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Caregiver–Physician Medication Concordance and Undertreatment of Asthma Among Inner-City Children

Kristin A. Riekert, PhD*; Arlene M. Butz, ScD, RN‡§; Peyton A. Eggleston, MD‡; Karen Huss, DNSc, RN§; Marilyn Winkelstein, PhD, RN§; and Cynthia S. Rand, PhD*

ABSTRACT. *Objective.* **To assess the extent to which caregivers and their child's physician agree about the prescribed asthma medication regimen and evaluate factors associated with medication concordance.**

Methods. **A cross-sectional, descriptive survey was administered to 318 caregivers of inner-city children with asthma, aged 5 to 12 years, and their caregiver-identified primary care physician at elementary schools and participants' homes. Concordance between caregiver- and physician-reported controller medication prescription was measured.**

Results. **Only 42% of physicians and 32% of caregivers reported a controller medication prescription (78% agreement, $\kappa = 0.54$; 95% confidence interval: 0.45–0.63) despite that 73% of the children were rated by their caregiver as currently experiencing persistent asthma symptoms. When the physician reported a controller prescription, 38% of the caregivers denied use of a controller. Having a course of oral steroids in the past year ($\chi^2 = 9.85$) and positive caregiver beliefs toward asthma care ($\chi^2 = 18.40$) were associated with caregiver–physician concordance. Multivariate analysis found that when caregivers had high Asthma Beliefs Scale summary scores versus low scores, they were almost 10 times as likely to be concordant with the physician (odds ratio: 9.76; 95% confidence interval: 2.85–33.46).**

Conclusions. **Our data support previous reports of physician underprescribing of controller medication among inner-city children. However, even when prescribed by a physician, more than one third of caregivers did not report a controller prescription, and this discordance was related to caregivers' beliefs about treatment. Efforts to improve physician adherence to asthma guidelines will not result in proper treatment unless caregiver–physician communication about asthma therapy is improved.** *Pediatrics* **2003;111:e214–e220. URL: http://www.pediatrics.org/cgi/content/full/111/3/e214;** ***attitudes, beliefs, adherence, compliance.***

ABBREVIATIONS. NAEPP, National Asthma Education and Prevention Program; CI, confidence interval; ICS, inhaled corticosteroid, ED, emergency department OR, odds ratio.

From the Johns Hopkins University School of Medicine, *Division of Pulmonary and Critical Care Medicine and ‡Department of Pediatrics, and §School of Nursing, Baltimore, Maryland.

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Reprint requests to (K.A.R.) Johns Hopkins University, 5501 Hopkins Bayview Cir, JHAAC 4B.72, Baltimore, MD 21224. E-mail: krieker1@jhem.jhmi.edu

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Asthma is the most common chronic childhood illness, affecting an estimated 2.3 million US children between the ages of 5 and 14.[1] Black and inner-city children have disproportionately higher asthma morbidity, mortality, and urgent care utilization.[2–6] Current guidelines from the National Heart, Lung, and Blood Institute's National Asthma Education and Prevention Program (NAEPP)[7] recommend daily use of an antiinflammatory medication for children with persistent asthma symptoms. Many studies, however, document undertreatment of asthma, particularly among inner-city children, as measured by caregiver report,[8,9] physician report,[9] pharmacy refill data,[10] and insurance claims data.[11] Undertreatment of asthma can affect health outcomes. Underuse of antiinflammatory medication has been associated with increased morbidity and health care utilization, including symptomatic days or nights per month,[8] emergency visits,[10,12] hospitalization,[11,12] and physician visits.[12]

There are several causes of underuse of antiinflammatory medication. Previous research has shown that among children with persistent asthma symptoms, only 50% were prescribed a maintenance medication by their physician.[9] Moreover, it has been documented that nearly one third of preventive medications prescribed are not filled within 1 year of the medical encounter.[13,14] Even when a prescription is filled, patient adherence to the regimen is typically poor.[15,16] The failure to fill a prescription has been called "primary nonadherence"[14] because there is no chance that a prescribed regimen can be followed without first obtaining the medication. Finkelstein et al[2] found that although children covered under Medicaid were equally likely to have controller medications prescribed as were children covered by commercial payers, they were less likely to have them dispensed (relative risk: 0.72; 95% confidence interval [CI]: 0.69–0.74). The reasons for the failure to fill controller medication prescriptions and, thus, the undertreatment of children's asthma have not been adequately described, particularly for inner-city populations.

The underuse of controller medication may be attributable to poor caregiver–physician communication about the severity of asthma symptoms,[9] the prescribed regimen,[17] or other medications that the patient is using.[18] Patient–physician communication can influence health outcomes, including satisfaction with care, recall and understanding of medical infor-

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mation, quality of life, and even health status.[19,20] Communication, however, is a difficult concept to measure and is time consuming to quantify comprehensively. One basic measure of communication that has been proposed is patient–physician concordance about therapy.[21]

The primary objective of this study was to examine caregiver–physician concordance regarding prescribed controller medication in an inner-city sample of school-aged children with asthma. We also assessed the relationship among demographic, medical factors (eg, asthma symptom control, urgent health care utilization, regular asthma care), caregiver beliefs about asthma management (eg, attitude toward preventative care, worry about side effects), and caregiver–physician medication concordance to evaluate possible correlates of medication concordance.

METHODS

Participants

Children who were aged 5 to 12 years and enrolled in 32 Baltimore City elementary schools were invited to participate in a community-based asthma intervention study if they had 1) physician-diagnosed asthma documented on their school health record and 2) experienced asthma symptoms at least 2 of the previous 14 days by parent report. Schools were selected when they met the following criteria: 1) student body that was >85% black, 2) >350 students were enrolled, and 3) had administrative consent to participate in the intervention study. A total of 365 families consented to participate in the study and completed the survey. A subsample of 318 (87% of consented) had sufficient information to examine caregiver- versus physician-reported treatment regimen.

Procedures

The Institutional Review Board of the Johns Hopkins Medical Institutions approved this study. After informed written consent was obtained, the child's caregiver competed the survey by telephone. The child's mother completed the survey 85% of the time. Families without telephones or those who could not be contacted were mailed a card with a toll-free number to call to complete the survey. Families were sent a $20 incentive after completion of the interview. Caregivers were asked to identify the physician or clinic that the child regularly visits when he or she has trouble with asthma. Providers were contacted to obtain current information about the child's prescribed asthma regimen.

Survey

The survey assessed demographic information, the child's current asthma symptoms, health care utilization, and beliefs about asthma management and health care. The primary outcome was the level of caregiver–physician concordance regarding whether the child was prescribed a long-term controller with antiinflammatory activity (ie, an inhaled corticosteroid [ICS] or cromolyn). Leukotriene modifiers were not included in the study because at the time the data were collected (March 1996 to November 1998), only 3 of 318 (1%) children in this sample were prescribed them. The parent was asked, "What medicines prescribed by a doctor is your child supposed to take every day even when he/she feels fine?" and, "What medicines does your child take that are only for when he/she has asthma symptoms?" When the caregiver reported an ICS and/or cromolyn medication for either question, it was coded as a positive caregiver report of a prescription controller medication. The physician was asked, in an open-ended question, to list the name, dosage, and frequency of all prescribed asthma medications. When the physician reported an ICS and/or cromolyn for use daily or as needed, it was coded positive for physician report of a controller medication.

Asthma control was classified as mild intermittent, mild persistent, and moderate-severe persistent based on NAEPP criteria[7] using caregiver responses to the following questions: 1) "For the last 6 months, on average how many days per week did cough, wheeze, or shortness of breath limit child's exercise, ability to play sports, or play with friends?" and 2) "For the last 6 months, on average how many nights per month did child wake up at night with cough, wheeze, shortness of breath, or tightness in chest?" A new scale was developed to assess caregiver beliefs about asthma management and care using 5 items. Items were scored on a 1 to 4 scale; the yes/no item was scored as no = 1 and yes = 4. An Asthma Beliefs Scale summary score was derived by summing the items together; higher scores reflect a more positive attitude toward preventive care, increased confidence to manage asthma attacks, and fewer concerns about side effects. Scores could range from 5 to 20 and were normally distributed. The summary score data were also divided into tertiles with the following labels: low (scores of 7–13), moderate (scores of 14–16), and high (scores of 17–20).

Data Analysis

All analyses were conducted using SPSS version 10.0 software.[22] Percentage agreement and κ were used to determine concordance between caregiver–physician reports of the medication regimen. Standard cross-tabulations and χ^2 analyses were used to test for differences in proportions between groups. Logistic regression was used for multivariate analysis to identify factors independently associated with caregiver–physician asthma medication concordance. Asthma Beliefs Scale summary score data were analyzed using both a continuous scale and tertiles. Results were equivalent, and, for ease of interpretation, the data presented in this article are for the tertiles only.

RESULTS

Sample Description

Children enrolled in the current study were primarily male (56.9%); mean age was 8.1 years (standard deviation: 2.15 years; Table 1). Most children (98%) were black, and their caregivers reported completing high school (76.3%) and working at least part-time (61.3%). Two thirds of the families had a household income <$20 000, and 55% received med-

TABLE 1. Demographic and Illness Characteristics of Sample (N = 318)

Characteristic	Value
Sociodemographics	
Child age (mean [SD] y)	8.09 (2.15)
Child gender (n [%] male)	181 (56.9)
Caregiver education (n [%] < high school degree)	73 (23.7)
Caregiver employed (n [%])	
No	121 (38.1)
Yes, part-time	48 (15.1)
Yes, full-time	147 (46.2)
Missing	2 (0.6)
Household income (n [%] <$20 000)	178 (66.7)
Received medical assistance (n [%] yes)	175 (55.0)
Asthma severity	
Guideline-based asthma symptom control (n [%])	
Mild intermittent	75 (23.6)
Mild persistent	30 (9.4)
Moderate-severe persistent	204 (64.2)
Missing	9 (2.8)
No. of ED visits, past 6 mo (mean [SD])	1.54 (2.16)
No. of courses oral steroids, past year (mean [SD])	2.26 (7.97)
Regular asthma care	
See 1 physician for regular asthma care (n [%] yes)	282 (88.7)
No. of times saw physician for asthma care, past year (mean [SD])	2.72 (2.45)
Time since last physician visit (n [%] <6 mo)	166 (52.2)

SD indicates standard deviation.

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ical assistance. The majority of participants (89%) reported having a specific physician for regular asthma care; however, only 52% had seen their doctor in the past 6 months, according to physician report.

Asthma Morbidity

Asthma morbidity was high as reported by the caregiver (Table 1). Sixty-four percent of the children met NAEPP criteria for moderate-severe asthma control[7], 55% had an emergency department (ED) visit in the past 6 months, and 44% had taken at least 1 course of oral steroids in the past year.

Prescription of Controller Asthma Medication

Overall, the report of the prescription of asthma controller medication was low. Physicians reported prescribing controllers for 42% of children, and 32% of caregivers reported a prescription; this difference was statistically significant ($P < .01$; Table 2). The proportion of controller prescriptions did not differ when stratified by caregiver report of child's recent level of asthma symptom control.

Caregiver–Physician Concordance

Concordance between physicians and caregivers by overall percentage agreement was 78%, and the κ statistic was 0.54 (95% CI: 0.45–0.63), suggesting moderate agreement between physicians and caregivers. Concordance did not vary by the level of asthma symptom control (Table 2). Specifically, 165 (52%) caregivers and physicians agreed that the child was not prescribed a controller medication, whereas 18 (6%) of the caregivers reported that their child was prescribed a controller when the physician did not report prescription of a controller medication (Table 2). Eighty-four (26%) caregiver–physician dyads agreed the child was prescribed a controller medication, whereas 51 (16%) of the caregivers reported no controller medication when the physician prescribed one. Thus, 38% of the time (51 of 135), caregivers did not report that the child was prescribed a controller medication when the physician reported prescribing one. In contrast, approximately 10% of the time (18 of 183), the caregiver reported the prescription of a daily asthma medication when the physician did not report a prescription.

Of the 84 caregiver–physician pairs who agreed that the child was prescribed a controller medication, 81 had data on dosing (daily versus as needed). Seventy-three (90.1%) of the dyads agreed that the medication was prescribed daily; 6 (7.4%) caregivers reported that the medication was prescribed as needed when the physician reported it was a daily medication. Finally, 2 (2.5%) caregivers reported that the controller medication was to be taken daily when the physician reported that it was prescribed as needed.

Correlates of Caregiver–Physician Concordance for Children Prescribed Controller Medication

We examined predictors of physician–caregiver concordance among the 135 children for whom the physician reported prescribing a controller medication. A caregiver–physician dyad was called "concordant" when both reported prescription of a controller medication. A caregiver–physician dyad was called "discordant" when the physician reported prescription of a controller medication but the caregiver did not.

Sociodemographic variables were not significantly associated with caregiver–physician concordance (Table 3). The groups did not differ by asthma symptom control or ED use in the past 6 months but did differ on oral steroid use. When the caregiver–physician dyad was concordant, the caregiver was almost twice as likely to report a course of oral steroids in the past year than discordant dyads (64% vs 35%; $P = .002$). Concordance was not statistically associated with any of the regular asthma medical care variables, including the frequency and recency of contact with the child's physician.

In contrast, several caregiver beliefs about asthma care practices were significantly associated with caregiver–physician concordance. At the item level, concordant caregiver–physician dyads had caregivers who were more likely to answer yes to the question, "Do you think children with asthma should take asthma medicines every day, even when they are not wheezing or coughing?" (73%) than discordant dyads (49%; $P = .005$) and were less likely to report being concerned about side effects of medications (eg, worry all the time: 20% vs 39%; $P = .048$). Moreover, caregivers in concordant dyads reported more overall positive attitudes toward asthma management than caregivers in discordant dyads as mea-

TABLE 2. Caregiver-Physician Concordance Overall and by Symptom Control ($N = 318$)

			Physician Report			Percentage Agreement	Kappa
			Prescribed	Not Prescribed	Total		
Overall	Caregiver report	Prescribed	84	18	102 (32%)		
		Not prescribed	51	165	216 (68%)		
		Total	135 (42%)	183 (58%)	318	78.3%	0.54
Mild intermittent	Caregiver report	Prescribed	21	4	25 (33%)		
		Not prescribed	13	37	50 (67%)		
		Total	34 (45%)	41 (55%)	75	77.3%	0.53
Mild persistent	Caregiver report	Prescribed	7	4	11 (37%)		
		Not prescribed	4	15	19 (63%)		
		Total	11 (37%)	19 (63%)	30	73.3%	0.43
Moderate-severe persistent	Caregiver report	Prescribed	53	10	63 (31%)		
		Not prescribed	32	109	141 (69%)		
		Total	85 (42%)	119 (58%)	204	79.4%	0.56

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TABLE 3. Correlates of Caregiver-Physician Concordance ($N = 135$)

Variable	Concordant ($n = 84$) N (%)	Discordant ($n = 51$) N (%)	χ^2 (P Value)
Sociodemographics			
Child's age (y)			1.17 (.279)
≤8	49 (59.8)	24 (50.0)	
>8	33 (40.2)	24 (50.0)	
Child's gender			2.14 (.144)
Female	37 (44.0)	16 (31.4)	
Male	47 (56.0)	35 (68.6)	
Caregiver education			0.43 (.510)
<High school	20 (25.0)	10 (20.0)	
≥High school	60 (75.0)	40 (80.0)	
Caregiver employed			4.50 (.105)
No	32 (38.1)	22 (43.1)	
Yes, part-time	9 (10.7)	11 (21.6)	
Yes, full-time	43 (51.2)	18 (35.3)	
Receive medical assistance			0.03 (.871)
Yes	48 (62.3)	28 (60.9)	
No	29 (37.7)	18 (39.1)	
Problems paying for medicine			0.39 (.531)
Yes	10 (11.9)	8 (15.7)	
No	74 (88.1)	43 (84.3)	
Asthma severity			
Guideline symptom control			0.01 (.994)
Mild-intermittent	21 (25.9)	13 (26.5)	
Mild-persistent	7 (8.6)	4 (8.2)	
Moderate-severe	53 (65.4)	32 (65.3)	
No. of ED visits in past 6 mo			2.87 (.238)
0	34 (41.0)	24 (48.0)	
1–2	23 (27.7)	17 (34.0)	
3+	26 (31.3)	9 (18.0)	
No. of courses of oral steroid in past year			9.85 (.007)
0	28 (35.9)	31 (64.6)	
1–2	22 (28.2)	7 (14.6)	
3+	28 (35.9)	10 (20.8)	
Regular asthma care			
One physician regularly seen for asthma care?			1.56 (.212)
Yes	78 (94.0)	43 (87.8)	
No	5 (6.0)	6 (12.2)	
No. of physician visits for asthma in past year			1.52 (.468)
0–1	17 (20.2)	14 (28.0)	
2	25 (29.8)	11 (22.0)	
3+	42 (50.0)	25 (50.0)	
Time since last physician visit			0.08 (.781)
<6 mo	54 (68.4)	31 (66.0)	
≥6 mo	25 (31.6)	16 (34.0)	
Asthma beliefs			
Should children take asthma medicines daily even when they don't have symptoms?			7.85 (.005)
No	21 (26.6)	25 (51.0)	
Yes	58 (73.4)	24 (49.0)	
I try to help asthma without using asthma medicines			4.48 (.107)
All the time	6 (7.1)	5 (9.8)	
Some/most of the time	23 (27.4)	22 (43.1)	
Never	55 (65.5)	24 (47.1)	
I worry about side effects of asthma medicine			6.09 (.048)
All the time	17 (20.2)	20 (39.2)	
Some/most of the time	39 (46.4)	16 (31.4)	
Never	28 (33.3)	15 (29.4)	
There is nothing I can do at home to stop an asthma attack			3.33 (.189)
All the time	10 (12.2)	12 (24.5)	
Some/most of the time	44 (53.7)	23 (46.9)	
Never	28 (34.1)	14 (28.6)	
How important is regular asthma care when child does not have symptoms?			0.08 (.781)
Very/extremely	71 (84.5)	44 (86.3)	
Not at all/somewhat	13 (15.5)	7 (13.7)	
Asthma Beliefs Scale summary score (tertiles)			18.40 (<.001)
Low	13 (16.9)	22 (47.8)	
Moderate	27 (35.1)	17 (37.0)	
High	37 (48.1)	7 (15.2)	

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TABLE 4. Multivariate Analysis of Factors Associated With Caregiver-Physician Concordance ($N = 114$)*

Characteristic	OR	95% CI	*P* Value
Child's age (y)			
≤8	1.0	Reference	–
>8	0.63	0.25–1.58	.32
Child's gender			
Female	1.0	Reference	–
Male	0.51	0.19–1.34	.17
Problems paying for medicine			
Yes	1.0	Reference	–
No	1.53	0.45–5.20	.50
No. of ED visits past 6 mo			
0	1.0	Reference	–
1–2	1.21	0.41–3.55	.73
3+	3.31	0.86–12.77	.08
No. of courses of oral steroid in past year			
0	1.0	Reference	–
1–2	2.28	0.67–7.70	.19
3+	3.08	0.92–10.33	.08
No. of physician visits for asthma in past year			
0–1	1.0	Reference	–
2	1.14	0.31–4.21	.84
3+	0.42	0.13–1.36	.15
Asthma Beliefs Scale summary score			
Low	1.0	Reference	–
Moderate	2.85	0.94–8.60	.06
High	9.76	2.85–33.46	<.001

Model $R^2 = 0.24$ (Cox and Snell).
* $N = 114$ as a result of missing data.

sured by the Asthma Beliefs Scale summary score ($\chi^2 = 18.40$, $P < .001$).

Multivariate Analysis of Factors Associated With Caregiver–Physician Concordance

A multivariate logistic regression analysis was performed to identify factors independently associated with caregiver–physician concordance. All covariates included in the model (Table 4) were chosen on the basis of theoretical consideration and the bivariate results. After demographic variables, asthma severity, regular asthma medical care factors, and caregiver beliefs were controlled for, caregiver–physicians dyads were 3 times as likely to be concordant when the child had had 3+ courses of oral steroid during the past year (odds ratio [OR]: 3.08; 95% CI: 0.92–10.33) and 3+ ED visits in the past 6 months (OR: 3.31; 95% CI: 0.86–12.77), although these differences were not statistically significant. In contrast, after other relevant covariates were controlled for, the caregivers' overall attitudes toward asthma management were significantly associated with caregiver–physician concordance. More specific, caregiver–physician dyads were almost 3 times as likely to be concordant when the Asthma Belief Scales summary score was in the moderate versus low range (OR: 2.85; 95% CI: 0.94–8.60) and almost 10 times as likely to be concordant when the summary score was in the high versus low range (OR: 9.76; 95% CI: 2.85–33.46).

DISCUSSION

Many studies have documented undertreatment of asthma by NAEPP guidelines.[8–11] Consistent with these reports, our study found that fewer than half of the children with persistent asthma symptoms had been prescribed a controller medication by both physician and caregiver report. Physicians reported a higher rate of antiinflammatory medication prescription than caregivers (42% vs 32%; $P < .01$).

Beyond physician prescribing practices and patient adherence, this study identifies an important intermediate step in the pathway to optimal treatment of pediatric asthma: caregiver acknowledgment and acceptance of the medication prescription. There was only moderate agreement between overall caregiver and physician concordance (78% agreement, $\kappa = 0.54$). Caregiver underreporting of a prescription controller medication (ie, 38% of caregivers did not report that the child was prescribed a controller medication when the physician did) was more likely than overreporting (ie, 10% of caregivers reported that the child was prescribed a controller medication when the physician did not) when compared with physician report. Moreover, caregiver–physician concordance did not differ on the basis of the child's current level of asthma symptom control. These findings suggest that a significant proportion of inner-city children who have persistent asthma symptoms and are prescribed a daily controller medication may not have the medication in the home and are unlikely to take the medication on even a sporadic basis.

Physicians in this study were not overly compliant with NAEPP guidelines regarding the prescription of controller medications, yet their report suggested significantly more compliance than did the caregiver report. This finding highlights the need for researchers to consider carefully the source of their data when drawing conclusions about physicians' absolute level of adherence to guidelines. The lack of concordance between caregivers and physicians identified in this study suggests that a negative bias may be introduced when caregiver or pharmacy data are relied on to estimate physician adherence with prescribing guidelines.

Our previous study suggested that caregiver beliefs, as measured by 1 question ("Do you think medications should be taken regularly?"), is related to caregiver report of a controller medication prescription.[8] Similarly, caregiver beliefs, particularly concerns about medication use and safety, have been found to be associated with increased medication nonadherence[23–25] and repeat ED use.[26] In this study, caregiver beliefs about asthma management were the most significant factor affecting caregiver–physician concordance about the prescribed asthma medication regimen. Specifically, not believing in the appropriateness of daily medication use without symptoms and concerns about side effects were associated with increased discordance.

Poor patient–physician communication and information sharing during an asthma care encounter are likely to be important contributing factors in the observed discordance about the prescription of a controller medication. Previous research has shown that physicians give more medication-related instructions than justification for use or motivational

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statements and rarely ask whether the patient is taking the medication.[27] More recent data indicate that, in medical consultations during which a new medicine was prescribed or dosing changes were made to an existing medicine, 61% of the time at least 1 medication was not specifically named, 21% of the time no dosing information was provided, and 53% of the time no information about side effects was provided.[17] Moreover, patients seem reluctant to volunteer information about medication preferences or over-the-counter drug use, and physicians do not seem to understand patient views on medication.[17,18] Thus, there is evidence that, in general, patient–physician communication about medication is poor. However, there are qualitative data to suggest that when physicians match the patient's communication needs (eg, sensitive to patients' need to discuss nonmedical issues such as anxiety, life events, and stress), there are improved health outcomes and patient satisfaction.[20]

Lack of time during an encounter is frequently cited as the main reason for poor communication—particularly pertaining to patient preferences, quality of life, and psychosocial factors[17]—and is more often the case during unscheduled acute care visits.[20] Given that inner-city families often do not make or keep preventive care visits, even after an ED encounter,[28] they may be at greater risk for poor physician–caregiver communication. Therefore, poor communication may be a contributing factor to the increased morbidity seen in inner-city children with asthma. One randomized, controlled study of general pediatricians suggests that improved family–physician communication may make asthma care encounters more effective and efficient.[29] This intervention led to patient–physician encounters that were of shorter duration, an increased rate of antiinflammatory prescriptions and other guideline-based activities, decreased nonemergency physician visits, and, for low-income families, decreased ED visits. Thus, the quality of the asthma care encounter may be more important than the duration of the visit.

Several issues may limit the generalizability of these findings. Only 2 questions relating to prescribed medications were included in an extensive interview. More extensive probing might have identified more prescribed controller medications. The questions, however, reflected standard wording used in clinical settings. The definition of caregiver–physician concordance (eg, report any antiinflammatory medication prescription) was intentionally broad. Research has shown that concordance is lower as the question becomes more specific.[30,31] Thus, our definition of concordance represents a best-case scenario, and more specific requirements, such as an exact match on medication name or specific dosing information (eg, twice a day), are likely to result in lower caregiver–physician concordance. Although the items on the Asthma Belief Scale are similar to those found on more extensive belief surveys, the scale was specifically designed for this study, and, therefore, there are no additional data on its validity or clinical utility. This study relied on caregiver report for utilization and asthma care variables rather than on clinical records; therefore, data are subject to recall and social desirability biases. Furthermore, physician data were obtained from only 1 doctor, identified by the caregiver as the provider who usually cares for the child's asthma. If different providers saw the child (eg, ED physicians) and altered the medication regimen, then caregiver–physician concordance would be lower than if all physicians seen were queried. However, if multiple physicians saw the child in the previous 6 months, then it more strongly points to the potential and risk of poor communication between the caregiver and the caregiver-identified primary provider of asthma medical care. All surveyed families had consented to participate in an asthma education program. Therefore, this sample may be biased toward families that are either more concerned about their child's asthma or more in need of asthma education and services. Again, this would most likely lead to an overestimation of caregiver–physician concordance. Finally, this study focused on inner-city children with symptomatic asthma; thus, is it unknown whether these results will generalize to other populations of children with persistent asthma.

CONCLUSION

This study found that a significant percentage of caregivers and physicians disagree about whether the child was prescribed a controller medication; most often, the caregiver did not report a controller prescription when the physician reported one. That caregiver beliefs about asthma management were predictive of concordance beyond demographic, illness, and asthma care factors suggests that improved family–physician communication regarding family worries about side effects and importance of preventive asthma care may be necessary to increase the use of controller medications among inner-city children with persistent asthma. Efforts to improve physician adherence to guidelines will not result in proper treatment unless caregiver–physician communication about asthma therapy is also improved.

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