The Role of Alternate Caregivers in the Management of Pediatric Asthma

David A. Fedele, PhD, Alvina Rosales, MS, Robin S. Everhart, PhD, Daphne Koinis-Michell, PhD, Glorisa Canino, PhD, Greg K. Fritz, MD, and Elizabeth L. McQuaid, PhD

1Department of Clinical and Health Psychology, University of Florida, 2Bradley/Hasbro Children's Research Center, 3Department of Psychology, Virginia Commonwealth University, and 4Behavioral Sciences Research Institute, University of Puerto Rico Medical Sciences Campus

All correspondence concerning this article should be addressed to David A. Fedele, PhD, Department of Clinical and Health Psychology, University of Florida, PO Box 100165, Gainesville, FL 32608, USA. E-mail: dfedele@phhp.ufl.edu

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Objective The current study examined the role of alternate caregivers (i.e., caregivers living outside of the home who spend at least 6 hr per week caring for the child) in a sample of Latino and non-Latino White (NLW) families with a child with asthma. Methods Participants included 665 families of children with asthma from NLW, Puerto Rican, and Dominican backgrounds from Rhode Island and Puerto Rico. All caregivers completed a validated semistructured family interview assessing asthma management strategies in the family context. Results 22 percent of families identified an alternate caregiver. Alternate caregiver involvement was highest among Island Puerto Rican families. Island Puerto Rican families who reported alternate caregiver involvement were rated as having higher medication adherence and more balanced adaptation to the demands of asthma management. Conclusions Alternate caregivers may play an important role in family asthma management, especially among some Latino subgroups.

Key words asthma; culture; family functioning.

Health disparities in pediatric asthma are well documented and multidetermined (see Canino et al., 2006 for review). Ethnic minority and disadvantaged families experience greater asthma burden and health-care utilization than non-Latino Whites (NLWs; Akinbami & Schoendorf, 2002). The need to examine heterogeneity within groups and across countries has been underscored in Latino families to further understand health disparities in asthma. Children born in Puerto Rico (PR) have a higher prevalence of asthma than PR children born in the mainland United States (Lara, Akinbami, Flores, & Morgenstern, 2006). Within Latino groups living in the mainland United States, Latinos of Caribbean descent, such as families from PR and the Dominican Republic (DR), are also at greater risk for asthma morbidity than NLWs (Lara et al., 2006).

Increased risk for asthma morbidity among Latino children may also stem from differences in asthma management and medication adherence. Objectively measured rates of medication adherence have been found to be lower among Latino children with asthma relative to NLW children (McQuaid et al., 2012). Research has also suggested that Latino families may find it more challenging to integrate asthma management behaviors and skills into their daily lives (Everhart et al., 2014), potentially due to reduced access to medical care and education, among other factors (Canino, McQuaid, & Rand, 2009). Because the family system exerts a proximal influence on daily child asthma care (Kaugars, Klinnert, & Bender, 2004), more research is needed that focuses on understanding the family system among Latino families with a child with
asthma, and the family’s role in child asthma management and medication adherence.

Appropriate integration of asthma management into the family system is a key component of asthma management (McQuaid, Walders, Kopel, Fritz, & Klinnert, 2005). As a chronic illness highlighted by a variable course, asthma management includes preventative and emergency treatment (National Heart, Lung, and Blood Institute [NHLBI], 2007). Incorporation of asthma management practices into family routines are likely to improve medication adherence and are critical to successful asthma management and reduced asthma morbidity (Fiese & Wamboldt, 2000, 2003). Further, families with higher balanced integration of asthma and family life, or the ability to appropriately manage asthma and potential exacerbations while concurrently limiting distress and interference from asthma management in daily activities, have been shown to demonstrate higher child medication adherence and lower levels of parenting stress (Celano, Klinnert, Holsey, & McQuaid, 2011; McQuaid et al., 2005).

Despite Latino children being at greater risk for asthma morbidity, the family system may be a protective factor because many Latino families may have strong family resources that could decrease the likelihood of asthma management difficulties. For instance, a value that is often emphasized in the Latino community is familismo, or a strong family orientation, which encourages connections and support among immediate and extended family members (Marin & Marin, 1991; Vega, 1990; Villarreal, Blozis, & Widaman, 2005). Family cohesion and familial support have been linked to higher adherence and health outcomes among adolescents with diabetes (Hsin, La Greca, Valenzuela, Taylor Moine, & Delamater, 2010; La Greca et al., 1995). Koinis-Mitchell et al. (2012) also found that higher levels of family connectedness were related to lower levels of functional limitation among children with asthma living in urban settings. Latino families who have potentially moved away from some of their family system through immigration (e.g., DR families) or migration to mainland United States (e.g., PR families) can experience higher levels of acculturative and psychological distress and may no longer have the same family supports they had in their native region or country (Calzada, Tamis-LeMonda, & Hirokazu Yoshikawa, 2012; Koinis-Mitchell et al., 2012). Limited family support may make it necessary to rely on others for childcare, which can impact asthma management.

Understanding the family system and its impact on child asthma management and health outcomes in Latino families is contingent on accurately identifying all individuals that participate in taking care of the child with asthma, including individuals who are not the primary caregiver (hereafter referred to as alternate caregivers). Despite early calls for examination of alternate caregivers in disease management and outcomes, there is a relative dearth of research within this area in pediatric psychology (Kazak, Rourke, & Navasria, 2009). Previous research has focused on extended family members and suggests that their involvement can be positive. For instance, among children with cerebral palsy, families that incorporated extended family care were found to have lower hospitalization rates and levels of stress (Weiss, Marvin, & Pianta, 1997).

Investigating the role of the larger family system, including individuals living outside the home that are still substantially involved in the child’s care (i.e., alternate caregivers) may be especially important among Latino families. Latino families appear more likely to have frequent contact with alternate caregivers than NLW families (Sarkisian, Gerena, & Gerstel, 2006). However, differences in where Latino families reside may be a key factor to consider. Proximity of potential alternate caregivers and adequacy of instrumental support can be higher in Island PR families than those living in the United States, leading some to suggest that social cohesion may be lower in mainland Latino families (Landale & Oropesa, 2001). The role of the alternate caregiver in the disease management of a child with a chronic illness such as asthma has not been examined. This remains an area of inquiry with added relevance for Latino families that may increase our ability to appropriately address health disparities from a family systems perspective (Antshel, 2002).

**Current Study**

The current study compared the role of alternate caregivers in a diverse sample of families of children with asthma. To explore within group heterogeneity, groups were compared based on the ethnic background and site, yielding four different groups: NLW, PR, and DR families residing in Rhode Island (RI), and PR families residing in PR. For purposes of this study, we define alternate caregiver as an adult living outside of the child’s home who spends at least 6 hr per week caring for the child. We investigated the relation of alternate caregivers to the child (e.g., grandmother, uncle), the average weekly length of time they spent in a caregiving role, their knowledge and involvement in asthma management, and the primary caregiver’s confidence in the alternate caregiver’s asthma management abilities. We also sought to determine whether families with and without an identified alternative caregiver differed on Family Asthma Management System.
family group served to moderate these associations. Medication adherence and balanced integration FAMSS ratings were chosen because of the likely impact alternate caregivers may have on these domains. Other FAMSS subscales (e.g., asthma knowledge) are unlikely to be influenced by alternate caregivers.

We hypothesized that Island PR families would be more likely to identify an alternate caregiver compared with Latino families in RI and NLW families, as they are likely to have more access to extended family in their region of origin (Landale & Oropesa, 2001). Because of likely inclusion of extended family members in asthma management, we hypothesized that Island PR families who report having an alternate caregiver would find it less challenging to balance and integrate asthma into daily life as compared with RI Latino and NLW families. We also hypothesized that families who report having an alternate caregiver would be rated as having lower medication adherence owing to a greater diffusion of illness-related responsibility.

**Method**

**Participants**

Data were from a larger investigation (n = 805) that evaluated mechanisms contributing to pediatric asthma disparities between Latino and NLW groups in RI and PR (Canino et al., 2009). Previous reports from the larger study have examined asthma severity, medication use, adherence, immigration, and acculturation (Canino et al., 2009). The current study is unique in examining the role of alternate caregivers in disease management. Data from only one child per family were included in this investigation, which resulted in a sample of 665 families (Table I).

**Procedure**

Eligible participants were youth between 7 and 16 years old with asthma from PR, DR, or NLW backgrounds, and their primary caregivers. Participants were recruited from hospital-based and community primary care clinics, community events, and asthma education classes. (For a full description of the methods and sample, see Canino et al., 2009.) Confirmation of asthma diagnosis was completed by a study clinician (i.e., pediatric allergist or pediatric nurse practitioner) through a review of the child’s medical history, physical examination, and spirometry. Participants with complicating respiratory conditions were excluded.

The study protocol was approved by institutional review boards in RI and PR. Informed written consent and demographic information were obtained at enrollment. Data collection for the larger study occurred in four study visits over 4 months. Three study visits were conducted in participants’ homes by trained research assistants, and a clinic visit was conducted in a hospital setting by a study physician or nurse practitioner. Data included in this study were collected at the second study visit when caregivers and children jointly completed the FAMSS interview (McQuaid et al., 2005) and completed survey instruments. The FAMSS interview was conducted with a primary caregiver and target child. If a family completed the FAMSS on multiple children, data from only the first FAMSS interview were included in the current study, which was typically conducted with reference to the child that the caregiver perceived to have more severe asthma. The clinic visit was scheduled immediately afterward, often within the same week.

**Measures**

**Asthma Severity**

Asthma severity was evaluated by a study clinician during the clinic study visit. Asthma severity was determined via physical examination, medical history, report of symptom frequency, prealbuterol FEV1, and current controller medication dose. Asthma severity was classified into the following four levels: “mild intermittent,” “mild persistent,” “moderate persistent,” and “severe persistent.” These categories are consistent with Global Initiative for Asthma and National Asthma Education and Prevention Program guidelines in place at the time of the study (Masoli, Fabian, Holt, & Beasley, 2004; NHLBI, 2007).

**Family Asthma Management System Scale**

The FAMSS is an established semistructured interview (McQuaid et al., 2005) that assesses a family’s strengths and weaknesses in several domains of asthma management. The FAMSS is conducted with the child and at least one primary caregiver that allows both parties to discuss aspects of asthma management including symptom assessment, asthma response plans, trigger control, and medication usage in detail. FAMSS interviewers and raters received thorough training through regularly scheduled meetings in which multiple blind ratings are compared. In the event of discordant ratings, consensus was achieved through group discussion using standard ratings (McQuaid et al., 2005).

For the current study, the Medication Adherence and Balanced Integration of Asthma and Family Life subscales served as dependent variables. The Medication Adherence
subscale assesses the prescribed medication regimen including availability, frequency of use, and adherence. The Balanced Integration of Asthma and Family Life subscale measures the ability of the family to integrate or balance the demands of asthma management with other life demands in a developmentally appropriate manner (e.g., school attendance). Each subscale is rated on a 9-point scale, with higher values corresponding to better asthma management practices.

This study also included the Management by Alternate Caregivers subscale from the FAMSS to determine alternate caregiver status and assess the primary caregiver’s perception of the ability of alternate caregivers to appropriately manage and care for the child diagnosed with asthma (e.g., administering medications). To determine alternate caregiver status, participants were asked the following question during the FAMSS interview: “Who else takes care of your child more than six hours per week outside the home?” Families who identified someone who met these criteria (yes/no) were coded as having an alternate caregiver who cares for the child diagnosed with asthma. Currently, we are unaware of published criteria to identify an alternate caregiver. Six hours per week was chosen as a cutoff point based on the assumption that these individuals would likely have a role in the child’s asthma management. Primary caregivers were also asked to indicate (1) if the alternate caregiver gave any medications (yes/no); (2) their perception of the alternate caregiver’s asthma symptom and trigger knowledge (does not know, knows some, knows all); and (3) their confidence, ranging from “not at all confident” to “very confident,” of the alternate caregiver to notice their child’s breathing problems, care for their child’s breathing problems, and give medications correctly. The alternate caregiver who spent the most time with the child was used when more than one was identified.

The FAMSS overall score has good internal reliability ($\alpha = .84$; McQuaid et al., 2005). Subscales of the FAMSS have been significantly associated with asthma morbidity and have demonstrated strong convergent validity with measures of parent asthma knowledge and child self-efficacy (McQuaid et al., 2005). Additionally, the FAMSS medication adherence subscale has been correlated with objective medication monitoring (McQuaid et al., 2005) and is classified as a well-established measure of adherence (Quittner, Modi, Lemanek, Ievers-Landis, & Rapoff, 2008).

For the larger study ($n = 56$), FAMSS interviews were randomly selected and rated by study personnel. Intraclass correlations (ICCs) for FAMSS subscales were > .70. The ICC for the Management by Alternate Caregivers subscale was .80. Cronbach’s alpha for the current study was .89.

Overview of Analyses

Preliminary analyses comparing demographic variables across Island PR and RI PR, DR, and NLW families were conducted (Table I). Asthma severity and poverty threshold status (yes/no) were included as covariates in appropriate subsequent analyses to account for potential changes in

<p>| Table I. Demographics of Children and Caregivers |
|---------------------------------|----------------|----------------|----------------|----------------|----------------|</p>
<table>
<thead>
<tr>
<th></th>
<th>Island PR $n = 302$</th>
<th>RI PR $n = 102$</th>
<th>RI DR $n = 122$</th>
<th>RI NLW $n = 139$</th>
<th>$p$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Child age</td>
<td>10.58 (2.53)</td>
<td>10.51 (2.39)</td>
<td>10.53 (2.49)</td>
<td>10.57 (2.61)</td>
<td>.994</td>
</tr>
<tr>
<td>Asthma severity</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mild intermittent</td>
<td>93 (30.8%)</td>
<td>12 (11.8%)</td>
<td>17 (13.9%)</td>
<td>28 (20.1%)</td>
<td>&lt; .001</td>
</tr>
<tr>
<td>Mild persistent</td>
<td>94 (31.1%)</td>
<td>27 (26.5%)</td>
<td>22 (18.0%)</td>
<td>36 (25.9%)</td>
<td>&lt; .001</td>
</tr>
<tr>
<td>Moderate persistent</td>
<td>84 (27.8%)</td>
<td>38 (37.3%)</td>
<td>38 (31.1%)</td>
<td>44 (31.7%)</td>
<td>&lt; .001</td>
</tr>
<tr>
<td>Severe persistent</td>
<td>31 (10.3%)</td>
<td>25 (24.3%)</td>
<td>45 (36.9%)</td>
<td>31 (22.3%)</td>
<td>&lt; .001</td>
</tr>
<tr>
<td>Child gender, female</td>
<td>134 (44.4%)</td>
<td>49 (48.0%)</td>
<td>54 (44.3%)</td>
<td>30 (36.0%)</td>
<td>.245</td>
</tr>
<tr>
<td>Primary caregiver identity</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Biological mother</td>
<td>289 (95.7%)</td>
<td>92 (90.2%)</td>
<td>113 (92.6%)</td>
<td>127 (91.4%)</td>
<td>&lt; .001</td>
</tr>
<tr>
<td>Biological father</td>
<td>1 (0.3%)</td>
<td>2 (2.0%)</td>
<td>7 (5.7%)</td>
<td>8 (5.8%)</td>
<td>&lt; .001</td>
</tr>
<tr>
<td>Other female caregiver</td>
<td>10 (3.3%)</td>
<td>8 (7.9%)</td>
<td>1 (0.8%)</td>
<td>3 (2.1%)</td>
<td>&lt; .001</td>
</tr>
<tr>
<td>Other male caregiver</td>
<td>2 (0.6%)</td>
<td>–</td>
<td>–</td>
<td>1 (0.7%)</td>
<td>&lt; .001</td>
</tr>
<tr>
<td>Below poverty threshold</td>
<td>183 (60.6%)</td>
<td>62 (60.8%)</td>
<td>71 (58.2%)</td>
<td>20 (14.4%)</td>
<td>&lt; .001</td>
</tr>
<tr>
<td>Primary caregiver years of education</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mother</td>
<td>13.27 (2.96)</td>
<td>11.67 (2.59)</td>
<td>12.08 (2.65)</td>
<td>14.53 (2.28)</td>
<td>&lt; .001</td>
</tr>
<tr>
<td>Father</td>
<td>12.73 (2.80)</td>
<td>11.11 (2.31)</td>
<td>11.97 (3.04)</td>
<td>14.18 (2.36)</td>
<td>&lt; .001</td>
</tr>
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Note. Comparisons made using chi-square tests or Fisher’s exact tests for categorical data and analysis of variance for continuous data.

PR = Puerto Rico; DR = Dominican Republic; NLW = non-Latino White.
Alternate caregiver involvement due to elevated child asthma severity (without accounting for adherence) or lower socioeconomic status. Exploratory descriptive analyses were conducted to examine the number of reported alternate caregivers in the current study, the type of relationship (e.g., grandparent) alternate caregivers have with the child diagnosed with asthma, and the number of hours per week the alternate caregiver spent in a caretaking role.

Chi-square analyses were conducted to determine whether having an alternate caregiver differed across Island PR and RI PR, DR, and NLW families. Analyses of covariance (ANCOVAs) were conducted to examine whether families differed on the Management by Alternate Caregivers subscale and the average length of time alternate caregivers spent in a caregiving role. Fisher’s exact tests were used to determine whether the proportion of alternate caregivers who were reported to be in a caregiving role with the child for 20.50 hr per week (SD = 16.77, range = 6–62).

**Alternate Caregivers Across Island PR and RI PR, DR, and NLW Families**

The percentage of families who identified an alternate caregiver was significantly different across families, $\chi^2 (3, N = 665) = 40.79, p < .001$. A higher percentage of Island PR families identified an alternate caregiver (32.1%) compared with RI NLW (10.1%), RI DR (15.6%), or RI PR (10.8%) families. The alternate caregiver’s ability to manage child asthma appropriately (e.g., response to exacerbations) as measured by the Management by Alternate Caregivers subscale scores did not differ across families, on average (F(3,113) = .84, $p > .05, \eta_p^2 = .02$). ANCOVA revealed that the average length of time alternate caregivers were reported by primary caregivers to be in a caregiving role with the child diagnosed with asthma did not differ across families (F(3,103) = .44, $p > .05, \eta_p^2 = .01$).

**Alternate Caregiver Involvement in Medication Administration**

The proportion of families in which the alternate caregiver was involved in medication administration was different across families, $p < .001$. Primary caregivers reported that Island PR alternate caregivers were involved in medication administration most often (92.8%) compared with RI NLW (64.3%), RI DR (57.9%), or RI PR (54.5%) alternate caregivers.

**Alternate Caregiver’s Knowledge of Asthma Management**

Primary caregivers’ perception of alternate caregivers’ asthma symptom knowledge did not differ across families ($p > .05$). Primary caregivers’ perception of alternate caregivers’ trigger knowledge varied across families ($p = .001$). Specifically, 54.6% of Island PR alternate caregivers were reported by primary caregivers to know all triggers that the child should avoid compared with 36.8% of RI DR, 30.0% of RI PR, and 21.4% of RI NLW alternate caregivers.

**Caregiver Confidence in Alternate Caregiver**

Primary caregivers’ confidence in the ability of alternate caregivers to provide care for their child’s breathing problems did not differ across families. Primary caregivers’ confidence in the ability of alternate caregivers to notice that their child is experiencing breathing problems differed

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**Results**

**Alternate Caregivers Characteristics**

Across RI and PR, 141 of 665 (21.2%) families identified having an alternate caregiver for their child diagnosed with asthma. The majority of alternate caregivers were reported to be grandmothers (56.0%), followed by “other” females (20.6%), aunts (13.5%), day-care providers (5.0%), grandfathers (2.1%), both grandparents (1.4%), biological sisters (0.7%), and female cousins (0.7%). On average, alternate caregivers were reported to be grandmothers (56.0%), followed by “other” females (13.5%), day-care providers (5.0%), grandfathers (2.1%), both grandparents (1.4%), biological sisters (0.7%), and female cousins (0.7%).
The Role of Time Alternate Caregivers Spend With Child

The amount of time the alternate caregiver was reported to spend in a caregiving role was unrelated to the primary caregivers’ confidence in the ability of alternate caregivers to notice that their child is experiencing breathing problems, provide care for their child’s breathing problems, or administer medications (p > .05). Similarly, there was no relationship between time alternate caregivers spent in a caregiving role and the Management by Alternate Caregivers, Medication Adherence, and Balanced Integration subscales of the FAMSS (p > .05).

Alternate Caregiver Status and FAMSS Subscales

Medication Adherence
ANCOVA revealed a significant effect for family group (F(3,578) = 4.24, p = .006, ηp² = .02) on the Medication Adherence subscale such that RI NLW families (M = 6.00, SD = 1.83) had significantly higher Medication Adherence than Island PR (M = 4.74, SD = 1.68) and RI PR (M = 4.81, SD = 1.80) families. There was not a significant effect for alternate caregiver status (F(1,578) = 1.24, p > .05, ηp² = .00). Main effects were qualified by a significant interaction (family group by alternate caregiver status; F(3,578) = 3.33, p = .019, ηp² = .02). Bonferroni-adjusted post hoc analyses revealed a main effect for alternate caregiver status among Island PR families (F(1,578) = 5.75, p = .017, ηp² = .01) such that families were rated as having higher medication adherence when they reported having an alternate caregiver (see Figure 1).

Balanced Integration of Asthma and Family Life
A significant main effect was found for family group (F(3,586) = 17.66, p < .001, ηp² = .08) such that Island PR families (M = 3.58, SD = 1.83) had significantly lower Balanced Integration of Asthma and Family Life subscale scores than RI NLW (M = 5.54, SD = 1.75), RI DR (M = 5.33, SD = 1.51), and RI PR (M = 4.37, SD = 1.55) families. There were no significant differences in Balanced Integration of Asthma and Family Life subscale scores across alternate caregiver status (F(1,586) = .65, p > .05, ηp² = .00). Main effects were qualified by a significant interaction (family group by alternate caregiver status; F(3,586) = 3.55, p = .014, ηp² = .02). Post hoc analyses again revealed a significant main effect for alternate caregiver status among Island PR families (F(1,586) = 6.28, p = .013, ηp² = .01) such that families who reported having an alternate caregiver were rated as having higher Balanced Integration of Asthma and Family Life subscale scores (Figure 2).

Discussion
The current study examined the presence of alternate caregivers (i.e., caregivers living outside of the home who spend at least 6 hr per week caring for the child) in the daily lives of RI Latino, Island PR, and NLW children with asthma and the extent to which alternate caregivers participate in asthma management. Across the sample, approximately
one in four families reported having an alternate caregiver who was involved in their child’s asthma care. Grandmothers were most commonly identified as alternate caregivers. For families with an identified alternate caregiver, the majority of primary caregivers reported that alternate caregivers were involved in children’s asthma medication management (e.g., medication administration), and that they were confident in alternate caregivers’ ability to manage child asthma. However, primary caregivers indicated that alternate caregivers may not be aware of all of the child’s asthma-related symptoms related to asthma exacerbations or know all of the child’s asthma triggers. These findings add to the family asthma management literature (Kaugars et al., 2004; McQuaid et al., 2005) by providing empirical support for expanding existing asthma management practices that primarily target primary caregivers. The current study reveals the widespread reliance on alternate caregiver support in providing child asthma care. Thus, alternate caregivers should be considered valuable contributors within a child’s asthma treatment plan.

In particular, alternate caregivers may play a central role in Island PR families. Our findings suggest that 32% of Island PR families received care from alternate caregivers, which was twice as much as other groups including RI PR families (15%) and were rated to be more knowledgeable in asthma management compared with RI Latino groups. Moreover, contrary to hypotheses, Island PR families with an identified alternate caregiver were rated as having higher levels of balanced integration and medication adherence than those who did not identify an alternate caregiver. These findings suggest that among Island PR families, the inclusion of an alternate caregiver is related to improved asthma management despite having additional individuals serving a caregiving role. Island PR families are likely to receive support from extended family members, many of whom reside in proximity (Garcia-Preto, 2005; Landale & Oropesa, 2001). This support may be helpful in balancing the daily demands of asthma management within the larger family system and improving medication-taking behaviors. Incorporating alternate caregiver involvement and support may be beneficial in targeting asthma management disparities that have been noted among Island PR families (Canino et al., 2006).

The proportion of alternate caregivers and how the presence of these caregivers relates to asthma management (i.e., balanced integration and medication adherence) were not consistent across Island PR, RI PR, and RI DR families. Rates of alternate caregiver care for RI PR and DR families were closer to that of NLWs. Additionally, counter to findings in Island PR families, RI PR and RI DR families who identified having an alternate caregiver were rated as having poorer medication adherence compared with families who did not identify an alternate caregiver. Factors related to migration, immigration, and acculturation may be important to consider in further disentangling these findings. The extended support systems of these Latino families may be affected when families migrate to mainland United States or travel back and forth to the mainland resulting in reduced family cohesion and less frequent contact with social networks that otherwise may help with asthma management (Koinis-Mitchell et al., 2011). Further, health behaviors may be negatively impacted by intergenerational acculturative stressors, including implementing an asthma treatment plan that may conflict with health beliefs from their place of origin (Koinis-Mitchell et al., 2011; McQuaid et al., 2009). In sum, for Latino families in RI, disrupted family systems and cultural beliefs related to medication usage may contribute to lower rates of adherence among children living in families with alternative caregivers.

Considering findings from the current study, it is possible that RI PR and RI DR families reported less alternate caregiver involvement because of migration or immigration to the United States (e.g., potential alternate caregivers may still reside in the country of origin). RI PR and RI DR caregivers who have migrated or immigrated to the United States might also be experiencing stress related to the acculturation process, which may result in reduced family organization and subsequent family-based asthma management difficulties (McQuaid et al., 2012). Although speculative, it is also possible that some RI PR and RI DR caregivers may adapt similar caregiving practices as NLWs over time and not rely on alternate caregivers as frequently. Clarifying the associations between migration-, immigration-, and acculturation-related factors and alternate caregiver involvement deserves additional research in
the future. Although it is beyond the scope of this study to identify mechanisms underlying differences in adherence, findings potentially suggest the need for interventions that target families who enlist the support of alternate caregivers for their child’s asthma management. Clinicians should work with these families to capitalize on strengths of alternate caregiver engagement, as well as assist with potential barriers.

**Limitations and Future Directions**

The current study was a secondary data analysis of a larger study on asthma disparities; delineating the role of alternate caregivers and their potential linkage to asthma management was not a primary study aim. Thus, we were limited in conducting analyses that could provide further exploration of alternate caregiver’s role in asthma management. For example, we do not have detailed information about alternate caregivers including demographics, reasons for their involvement, and additional measures of their ability to implement asthma management. We also do not have information related to alternate caregivers living in the child’s home, which is common in Latino families living in the United States. (Mutchler et al., 2002). These potential alternate caregivers would have been missed in the current study because of our operational definition of an alternate caregiver. Alternate caregivers were operationally defined as individuals spending ≥6 hr per week outside the home. Future research is needed to determine whether this definition is appropriate for identifying alternate caregivers. Furthermore, the current study does not include families currently living in DR, which limits potential comparisons within this group.

Medication adherence and balanced integration estimates are based on interviewer ratings from a validated semistructured interview (McQuaid et al., 2005). However, the FAMSS does not assess barriers that families may encounter related to accessing the health-care system, which may impact medication adherence and a family’s ability to balance and integrate asthma in daily life. It is also possible that families may over report medication adherence and be unlikely to report experiencing asthma-related distress to interviewers. The Management by Alternative Caregivers subscale of the FAMSS was developed specifically for this study due to concerns that assessing only the nuclear family might not fully capture the range of caregivers involved, particularly for families in Island PR. Additional research is needed to establish the psychometric properties of this subscale. Measurement of alternate caregivers’ asthma knowledge and management abilities are based on the perceptions of primary caregivers. Assessment of these areas from alternate caregivers is needed in future studies. Furthermore, given the role of health beliefs in asthma management among Latinos (McQuaid et al., 2014), future studies should seek to examine health beliefs of alternate caregivers. Finally, future studies should also examine how asthma control and the child’s developmental level in family asthma management (Kaugars et al., 2004) are related to the presence of alternate caregiver involvement.

Despite these limitations, this is the first study to examine alternate caregivers in pediatric asthma and between families in mainland United States and Island PR. A significant portion of families believe that their children are receiving adequate care from alternate caregivers. Future studies should continue to examine the role of alternate caregivers and assistance they provide in asthma management, particularly for families with limited support. Assessment of immigration and acculturation factors related to alternate caregiver involvement and linkage to asthma management are also in need of elucidation. Studies should seek to differentiate between one- and two-parent households, and how this relates to alternate caregiver involvement.

Taken together, the current study reflects a need to consider alternate caregivers in asthma management, especially among Latino families. Given the number of identified alternate caregivers in our sample, clinicians are encouraged to assess for alternate caregivers and their role in the child’s asthma management. It may be useful to integrate alternate caregivers into existing asthma education approaches. Further, encouraging alternate caregivers to understand and recognize asthma symptoms and follow a child’s asthma action plan would likely be beneficial. Alternate caregivers may play an integral role in future efforts to promote effective asthma treatment in Latino and NLW families with a child with asthma.

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The methods of this study are based on a study first reported by Canino et al. (2009).

**Conflicts of interest:** None declared.

**References**


