39, $p < 0.0001$).

Parent's reports of their ability to obtain regular or routine care for their child when they wanted were significantly associated with an annual household income greater than \$40,001 and health insurance coverage of the child (Table 4.8). Respondents whose annual income was more than \$40,001 a year were significantly more likely than respondents whose income was \$20,000 or less a year to report that they were able to receive an appointment for routine care when they wanted (OR= 1.35, $p < 0.01$). Parents of children who were not covered by some form of health insurance (uninsured) were significantly less likely than parents of insured children to report that they were able to obtain an appointment for regular/routine care for their child when they wanted (OR= 0.66, $p < 0.0001$).

Parent's reports of their ability to obtain immediate care for a child's illness or injury were also significantly associated with an annual income of more than \$40,001 and health insurance of the child, as well as area of residence (Table 4.8). In fact, parents

who reported an annual income of more than \$40,001 were significantly more likely to report being able to receive immediate care for their child than respondents whose annual income was less than \$20,000 (OR= 1.34, $p < 0.01$). Also, parents of uninsured children were significantly less likely to report being able to receive immediate care for a child's illness or injury than parents of insured children (OR= 0.75, $p < 0.01$). Residents of an urban area were also significantly less likely to report being able to receive immediate care for an illness or injury than rural residents (OR= 0.84; $p < 0.05$).

Health insurance status of the child and annual household income were also significantly associated with parent's reports of their ability to obtain needed advice/help over the phone when calling the physician's office during regular hours (Table 4.9). Parents who reported an annual income of more than \$40,001 were significantly more likely to report being able to receive advice than those who reported incomes of less than \$20,000 (OR= 1.49, $p < 0.0001$), while those parents who failed to report their annual income were more likely to report that they were able to obtain needed advice/help over the phone (OR= 1.38, $p < 0.05$). Parents whose children were uninsured were significantly less likely to report being able to obtain advice over the phone when calling the physician's office during regular hours than parents of insured children (OR= 0.77, $p < 0.01$).

The only enabling factor significantly associated with parent's reports of the frequency with which their child had to wait in the physician's office or clinic more than 15 minutes past the appointment time was area of residence (Table 4.10). Urban

residents were significantly less likely to report that their child 'never' had to wait longer than 15 minutes than were rural residents (OR= 0.83, $p < 0.001$).

4.3.3 Need variables

The KINDL subscale that measured parents' reports of their child's physical functioning was significantly associated to children's physician visits, parents' reports of their ability to receive immediate care for a child's illness or injury, the frequency with which the child had to wait longer than 15 minutes in the physician's office, and the ability to obtain advice or help over the phone when calling the doctor's office during regular hours. Those parents who reported higher scores for their children's physical capability on the KINDL were slightly more likely to report that their child had not seen a physician in the past year (OR= 0.89, $p < 0.0001$, Table 4.7), that they were able to receive immediate care for an illness or injury (OR= 1.04; 95% CI= 1.01, 1.08; $p < 0.05$, Table 4.8) and that they were able to receive advice when needed (OR= 1.03; 95% CI= 1.00, 1.07; $p < 0.05$, Table 4.9). Parents who rated their children's physical functioning high were also slightly more likely to report that their children 'never' had to wait longer than 15 minutes (OR= 1.05; 95% CI= 1.02, 1.08; $p < 0.01$, Table 4.10).

The KINDL subscale assessing parents' perceptions of their children's self-esteem (subscale 3) was significantly associated with children's physician visits and four of the five items related to timeliness of care presented in this study (Tables 4.7 through 4.9). In fact, higher ratings of children's self-esteem were significantly associated with higher reports of children having been to see a physician (OR= 1.06, $p < 0.05$) and

slightly higher reports of parents being able to receive an appointment for regular or routine care for their child when wanted (OR= 1.11; 95% CI=1.07, 1.15; $p < 0.0001$), being able to receive immediate care for a child's injury or illness when needed (OR= 1.11; 95% CI= 1.06, 1.15; $p < 0.0001$), and being able to receive needed advice or help over the phone when calling during regular office hours (OR= 1.10; 95% CI= 1.06, 1.14; $p < 0.0001$). Parents' reports of their child not having to wait longer than 15 minutes past the appointment time were not significantly associated with their child's self-esteem. Essentially, parents who rated their children's self-esteem high on the KINDL also reported a greater number of physician visits for their child and had higher evaluations of their children's access to health care.

Parents' reports of whether their child had been to see a physician and the frequency with which their child had to wait more than 15 minutes past the appointment time were the only two outcome measures significantly associated with parents' ratings of their children's family life (KINDL subscale 4). Physician visits were negatively associated with higher ratings of a child's family life, while wait times were positively associated. In fact, parents who rated their children's family life higher were less likely to report that their child had made a physician visit (OR= 0.92, $p < 0.01$, Table 4.7) and more likely to report that their child did not have an excessive wait time (OR= 1.07; $p < 0.0001$; 95% CI= 1.05, 1.13, Table 4.10).

The fifth KINDL subscale, which is a measure of the child's interaction with friends, was significantly associated with parents' reports of being able to receive an appointment for regular/routine care (Table 4.8), receive immediate care for a child's

illness or injury (Table 4.8), and receive needed advice or help when calling the doctor's office during regular hours (Table 4.9). Parents reported, in all three cases, that they were significantly more likely to receive the care/advice they needed the higher their children's score on the KINDL (OR's= 1.11 regular/routine care; 1.16 immediate care; 1.17 advice/help; 95% CI's= 1.06, 1.17 regular/routine care; 1.06, 1.17 immediate care; 1.11, 1.22 for advice).

The sixth KINDL subscale, or the one that assesses a child's everyday functioning, was excluded from the analyses presented in this study primarily due to the large number of missing values. Also, it was felt that a child's ability to function in school is not conceptually associated with health-related quality of life and was therefore omitted.

4.3.4 Regression diagnostics

Hosmer-Lemeshow and Pearson chi-square tests were performed in order to assess the goodness of fit for the physician visit model. The p-values of both tests were non-significant with a Hosmer-Lemeshow chi-square p-value of 0.4438 and a Pearson chi-square p-value of 0.4222. Since neither p-value was significant at the 0.05 alpha-level, the model failed to reject the null that the data fits, hence the model is a good fit. Graphs of leverage versus residual, residuals versus probability, leverage versus probability, influence versus probability, and residuals versus probability using influence as a weight can be found in Figures 4.1 through 4.6. Outliers that presented high values of influence, leverage, and/or residual were deleted and the model run with those

observations deleted to determine whether the outliers exhibited a substantial effect on the overall fit of the model. Omission of those variables that presented large influence, leverage, and/or residual was not warranted due to the negligent effect on the overall fit of the model.

A specification test of the models was also performed by including the total KINDL score instead of each subscale score in the analyses. This was done to examine whether the associations between the predisposing, enabling, and access variables changed when controlling for health status in a different manner (i.e., overall health status). The odds ratios did not differ substantially when the KINDL total score was included.

Table 4.1
 Characteristics of the sample survey

Characteristic	N= 5471	%
<i>Predisposing Factors</i>		
Age of the Child		
3 to 11	3397	62.09
12 to 18	2074	37.91
Gender of the Child		
Male	2805	51.27
Female	2666	48.73
Parents' relation to the Child		
Mother	4261	77.88
Father	1210	22.12
Parent's Age in years – Mean (Std)		37.60(8.06)
Race/Ethnicity		
Non-Hispanic White	2759	50.43
Hispanic	2358	43.10
Other	354	6.47
‡Acculturation Index – Mean (Std)		2.97(3.91)
Marital Status of the Parent		
Married	4257	77.81
Single	1214	22.19
<i>Enabling Factors</i>		
Educational Attainment of the Parent		
Less than High School	2000	36.56
High School or Beyond	3471	63.44
Employment Status of the Parent		
Employed	3579	65.42
Unemployed	1892	34.58
Annual Household Income		
Less than \$20,000	1378	25.19
\$20,001 to \$40,000	1609	29.41
More than \$40,000	2054	37.54
Did not report income	430	7.86
Insurance Status of the Child		
Insured	4584	83.79
Uninsured	887	16.21
Residence		
Rural	2089	38.18
Urban	3382	61.82

Table 4.1 (Continued)

<i>Characteristic</i>	<i>N=</i> <i>5471</i>	<i>%</i>
<i>Need Factors</i>		
KINDL subscale 1: physical functioning – Mean (Std)		8.17 (2.04)
KINDL subscale 2: emotional functioning – Mean (Std)		8.59 (1.51)
KINDL subscale 3: self-esteem – Mean (Std)		7.48 (1.95)
KINDL subscale 4: family life – Mean (Std)		7.69 (1.71)
KINDL subscale 5: friends – Mean (Std)		8.08 (1.52)

‡ Acculturation index was only obtained for Hispanic respondents.

Table 4.2
 Reports of having had a physician visit in the past 12 months

Independent Variable	N= 5471	Not at all n= 688 (%)	At least once n= 4783 (%)
Predisposing			
Child age category ****			
3 to 11	3397	10.27	89.73
12 to 18	2074	16.35	83.65
Child's gender			
Male	2805	13.33	86.67
Female	2666	11.78	88.22
Respondent's relation to child			
Mother	4261	12.37	87.63
Father	1210	13.31	86.69
Respondent's age (continuous) ****	37.60	39.48	37.33
Race/Ethnicity			
Non-Hispanic white	2759	10.84	89.16
Hispanic ****	2358	14.55	85.45
Other	354	12.99	87.01
‡Acculturation Index (mean) ****	2.97	3.54	2.89
Marital Status			
Married	4257	12.54	87.46
Single	1214	12.69	87.31
Enabling			
Education **			
Less than high school	2000	13.90	86.10
High school or beyond	3471	11.81	88.19
Employment Status			
Employed	3579	12.21	87.79
Unemployed	1892	13.27	86.73
Household Income			
Less than \$20,000	1378	14.51	85.49
\$20,001 to \$40,000	1609	12.80	87.20
More than \$40,001 ****	2054	9.93	90.07
Did not report income	430	18.14	81.86
Insurance Status ****			
Insured	4584	10.41	89.59
Uninsured	887	23.79	76.21
Residence **			
Rural	2089	14.12	85.88
Urban	3382	11.62	88.38
Need			
KINDL subscale 1: physical functioning****	8.17	8.46	8.13
KINDL subscale 2: emotional well-being	8.59	8.60	8.59
KINDL subscale 3: self-esteem*	7.48	7.34	7.50
KINDL subscale 4: family life****	7.69	7.96	7.65
KINDL subscale 5: friends	8.08	8.12	8.07

* <0.05 significance level; ** <0.01 significance level; *** <0.001 significance level; **** <0.0001 significance level

Table 4.3
Frequency of reports to obtain regular/routine care

Independent Variable	N= 4708	Never (%) n= 225	Sometimes (%) n= 528	Usually (%) n= 1019	Always (%) n= 2936
Predisposing					
Child age category *					
3 to 11	2985	4.19	10.65	21.88	63.28
12 to 18	1723	5.80	12.19	21.24	60.77
Child's Gender					
Male	2391	5.10	10.92	22.17	61.82
Female	2317	4.45	11.52	21.10	62.93
Respondent's relation to child					
Mother	3666	4.75	11.05	21.09	63.12
Father	1042	4.89	11.80	23.61	59.69
Respondent's age (continuous)	37.60	38.64	37.08	37.11	37.29
Race/Ethnicity					
Non-Hispanic white	2367	3.59	7.48	22.73	66.20
Hispanic ****	2025	6.37	15.56	20.35	57.73
Other	316	3.48	11.39	21.84	63.29
‡Acculturation Index (mean) ****	2.97	3.95	3.93	2.71	2.73
Marital Status ****					
Married	3656	4.46	10.09	21.66	63.79
Single	1052	5.89	15.11	21.58	57.41
Enabling					
Education *					
Less than High School	1676	5.49	12.89	21.42	60.20
High School or beyond	3032	4.39	10.29	21.77	63.56
Employment Status					
Employed	3079	4.19	10.56	23.06	62.20
Unemployed	1629	5.89	12.46	18.97	62.68
Household Income					
Less than \$20,000	1209	7.44	15.55	19.93	57.07
\$20,001 to \$40,000 **	1359	4.78	12.95	22.66	59.60
More than \$40,001 ****	1801	2.89	7.27	22.15	67.68
Did not report income **	339	5.31	9.73	20.94	64.01
Insurance Status ****					
Insured	4023	3.90	10.22	21.75	64.13
Uninsured	685	9.93	17.08	21.02	51.97
Residence					
Rural	1782	5.39	10.77	20.99	62.85
Urban	2926	4.41	11.48	22.04	62.06
Need					
KINDL subscale 1: physical****	8.17	8.07	7.68	8.04	8.24
KINDL subscale 2: emotional****	8.59	8.20	8.14	8.47	8.72
KINDL subscale 3: self-esteem****	7.48	6.90	6.83	7.31	7.73
KINDL subscale 4: family life****	7.69	7.72	7.30	7.53	7.75
KINDL subscale 5: friends****	8.08	7.66	7.72	7.91	8.22

* <0.05 significance level; ** <0.01 significance level; *** <0.001 significance level; **** <0.0001 significance level

Table 4.4
 Frequency of reports to obtain immediate care when needed

Independent Variable	N= 4426	Never (%) n= 176	Sometimes (%) n= 312	Usually (%) n= 656	Always (%) n= 3282
Predisposing					
Child age category					
3 to 11	2810	4.09	6.76	14.52	74.63
12 to 18	1616	3.77	7.55	15.35	73.33
Child's Gender					
Male	2267	4.01	6.66	14.64	74.68
Female	2159	3.94	7.46	15.01	73.60
Respondent's relation to child					
Mother	3428	4.17	6.94	14.47	74.42
Father	998	3.31	7.41	16.03	73.25
Respondent's age (continuous)	37.60	37.45	37.24	37.27	37.28
Race/Ethnicity					
Non-Hispanic whites	2285	2.84	4.86	14.92	77.37
Hispanic ****	1840	5.49	9.57	15.11	69.84
Other	301	3.32	8.31	12.29	76.08
Acculturation Index (mean)****	2.97	3.73	3.75	2.69	2.68
Marital Status ****					
Married	3435	3.70	6.72	14.47	75.11
Single	991	4.94	8.17	16.04	70.84
Enabling					
Education **					
Less than High School	1546	5.50	8.09	14.81	71.60
High School or beyond	2880	3.16	6.49	14.83	75.52
Employment Status					
Employed	2935	3.68	6.30	15.67	74.34
Unemployed	1491	4.56	8.52	13.15	73.78
Household Income					
Less than \$20,000	1105	5.79	11.31	13.30	69.59
\$20,001 to \$40,000 **	1308	3.82	6.65	17.28	72.25
More than \$40,001 ****	1701	2.65	4.70	14.70	77.95
Did not report income **	312	5.45	6.41	10.58	77.56
Insurance Status ****					
Insured	3787	3.59	6.47	14.47	75.47
Uninsured	639	6.26	10.49	16.90	66.35
Residence ***					
Rural	1678	3.58	6.67	13.59	76.16
Urban	2748	4.22	7.28	15.57	72.93
Need					
KINDL subscale 1: physical ****	8.17	7.90	7.58	7.78	8.21
KINDL subscale 2: emotional****	8.59	8.14	8.05	8.37	8.69
KINDL subscale 3: self-esteem****	7.48	6.97	6.92	7.01	7.68
KINDL subscale 4: family life****	7.69	7.71	7.36	7.31	7.71
KINDL subscale 5: friends****	8.08	7.76	7.61	7.77	8.20

* <0.05 significance level; ** <0.01 significance level; *** <0.001 significance level; **** <0.0001 significance level

Table 4.5

Frequency of reports to obtain advice/help over the phone when needed

Independent Variable	N= 4634	Never (%) n= 166	Sometimes (%) n= 448	Usually (%) n= 926	Always (%) n= 3094
Predisposing					
Child age category					
3 to 11	2950	3.32	10.44	19.56	66.68
12 to 18	1684	4.04	8.31	20.72	66.92
Child's Gender					
Male	2346	3.32	9.12	20.38	67.18
Female	2288	3.85	10.23	19.58	66.11
Respondent's relation to child					
Mother	3605	3.77	9.82	19.20	67.21
Father	1029	2.92	9.14	22.74	65.21
Respondent's age (continuous)*	37.60	38.11	36.23	37.28	37.33
Race/Ethnicity					
Non-Hispanic white	2420	2.52	6.28	21.16	70.04
Hispanic ****	1914	5.12	13.64	18.29	62.96
Other *	300	2.33	11.67	21.33	64.67
‡Acculturation Index (mean) ****	2.97	3.87	3.93	2.51	2.58
Marital Status ***					
Married	3601	3.25	9.11	20.19	67.45
Single	1033	4.74	11.62	19.26	64.38
Enabling					
Education **					
Less than high school	1622	4.93	11.10	19.24	64.73
High school or beyond	3012	2.86	8.90	20.39	67.86
Employment Status					
Employed	3071	3.06	8.40	21.65	66.88
Unemployed	1563	4.61	12.16	16.70	66.54
Household Income					
Less than \$20,000	1141	5.96	14.20	17.88	61.96
\$20,001 to \$40,000 **	1350	3.19	10.22	22.30	64.30
More than \$40,001 ****	1811	2.37	6.24	20.38	71.01
Did not report income **	332	3.61	10.54	15.66	70.18
Insurance Status ****					
Insured	3987	3.03	8.80	20.37	67.80
Uninsured	647	6.96	14.99	17.62	60.43
Residence					
Rural	1787	3.86	9.57	18.52	68.05
Urban	2847	3.41	9.73	20.90	65.96
Need					
KINDL subscale 1: physical ****	8.17	7.75	7.72	7.88	8.24
KINDL subscale 2: emotional ****	8.59	8.05	8.17	8.42	8.73
KINDL subscale 3: esteem ****	7.48	6.75	7.04	7.16	7.74
KINDL subscale 4: family ****	7.69	7.54	7.44	7.39	7.73
KINDL subscale 5: friends ****	8.08	7.59	7.71	7.75	8.27

* <0.05 significance level; ** <0.01 significance level; *** <0.001 significance level; **** <0.0001 significance level

Table 4.6

Frequency of reports of an excessive wait time in the physician's office/clinic.

Independent Variable	N = 4927	Always (%) n= 1381	Usually (%) n= 746	Sometimes (%) n= 1688	Never (%) n= 1112
Predisposing					
Child age category					
3 to 11	3121	29.57	14.48	33.84	22.11
12 to 18	1806	25.36	16.28	34.99	23.37
Child's Gender					
Male	2516	28.14	15.86	34.38	21.62
Female	2411	27.91	14.39	34.14	23.56
Respondent's relation to child *					
Mother	3858	29.03	14.59	34.16	22.21
Father	1069	24.42	17.12	34.61	23.85
Respondent's age (continuous)					
	37.60	37.19	37.52	37.14	37.77
Race/Ethnicity					
Non-Hispanic white	2501	24.51	14.71	35.79	24.99
Hispanic ****	2107	33.18	16.09	31.04	19.70
Other	319	21.63	12.23	43.57	22.57
‡Acculturation Index (mean) ****	2.97	3.48	3.04	2.53	2.65
Marital Status					
Married	3830	27.65	15.46	34.05	22.85
Single	1097	29.35	14.04	35.00	21.60
Enabling					
Education *					
Less than high school	1768	30.15	16.01	32.30	21.55
High school or beyond	3159	26.84	14.66	35.36	23.14
Employment Status					
Employed	3228	26.80	15.18	35.13	22.89
Unemployed	1699	30.37	15.07	32.61	21.95
Household Income					
Less than \$20,000	1257	31.19	14.24	33.02	21.56
\$20,001 to \$40,000	1435	27.04	15.47	35.19	22.30
More than \$40,001	1874	26.89	15.31	35.01	22.79
Did not report income	361	26.87	16.07	31.02	26.04
Insurance Status					
Insured	4207	27.79	15.38	34.59	22.25
Uninsured	720	29.44	13.75	32.36	24.44
Residence ****					
Rural	1863	24.69	14.65	36.61	24.05
Urban	3064	30.06	15.44	32.83	21.67
Need					
KINDL subscale 1: physical****	8.17	7.95	8.10	8.08	8.49
KINDL subscale 2: emotional****	8.59	8.37	8.48	8.63	8.84
KINDL subscale 3: self-esteem****	7.48	7.34	7.25	7.47	7.90
KINDL subscale 4: family life****	7.69	7.55	7.52	7.58	8.02
KINDL subscale 5: friends****	8.08	7.98	7.94	8.06	8.33

* <0.05 significance level; ** <0.01 significance level; *** <0.001 significance level; **** <0.0001 significance level

Table 4.7

Multivariate logistic regression for probability of having seen a physician, nurse, or other health care professional in the last 12 months

Independent Variable (reference group) n = 5,248	Odds Ratio	95% Confidence Interval
<i>Predisposing</i>		
Child age: 12 to 18 (3 to 11) ****	0.68	(0.54, 0.80)
Child's gender: Female (male)	1.11	(0.94, 1.32)
Respondent's relation to child: Father (mother)	0.97	(0.79, 1.20)
Respondent's age (continuous) ****	0.98	(0.96, 0.99)
Race/Ethnicity:		
Hispanic (non-Hispanic white)	0.74	(0.54, 1.01)
Other (non-Hispanic white)	0.70	(0.33, 1.48)
‡ Acculturation Index (0 to 16)	1.03	(0.98, 1.08)
Marital status: Single (married)	1.05	(0.84, 1.32)
<i>Enabling</i>		
Education: High school or beyond (less than high school)	1.00	(0.83, 1.20)
Employment status: Unemployed (employed)	1.02	(0.84, 1.23)
Household income: (less than 20,000)		
\$20,001 to \$40,000 (less than 20,000)	1.01	(0.80, 1.29)
More than \$40,001 (less than 20,000)	1.25	(0.95, 1.64)
Did not report (less than 20,000)	0.83	(0.60, 1.15)
Insurance status: Uninsured (insured) ****	0.39	(0.32, 0.48)
Residence: Urban (rural)	1.16	(0.98, 1.38)
<i>Need</i>		
KINDL subscale 1: physical functioning ****	0.89	(0.85, 0.94)
KINDL subscale 2: emotional functioning	1.02	(0.95, 1.10)
KINDL subscale 3: self-esteem *	1.06	(1.01, 1.11)
KINDL subscale 4: family life **	0.92	(0.87, 0.97)
KINDL subscale 5: friends	0.99	(0.93, 1.06)

† Statistical tests are based upon multivariate logistic regression analyses.

* <0.05 significance level; ** <0.01 significance level; *** <0.001 significance level; **** <0.0001 significance level

‡ Acculturation index was only obtained for Hispanic respondents.

Estimates have been rounded to the nearest hundredth.

Table 4.8

Multivariate ordered logit regression analysis for ability to obtain an appointment for regular/routine care and ability to obtain immediate care for an illness or injury

Independent Variable (reference group)	Regular/routine care Odds Ratio (95% CI) n= 4,708	Immediate care Odds Ratio (95% CI) n= 4,426
<i>Predisposing</i>		
Child age: 12 to 18 (3 to 11)	0.92 (0.79, 1.06)	1.04 (0.88, 1.23)
Child's Gender: Female (male)	1.02 (0.91, 1.15)	0.93 (0.81, 1.07)
Respondent's relation to child: Father (mother)	0.74 (0.64, 0.86)****	0.84 (0.70, 1.00)*
Respondent's Age (continuous)	1.00 (0.99, 1.01)	1.00 (0.99, 1.01)
Race/Ethnicity:		
Hispanic (non-Hispanic white)	0.69 (0.56, 0.86)***	0.66 (0.51, 0.85)***
Other (non-Hispanic white)	0.83 (0.47, 1.47)	1.00 (0.50, 1.97)
‡Acculturation Index (0 to 16)	1.01 (0.97, 1.04)	1.02 (0.98, 1.06)
Marital Status: Single (married)	0.83 (0.71, 0.97)*	0.94 (0.78, 1.12)
<i>Enabling</i>		
Education: High school or beyond (less than)	1.07 (0.93, 1.22)	1.16 (0.99, 1.35)
Employment Status: Unemployed (employed)	1.07 (0.93, 1.23)	1.08 (0.92, 1.27)
Household Income:		
\$20,001 to \$40,000 (less than \$20,000)	1.03 (0.86, 1.22)	1.05 (0.86, 1.28)
More than \$40,001 (less than \$20,000)	1.35 (1.12, 1.64)**	1.34 (1.07, 1.67)**
Did not report (less than \$20,000)	1.21 (0.93, 1.58)	1.35 (0.98, 1.87)
Insurance status: Uninsured (insured)	0.66 (0.56, 0.78)****	0.75 (0.62, 0.91)**
Residence: Urban (rural)	0.98 (0.86, 1.11)	0.84 (0.72, 0.97)*
<i>Need</i>		
KINDL subscale 1: physical functioning	1.01 (0.98, 1.04)	1.04 (1.01, 1.08)*
KINDL subscale 2: emotional functioning	1.04 (0.99, 1.09)	1.03 (0.98, 1.09)
KINDL subscale 3: self-esteem	1.11 (1.07, 1.15)****	1.11 (1.06, 1.15)****
KINDL subscale 4: family life	1.02 (0.98, 1.06)	1.03 (0.98, 1.07)
KINDL subscale 5: friends	1.11 (1.06, 1.17)****	1.12 (1.06, 1.17)****

† Statistical tests are based on multivariate ordered logit regression analyses.

* <0.05 significance level; ** <0.01 significance level; *** <0.001 significance level; **** <0.0001 significance level

‡ Acculturation index was only obtained for Hispanic respondents.

Estimates have been rounded to the nearest hundredth.

Table 4.9

Multivariate ordered logit regression analysis for ability to obtain advice/help over the phone when calling the physician's office during regular hours.

Independent Variable (reference group) n= 4,634	Odds Ratio	95% Confidence Interval
<i>Predisposing</i>		
Child age: 12 to 18 (3 to 11)	1.11	(0.95, 1.29)
Child's Gender: Female (male)	0.90	(0.80, 1.03)
Respondent's relation to child: Father (mother) *	0.82	(0.70, 0.96)
Respondent's Age (continuous)	1.00	(0.99, 1.01)
Race/Ethnicity:		
Hispanic (non-Hispanic white)****	0.64	(0.51, 0.80)
Other (non-Hispanic white)*	0.55	(0.30, 1.00)
‡Acculturation Index (0 to 16)	1.03	(0.99, 1.07)
Marital Status: Single (married)	1.02	(0.86, 1.20)
<i>Enabling</i>		
Education: High school or beyond (less than High School)	1.15	(1.00, 1.31)
Employment Status: Unemployed (employed)	1.04	(0.90, 1.20)
Household Income:		
\$20,001 to \$40,000 (less than 20,000)	1.15	(0.96, 1.38)
More than \$40,001 (less than 20,000)****	1.49	(1.22, 1.81)
Did not report (less than 20,000)*	1.42	(1.06, 1.89)
Insurance status: Uninsured (insured) **	0.77	(0.64, 0.92)
Residence: Urban (rural)	0.94	(0.82, 1.07)
<i>Need</i>		
KINDL subscale 1: physical functioning *	1.03	(1.00, 1.07)
KINDL subscale 2: emotional functioning	1.03	(0.98, 1.08)
KINDL subscale 3: self-esteem ****	1.10	(1.06, 1.14)
KINDL subscale 4: family life	1.03	(0.99, 1.07)
KINDL subscale 5: friends ****	1.17	(1.11, 1.22)

† Statistical tests are based upon multivariate ordered logit regression analyses.

* <0.05 significance level; ** <0.01 significance level; *** <0.001 significance level; **** <0.0001 significance level

‡ Acculturation index was only obtained for Hispanic respondents.

Estimates are rounded to the nearest hundredth.

Table 4.10

Multivariate ordered logit regression analysis for not having to wait in the doctor's office/clinic more than 15 minutes past the appointment time

Independent Variable (reference group) n= 4,927	Odds Ratio	95% Confidence Interval
<i>Predisposing</i>		
Child age: 12 to 18 (3 to 11) **	1.20	(1.06, 1.36)
Child's gender: Female (male)	1.06	(0.96, 1.18)
Respondent's relation to child: Father (mother)	1.03	(0.90, 1.17)
Respondent's age (continuous)	1.00	(0.99, 1.01)
Race/Ethnicity		
Hispanic (non-Hispanic white) *	0.83	(0.68, 1.00)
Other (non-Hispanic white)	1.54	(0.93, 2.55)
‡ Acculturation Index (0 to 16)**	0.96	(0.93, 0.99)
Marital Status: Single (married)	0.98	(0.85, 1.13)
<i>Enabling</i>		
Education: High school or beyond (less than high school)	1.06	(0.95, 1.19)
Employment Status: Unemployed (employed)	0.98	(0.87, 1.10)
Household Income:		
\$20,001 to \$40,000 (less than \$20,000)	0.99	(0.85, 1.15)
More than \$40,001 (less than \$20,000)	0.91	(0.78, 1.08)
Did not report (less than \$20,000)	1.10	(0.87, 1.39)
Insurance status: Uninsured (insured)	1.17	(1.00, 1.36)
Residence: Urban (rural) ***	0.83	(0.75, 0.92)
<i>Need</i>		
KINDL subscale 1: physical functioning **	1.05	(1.02, 1.08)
KINDL subscale 2: emotional functioning	1.04	(0.99, 1.08)
KINDL subscale 3: self-esteem	1.03	(1.00, 1.07)
KINDL subscale 4: family life ****	1.09	(1.05, 1.13)
KINDL subscale 5: friends	1.03	(0.99, 1.07)

† Statistical tests are based on multivariate ordered logit regression analyses.

* <0.05 significance level; ** <0.01 significance level; *** <0.001 significance level; **** <0.0001 significance level

‡ Acculturation index was only obtained for Hispanic respondents.

Estimates have been rounded to the nearest hundredth.

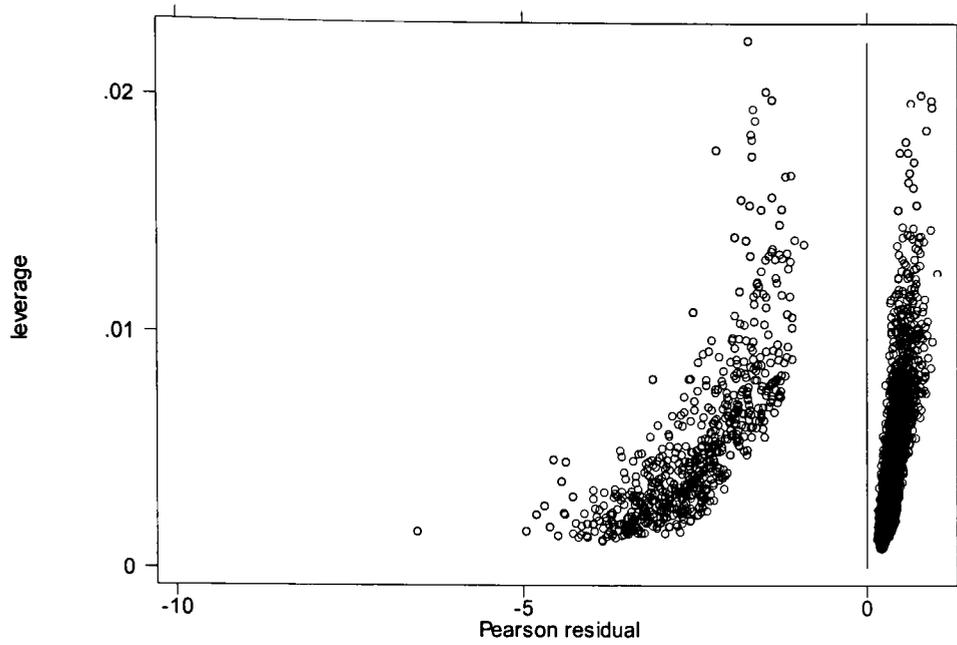


Figure 4.1: Plot of Leverage versus Residuals.

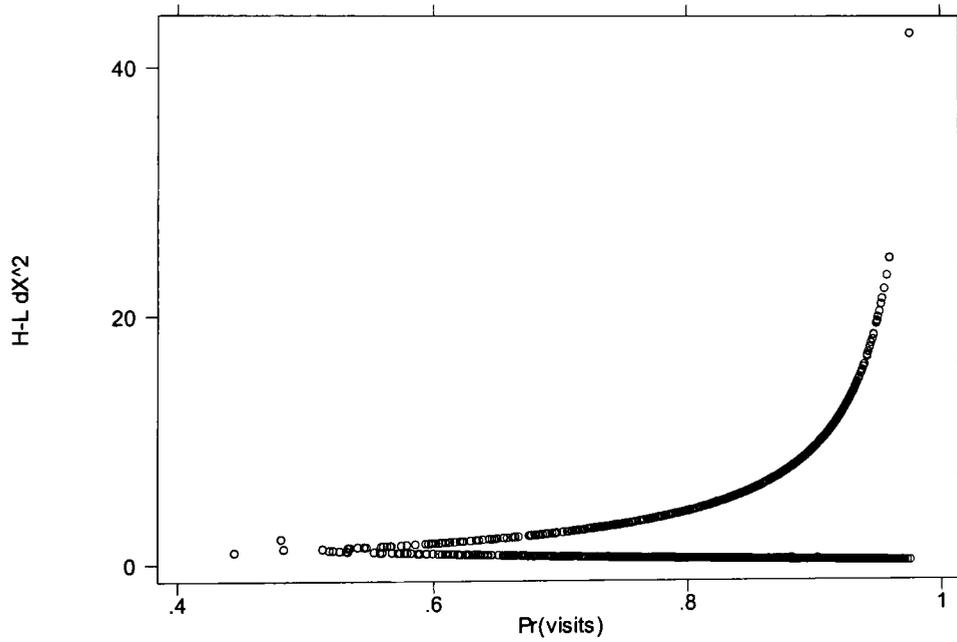


Figure 4.2: Plot of Residuals versus Probability.

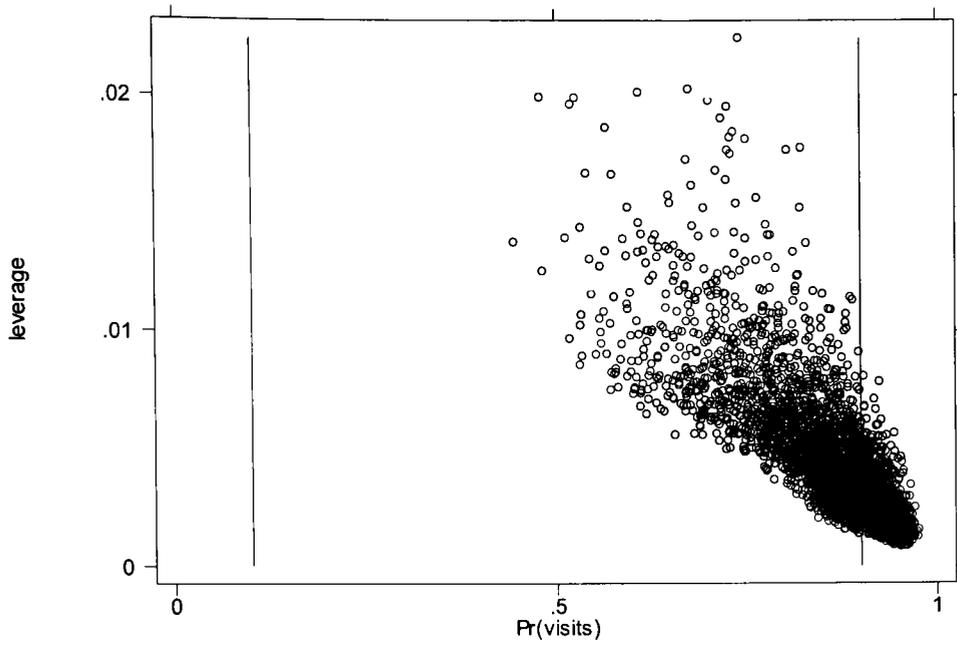


Figure 4.3: Plot of Leverage versus Probability.

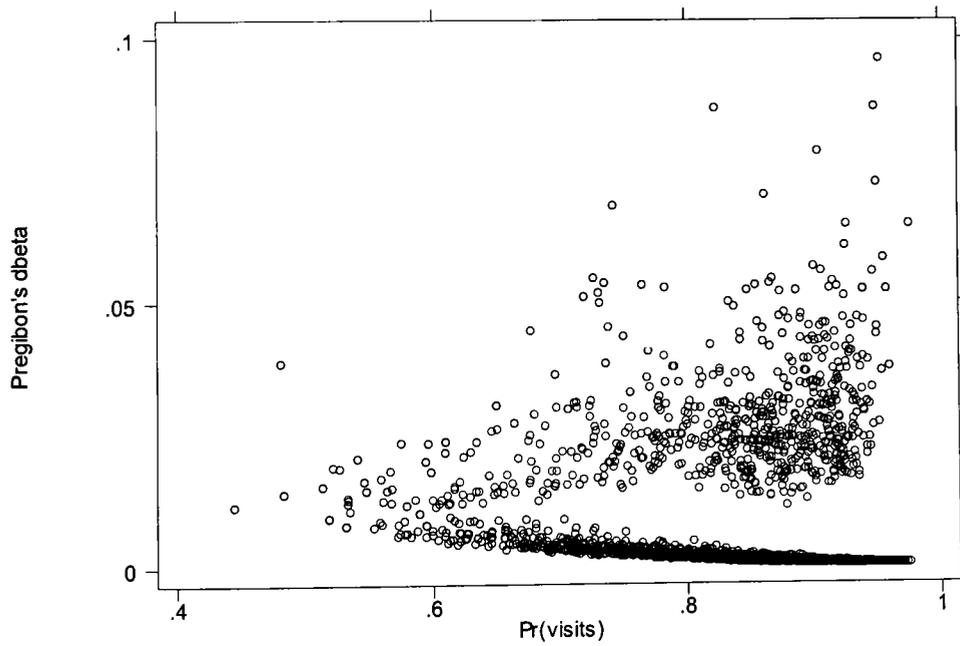


Figure 4.4: Plot of Influence versus Probability.

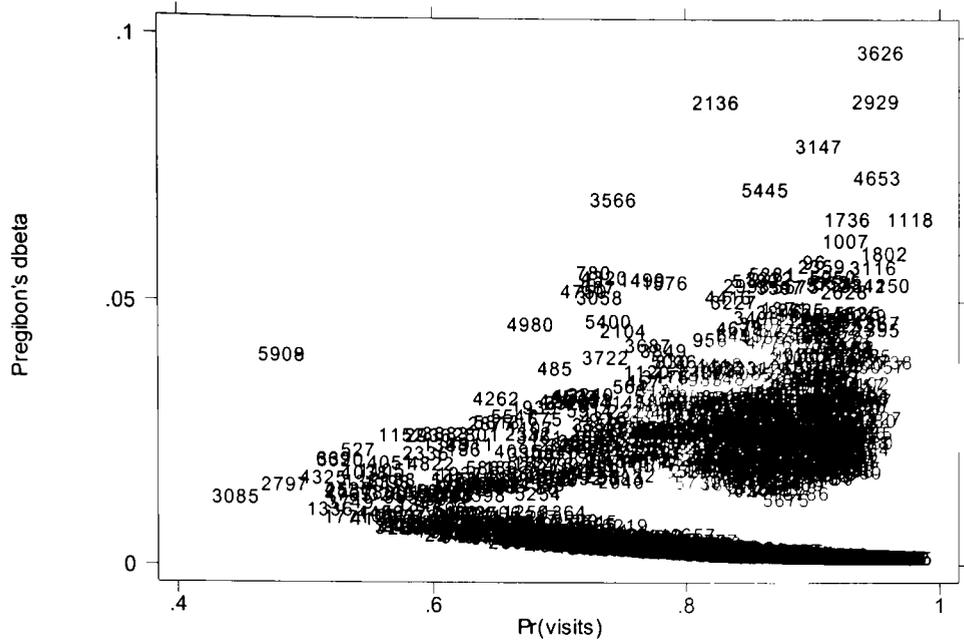


Figure 4.5: Plot of Influence versus Probability using the ID of the Observation.

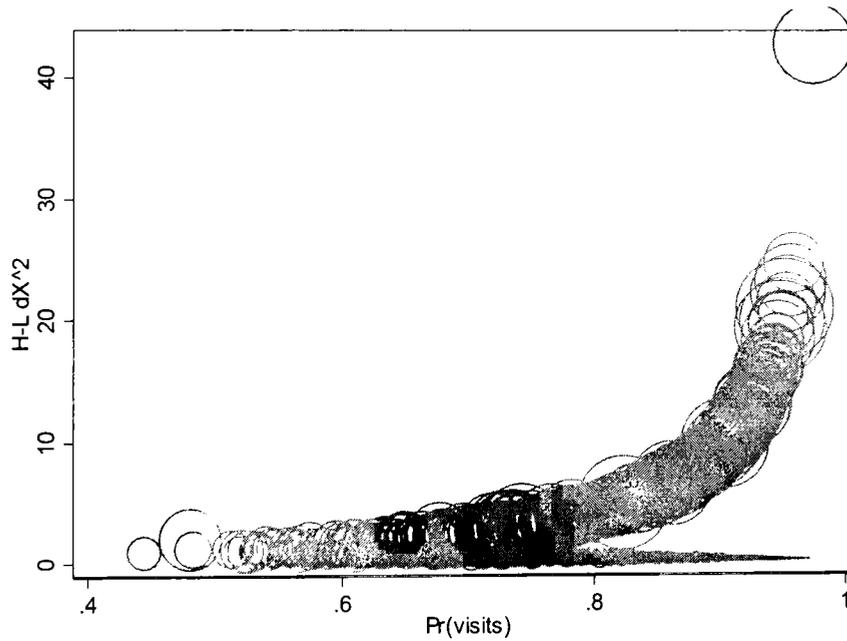


Figure 4.6: Plot of Residuals versus Probability using Influence as a Weight.
The circles with the widest diameter represent the largest influence.

CHAPTER 5

SUMMARY AND DISCUSSION

5.1 Discussion of Findings

Using Andersen's behavioral model (1995), the present study evaluated the predictors of physician visits, parents' reports of their ability to obtain needed advice or help for their child over the phone when contacting the doctor's office during regular hours, obtain an appointment for their child for routine or regular care when desired, obtain immediate care for a child's illness or injury, and report the frequency with which their child had to wait more than 15 minutes past the appointment time to see a physician. Examining these associations entailed regressing predisposing, enabling, and need variables using both multivariate logistic regression analysis and multivariate ordered logit regression analysis.

The two hypotheses proposed in the present study yielded inconsistent results. For example, when evaluating Hispanic/non-Hispanic white disparities, Hispanic ethnicity was significantly associated with all of the outcome measures, while rural/urban area of residence was only significantly associated to parents' reports of their ability to obtain immediate care and waiting times for their child to see a physician. Specifically, Hispanic parents were significantly less likely than non-Hispanic whites to obtain an appointment for their child for regular/routine care, obtain immediate care for a child's illness or injury, obtain needed advice over the phone, to have a physician visit in the past 12 months, and to report that their child 'never' had an excessive wait time when they did

visit a physician. These results are not surprising given the number of studies documenting that Hispanic children are at the greatest risk of having an excessive amount of barriers to health care access (Flores et al., 1998; Flores and Vega, 1998; Flores et al., 1999, 2002; Zambrana et al., 1994; Zambrana and Logie, 2000; Zambrana and Carter-Pokras, 2001).

Flores and her colleagues consistently found that Hispanic children experience significant barriers when trying to access health care services. Their inability to access the health care system may be due to a number of factors. For example, Hispanic ethnicity is significantly associated with an increased lack of health insurance and an increased risk of living below federal poverty levels (Flores & Vega 1998; Flores et al., 1999, 2002). This lack of financial stability may be the cause of existing barriers. Also, Hispanic children are more likely to receive care in public settings such as clinics, community health centers, and emergency departments (Lieu et al., 1993; Newacheck, Stoddard, and McManus 1993; Wood, Halfon et al., 1995; Zambrana et al., 1994) than are any other racial/ethnic group. Public facilities may not be equipped or staffed to accommodate the number of individuals trying to obtain an appointment for routine or sick care on a daily basis. Waiting times may also be increased when appointments are available due to the large number of patients hoping to see a physician. Hispanics' inability to access physician services may also be due to personal characteristics such as the primary language spoken, transportation accessibility, etc. Future research should focus on determining the exact reasons Hispanics face such a multitude of barriers when trying to access health care for their children.

While Hispanic parents had worse evaluations of all aspects of their children's access to care, rural residence was only associated with parents' reports of being able to obtain immediate care for a child's illness or injury and of not having excessive wait times in the physician's office. However, the association was in the opposite direction than originally hypothesized. For example, urban residents were significantly less likely to report that their child 'never' had an excessive wait time and significantly less likely to report that their child always received immediate care for an illness or injury. These findings indicate that residents of areas classified as urban are more likely to experience difficulties accessing health care for their children than parents residing in rural areas. The literature also has inconsistent findings when assessing disparities between urban and rural residents' access to health care.

In the present study, the findings that urban residents were less likely than rural residents to obtain immediate care and more likely to have an excessive wait time before seeing the physician, were somewhat surprising since a greater number of health care professional shortages and fewer beds per capita are found in rural communities (Blumenthal & Kagen, 2002; Heady & Byrd, 2002; Van Dis, 2002). Also, urban residents generally have potential access to a greater number of health care facilities than do rural residents. The increased inability for urban residents to access immediate care and experience a longer waiting time once care is accessed may be due to the settings in which care is sought or the larger percentage of people obtaining care from the same facilities.

Another significant finding of interest was the fact that fathers reported greater problems obtaining an appointment for regular/routine care for their child, immediate care for a child's illness or injury, and receiving needed advice/help over the phone when contacting the doctor during regular office hours. It is quite possible that men have greater difficulties accessing care for their children than do women. Barriers to access for fathers may be due, in part, to the larger percentage of fathers who are employed compared to mothers. It may also be due to the fathers' inexperience at accessing the health care system in general, since males generally make fewer visits to a physician than females (Xu and Borders, 2003). Although relation (mother versus father) to the child was significant, it is difficult to determine whether these problems with access are really experienced more by fathers or whether these children would have experienced similar barriers had their mothers responded. Without having had both the mother and father of the child respond to a survey, distinguishing between the two is impossible.

5.2 Limitations

The present study had several limitations. First, there is always a possibility of bias when there are missing values. Most missing values in the present study were assigned to the referent group, unless there was either an "other" category or a sufficient number of missing values to warrant the creation of a dummy variable. Furthermore, the direction of the bias was impossible to determine; significance may have been overestimated or underestimated.

Secondly, the present study did not include items regarding health beliefs and personal health practices due to the fact that they were not included in the original Childhood Diabetes Survey. It has been suggested that individuals' health beliefs enable a better understanding of how social structural variables influence enabling resources, perceived need, and utilization of health services (Andersen, 1995; Flores et al., 1998, 1999, 2002; Flores and Vega, 1998). Flores et al. document that the lack of culturally competent care can have a major impact on the health and health services use of Hispanic children (2002). Lavizzo-Mourey and McKenzie (1996) described cultural competence as the awareness, inclusion, and integration of health-related beliefs and cultural values, disease incidence and prevalence, and treatment efficacy. In another study done by Flores and Vega, they stated that one of the most important findings to emerge was the potential for parental belief systems to act as an important access barrier for Hispanic children. They found that Hispanic mothers often chose non-medical contacts as their initial source of advice when their child was ill rather than physicians or other health care professionals. They also found that the Hispanic mothers' first step in managing their child's illness was home remedies instead of seeking medical attention (1998).

Another limitation of the present study was the lack of distinction between whether immediate care was sought at a physician's office/clinic or the emergency department of a hospital. In this case, physician use may not be independent of hospital emergency department use. Access to care sought in an emergency department is substantially different from access to care sought in a physician's office or clinic.

Recall bias may also be present due to the considerable time frame of the outcome measures. All of the dependent variables in this study were based on responses to questions covering a 12-month period. It is quite possible that respondents either overestimated or underestimated their children's physician visits and their ability to obtain specific aspects of care.

Since the data for the present study was self-reported by the parent, the information obtained may not be accurate. In a study to determine how consumer assessments of care for children and adults differed, Zhan et al. determined that parents generally rated their children's experiences higher than the children did themselves (2002). Homer et al. presented similar findings in their study of the CAHPS survey of children's health care (1999).

Although Rohrer (1999) suggested that a response rate greater than 50% would be appropriate, the small response rate of the Childhood Diabetes Survey (~55%) may be considered a limitation. Since it is impossible to determine whether respondents and non-respondents have similar perceptions of their children's access to care, results presented may either be overestimated or underestimated. Non-respondents may also differ substantially in regards to sociodemographic factors which may enable or impede their use of health care services.

5.3 Implications

The present study serves as an example of how a population-based study of parents' reports of their children's access to care can help policy makers evaluate how to

improve access for vulnerable subpopulations. For example, Hispanic residents reported greater difficulty obtaining an appointment for regular/routine care for their children than did their non-Hispanic white counterparts, even when controlling for predisposing and enabling factors. Moreover, urban residents reported greater instances of their children having to wait more than 15 minutes past the appointment time than did their rural counterparts. Additional research is needed to determine how access to health care services could be more attainable to those subgroups reporting problems.

This study may also enable health services researchers, policy makers, managers, and health care providers to better understand the actual and perceived barriers parents, particularly those in vulnerable subpopulations, face when trying to access health care for their children. In addition, the assessment and degree of rural/urban, Hispanic/non-Hispanic white disparities in parents' reports of their children's access to care and the role health insurance plays in children's ability to access care may further enable an understanding of parents' perceptions of their children's access and in children's actual access to health care. A better understanding of the factors associated with poor assessments of children's access, may, in turn, lead to the implementation of effective programs and policies targeting the improvement of access for Hispanic children, children living in areas at risk, and children who are privy to a number of other access barriers.

5.4 Conclusions

Racial and ethnic disparities in access to health care have been well documented. However, for some populations, such as children, immigrant groups, and ethnic subgroups, barriers to equitable access have not been well established and further research is warranted. For many other populations, such as the elderly, African-Americans, and Hispanics, research has provided many potential targets for interventions. Health services interventions, whether used alone or in conjunction with other social and economic interventions, are likely to play a significant role in reducing racial and ethnic health care access disparities. Interventions should target at-risk populations, such as Hispanic children, children living in either rural or urban areas, and children exposed to other potential access barriers. In addition, focus should be placed on the most important contributing factors for each community, population, or diseased group, and use culturally and linguistically appropriate methods.

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APPENDIX

Table A.1
 2000 Census Data for the Counties Included in the Study

County Code	County Name	Population	Urb/Rural Status
48003	Andrews	13,004	R
48009	Archer	8,854	R
48011	Armstrong	2,148	R
48017	Bailey	6,594	R
48023	Baylor	4,093	R
48033	Borden	729	R
48043	Brewster	8,866	R
48049	Brown	37,674	R
48059	Callahan	12,905	R
48065	Carson	6,516	R
48069	Castro	8,285	R
48075	Childress	7,688	R
48077	Clay	11,006	R
48079	Cochran	3,730	R
48081	Coke	3,864	R
48083	Coleman	9,235	R
48087	Collingsworth	3,206	R
48093	Comanche	14,026	R
48095	Concho	3,966	R
48101	Cottle	1,904	R
48103	Crane	3,996	R
48105	Crockett	4,099	R
48107	Crosby	7,072	R
48109	Culberson	2,975	R
48111	Dallam	6,222	R
48115	Dawson	14,985	R
48117	Deaf smith	18,561	R
48125	Dickens	2,762	R
48127	Dimmit	10,248	R
48129	Donley	3,828	R
48133	Eastland	18,297	R
48135	Ector	121,123	U
48141	El Paso	679,622	U
48151	Fisher	4,344	R
48153	Floyd	7,771	R
48155	Foard	1,622	R
48165	Gaines	14,467	R
48169	Garza	4,872	R
48179	Gray	22,744	R
48189	Hale	36,602	R

Table A.1 (Continued)

County Code	County Name	Population	Urb/Rural Status
48191	Hall	3,782	R
48195	Hansford	5,369	R
48197	Hardeman	4,724	R
48205	Hartley	5,537	R
48207	Haskell	6,093	R
48211	Hemphill	3,351	R
48219	Hockley	22,716	R
48227	Howard	33,627	R
48229	Hudspeth	3,344	R
48233	Hutchinson	23,857	R
48237	Jack	8,763	R
48243	Jeff Davis	2,207	R
48253	Jones	20,785	R
48263	Kent	859	R
48267	Kimble	4,468	R
48271	Kinney	3,379	R
48275	Knox	4,253	R
48279	Lamb	14,709	R
48295	Lipscomb	3,057	R
48303	Lubbock	242,628	U
48305	Lynn	6,550	R
48307	McCulloch	8,205	R
48319	Mason	3,738	R
48323	Maverick	47,297	R
48327	Menard	2,360	R
48329	Midland	116,009	U
48335	Mitchell	9,698	R
48337	Montague	19,117	R
48341	Moore	20,121	R
48345	Motley	1,426	R
48353	Nolan	15,802	R
48357	Ochiltree	9,006	R
48359	Oldham	2,185	R
48369	Parmer	10,016	R
48371	Pecos	16,809	R
48375	Potter	113,546	U
48377	Presidio	7,304	R
48381	Randall	104,312	U
48383	Reagan	3,326	R
48385	Real	3,047	R

Table A.1 (Continued)

County Code	County Name	Population	Urb/Rural Status
48389	Reeves	13,137	R
48393	Roberts	887	R
48399	Runnels	11,495	R
48413	Schleicher	2,935	R
48415	Scurry	16,361	R
48417	Shackelford	3,302	R
48421	Sherman	3,186	R
48429	Stephens	9,674	R
48431	Sterling	1,393	R
48435	Sutton	4,077	R
48437	Swisher	8,378	R
48441	Taylor	126,555	U
48445	Terry	12,761	R
48447	Throckmorton	1,850	R
48451	Tom Green	104,010	U
48461	Upton	3,404	R
48463	Uvalde	25,926	R
48465	Val Verde	44,856	R
48475	Ward	10,909	R
48483	Wheeler	5,284	R
48485	Wichita	131,664	U
48487	Wilbarger	14,676	R
48495	Winkler	7,173	R
48501	Yoakum	7,322	R
48503	Young	17,943	R
48507	Zavala	11,600	R

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