

OUTCOMES

Randomized trial of a health communication intervention for parents of children with asthma

Ivor B. Horn, MD, MPH, Stephanie J. Mitchell, PhD, Catherine W. Gillespie, MPH, PhD, Kristin M. Burke, BS, CHES, Leandra Godoy, PhD, and Stephen J. Teach, MD, MPH

Center for Translational Science, Children's National Medical Center, Washington, DC, USA

Abstract

Objective: To determine if a health communication intervention targeting parents of high-risk, urban, minority children with asthma could (i) improve parental perceptions of connectedness to and communication with their child's primary care providers (PCP) and (ii) decrease reliance on emergency departments (EDs) and other urgent care services for their child's asthma-related care. **Methods:** The design was a single blind, parallel groups, randomized controlled trial. Parents were recruited from an ED-based asthma clinic serving primarily low-income, minority children in Washington, DC. The intervention involved face-to-face education on effective communication followed by a single booster call. Standardized instruments were administered to assess primary care connectedness and healthcare utilization at baseline and 2- and 6-months post-enrollment. **Results:** A total of 150 parents of children 1–12 years old were randomized (77 intervention and 73 usual care), and 137 (91%) were successfully followed for six months. Only at the two-month follow-up time-point, parents in the intervention group were significantly more likely to identify a PCP as the main source of their child's asthma care (adjusted odds ratio: 12.6, 95% confidence interval: 1.1–142.1) and to report a significant reduction in ED visits for asthma care (adjusted incidence rate ratio: 0.3, 95% confidence interval: 0.1–0.8). There was no significant effect on parent communication self-efficacy or number of PCP visits. **Conclusions:** A brief, in-person health communication intervention for parents of high-risk children with asthma resulted in improved identification of PCPs as the usual source of asthma care and reduced reliance on EDs for asthma care, albeit only for two months post-intervention.

Keywords

African Americans, communication education, primary care, self-efficacy, urgent care

History

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Introduction

Asthma, one of the most common chronic pediatric medical conditions in the United States, disproportionately affects urban, minority populations [1], who also make more visits to the emergency department (ED) for asthma care [2]. The National Asthma Education and Prevention Program's (NAEPP) Guidelines recommend developing partnerships between healthcare providers and patients (and for pediatric patients and their parents)¹ as a means of reducing asthma morbidity and mortality rates [3]. Such partnerships require open and active communication between providers and patients/parents. It is well documented, however, that patient-provider communication among adult African Americans patients is less participatory than patient-provider communication among White patients [4], which may contribute to observed racial disparities in the quality and

outcomes of medical care for chronic illnesses [5,6]. Facilitating African American parents' open communication with providers regarding child healthcare status and concerns could equip them to more effectively partner with their child's primary care provider (PCP) and ultimately to improve child asthma health outcomes.

Data from a previous evaluation of our ED-based asthma education, medical care and short-term care coordination program ("Improving Pediatric Asthma Care in the District of Columbia" – IMPACT DC) showed that it improved many asthma outcomes for inner-city children including increased use of controller medications, decreased frequency of ED visits and improved asthma-related quality-of-life [7]. However, care in the IMPACT DC Asthma Clinic was not associated with an improvement in the proportion of parents who identified a PCP as their child's usual source of asthma care. This failure to improve connectedness to PCPs has limited the program's overall efficacy [8]. In response, we proposed that facilitating African American parents' open communication with providers regarding healthcare status and concerns could empower them to partner with their child's PCP and ultimately to improve their child's asthma health outcomes. We therefore developed a brief

Correspondence: Ivor B. Horn, Center for Translational Science, Children's National Medical Center, 111 Michigan Ave. NW, Washington, DC 20010, USA. Tel: (202) 476-4908. E-mail: ihorn@childrensnational.org

¹We use "parent" to refer to any primary caregiver.

supplemental health communication intervention, guided by Social Cognitive Theory [9], which was designed to achieve the immediate goal of empowering parents to communicate with providers, thus enhancing their sense of connectedness with their child's PCP. We anticipated that this enhanced connectedness to PCPs would translate into improved health outcomes and reduced asthma-related healthcare costs. In this study, we tested whether the supplemental health communication intervention resulted in greater self-efficacy in communicating with PCPs, more reliance on PCPs for asthma care and fewer asthma-related ED and urgent care visits relative to usual care in the IMPACT DC Asthma Clinic.

Patients and methods

Setting

The IMPACT DC Asthma Clinic operates in the two EDs affiliated with Children's National Medical Center (CNMC), an urban, tertiary care, academic pediatric medical center in Washington, DC.

Participants

Caregivers of children attending the clinic were eligible to participate if the child was between 12 months and 12 years old, had prior physician-diagnosed asthma, was referred to the IMPACT DC clinic from the ED or inpatient units at CNMC, was covered by any form of insurance and if the parent/guardian was the child's primary asthma caregiver and could identify a specific PCP for the child. Families were excluded if the child had significant medical co-morbidities affecting the cardio-respiratory system, was being treated by a pulmonary or allergy specialist, was enrolled in another asthma research study and/or if the primary language of the caregiver was not English.

Procedure

Participating caregivers were enrolled on a rolling basis between January 2009 and April 2011. The IMPACT DC clinic staff first described the trial to a potentially eligible family at the beginning of their visit to the clinic, and written informed consent was obtained from those parents who wished to participate. A research assistant (RA) then administered a questionnaire to the parent focusing on asthma symptoms, healthcare utilization, quality of life, medication adherence and parental self-efficacy communicating with healthcare providers. Following an extensive asthma education session at the IMPACT DC clinic ("usual care"), the family was randomized to either "usual care" or "enhanced care". Randomization occurred in blocks of 20 families with the use of sealed and shuffled opaque envelopes prepared by staff unconnected with the trial. RAs (blinded to randomization) completed follow-up questionnaires with parents *via* phone at 2- and 6-months post-enrollment (see Figure 1 for participant flow through the trial). The CNMC Institutional Review Board approved and monitored this randomized controlled trial; registered clinical trial protocol is available at <http://www.clinicaltrials.gov/ct2/show/NCT00832923>.

Usual care condition

Usual care in the IMPACT DC clinic served as the control in this trial to ensure that validated and effective asthma care and education was provided to all families and to control for nonspecific intervention features such as time and attention. Families are encouraged to attend the IMPACT DC clinic within two weeks of an ED visit or hospitalization for an acute asthma exacerbation. The IMPACT DC intervention has been described previously [7]. A IMPACT DC session involves a 90-minute visit with an asthma educator and a physician or nurse practitioner. Clinic staff focus on three key elements of asthma management: (1) medical care; (2) trigger identification and control; and (3) care coordination. If randomized into "usual care", participants completed the IMPACT DC session without receiving additional education on parent-provider communication and were discharged after reviewing their child's individual Asthma Action Plan.

Enhanced care/intervention condition

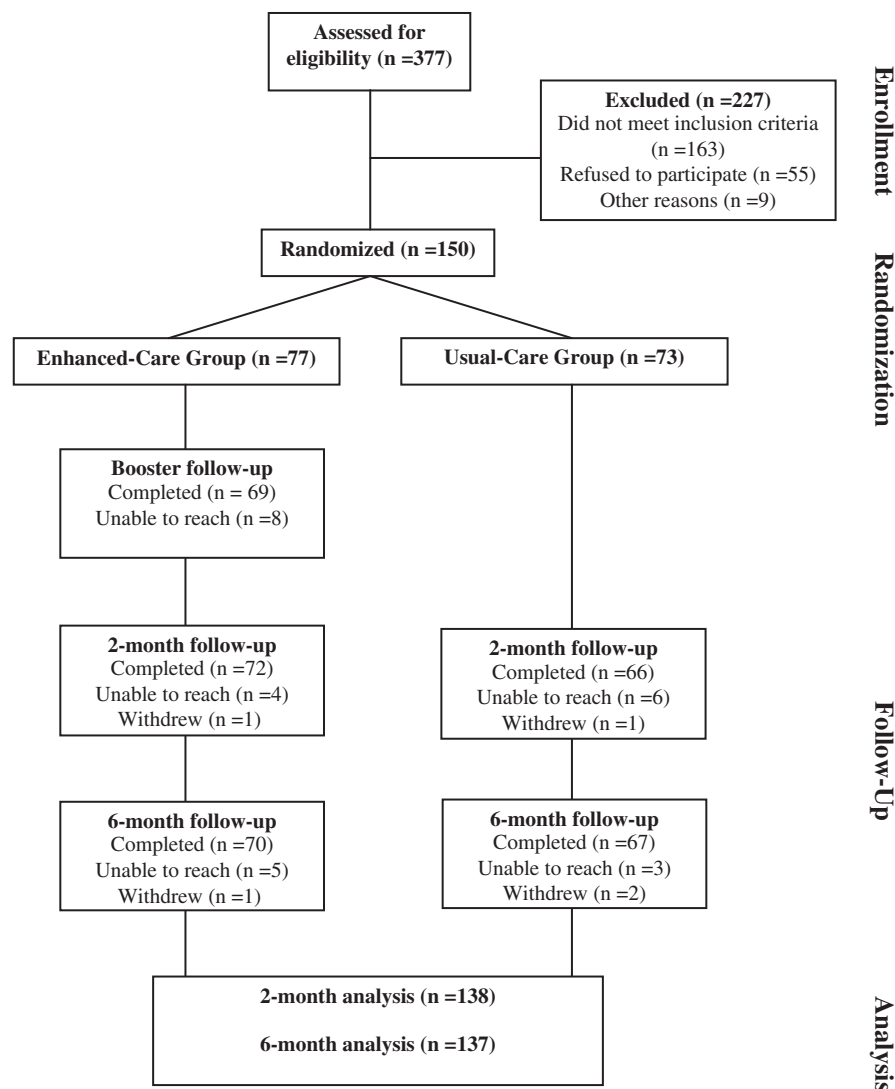
A parent randomized to the enhanced care condition also received a health communication intervention ("Parent Empowerment Program for Asthma Care" [PEPAC]). In addition to the comprehensive IMPACT DC asthma education (usual care), the asthma education discussed the information-exchange components of an asthma care visit with the child's PCP. This information exchange was presented as a communication toolkit consisting of "Three Ss":

- (1) *Sharing*: The importance of planning for the visit was emphasized, having parents think through their questions and concerns regarding their child's asthma needs and identify their goals for the visit.
- (2) *Seeking*: Parents were encouraged to seek information from the provider about the diagnosis and asthma care plan.
- (3) *Saying it back*: Parents were encouraged to clarify what the plan of care is for their child and, by saying the information out loud in their own words, to address any difference between parent and provider goals for the care plan.

The RA explained the three Ss using a large visual aid and provided the parent a wallet-sized card that listed the three Ss and included space to enter the child's PCP name and contact information and current medication plan. The asthma educator also discussed the importance of follow-up with the child's PCP for asthma care after the IMPACT DC visit, and then the parent had an opportunity to practice the three Ss with the IMPACT DC clinician. On an average, the supplemental healthcare communication education lasted 30 minutes.

Four weeks after their IMPACT DC visit, intervention families received a booster call from the PEPAC RA. If the family had visited their child's PCP as recommended, the RA asked a series of questions to assess the parent's comfort level with the appointment. All families receiving the booster call were given the opportunity to review the components of a PCP asthma care visit using the three Ss as a guide and to role-play an asthma care visit over the phone.

Figure 1. Participant flow through the randomized controlled trial evaluating the Parent Empowerment Program for Asthma Care (PEPAC).



Measures

Primary outcomes: connectedness to ongoing primary care

Three indicators of parent-perceived connectedness to ongoing primary care were assessed. First, parents reported the number of scheduled asthma care visits with PCPs during the study follow-up period. Second, they were asked to identify their child's PCP as well as their child's primary asthma care provider; if the same provider was named in response to each question, then it was determined that the PCP was the child's usual source of asthma health care. Third, parents' self-efficacy in communicating with their child's PCP was assessed using the Perceived Efficacy in Patient-Physician Interactions (PEPPI) instrument [10], consisting of five items measuring self-efficacy in obtaining medical information and attention to their medical concerns from physicians using a 10-point scale, from "not confident at all" to "extremely confident". For this study, the wording was modified for use with parents. Due to skew, total scores were dichotomized based on whether or not the parent had the maximum

score of 50, a scoring technique previously employed by the scale's author [11].

Secondary outcomes: healthcare utilization

Standard questions about healthcare use were drawn from national surveys [12]. Parents indicated whether and when their child had been admitted to stay in the hospital overnight because of asthma. They also indicated how many times in the past 12 months (at baseline) or since the last interview (at 2 and 6 month follow-up) their child had gone to a hospital ED for urgent asthma care; to a doctor's office or clinic for urgent treatment of his/her asthma; and to a doctor's office or clinic for a scheduled visit where his/her asthma was discussed. The frequency of each type of healthcare utilization was calculated for the interval since baseline (i.e. over 2 months for 2-month follow-up or over 6 months for 6-month follow-up).

Covariates

Parents reported their child's age (categorized for determination of National Health, Lung and Blood Institute [NHLBI]

asthma classifications), gender, race/ethnicity (recoded as non-Hispanic white, non-Hispanic black, Hispanic or other), type of insurance (private or public/government-sponsored) and annual household income (dichotomized at \$30 000 to approximate federal poverty thresholds). Asthma severity classifications were made based on NHLBI criteria [3]. Parents also answered a series of yes/no questions about potential asthma triggers in their child's home or daycare, and responses were used to create a dichotomous variable indicating whether child was exposed to any smoke from tobacco, candles or incense. Parents also answered a series of yes/no questions about child's use of any controller medications (i.e. inhaled steroids, nebulized steroids and long-acting leukotriene inhibitors) in the two days prior to each interview.

Statistical analysis

Socio-demographic characteristics, indicators of asthma-related health, connectedness to ongoing primary care and healthcare utilization reported at baseline were first summarized to assess the balance across study groups achieved by randomization. Categorical characteristics were compared using Pearson's chi-squared tests and Fisher's exact tests. Continuous variables were compared across study groups using two-sample t-tests and Wilcoxon rank sum tests. Multivariable logistic regression was then used to assess associations between categorical outcome measures and group assignment *via* adjusted odds ratios (aORs) and 95% confidence intervals (CIs). These models accounted for the baseline value of the outcome measure and any covariates that significantly ($p < 0.05$) differed between groups at baseline. Multivariable negative binomial regression (a generalization of Poisson regression) was used to estimate adjusted incidence rate ratios (aIRRs) and 95% CIs for count data (i.e. number of ED, urgent care and scheduled visits for asthma care), controlling for the same set of covariates described above. All analyses were performed using STATA statistical software [13]. Two-sided tests were used, and the level of significance was set at $p = 0.05$.

Sample size calculation

Projected recruitment was calculated on the conservative basis of detecting an increase in the number of scheduled primary care visits for asthma in the six months after randomization. A baseline rate of 2.0 visits per six months was derived from the original IMPACT DC clinical trial [7]. Using a Poisson regression, a total projected sample of 133 participants would yield 90% power (at $p \leq 0.05$) to detect a 50% increase (to a mean of three visits per six months) attributable to the intervention relative usual care. Assuming 10% attrition, we chose a final enrolled sample size of 150 and discontinued recruitment when this target was reached.

Results

A total of 150 parents were randomized (77 intervention and 73 usual care), and 137 (91%) parents were successfully followed for six months (Figure 1). The overall sample of

patients was primarily African Americans on public insurance. Over 90% of the children had persistent asthma, and 36% of parents reported three or more ED visits for asthma in the past 12 months (Table 1). Compared to families in the usual care group, families in the intervention group were significantly more likely to be on public insurance ($p = 0.003$), report annual household incomes less than \$30 000 ($p = 0.02$, $n = 131$) and report exposure to smoke in the child's home or daycare ($p = 0.04$) at baseline (Table 1). These variables were retained as covariates in analyses of intervention outcomes.

With respect to the specific aims of the PEPAC intervention, significant effects were seen only at two months post-enrollment (Table 2). At the two-month follow-up, after controlling for baseline insurance type, annual household income and exposure to smoke in the home or daycare, parents in the intervention group had significantly higher odds of identifying a PCP as their child's main source of asthma care (aOR = 12.6, 95% CI: 1.1–142.1, $p = 0.04$, $n = 138$); there was no longer such a difference between groups at the six-month follow-up (aOR = 1.5, 95% CI: 0.5–3.9, $p = 0.52$, $n = 137$). In terms of parental self-efficacy, there was no significant difference between intervention and usual care groups in the proportions of parents reporting maximum PEPPI score at the two-month (aOR = 1.6, 95% CI: 0.7–3.5, $p = 0.27$, $n = 138$) or six-month follow-up (aOR = 1.4, 95% CI: 0.6–3.5, $p = 0.42$, $n = 137$). As for healthcare utilization, the odds of having been hospitalized by the two-month (aOR = 0.8, 95% CI: 0.1–6.2, $p = 0.85$, $n = 138$) or six-month follow-up (aOR = 1.0, 95% CI: 0.3–3.8, $p = 0.99$, $n = 137$) did not significantly differ for intervention versus usual care groups. Parents in the intervention group reported a significantly lower frequency of ED visits for their children's asthma care between baseline and the two-month follow-up compared to parents in the usual care group (aIRR = 0.3, 95% CI: 0.1–0.8, $p = 0.02$, $n = 138$), but the groups did not report significantly different rates at the six-month follow-up (aIRR = 0.6, 95% CI: 0.3–1.3, $p = 0.23$, $n = 137$). There was also no significant difference between groups in the parent-reported frequencies of urgent care visits at the two-month (aIRR = 0.8, 95% CI: 0.4–1.6, $p = 0.51$, $n = 138$) or six-month follow-up (aIRR = 0.8, 95% CI: 0.4–1.4, $p = 0.42$, $n = 137$). Finally, there were no significant differences between groups in the reported number of scheduled asthma care visits at the two-month (aIRR = 0.9, 95% CI: 0.7–1.3, $p = 0.72$, $n = 138$) or six-month follow-up (aIRR = 1.0, 95% CI: 0.7–1.5, $p = 0.85$, $n = 137$).

Discussion

In this randomized controlled trial, we implemented and evaluated a supplemental health communication intervention (PEPAC) targeting parents of inner city, minority and largely disadvantaged children with moderate to severe asthma and a history of ED recidivism who were visiting an ED-based asthma subspecialty clinic. Results indicate that the brief, in-person PEPAC intervention significantly increased identification of PCPs as usual source of asthma care and reduced ED visits over two months, but these effects were not sustained over the six-month study period.

Table 1. Participant characteristics at enrollment by group.

	Overall N = 150	Enhanced care N = 77	Usual care N = 73
Sociodemographics			
Child's age, n (%)			
1–4 years old	69 (46.0)	35 (45.5)	34 (46.6)
5–11 years old	77 (51.3)	40 (52.0)	37 (50.7)
12 years old	4 (2.7)	2 (2.6)	2 (2.7)
Male gender, n (%)	86 (57.3)	40 (52.0)	46 (63.0)
Child's race/ethnicity, n (%)			
White, non-Hispanic	1 (0.7)	0 (0.0)	1 (1.4)
Black, non-Hispanic	133 (89.3)	69 (89.6)	64 (88.9)
Other, non-Hispanic	9 (6.0)	5 (6.5)	4 (5.6)
Hispanic	6 (4.0)	3 (3.9)	3 (4.2)
Public insurance, n (%)	100 (66.7)	60 (77.9)	40 (54.8)
Annual household income ^a , n (%)			
≤ \$30 000	57 (43.5)	36 (53.7)	21 (32.8)
> \$30 000	74 (56.5)	31 (46.3)	43 (67.2)
Asthma-related health indicators			
Asthma morbidity (NHLBI classification), n (%)			
Mild intermittent	13 (8.8)	5 (6.6)	8 (11.1)
Mild persistent	80 (54.1)	42 (55.3)	38 (52.8)
Moderate persistent	47 (31.8)	25 (32.9)	22 (30.6)
Severe persistent	8 (5.4)	4 (5.3)	4 (5.6)
Controller asthma medication used in previous two days, n (%)	71 (47.7)	39 (50.7)	32 (44.4)
Any smoke exposure in child's home or daycare, n (%)	93 (62.0)	54 (70.1)	39 (53.4)
Connectedness to ongoing primary care			
Primary source of asthma care, n (%)			
Primary care provider	122 (83.0)	62 (82.7)	60 (83.3)
Emergency department	3 (2.0)	1 (1.3)	2 (2.8)
Other	22 (15.0)	12 (16.0)	10 (13.9)
PEPPI maximum score, n (%)	51 (34.0)	28 (36.4)	23 (31.5)
Utilization of healthcare services for asthma care in the 12 months prior to baseline			
≥ 1 Hospital Admission, n (%)	75 (50.0)	37 (48.1)	38 (52.1)
Number of ED visits, n (%)			
None	9 (6.3)	6 (8.3)	3 (4.2)
1–2 visits	82 (57.3)	40 (55.6)	42 (59.2)
3–4 visits	30 (21.0)	11 (15.3)	19 (26.8)
≥ 5 visits	22 (15.4)	15 (20.8)	7 (9.9)
Number of urgent care visits, n (%)			
None	52 (34.7)	31 (40.3)	21 (28.8)
1–2 visits	50 (33.3)	25 (32.5)	25 (34.3)
3–4 visits	30 (20.0)	14 (18.2)	16 (21.9)
≥ 5 visits	18 (12.0)	7 (9.1)	11 (15.1)
Number of scheduled visits, n (%)			
None	27 (18.0)	15 (19.5)	12 (16.4)
1–2 visits	79 (52.7)	40 (52.0)	39 (53.4)
3–4 visits	29 (19.3)	15 (19.5)	14 (19.2)
≥ 5 visits	15 (10.0)	7 (9.1)	8 (11.0)

^aData on reported household income missing on 19 participants.

The short-term reduction in ED visits is nevertheless impressive because this intervention effect was observed above and beyond the effect of IMPACT DC, a successful asthma education, medical care and care coordination intervention (the “usual care” condition in this study). The IMPACT DC intervention alone has previously been associated with a 46% reduction in the frequency of ED visits for asthma care over a six-month interval [7]. In this study, families also exposed to PEPAC demonstrated an additional 70% relative reduction in the rate of ED visits during the first two months post-intervention, meaning PEPAC could boost healthcare savings when combined with IMPACT DC. Which particular component of the PEPAC intervention, the reduced ED visits can be attributed to is unclear. It may well have been the follow-up “booster” call, when parents role-played a discussion of their child's asthma management, possibly

serving as an unofficial routine care visit and reinforcing effective self-management techniques that would reduce the need for acute/ED care.²

Or, our supplemental health communication intervention may have had this modest effect on ED utilization because it facilitated more effective partnerships between parents and PCPs [14]. This interpretation is modestly supported by the finding that parents who received the PEPAC intervention were significantly more likely to identify their child's PCP as the primary source of asthma care at two months post-intervention than parents in the usual care condition. As continuity of care by a PCP is a critical

²We would like to thank an anonymous reviewer for this insightful suggestion of which component(s) of our health communication intervention contributed to the short-term reduction in ED visits.

Table 2. Outcome measures at two- and six-month follow-up visits.

	Two-month follow-up visit <i>N</i> = 138				Six-month follow-up visit <i>N</i> = 137			
	Enhanced care <i>n</i> = 72	Usual care <i>n</i> = 66	aOR (95% CI) for categorical outcomes, aIRR (95% CI) for count data ^a	<i>p</i>	Enhanced care <i>n</i> = 70	Usual care <i>n</i> = 67	aOR (95% CI) for categorical outcomes, aIRR (95% CI) for count data ^a	<i>p</i>
Asthma-related health indicators								
Child used controller asthma medication in previous two days, <i>n</i> (%)	47 (65.3)	40 (60.6)	0.9 (0.4–2.1)	0.85	41 (58.6)	34 (50.8)	1.3 (0.6–2.8)	0.43
Any smoke exposure in child's home or daycare, <i>n</i> (%)	24 (33.3)	16 (24.2)	1.5 (0.6–3.5)	0.38	24 (34.3)	21 (31.3)	0.8 (0.3–1.8)	0.56
Connectedness to ongoing primary care								
Primary care provider identified as primary source of asthma care, <i>n</i> (%)	69 (98.6)	57 (90.5)	12.6 (1.1–142.1)	0.04	60 (85.7)	56 (83.6)	1.4 (0.5–3.9)	0.52
Maximum PEPPI score (self-efficacy), <i>n</i> (%)	43 (59.7)	32 (48.5)	1.6 (0.7–3.5)	0.27	40 (60.6)	33 (51.6)	1.4 (0.6–3.5)	0.42
Utilization of healthcare services for asthma care since baseline								
Any hospital admissions, <i>n</i> (%)	2 (2.8)	2 (3.0)	0.8 (0.1–6.2)	0.85	7 (10.6)	5 (7.8)	1.0 (0.3–3.8)	0.99
Number of ED visits, mean (SD)	0.2 (0.7)	0.4 (1.1)	0.3 (0.1–0.8)	0.02	0.5 (1.3)	0.7 (1.5)	0.6 (0.3–1.3)	0.23
Number of urgent care visits, mean (SD)	0.3 (0.6)	0.4 (0.9)	0.8 (0.4–1.6)	0.51	0.6 (1.1)	0.8 (1.5)	0.8 (0.4–1.4)	0.42
Number of scheduled visits, mean (SD)	0.9 (0.9)	1.0 (0.9)	0.9 (0.7–1.3)	0.72	2.0 (1.5)	1.8 (2.1)	1.0 (0.7–1.5)	0.85

^aAdjusted for the value of the outcome variable reported at baseline, insurance type (public or private) reported at baseline, annual household income ($\leq \$30\,000$, $> \$30\,000$ or not reported) reported at baseline and exposure to smoke in the home or daycare (including smoke from tobacco, candles or incense) reported at each follow-up visit.

component of effectively managing/treating pediatric asthma [15], this finding highlights the possible utility of our health communication intervention. However, we cannot claim the intervention improved utilization of PCPs for asthma care since there was no significant difference in scheduled asthma care visits between the intervention and usual care groups. This may in large part be due to a ceiling effect; NAEPP guidelines recommend a follow-up visit with the PCP immediately after an acute asthma exacerbation and quarterly PCP visits for routine asthma care, which all study participants seemed to adhere to given the average number of scheduled visits was 0.9–1.0 at the two-month assessment and 1.8–2.0 at the six-month assessment.

A surprising null finding was that the PEPAC program did not significantly influence parents' perceived self-efficacy in communicating with their providers, which we hypothesized would be the mechanism by which the intervention would influence child asthma outcomes. It may be that the PEPPI scale did not adequately capture variation in self-efficacy among parents of pediatric patients, potentially due to self-report bias, as reflected in the high proportion of maximum scores. Moreover, the PEPPI focuses on self-efficacy in communicating with providers, but parents' broader sense of self-efficacy in managing their children's asthma may have been the process by which PEPAC led to reduced ED utilization over the first two months post-intervention. In addition, changes in parent care-seeking behaviors, which were not directly assessed in this study (e.g. seeking phone advice from the PCP regarding asthma care), may also explain the intervention's effects.

The lack of sustained effects at the six-month follow-up suggests that a major limitation of our intervention was that it was brief and short-term, with only one 30-minute "dose" in the clinic and a "booster" telephone call. As parents' relationships with their child's PCPs are hopefully on-going, programs to improve parent-provider communication should also be longer-term or continuously accessible. Creating such programs is an important direction for future health communication intervention work. Moreover, to enhance likelihood of implementation and cost-effectiveness, it is important for future research to examine effects attributable to specific components of this intervention (educational content, booster calls and context of the IMPACT DC intervention).

Limitations

The findings reported herein come from the context of a single asthma clinic at a single urban pediatric medical center and may not be generalizable to other settings and other patient populations. Moreover, the sample was restricted to parents who could identify a PCP for their child, and thus the findings may not extend to children with asthma who are not at all connected to a PCP for asthma care. In addition, the number of ED visits was reported by parents and could not be corroborated by medical record review because records from other EDs were not accessible, thus the significant result may have been inflated by self-presentation bias.

Conclusion

This study suggests that a brief, supplemental health communication intervention targeting parents can increase

identification of PCPs as the usual source of asthma care and reduce ED visits among inner city, minority children with moderate to severe asthma. Such promising outcomes, relative to the intensive usual care condition and with such a brief intervention, call for further development of a health communication intervention that can be delivered longer term and ideally at low-cost so that positive effects can be sustained.

Declaration of interest

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