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Urban caregiver empowerment: Caregiver nativity, child asthma symptoms and emergency department use

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Abstract

Introduction—This study examines the associations between caregiver empowerment, child asthma symptoms, and emergency department use in a sample of school aged urban children with asthma. We examined differences in caregiver empowerment, and in the associations among caregiver empowerment, proportion of days with child asthma symptoms, and emergency department use as a function of caregiver nativity.

Methods—Participants for this study were part of a larger longitudinal study and included Latino, African American and non-Latino White urban caregivers and their children with asthma (ages 7–9; N=130). Caregiver empowerment was assessed within family, asthma services, and community domains.

Results—Children whose caregivers reported greater empowerment within the family (knowledge and ability to care for their family) presented with fewer asthma symptoms. Children whose caregivers reported greater empowerment within asthma services (ability to collaborate with asthma providers and healthcare system), presented with more asthma symptoms. Foreign-born caregivers endorsed greater empowerment within the family, while US-born caregivers reported greater empowerment within asthma services. For foreign-born caregivers, higher levels of empowerment in the family were associated with fewer child asthma symptoms. For US-born caregivers, higher levels of empowerment in asthma services were associated with more child asthma symptoms.

Discussion—Results suggest that caregivers who feel more confident and better able to manage problems within their family may better manage their child's asthma more effectively navigate the asthma healthcare system and manage their child's asthma.

Keywords

caregiver empowerment; asthma; disparities; ethnicity

Asthma affects 9.5% of American children (Akinbami et al., 2012). Black and Puerto Rican children experience the highest asthma prevalence rates (11.2% & 16.1% respectively; Akinbami et al., 2012). Ethnic minority children are disproportionately present in urban settings where child asthma rates are high (Pearlman et al., 2006; Williams, Sternthal and Wright, 2009), and there is increased exposure to asthma triggers (Crain et al., 2002). However, asthma can be well controlled with appropriate outpatient management strategies (NHLBI, 2007).

Ethnic minority and urban children with asthma have higher emergency department (ED) use rates than non-Latino Whites (Morman et al., 2012; Shields, Comstock, & Weiss, 2004). Urban and ethnic minority families are less likely to administer preventative care, use a consistent healthcare provider and are more likely to use the ED for child asthma care (Boudreaux, Emond, Clark, & Camargo, 2003; Jandasek et al. 2011; McQuaid et al., 2012; Rand et al., 2000). Individual (e.g., illness severity), healthcare (e.g., patient provider relationship), family (e.g., family support), and cultural-related factors (e.g., caregiver nativity) have been associated with urban and ethnic minority families' greater use of the ED for asthma treatment (Flores et al, 2009, Koinis-Mitchell et al., 2007, Koinis-Mitchell et al., 2011; Mansour, Lanphear and DeWitt, 2000; Rand et al, 2000).

Asthma management involves attention to symptoms, understanding of medications and their administration, avoidance of asthma triggers, and effective communication with healthcare providers (e.g., primary care providers, asthma specialist, school nurse; McQuaid et al., 2005). Caregivers play a significant role in effective child asthma management. Given the complexity of effective asthma management for urban families (Koinis Mitchell et al., 2007), and the stressors families may face related to urban poverty (e.g., healthcare access, inconsistent provider, lack of insurance; Jandasek et al., 2011) and ethnic background (e.g., discrimination, language barriers; Koinis Mitchell et al., 2011, Koinis Mitchell et al., 2014), urban caregivers may be at a greater disadvantage for effectively managing their child's symptoms and navigating the healthcare system.

Empowerment is a multidimensional concept that involves individuals gaining knowledge, skills, and resources to enhance their quality of life. It is manifested at the individual, familial, and systemic level (Curtis & Singh, 1996; Feste & Anderson, 1995; 2002; Rappaport, 1987). Within the healthcare context, caregiver empowerment involves caregivers' healthcare system knowledge, appropriate disease management, and advocacy skills to support their child's effective asthma treatment (Aujoulat, et al., 2007; Curtis & Singh, 1996; Fitzsimmons & Fuller, 2002). Findings, in the developmental disabilities and child mental illness literatures, highlight the role of caregiver empowerment in supporting positive treatment outcomes, increased parent participation (Banach et al., 2010; Farber &

Maharaj, 2005) and satisfaction (Graves & Shelton, 2007; Resendez, et al., 2000; Taub, et al., 2001) with their child's treatment.

Within pediatric asthma, Puerto Rican caregivers who reported higher symptoms of depression endorsed less empowerment to care for their child's asthma (Martinez, Pérez, Ramírez, Canino, & Rand, 2009). Many ethnic minority caregivers' experience mistrust towards the healthcare system (Armstrong et al., 2008; Benkert et al. 2006; Boulware et al., 2003). Caregiver empowerment has the potential to enhance caregivers' ability to support their child's asthma management in a healthcare context that may not always be receptive to the needs of ethnic minority families.

For caregivers of children with asthma, caregiver empowerment can be developed through increased knowledge of asthma, and administration of specific components of asthma management (e.g. response to symptoms, and medication administration and timing; Rappaport, 1987; Rezendez, et al., 2000). It includes knowledge of the healthcare system (e.g. understanding the role of asthma care providers and how to appropriately access emergency services), comfort asking questions and advocating with providers for children's asthma treatment.

Latino caregivers born outside of the mainland US reported a greater number of ED visits for their child's asthma, than caregivers born in the US mainland (Klinnert Price, Liu and Robinson, 2003; Koinis-Mitchell et al., 2011). For foreign-born caregivers, the experience of adjusting to a new country and healthcare system may contribute to their decisions about asthma management strategies and where to seek care for their children (DeRose, Escarce, & Lurie, 2007). For foreign-born caregivers, greater empowerment may assist to demystify misconceptions about asthma and its management and support effective use of asthma healthcare resources (Koinis-Mitchell et al., 2011).

The current study examines the association of caregiver empowerment, proportion of days with asthma symptoms and ED use in an ethnically diverse urban sample of children with persistent asthma and their caregivers. We hypothesized caregivers' greater levels of empowerment will be associated with lower proportion of days with child asthma symptoms and fewer ED visits. We examined differences in caregiver empowerment as a function of caregiver nativity, those born within (US-born) and outside (foreign-born) the US mainland. We hypothesized that US-born caregivers will endorse higher levels of caregiver empowerment than foreign-born caregivers. We sought to explore separately for foreign-born and US-born caregivers, the association of caregiver empowerment with asthma symptoms and ED use. We hypothesized US born caregivers' greater levels of empowerment will be associated with lower proportion of child asthma symptoms and fewer ED visits.

Methods

Procedures

The data reported herein are part of a longitudinal study, Project NAPS (Nocturnal Asthma and Performance in School), examining the association of asthma and allergic rhinitis, sleep and academic functioning in urban children with and without a persistent asthma diagnosis.

Recruitment of participants occurred in a hospital based ambulatory clinic, asthma education program, and urban school districts. Eligibility criteria included: 1) child between 7 – 9 years of age, 2) child's legal guardian participation, 3) parent ethnicity self-defined as Non-Latino White (NLW), Latino, or African American (AA), 4) residency in an urban school district, and 5) child had asthma, or met persistent asthma status, as reported by the caregiver. Asthma diagnoses was confirmed through a clinician evaluation which used guideline based procedures (NHLBI, 2007). Exclusionary criteria included moderate to severe cognitive impairment, use of stimulant medication for attention deficit hyperactivity disorder, intermittent asthma, another pulmonary or chronic health condition, or diagnosed sleep disorder. Participants completed the protocol in English or Spanish according to their preference and received monetary compensation for all study visits. Approval for the study was obtained from the Institutional Review Board of Rhode Island Hospital.

For the present study, only NAPS participants with asthma were included. For the two years of this study, 1248 potential study participants were screened for NAPS participation. Of those screened, 72% were ineligible, 2% declined to participate, 5% were eligible but did not enroll (i.e., were not available for follow up, missed an enrollment visit, became difficult to contact) and 21% were eligible & enrolled. Of those enrolled some were deemed ineligible after study clinician assessment, given no asthma (n=6) or inconclusive asthma diagnoses (n=1), and due to other medical issues (n=16). All families with a child with asthma enrolled in NAPS participated in this sub-study. Recruitment sources included 1) schools (28%), 2) clinic (17%), 3) community asthma program (53%) and 4) Other (e.g., word of mouth, 3%). Data for the current study were completed within the first two monitoring periods (each 4 weeks in length), in the fall and winter of the year of participation. Demographic information, asthma symptoms and ED visits were collected in the first monitoring period (fall), and the caregiver empowerment in the second period (winter).

Measures

Demographic Questionnaire—Primary caregivers provided demographic information including the child's age and gender, caregiver and child ethnicity, caregiver country of birth, caregiver preferred language and family income. Poverty status was categorized as above or below the poverty threshold, and determined by the family's per capita annual income compared to the federal poverty threshold for a same size family (USDHHS, 2005).

Caregiver Nativity—Caregiver nativity was defined as caregivers born outside (foreign-born) or within the mainland US (US-born).

Caregiver Empowerment—The Family Empowerment Scale (FES; Koren et al., 1992) and the Patient Activation Scale (PAS; Alegria et al., 2008; Cretin, Shortell & Keeler, 2004) were used to conceptualize caregiver empowerment. Both scales were modified to reflect asthma treatment. The FES' overall instructions were modified to direct caregivers to consider asthma services for the past 12 months; items were not changed. The services domain instructions were modified for caregivers to consider services “related to asthma, asthma education, treatments, plan for school and home.” The 34-item FES assesses

caregiver empowerment using three subscales: family functioning (family domain, 12 items for example “When I need help with problems in my family, I am able to ask for help from others.”), engagement with asthma providers (asthma service domain, 12 items), and advocacy within the community (community domain, 10 items). Responses include a 5 point likert scale ranging from 1 (never) to 5 (very often). Within this study internal consistency is very good (Cronbach’s $\alpha = .85, .89$ and $.88$ for family, service and community subscales, respectively).

The 9-item PAS assesses the patient’s engagement in behaviors that increase their collaboration with the healthcare provider within a medical encounter, such as question formulation and information seeking skills (Alegria et al., 2008; Cretin et al., 2004). We conceptualized this measure as assessing caregiver empowerment related to the service domain of the FES (Koren et al.). Items of the PAS were modified to consider asthma services for example “How well do you communicate with your child’s asthma doctor when you are feeling uncomfortable about his/her treatment?” Participants chose a response ranging from 1 (none of the time) to 10 (all of the time). Internal consistency is very good for Spanish, English and for our modified version (Cronbach alphas were $.75, .82$ and $.81$ respectively, Alegria et al., 2008).

Asthma symptoms—Caregivers completed a daily diary where they noted breathing problems experienced by their child during a four-week monitoring period. A proportion of days during which asthma symptoms (herein referred to as asthma symptoms) were reported was computed across all days with valid data during the four-week period. Eighty-seven percent of participants completed at least two weeks of diary data ($M=26$ days, $SD=5$). The remaining 13% completed fewer than two weeks ($M=9$ days, $SD=2$). We excluded from analyses, those participants with fewer than 7 days with valid data; this threshold was based on prior evaluation of pulmonary function testing data (Seifer, Garro, McQuaid, Kopel, Canino, & Fritz, 2009), which indicated that valid estimates of lung function can be based on at least this number of days’ data. Analyses nested by case ($F=2.1, p<.001$) indicate an association between the data collected in the diary and daily lung function data (FEV1) collected in the four-week monitoring period (Koinis-Mitchell et al., in press).

ED Visits—Caregivers reported the number of asthma-related child ED visits within the previous year. ED visits ranged from zero ($n=63$) to twenty ($n=1$) ($M=.99, SD=2.19$). Caregivers who reported an ED visit, reported one ($n=19$), two ($n=12$), three ($n=9$), four ($n=3$) and five visits ($n=1$). Given the limited range visits and standard practice in the asthma literature, ED visits were categorized into none and one or more visits.

Statistical Analysis Plan

Preliminary analyses included examining differences in caregiver empowerment, patient activation scale, asthma symptoms and ED use by demographics (child age, gender, ethnicity, poverty status, caregiver country of birth, and language) using analysis of variance (ANOVA) and chi square analysis. This allowed us to determine which variables to control in subsequent analyses. Correlational and chi-square analyses assessed the simple correlations between the constructs and identified covariates in the regression procedures.

Regression analyses were used to assess the association between caregiver empowerment, child asthma symptoms and ED visits. ANOVAs were used to examine differences in caregiver empowerment by caregiver nativity. Regression analyses were completed separately for US-born and foreign-born caregivers to examine differences in the association of caregiver empowerment with asthma symptoms and ED use for each group. A p value of .05 was used to assess the significance of the results. To assess the effect size of ANOVAs partial omega squares (ω^2_p) are reported, and interpreted as small (.01), medium (.06) or large (.14) (Cohen, 1988). For chi-square analyses, Cramer's Phi (ϕ_c) is presented and the adjusted R^2 is used to assess effect size in regressions.

Results

Sample descriptive data appear in Table 1. The sample included 141 children and caregivers. Participants were mostly female (51%) with a mean age of 8.33 (SD= .86). The sample was predominantly Latina, with 51.1% of caregivers self-identifying as Latino, 30.7% as AA and 18.2% as NLW. Caregiver country of birth included mainland US ($n=73$), the island of Puerto Rico ($n=25$), Dominican Republic ($n=23$) and other ($n=16$). Most caregivers were US-born (51.8%), and (71.5%) reported household incomes below the poverty threshold. More Latino (43%) families reported incomes below the poverty threshold, $\chi^2 = 17.92$, $p < .001$. Asthma severity ranged from mild intermittent to severe persistent. Given our interest in ED use, those with mild intermittent asthma ($n=7$) and participants with missing data ($n=4$) were removed from the main analyses. The main study analyses included 130 participants.

Preliminary Analysis

Patient activation differed by preferred caregiver language, $F(1, 120) = 4.2$, $p = .04$; caregivers who preferred English ($M=79.1$) reported higher engagement and collaboration with asthma providers than caregivers who preferred Spanish ($M=74.4$). There were differences in the service domain of caregiver empowerment, $F(1, 120) = 3.9$, $p = .04$, with caregivers who prefer English ($M=4.4$) reporting greater ease collaborating with asthma providers than those who preferred Spanish ($M=4.2$) (Table 2). Those below the poverty threshold (36.2%) were more likely to endorse no ED visits relative to those above (20.8%, $\chi^2 = 5.63$, $p = .04$) (Table 3). We controlled for poverty threshold and caregiver preferred language in the main analyses.

Caregiver empowerment, child asthma symptoms and ED use

Stepwise regression was used to examine the contribution of caregiver empowerment to proportions of days with child asthma symptoms. Poverty threshold and caregiver preferred language were entered in the first step, followed by each of the caregiver empowerment variables (patient activation, family, service, and community) entered on separate steps. Empowerment in the family, $F(1, 108) = 8.7$, $p = .004$ and service, $F(1, 107) = 4.7$, $p = .03$ domain added significantly to the model. Greater caregiver empowerment in the family domain, $\beta = -.53$, $p < .001$, was associated with lower proportion of days with child asthma symptoms. Greater caregiver empowerment in the service domain, $\beta = .32$, $p = .05$, was associated with greater child asthma symptom days (see table 4). Results suggest that when

caregivers feel more empowered to address within the family domain, families are also less likely to endorse child asthma symptoms. Contrary to our hypotheses, caregivers who endorsed greater level of empowerment when dealing with service providers, reported more child asthma symptoms.

The role of caregiver empowerment in predicting ED visits was examined using stepwise logistical regression. The findings were not significant (see table 5 for odd ratios).

We examined differences in caregiver empowerment as a function of caregiver nativity. We found differences in patient activation, $F(1, 120) = 8.3, p = .005$, with US-born caregivers ($M = 80.5$) reporting higher levels of patient activation than foreign-born caregivers ($M = 74.9$) (see table 2). US-born caregivers reported engaging in more active collaboration, and information seeking with asthma providers when compared with foreign-born caregivers.

To assess whether the association of caregiver empowerment with proportion of days with asthma symptoms and ED use differed as a function of caregiver nativity, we completed the regression analyses as described above, separately for US-born and foreign-born caregivers (see table 4). For US-born caregivers, empowerment within the service domain was a significant contributor to the final model, $F(1, 54) = 4.9, p = .03, \beta = .47, p = .01$. Contrary to what we expected, results indicate that for US-born caregivers, their ability to collaborate and advocate with asthma care providers, is related to more child asthma symptoms. For foreign-born caregivers, empowerment within the family domain was a significant contributor to the model $F(1, 46) = 5.4, p = .02, \beta = -.46, p = .04$. For foreign-born caregivers competence and ability to address problems within the family domain were related to fewer child asthma symptoms.

To examine the association with ED use, we ran separate logistic regression models for US-born and foreign-born caregivers. The models were not significant (see table 5), suggesting that caregiver empowerment did not contribute to ED use.

Discussion

Caregiver empowerment includes the caregiver's: 1) knowledge of asthma and asthma management behaviors, 2) knowledge of the healthcare system and 3) comfort advocating for their child's treatment. Caregiver empowerment was assessed across the family domain (ability to address problems within the family), the asthma services domain (ability to advocate and address concerns with asthma providers), and the community domain (ability to positively impact concerns within their community). Comfort asking questions and collaborating with asthma providers within an encounter was included in assessing caregiver empowerment (Alegria et al., 2008).

Greater caregiver empowerment in the family domain was associated with fewer proportion of days with child asthma symptoms. Caregivers with a greater sense of control within their families may feel more confident in managing their child's asthma, using medications as prescribed, and avoiding asthma triggers and this may have resulted in less frequent child asthma symptoms. Contrary to our hypotheses, greater empowerment within the service domain was associated with greater proportion of days with child asthma symptoms. For

children who experience more symptoms, caregivers may have more frequent interactions with asthma care providers. As a result, caregivers may endorse greater comfort and ability to collaborate with providers, and advocate for their child's needs.

For US-born caregivers, empowerment within the service domain was associated with greater proportion of days with child asthma symptoms. Greater comfort collaborating and advocating for children with the provider may arise for US-born caregivers given more frequent contact with providers because of the need to control more frequent asthma symptoms. US-born caregivers may be more familiar and comfortable with the medical system and what is expected from caregivers in a medical appointment and this contributed to their greater empowerment in this domain.

For foreign-born caregivers, empowerment within the family domain was associated with less reported child asthma symptoms. Foreign-born caregivers, who may be dealing with an unfamiliar system of care, may experience family as a domain where they feel more comfortable controlling and making decisions about their child's asthma. Further, foreign-born caregivers endorsed lesser comfort when collaborating with service providers and taking on an active role within a medical appointment. While information about the language spoken with the child's asthma providers is unavailable, foreign-born caregivers were found to be less likely to speak English, and that may have impacted their comfort level and understanding of the encounter and treatment plan. Beliefs about the patient-doctor relationship, e.g., deferent approach to the provider, may impact foreign-born caregiver's expectations about collaboration with providers (Sidora-Arcoleo, Feldman, Serebrisky, & Spray, 2012).

These findings indicate the need for clinical interventions that explore how to enhance caregivers' empowerment within the context of medical encounters. Training providers to develop an atmosphere of collaboration that supports caregiver curiosity and questioning of asthma treatment decisions may encourage caregiver empowerment. Findings suggest the importance of developing clinical interventions aimed at better understanding caregiver empowerment within the family domain and applying it to strategies in the home that support asthma management (e.g., creating an asthma friendly bedroom).

Limitations

Given our interest in understanding mechanisms contributing to asthma outcomes in this high risk population (urban ethnically diverse children) the results may not be generalizable to other populations. The sample size is relatively small, particularly for evaluation of associations by caregiver nativity, and this may have impacted our ability to detect meaningful effects. Nevertheless the significant associations found indicate that caregiver empowerment and its association with children's asthma symptoms is worthy of further research with larger samples. While the caregiver empowerment measures have been validated in similar populations, they were adapted specifically for use with this pediatric asthma population. Consequently, there may be aspects of the experience of caregiver empowerment that are not well captured in this sample. The development of caregiver empowerment measures specific to child asthma management is an important next step in research. Additional mechanisms, including caregiver self-efficacy, may contribute to the

associations found herein and warrant further study. We did not find an association between caregiver empowerment and ED use. If caregivers perceive asthma as an acute condition that can only be resolved through emergency interventions, their sense of empowerment may not be adequately captured in the literature.

Examining the interaction between caregiver empowerment and barriers to care (e.g., lack of bilingual providers), beyond the caregiver's control is a complex issue that needs to be further investigation. Results support previous findings highlighting the role of caregiver nativity (Koinis-Mitchell et al., 2011) in child asthma outcomes. Further study is needed to better understand factors underlying this association, as well as the association between caregiver empowerment and ED use. Future studies with larger samples are needed to better understand the association of empowerment with asthma service providers and child asthma symptoms for foreign-born caregivers. Additionally, it is important to further assess the role of acculturative stress, perceptions of discriminations, as well as, beliefs about asthma (e.g. medications, etiology) in the association of caregiver empowerment and child asthma outcomes.

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Table 1

Participant Characteristics as a Percentage of the Sample & Demographic Differences by Parent Self-Reported Ethnic Group

Study participants	Sample N=137	Latino n=70	Af. American n=42	NL White n=25	χ^2 / F (Effect Size) ---
Age, in years M (SD)	8.38 (0.86)	8.31 (0.86)	8.44 (0.86)	8.44 (0.92)	
Child sex					6.06* (.04)
Male	51	25	20	6	
Female	49	25	11	13	
Parent language					41.62*** (.22)
English	74	25	30	18	
Spanish	26	25	2	0	
Caregiver nativity					36.59*** (.21)
U.S. Born	53	15	20	18	
Foreign Born	47	36	10	1	
Poverty Status					17.92*** (.11)
> poverty threshold	29	8	10	11	
poverty threshold	71	43	21	7	
Asthma Severity					12.09 (.19)
Mild Intermitent	5	2	1	2	
Mild Persistent	40	22	9	9	
Moderate Persistent	36	19	11	6	
Severe Persistent	19	8	10	1	
ED visits (in 12 months)					5.65 (.03)
No visits	56.9	30.8	13.1	13.1	
One or more visits	43.1	20	17.7	5.4	

Note. Effect sizes are presented following the respective statistic for F values the partial omega squares (ω^2_p) are reported, and for chi square analyses. Cramer's Phi (ϕ_c) are reported

* $p < .05$;

** $p < .01$;

*** $p < .001$

Table 2

Mean differences in caregiver empowerment variables by key demographic variables

	Family <i>M (SD)</i>	<i>F</i> (ω^2_p)	Service <i>M (SD)</i>	<i>F</i> (ω^2_p)	Community <i>M (SD)</i>	<i>F</i> (ω^2_p)	Pt. Act. <i>M (SD)</i>	<i>F</i> (ω^2_p)
Sample (<i>N</i> =122)	4.5 (.43)		4.3 (.56)		2.8 (.88)		77.9 (10.8)	
P. Threshold: Above (<i>n</i> =33)	4.5 (.44)	.04 (.01)	4.5 (.42)	2.1 (.02)	2.9 (.66)	.39 (.00)	80.8 (6.9)	3.2 (.01)
Below (<i>n</i> =89)	4.5 (.43)		4.3 (.60)		2.8 (.95)		76.9 (11.8)	
Ethnicity: Latino (<i>n</i> =63)	4.4 (.45)	1.1 (.00)	4.3 (.59)	1.2 (.01)	2.7 (.85)	2.5 (.01)	75.8 (12.6)	2.6 (.03)
Afr. American (<i>n</i> =38)	4.6 (.36)		4.4 (.49)		3.0 (.89)		79.7 (8.8)	
NLW (<i>n</i> =21)	4.4 (.48)		4.4 (.59)		2.6 (.87)		81.1 (6.5)	
Nativity: US Born (<i>n</i> =66)	4.5 (.42)	1.3 (.00)	4.4 (.53)	1.9 (.00)	2.8 (.90)	.03 (.00)	80.5 (7.8)	8.3 *** (.07)
Foreign Born (<i>n</i> =56)	4.4 (.44)		4.3 (.58)		2.8 (.86)		74.9 (12.9)	
Cg. Lang: English (<i>n</i> =89)	4.5 (.40)	3.5 (.01)	4.4 (.52)	3.9* (.02)	2.8 (.92)	.88 (.00)	79.1 (9.4)	4.2* (.02)
Spanish (<i>n</i> =33)	4.4 (.48)		4.2 (.65)		2.9 (.76)		74.7 (13.4)	

Note. Family - Family subscale of the Family Empowerment Scale; Service – Service subscale of the Family Empowerment Scale; Community – Community subscale of the Family Empowerment Scale; and Pt Act. : Patient Activation Scale; P. Threshold-Poverty threshold, Cg. Lang- Caregiver preferred language.

Partial Omega Squares (ω^2_p) are presented as the effect size for the *F* values.

*
p < .05;

**
p < .01;

p < .001.

Table 3
Differences in ED Use and Proportion of Days with Asthma Symptoms by Demographic Variables

	ED Use [§] Percentage with no visits	$\chi^2(\phi)$	Proportion of Asthma Symptoms ^{§§} <i>M (SD)</i>	<i>F</i> (ω^2_p)
Entire Sample	45.7		.13 (.17)	
Poverty Threshold:				
Above (n=32)	20.8	5.43* (.22)	.14 (.19) (n=31)	.15 (.01)
Below (n=77)	36.2		.12 (.17) (n=83)	
Ethnicity:				
Latino (n=56)	30.8		.13(.19)	
African American (n=31)	13.1	5.65 (.22)	.12 (.12)	.09 (.01)
Non-Latino White (n=22)	13.1		.13 (.18)	
Nativity:				
US Born (n=57)	32.3		.13(.14) (n=60)	
Foreign Born (n= 52)	24.6	.93 (.09)	.12 (.20) (n=54)	.05(.01)
Caregiver Language: English(n=82)	43.1		.12 (.15) (n= 83)	
Spanish (n=27)	13.8	.29 (.05)	.13 (.24) (n=31)	.07(.01)

Note.

[§]For ED use $n=109$.

^{§§}For asthma symptoms $n= 114$, with Latino ($n=60$), AA ($n=34$), NLW ($n=20$).

* $p < .05$;

** $p < .01$;

*** $p < .001$

Hierarchical Regression Predicting Proportion of Days with Asthma Symptoms from Caregiver Empowerment Variables for the Overall Sample, and for US-Born and Foreign Born Caregivers

Table 4

Variables	B	SE B	β	Full Model				
				R ²	Adj. R ²	F	F	F
Overall Sample (N=113)				.01	.07	.62	2.52*	
Constant	.55	.20						
Poverty Threshold	.01	.04	.02					
Caregiver Pref. Language	-.01	.04	-.02					
Patient Activation	.01	.01	.05					
Family	-.21	.06	-.53***					
Service	.09	.05	.32*					
Community	.02	.02	.08					
US Born Caregivers (n=60)				.01	.07	.20	1.79	
Constant	.57	.26						
Poverty Threshold	.03	.04	.10					
Caregiver Pref. Language	-.10	.09	-.15					
Patient Activation	-.01	.01	-.02					
Family	-.19	.07	-.54*					
Service	.13	.06	.48*					
Community	-.01	.02	-.06					
Foreign Born Caregivers (n=53)				.03	.05	1.48	1.50	
Constant	.64	.34						
Poverty Threshold	-.03	.08	-.05					
Caregiver Pref. Language	.01	.06	.01					
Patient Activation	.01	.01	.11					
Family	-.21	.10	-.46*					

Variables	<i>B</i>	<i>SE B</i>	β	Full Model				<i>F</i>	<i>F</i>
				<i>R</i> ²	<i>R</i> ²	Adj. <i>R</i> ²	<i>F</i>		
Service	.04	.09	.11						
Community	.05	.04	.20						

Note.

* *p*<.05;

** *p*<.01;

*** *p*<.001.

For poverty threshold those above the threshold were coded as 1, below the threshold was coded as 0; for caregiver language spanish was coded as 1 and English as 0.

Table 5

Bivariate Logistical Regression for Emergency Department Use

Variable	OR	CI
Overall Sample (N=123)	---	
Poverty Threshold	.36	.14–.88
Caregiver Preferred Language	1.18	.49–2.84
Patient Activation	.98	.94–1.02
Family	.54	.13–2.18
Service	2.66	.74–9.27
Community	1.22	.74–2.02
US Born Caregivers (n=66)		
Poverty Threshold	.80	.26–2.45
Caregiver Preferred Language	1.19	.08–17.43
Patient Activation	.94	.87–1.02
Family	.58	.07–4.85
Service	4.45	.61–32.42
Community	1.25	.64–2.46
Foreign Born Caregivers (n=57)		
Poverty Threshold	.06	.01–.62
Caregiver Preferred Language	1.69	.49–5.77
Patient Activation	1.01	.95–1.07
Family	.65	.08–5.17
Service	1.59	.25–9.94
Community	1.29	.55–2.98

Note.

*
 $p < .05$;**
 $p < .01$;***
 $p < .001$.

OR = Odds Ratio; CI = 95% Confidence Interval