Questions and reported medication problems from pediatric patients and caregivers after intervention

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Purpose. The effectiveness of an asthma question prompt list with video intervention to increase question-asking during pediatric office visits among youth who reported medication problems was evaluated.

Methods. English- or Spanish-speaking youth age 11–17 years with persistent asthma and their caregivers were enrolled from 4 pediatric clinics in a randomized controlled trial. Youth were randomized to intervention or usual care groups. Youth in the intervention group watched an educational video with their caregivers on an iPad. The youth then received a 1-page asthma question prompt list to complete before their visits. The audio of all baseline medical visits was recorded. Youth were interviewed and caregivers completed questionnaires at baseline and 6 months later.

Results. A total of 40 providers and 359 of their patients participated. Youth who reported at least 1 medication problem who were in the intervention group were significantly more likely to ask 1 or more questions about medications during their visits than youth in the usual care group (odds ratio = 3.1, 95% confidence interval = 2.0, 4.1). Seventy-four percent of youth and 71% caregivers who reported the youth had problems using asthma medications at baseline still reported 1 or more problems 6 months later.

Conclusion. Among youth who reported 1 or more problems with using their asthma medications, the intervention significantly increased youth question-asking. Many youth- and caregiver-reported problems with using asthma medications persisted over time.

Keywords: asthma, communication, educational video, medication problems, question-asking, question prompt list

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Asthma is one of the most common chronic conditions among children in the United States.^{1, 2} Asthma accounts for an estimated \$20 billion in healthcare costs annually.² Asthma exacerbations can be prevented with appropriate care.² Prior research has found that children and adolescents with asthma are not actively involved during their medical visits despite the fact that several national organizations (e.g., Centers for Disease Control and Prevention, National Asthma Education and Prevention Program, Institute of Medicine) encourage empowering youth to manage their asthma.^{3–5}

Most studies that have examined communication during general pediatric visits did not evaluate the extent to which the child and caregiver ask questions or seek information from the provider about asthma management.^{4–10} The limited literature that is available suggests that child and caregiver question-asking is minimal during pediatric visits.^{5, 11} In fact, Wassmer et al.⁵ found that caregivers sought information during 13% of pediatric visits, and children asked for information during only 3% of visits. In our prior work conducted almost 10 years ago, we found that among caregivers who reported 1 or

more asthma medication problems, only 35% asked 1 or more questions during their child's medical visits.¹¹ In addition, among youth who reported 1 or more asthma medication problems, only 11% asked 1 or more medication questions during their visits.¹¹

We created an asthma question prompt list for youth and an educational video in both English and Spanish that youth and caregivers can watch together in the waiting area before visits that encourages youth to be more involved during visits.^{12, 13} A question prompt list is a catalog of common questions patients might want to ask their doctor about their condition and its treatment. Both are described in detail elsewhere.^{12, 13} We conducted a randomized controlled trial to test the effectiveness of an asthma question prompt list with video intervention to increase question-asking among 359 youth with asthma. We previously reported that youth in the intervention group were significantly more likely to ask questions about medications, triggers, and environmental control than youth in the usual care group and were more likely to be educated by their providers about rescue medications, triggers, and environmental control during visits.¹⁴

This current analysis examines (1) whether the question prompt list with video intervention increases the likelihood that youth who reported 1 or more asthma medication problems ask 1 or more questions about medications during their baseline pediatric visits and (2) how the intervention and question-asking during the baseline visit are associated with whether youth and their caregivers still reported 1 or more asthma medication problems 6 months later.

Methods

Procedure. This study was approved by the University of North Carolina at Chapel Hill institutional review board. The research was conducted according to the principles of the Declaration of Helsinki and with the human subjects' understanding and consent. Providers from 4 pediatric

KEY POINTS

- Prior research has found that youth are not actively involved during their medical visits, despite the fact that several national organizations encourage empowering youth to manage their asthma.
- Among youth who reported 1 or more problems in using their asthma medications, the asthma question prompt list with video intervention significantly increased youth question-asking about medications.
- Seventy-four percent of youth and 71% caregivers who reported problems in their child using their asthma medications at baseline still reported 1 or more problems 6 months later.

practices (1 academic and 3 private) in North Carolina agreed to participate in the study. Clinic staff referred potentially eligible patients who were interested in learning more about the study to a research assistant. Each clinic had its own research assistant that was hired from the local area. During the previsit wait time, the research assistant explained the study, obtained caregiver consent and youth assent, and administered an eligibility screener.^{3, 12} Children were eligible if they were age 11–17 years, spoke and read English or Spanish, had persistent asthma of any severity level, were present for an acute or follow-up asthma visit or a well-child visit, and had previously visited the clinic at least once for asthma. Using information from the eligibility screener that caregivers completed with the research assistant, persistent asthma was defined as experiencing asthma-related daytime symptoms more than twice a week, experiencing asthma-related nighttime symptoms more than twice a month, or receiving 1 or more long-term controller medications for asthma.^{3, 15} Asthma was classified as moderate to

severe if the youth reported experiencing any of 8 asthma symptoms from the eligibility screener as occurring every day or were on 2 or more controller medications. Controller medications included inhaled corticosteroids, long-acting β -agonists, combination inhaled corticosteroids/long-acting β -agonists, and leukotriene modifiers.

The study statistician prepared the randomization envelopes for the research assistants to use. Youth were randomized to the intervention or usual care group with providers, and opaque envelopes were prepared for the research assistants at each site. Youth in the intervention group watched the video with their caregivers on an iPad (Microsoft Corp., Redmond, WA).¹⁶ Depending on the clinic, they either watched it in a private area before the visit or they watched it with earphones in the waiting area. The youth then received a 1-page asthma question prompt list to complete before their visits. The 1-page asthma question prompt list, which has previously been published, contained 14 questions about asthma medications, 8 questions about triggers and asthma in general, and an area where youth could write in questions.¹² The question prompt list took youth in the intervention group less than 4 minutes to complete. The usual care group received neither the video nor the question prompt list. They received the care they would have typically received during a standard office visit.

Providers were blinded to the participant's group assignment. All youth visits were audiorecorded at baseline. All youth were interviewed after their medical visits by a research assistant while their caregivers completed questionnaires at the baseline visit and 6 months later. Youth and caregivers each received \$25 at baseline and at the 6-month follow-up visit.

Measurement. Youth age, years the youth had been living with asthma, caregiver's years of education, caregiver age, and provider age were measured as continuous variables. Youth, caregiver, and provider sex, and whether the youth had Medicaid were measured as dichotomous variables. Youth and provider race

were coded into 5 categories: non-Hispanic white, African American, Native American/American Indian, Hispanic, or other. Caregiver race was measured as a dichotomous variable (white, non-white). Caregiver report of language spoken at home with their child was measured as English or Spanish. Asthma severity was classified as mild persistent versus moderate-severe persistent according to the National Heart Lung and Blood Institute's guidelines.^{17, 18} Whether the child was on a control medication was measured as a dichotomous variable.¹⁸

Youth- and caregiver-reported problems with using asthma medications

Problems or concerns with using asthma medications were assessed by the youth interview and caregiver questionnaire at baseline and 6 months later. Youth were asked how much they had a problem or concern in using asthma medications in each of the following areas: side effects, hard to remember when to take, hard to use medicines at school, not sure they are using their inhalers like they are supposed to, and hard to understand the directions on the medicines. Caregivers were asked how much they perceived a problem or concern in using asthma medications in each of the following areas: child experienced side effects, hard for child to remember when to take, not sure they are using their inhaler correctly, hard to understand the directions, hard to pay for, and hard to get refills on time. Response options included none, a little, or a lot. Each of the youth- and caregiver-reported problem areas were recoded into dichotomous variables for the multivariable analyses.

Visit communication. All of the medical visit audiotapes were transcribed verbatim. Three research assistants were trained to code the transcripts using a detailed tool developed and used in prior asthma communication work.^{3, 11, 19} The transcriptionists and coders were blinded as to whether patients were in the intervention or usual care groups. The research assistants coded the following: (a) whether the youth and caregivers

Table 1. Youth, Caregiver, and Provider Characteristics

Characteristic	Intervention Group (n = 185)	Usual Care Group (n = 174)	p
Youth sex, no. (%)			
Male	109 (58.9)	96 (55.2)	0.52
Female	76 (41.1)	78 (44.8)	
Youth race/ethnicity, no. (%)			
White	60 (32.4)	70 (40.2)	0.51
African American	71 (38.4)	63 (36.2)	
Hispanic	26 (14.1)	19 (10.9)	
Native American	24 (13.0)	17 (9.8)	
Other	4 (2.2)	5 (2.9)	
Language spoken at home, no. (%)			
English	162 (93.1)	166 (89.7)	0.26
Spanish	12 (6.9)	19 (10.3)	
Mean ± S.D. youth age, yr	13.2 ± 1.9	13.2 ± 1.9	0.66
Mean ± S.D. years living with asthma	9.2 ± 4.3	9.9 ± 3.9	0.10
Mean ± S.D. no. youth-reported asthma medication problems at baseline	1.3 ± 1.2	1.3 ± 1.2	0.70
Asthma severity			
Mild	91 (49.2)	77 (44.3)	0.40
Moderate/severe	94 (50.8)	97 (55.7)	
On one or more control medications			
Yes	164 (88.6)	155 (89.0)	0.89
No	21 (11.4)	19 (11.0)	
Caregiver sex			
Male	26 (15.0)	23 (13.2)	0.82
Female	159 (85.0)	151 (86.8)	
Caregiver race			
White	79 (42.7)	86 (49.4)	0.2
Nonwhite	106 (57.3)	88 (50.6)	
Mean ± S.D. caregiver age, yr	41.8 ± 7.7	43.3 ± 9.3	0.09
Mean ± S.D. no. caregiver-reported asthma medication problems at baseline	1.1 ± 1.1	1.2 ± 1.1	0.30
Mean ± S.D. caregiver educational level, yr	13.5 ± 3.1	13.8 ± 3.5	0.39
Provider sex			
Male	62 (33.5)	56 (32.2)	0.82
Female	123 (66.5)	118 (67.8)	
Provider race/ethnicity			
White	135 (73.0)	127 (73.0)	0.97
Nonwhite	50 (27.0)	47 (27.0)	
Mean ± S.D. provider age	44.2 ± 11.5	44.0 ± 11.4	0.91

Table 2. Percentage of Youth and Caregivers Who Reported One or More Asthma Medication Problems Who Asked a Medication Question in The Reported Problem Area or Who Asked Any Medication Question During the Baseline Visit

Type of Medication Problem Reported by Youth to Research Assistant	Fraction (%) of Youth With a Reported Problem Who Asked a Medication Question About Specific Problem Area During the Visit	No. (%) Youth With a Reported Problem Who Asked Any Medication Question
Side effects	None (0/98)	37/98 (37.8)
Difficulty remembering to take	None (0/188)	64/188 (34.0)
Difficulty using in school	1/121 (0.8)	45/121 (37.2)
Difficulty using inhaler correctly	5/85 (5.9)	30/85 (35.3)
Difficulty understanding medication instructions	6/58 (10.3)	21/58 (36.2)
Type of Reported Problem Reported by Caregiver to Research Assistant	Percentage of Caregivers With a Reported Problem Who Asked a Medication Question About the Problem Area During the Visit	Percent of Caregivers With a Reported Problem Who Asked Any Medication Question
Side effects	4/70 (5.7)	28/70 (40.0)
Difficulty remembering to take	1/170 (0.6)	62/170 (36.5)
Difficulty using inhaler correctly	3/92 (3.3)	39.1 36/92 (39.1)
Difficulty paying for medication	3/75 (4.0)	31/75 (41.3)
Difficulty understanding medication instructions	2/20 (10.0)	6/20 (30.0)
Difficulty getting refills on time	None (0/39)	16/39 (41.0)

asked 1 or more questions in the areas where they reported medication problems and (b) whether the youth and caregivers asked 1 or more questions about asthma medications. They also coded whether the provider educated youth during visits about control medications and rescue medications. Three coders coded 34 of the same transcripts throughout the study period to assess interrater reliability. Interrater reliability was calculated using correlation coefficients and ranged from 0.80 to 0.98 for the following communication variables: (a) whether the youth asked 1 or more questions about asthma medications (0.98), (b) whether the caregiver asked 1 or more questions about asthma medications (0.92), (c) whether the provider educated about control medications (0.80), and (d) whether the provider educated about rescue medications (0.86).

Analyses. All analyses were conducted using SPSS (IBM SPSS, Armonk, New York). The target sample size was calculated a priori and determined to be

360 families.¹⁴ Youth and provider race were recoded into dichotomous variables (white, nonwhite). First, descriptive statistics for all variables were computed. Generalized estimating equations (GEEs) were used because they allow adjustment of standard errors to account for nesting within providers.²⁰ Limiting our analysis to those youth who reported 1 or more asthma medication problems, GEEs were used to investigate how study group (intervention, usual care), youth demographics and clinical characteristics, number of reported asthma medication problems, and provider age, sex, and race were associated with whether the child asked 1 or more questions about asthma medications at baseline. Examining those caregivers who reported 1 or more asthma medication problems, GEEs were then used to investigate how study group (intervention, usual care), caregiver demographics and youth clinical characteristics, number of asthma medication problems at baseline, and provider age, sex, and race were associated with whether the caregiver asked 1

or more questions about asthma medications at baseline.

Then, GEEs were used to examine whether youth and caregivers who reported a specific medication problem at baseline reported the same problem 6 months later. Examining those youth who expressed 1 or more asthma medication problems at baseline, GEE was used to investigate how (1) study group (intervention, usual care), (2) youth demographics and clinical characteristics, (3) number of reported asthma medication problems, (4) youth asked 1 or more medication questions, provider educated about control medications, provider educated about rescue medications at baseline, and (e) provider age, sex, and race were associated with whether the child reported 1 or more asthma medication problems 6 months later. Examining those caregivers who expressed 1 or more asthma medication problems at baseline, GEEs were used to examine how (a) study group (intervention, usual

care), (b) caregiver demographics and youth clinical characteristics, (c) number of asthma medication problems at baseline, (d) caregivers asked 1 or more asthma medication questions, provider educated about control medications, provider educated about rescue medications at baseline, and (e) provider age, sex, and race were associated with whether the caregiver reported 1 or more asthma medication problems 6 months later.

Results

Forty-six providers agreed to participate in the study, and 40 of these providers enrolled patients. Providers ranged in age from 28 to 62 (mean age = 41.2, standard deviation = 11.2). Twenty-seven of the 40 providers who had patients enrolled in the study were female. Four providers were Native American, 3 were African American, 3 were Asian American, 29 were White, and 1 was Hispanic. Table 1 presents the demographic and clinical characteristics of the participants by study group.

Participants were enrolled from June 2015 to November 2016. A total of 359 of 469 screened youth and their caregivers were eligible and enrolled; 110 patients did not meet inclusion criteria. Fifty-three refused to participate (87% participation rate). Of the 359 eligible families, 185 were randomly allocated to the experimental intervention group and 174 were allocated to the control group or usual care. Table 1 presents the demographic characteristics by whether youth were randomized to the intervention or usual care. The groups were balanced on all youth, caregiver, and provider demographic characteristics. Nine percent of parents reported that they spoke Spanish at home; 91% spoke English at home. Fifteen caregivers completed the questionnaires in Spanish and seven adolescents were interviewed in Spanish.

Three of the baseline visits were not properly audiorecorded. A total of 278 youth reported 1 or more asthma medication problems at baseline, and 248 caregivers reported 1 or more asthma medication problems at

baseline. Two hundred and sixty-two families (73%) completed a 6-month follow-up interview; 97 were lost to follow-up. Most patients were lost to follow-up at 6 months due to a devastating hurricane that displaced many of the families enrolled in our study. There was no difference in completion of 6-month follow-up interviews by intervention or control group (27.5% of usual care families missed [$n = 48$] and 26.5% of intervention families missed [$n = 49$]).

Table 2 presents whether youth and caregivers who reported specific asthma medication problems asked 1 or more questions about the problem area or asked any medication question during the baseline visit. Both youth and caregivers rarely asked 1 or more questions

about the specific asthma medication problem areas they were experiencing.

Table 3 displays the GEE results predicting whether youth who expressed 1 or more medication problems asked 1 or more medication questions during their visits. Forty-two percent of youth in the intervention group (61 out of 144) compared with 22% of youth in the usual care group (30 out of 131) asked 1 or more questions if they reported a medication problem.

Table 3 presents the GEE results predicting whether caregivers who expressed 1 or more medication problems asked 1 or more asthma medication questions during their children's visits. Thirty-three percent of caregivers in the usual care group and 37% of caregivers in the intervention group asked 1 or

Table 3. Generalized Estimating Equations Predicting Whether Youth ($n = 278$) and Caregivers ($n = 248$) Who Report One or More Problems in Using Medications Ask One or More Medication Questions During Their Visits

Independent Variable	Odds Ratio (95% Confidence Interval)	
	Youth	Caregiver
Youth sex, male	2.4 (0.9–4.5)	... ^a
Youth age	1.0 (0.9–1.1)	...
Youth race, white	1.2 (0.6–2.2)	...
Caregiver sex, male	...	1.0 (0.4–2.5)
Caregiver age	...	1.0 (0.9–1.1)
Caregiver race, white	...	1.7 (1.1–2.7) ^a
Caregiver's years of education	...	0.9 (0.8–1.0)
Asthma severity, moderate/severe	1.8 (1.1–3.1) ^b	1.3 (0.8–2.0)
Years living with asthma	1.1 (1.0–1.2)	1.0 (0.9–1.1)
Language spoken at home, Spanish	1.5 (0.4–5.3)	1.7 (0.8–3.7)
Youth was in intervention or usual care group	3.1 (2.0–4.7) ^c	1.1 (0.7–2.0)
Youth taking ≥ 1 control medication	0.8 (0.4–1.8)	1.1 (0.5–2.6)
No. reported problems at baseline	0.7 (0.6–1.0)	1.4 (1.1–2.0) ^d
Provider age	1.0 (0.9–1.1)	1.0 (0.9–1.1)
Provider race, white	0.7 (0.3–2.0)	0.9 (0.6–1.6)
Provider sex, female	0.7 (0.4–1.6)	0.6 (0.4–0.9) ^b

^a In our prespecified analysis plan we did not have youth demographics in the caregiver models.

^b $p < 0.05$.

^c $p < 0.001$.

^d $p < 0.01$.

more questions if they reported a medication problem.

Table 4 presents the percentage of youth and caregivers who still reported having the same asthma medication problem 6 months later. Sixty-nine percent of youth ($n = 95$ of 137) and 61% of caregivers ($n = 81$ of 132) reported a problem with remembering to take their asthma medications at baseline and again 6 months later. Forty-two percent of youth continued to report a problem using their asthma medication at school. Fifty percent of caregivers continued to report not knowing whether their child was using their inhaler correctly.

Of the youth who reported an asthma medication problem at baseline, 74% still reported having 1 or more asthma medication problems 6 months later ($n = 153$ of 206 who had a 6-month interview). Table 5 shows the GEE results predicting whether the youth continued to report having 1 or more asthma medication problems at 6 months.

Of the caregivers who reported an asthma medication problem at baseline, 71% still reported having 1 or more asthma medication problems 6 months later (132 of 187 who had a 6-month

interview). Table 5 also presents the GEE results predicting whether the caregiver continued to report having 1 or more asthma medication problems at 6 months.

Discussion

The study results indicated that the intervention was successful at increasing question-asking among youth who reported asthma medication problems. Among youth who reported a medication problem at baseline, 42% of youth in the intervention group compared to 22% of youth in the usual care group asked 1 or more questions. In the observational study we completed approximately 10 years ago, only 11% of youth who reported a medication problem asked 1 or more questions.¹¹ Perhaps the overall increase in number of youth asking questions is an indication of youth becoming more involved during their visits over time. Future research should investigate whether youth question-asking and involvement in visits is increasing in other diseases as well. More importantly, the intervention almost doubled the percentage of youth who asked 1 or more questions about asthma

medications among those who reported a medication problem.

Both youth and caregivers rarely asked 1 or more medication questions in the specific area where they reported a medication problem. Part of this might be because the specific questions that are on the 1-page prompt list do not include questions about some of medication problems that youth and caregivers reported.¹⁴ For example, the question prompt list does not have questions that focus on overcoming difficulties when using medications in school or strategies on how to remember to take asthma medications, which were problems reported by many youth at both baseline and 6 months. Future research should examine whether adding questions to the prompt list about how to overcome difficulties in these areas increases youth question asking in these areas and reduces the number of asthma medication problems that youth report over time.

The youth question prompt list did have 2 questions focusing on how to use asthma devices (How long do I hold my breath after I inhale my medicine? Can I show or tell you how I use my medicine so you tell me if I am doing it right?) and only 27% of youth reported still having difficulty using their inhaler correctly at 6 months. Perhaps future work with question prompt lists could have a section where the youth checks the problems they are having in using their asthma medications, and next to each problem there could be a question to ask the provider how to overcome the difficulty.

An important finding is that 74% of youth and 71% of caregivers who reported problems at baseline continued to report 1 or more problems 6 months later, suggesting that patients are not receiving the information they need or perhaps are not comprehending the information. Even some of the patients in the intervention group did not ask some or all of the prompt list questions that they had checked. Pharmacists are an excellent resource who could work with youth and their caregivers to help them overcome the problems that they experience when using their asthma

Table 4. Percentage of Youth And Caregivers Who Still Reported Having A Medication Problem 6 Months Later ($n = 262$)

Type of Medication Problem Youth Reported to Research Assistant	Fraction (%) of Youth Who Still Had Problem 6 Months Later
Side effects	26/74 (35.1)
Difficulty remembering to take	95/137 (69.3)
Difficulty using in school	38/89 (42.7)
Difficulty using inhaler correctly	16/59 (27.1)
Difficulty understanding medication instructions	12/41 (29.2)
Type of medication problem caregivers reported to research assistant	Fraction (%) of caregivers who still had problem 6 months later
Side effects	27/57 (47.4)
Difficulty remembering to take	81/132 (61.4)
Difficulty using inhaler correctly	28/56 (50.0)
Difficulty paying for medication	35/73 (47.9)
Difficulty understanding medication instructions	9/31 (29.0)
Difficulty getting refills on time	5/17 (29.4)

Table 5. Generalized Estimating Equations Predicting Whether Youth (N = 206) And Caregivers (n = 187) Who Reported One or More Problems in Using Medications at Baseline Still Reported One or More Problems at 6 Months

Independent Variable	Odds Ratio (95% Confidence Interval)	
	Youth	Caregiver
Youth sex, male	1.0 (0.9–1.2)	...
Youth age	1.3 (0.5–2.9)	...
Youth race, white	1.2 (0.6–2.3)	... ^a
Caregiver sex, male	...	5.1 (2.1–12.0) ^b
Caregiver age	...	1.0 (0.9–1.1)
Caregiver race, white	...	0.6 (0.3–1.6)
Caregiver's years of education	...	1.0 (0.8–1.1)
Asthma severity, moderate/severe	1.2 (0.6–2.6)	1.2 (0.7–2.2)
Years living with asthma	1.0 (0.9–1.1)	0.9 (0.8–1.0)
Language spoken at home, Spanish	0.6 (0.2–2.0)	0.7 (0.2–2.2)
Youth was in intervention or usual care group	1.2 (0.6–2.7)	0.9 (0.3–2.4)
Youth is on one or more control medications	1.5 (0.5–4.8)	0.9 (0.2–4.2)
No. reported problems at baseline	2.5 (1.4–3.3) ^b	2.4 (1.3–4.3) ^c
Youth asked one or more medication questions at baseline	0.7 (0.4–1.2)	...
Caregiver asked one or more medication questions at baseline	...	1.5 (0.6–3.9)
Provider educated about control medications at baseline	1.9 (0.9–4.2)	1.4 (0.6–3.1)
Provider educated about rescue medications at baseline	1.0 (0.5–2.1)	1.8 (0.7–4.4)
Provider age	1.0 (0.9–1.1)	1.0 (1.0–1.0)
Provider race, white	1.8 (0.6–5.4)	2.5 (0.9–7.3)
Provider sex, female	1.5 (0.6–3.8)	0.8 (0.2–2.4)
Youth is on Medicaid	...	0.3 (0.1–0.8) ^d

^a In our prespecified analysis plan we did not have youth demographics in the caregiver models.

^b $p < 0.001$.

^c $p < 0.01$.

^d $p < 0.05$.

medications.^{21–24} Pharmacists could assess and demonstrate asthma medication device technique when medications are picked up. They also could strategize with families on ways to remember when to take asthma controller medications.^{22, 23} In addition, the question prompt list with video intervention should be tested in pharmacy settings. The videos used with

the intervention group in this study can be found online.¹⁶ The actual question prompt list can be found in our prior published work.¹²

These study results are in agreement with prior work that found that white adults were more likely to ask questions about hand surgery than nonwhite adults and were more likely to make statements

about their vision quality-of-life to providers than nonwhite adults.^{12, 25} Cox et al.²⁶ found that African-American families were significantly less likely to be actively engaged in decision-making about respiratory conditions than white families. The authors also found that fewer than 2% of families were actively engaged during visits, which the research team defined as proposing treatment plans.²⁶ All health-care providers should encourage nonwhite caregivers to ask questions they may have about their child's asthma medications. Healthcare providers, such as pharmacists, could ask something such as, "What problems or concerns are you having with your child's asthma medications?"

Unlike prior work, which found an association with question-asking and health literacy or education level,^{12, 25} we did not find that caregiver education was associated with whether caregivers asked 1 or more questions about their child's asthma medications. We also found that the intervention was successful at increasing youth question-asking about medications, regardless of whether the caregiver reported that the family spoke English or Spanish at home.

The results of this study were limited in generalizability in that it was conducted in 4 pediatric clinics in North Carolina. Another limitation is that we do not know how many of the patients who the clinic staff referred chose not to talk to the research assistant. However, we could not ask the clinic staff to track these numbers because of the busyness of the clinics and our promise not to interrupt flow. Another limitation was that we were unable to collect 6-month follow-up data from 27% of families, primarily because of a hurricane that struck the communities. However, the percentage of families missing from the intervention and usual care group at 6-month follow-up were similar. In addition, patient and caregiver literacy was not assessed. Despite its limitations, the study demonstrated that an asthma question prompt list with video intervention improved youth question-asking among youth who expressed 1 or more problems in using their asthma medications.

Conclusion

Among youth who reported 1 or more problems with using their asthma medications, the intervention significantly increased youth question-asking. Many youth- and caregiver-reported problems with using asthma medications persisted over time.

Disclosures

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