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ORIGINAL ARTICLE

Patients' and providers' perceptions of asthma and asthma care: a qualitative study

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Abstract:

Background: Differences in patients' and providers' perceptions of asthma and asthma care can create barriers to successful treatment. The primary goal of this qualitative study was to further explore patient and provider perceptions of asthma and asthma care as part of a larger Asthma Comparative Effectiveness Study. **Methods:** Focus groups held every 6 months for 3 years were designed to have a mix of both patients and providers allowing for unique understanding around asthma care. **Results:** The discussion centered on goal setting, asthma action plans and prevention strategies for asthma exacerbations. Three overarching themes, with a variety of subthemes, emerged as the main findings of this study. The three main themes were Cost/Economic Barriers/Process, Self-Governance/Adherence and Education. **Conclusions:** These themes indicated a strong need for patient educational interventions around asthma as well as education for providers around cost, insurance coverage and patient-centered communication. Specifically, education on learning to use inhalers properly, avoiding triggers and understanding the importance of a controller medication will benefit patients in the long-term management of asthma.

Keywords

Education, focus groups, goals, shared decision making, triggers

History

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Introduction

Asthma is a chronic lung disease with a high healthcare burden. In the USA, more than 23 million people, including approximately 7 million children, are affected by the disease [1,2]. The economic burden of asthma is also substantial, with 2 million emergency department visits, 504 000 hospitalizations, 13.6 million physician office visits, over 4200 deaths and \$15 billion in direct medical costs annually [3–5]. In North Carolina during 2010, the lifetime prevalence of asthma in adults was 12.6%, impacting over 800 000 individuals [6].

Differences in patients' and providers' perceptions of asthma and asthma care create barriers to successful treatment. Often patients differ with regard to asthma knowledge, awareness of side effects and disease symptoms, and adherence to asthma therapy [7]. These differences make paternalistic approaches to asthma care ineffective. Qualitative methods, such as focus groups, can help to clarify patient beliefs, feelings and behaviors regarding their disease. Focus groups can also provide insight into clinician beliefs, feelings and behaviors around asthma and asthma care [8,9]. Previous research has shown that many patients with asthma

may not achieve long-term asthma control. Typical barriers to care include communication issues [10,11], lack of self-governance and non-adherence [12], ignoring triggers [12,13], lack of identity with the disease [10] and overuse of rescue medication [14]. By design, the primary outcomes for these studies were the qualitative results themselves. Likewise, not only our study used similar qualitative methods for outcomes, but also from the outset we used these methods to inform both the iterative design and implementation of a large comparative effectiveness study within an integrated healthcare system. In addition, limited research has examined provider and patient perspectives in combined (patient and provider) focus groups, so in this study we designed combined groups to illicit their shared perspectives on asthma management.

The primary goal of this qualitative study was to further explore patient and provider perceptions of asthma and asthma care. This qualitative study was part of a larger Asthma Comparative Effectiveness (ACE) study. The ACE study took place within a network of over 100 primary care clinics practices that are part of Carolinas Healthcare System, a large integrated delivery system based in Charlotte, North Carolina. The overall goal of the ACE study was to improve health outcomes for patients with asthma using comparative effectiveness research. A group of community partners, healthcare providers and research team members collaborated to understand the factors that impact asthma outcomes and

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compare various methods of care, shared decision making (SDM), integrated approach to care (IAC) using quality nurses and usual care (control). This study examines patient and provider perceptions of care during a 3-year period during the implementation of novel approaches to asthma management. The following research question was examined. What are patient and provider perceptions of asthma and asthma care across a large healthcare system? We hypothesized that asthma patients and providers within a large healthcare system would discuss a broad range of asthma care barriers and challenges from which specific themes would emerge.

Methods

This study was approved by Carolinas HealthCare System’s Institutional Review Board. We designed and conducted a series of focus groups with parents, children, adults, physicians, nurses and other clinical staff in 15 different practice settings (Table 1). The focus groups’ objectives were to identify patient and provider perceptions of asthma and asthma care across a large healthcare system. Participating practices specialized in pediatrics, family medicine and internal medicine. Focus groups were conducted in rounds every 6 months over 3 years. Participants were invited from clinics across a large healthcare system that was implementing varying asthma care strategies as part of the ACE study. Six of the clinics were providing care for many of the community’s underserved and disadvantaged population and were implementing a SDM approach to care for patients with asthma. SDM supports patient self-management by involving the patients in developing a treatment plan that meets their goals and preferences [15]. Seventy-five of the clinics were implementing an integrated approach to care (IAC), where standard appropriate care measures such as documentation of day time and night time symptoms, use of controller medications and administration of flu vaccine were incorporated into the electronic medical record (EMR) [(16)]. The remaining 20 clinics had neither of these specific asthma interventions and were termed “usual care”.

Sample and recruitment

To facilitate recruitment, the billing database was used to compile a list of patients with a diagnosis code of asthma and an office visit within the last year. A member of the research team used the list to call patients and invite them to participate. Calls continued until the desired sample size was reached for each focus group. Typically, over-recruitment was necessary for focus groups to compensate for a 40–50% rate of non-attendance. Providers from the focus group clinics were invited to attend. Participants were verbally consented for participation at the start of each focus group.

In all, 26 focus groups were held during the study. As a broad perspective was desired, focus groups contained both patients and providers with varying demographics (Table 1). The focus groups were categorized into one of three clinic groups (Table 2). The IAC clinics had the integrated approach to care, SDM clinics had the shared decision makings and control clinics had usual care. Patients ranged in age depending on the clinic. Patients from the SDM clinics had higher proportion of minority/ethnic population than patients from the IAC and control clinics.

Although clinics had more than one focus group over time, patients did not attend more than one group; so each focus group was unique in its population. In pediatric clinics, most patients were under 18 years of age and many times were accompanied by their parents. In these cases, parents would come to the focus groups either on behalf of their child or with their child. Many children engaged in conversation but parents more often engaged in conversation. Groups were between 5 and 10 participants with at least 1–2 providers in each group except for two clinics in the control group that requested separate focus groups for providers. One clinic expressed a lack of comfort discussing asthma and asthma care in a group with patients. The other clinic chose to do a provider only group first to better understand the purpose of the focus groups and then followed up with a mixed, patient and provider group. Over the course of the qualitative study, approximately 200 patient and providers participated in focus groups.

Table 1. Clinic demographics.

ID	Clinic Type	Group	# Of Patients	% Caucasian	% African-American	% Other	% Hispanic	% Female	% Under 18
1	Pediatrics	Control	10 500	32	48	20	8	48	98
2	Internal medicine	Control	2100	77	13	10	6	60	19
3	Family medicine	Control	19 300	67	20	13	9	56	7
4	Family medicine	Control	7500	94	5	1	2	54	9
5	Family medicine	Control	12 400	61	29	10	5	55	8
6	Pediatrics	Control	8100	63	17	20	6	50	97
7	Family medicine	Control	2900	88	3	9	2	54	20
8	Family medicine	Control	2000	95	3	2	3	50	26
9	Internal medicine	IAC	13 400	59	33	8	3	57	0
10	Family medicine	IAC	3900	73	20	7	5	53	14
11	Internal medicine	SDM	8100	8	81	11	8	63	33
12	Family medicine	SDM	7600	18	75	7	7	63	28
13	Pediatrics	SDM	5900	4	42	54	53	48	99
14	Family medicine	SDM	9600	6	34	60	56	57	66
15	Pediatrics	SDM	3700	10	52	38	34	63	75

IAC, integrated approach to care; SDM, shared decision making.

Table 2. Intervention group within ACE study and focus group distribution.

Group	Description	Number of patient and provider groups	Number of patient only groups	Number of provider only groups	Total number of groups
Control	Clinic with no exposure to IAC/SDM	9	2	1	12
IAC	Clinics with an IAC intervention only	4	0	0	4
SDM	Clinics with an SDM intervention	9	0	1	10

Focus group guide and analysis

Focus groups lasted 1 h and utilized a standardized open-ended question guide that explored patient and provider perceptions of care. Examples of questions that participants were asked included:

- “What sort of goals, around your asthma care, did you and your healthcare provider talk about?”
- “What did you and your provider talk about in reference to your values, opinions, traditions and culture? Were these things taken into consideration when your provider recommended asthma treatments?”
- “What choices were you given to decide on for your asthma treatment?”
- “When meeting with your provider how did you plan ahead for difficult times? And did you talk about how to best take care of your asthma during those times?”

These groups, of patients and providers combined, created an open dialogue about medication, side effects, goals and cost outside of the context of normal clinic setting. Careful moderation and guidance was provided to all participants to prevent the request for or delivery of medical advice during the sessions. After participation in the focus group, as compensation for time spent in the group, each participant received an incentive valued at \$25.

Focus groups were transcribed and de-identified by a member of the research team. Transcripts were reviewed by the moderator before being read and analyzed for triangulation. Then, transcripts were read and analyzed by the research team using the immersion and crystallization technique [17–19]. We also used a thematic approach where each team member listed themes and themes were then cross-referenced and discussed in collaborative meetings [8,14, 20,21]. A compiled list of themes was then sent out once again for verification by the group [22,23]. From these focus groups, many common themes emerged highlighting gaps in healthcare and understanding around asthma.

Results

Three overarching themes emerged with multiple associated subthemes highlighted by patients, providers and parents; these themes were Cost/Economic Barriers/Process, Self-Governance/Adherence and Education. The themes that were detected did not differ among the usual care, SDM and IAC clinic groups, nor did they change over the course of the study. In addition, there were no distinctions in themes by clinic specialty (e.g. pediatric vs internal medicine).

Cost/Economic Barriers/Process

Themes highlighted were the high cost of medications to the patient and the provider's lack of knowledge of medication

costs [12,24,25]. Additional barriers included a lack of insurance or the need for prior approval for patient's medications. Process difficulties articulated ranged from: not having enough time with patients, difficulties using the EMR effectively, problems gaining access to their provider and providers knowing (or not knowing) the formularies and other caveats of prescribing asthma medications.

• Time/productivity

Providers voiced this subtheme. They spoke of frustrations with time constraints. Although the process of a visit may be prolonged by as much as an hour for a patient, only 15 min are allotted for face to face provider time. This leaves virtually no time to cover all subjects like cost and education [26,27].

Provider: If I get more time, I can definitely ask when they have a 6-month recheck what the next goal is. Do you want to do something different? But that's not something I routinely ask.

• Cost of prescriptions/lack of knowledge of insurance rules

Cost was a constant theme. Patients questioned the affordability of medications and stated this presented a significant barrier to medication adherence. Providers admitted that with constantly changing formularies and insurance plans they had little knowledge of which medications were both efficacious and cost effective. Many providers were not aware of how much many of their patients were spending on medications [28].

Provider: The aero chambers, some insurance companies cover them, a lot don't. They are cost-prohibitive for us to just buy them because we can't bill for them because the insurance won't pay for them that way either. It's figuring out creative ways for things that we know are good yet we are caught in the middle. We run into that big-time with inhaled medications. ... But if you have asthma, or chronic lung disease, and you need an inhaled medication, forget it. It's terrible. You can't find an inhaler control medicine for less than 90 bucks a month. That is the generic.

Provider: With everybody I've sat with, I give them the this is what's out there, this is what your insurance will cover, this is what I'm willing to use but I really prefer this one over that one. But usually, from my experience, cost dictates.

Patient: I've been self-employed the last 4 years. I went through lay-offs. When I had to pay for Advair without a copay – I was livid. This is almost \$400 and I need this to live? This is a really bad problem. So I got off of it and almost died.

- EMR productivity

EMR systems are considered a mixed blessing, they are often onerous to use and require knowledge that is not necessarily intuitive. Although, some providers thought that the EMR was helpful and easy and helped them to track their patients easily. Others mentioned how cumbersome it could be and how it was difficult to find previously entered data. Clearly, both providers in the IAC and SDM groups recognized the importance of the EMR in maintaining accurate records for their patients and the potential for registry functions.

Provider: We have electronic medical records now; in a lot of circumstances it gives us green or red bars that tell us that your insurance (Cigna or BCBS) prefers and that allow us to have a conversation. We can say, this is what's covered, and these are the options. No longer is it just the doctor saying, 'Well I like Advair best so I'm going to give everybody Advair samples and write Advair.'

- Medication choices

Medication choice was an area of discussion, providers often had difficulty with the thought of giving choices to the patient and most patients did not seem to feel they had choices. Providers felt limited to the drugs covered by insurance carriers. As mentioned in the cost section, providers saw these limitations as barriers to offering choice of medication to patients.

Provider on choice: Not a lot. I like to use generic medicines and not spend a whole lot of money. Let's start with the most reasonably priced, most effective. There are not a lot of choices.

Patient: I would prefer having a choice.

SDM Patient: ... I was the one that told them that the other medicine wasn't working for me so, and they helped me find another medicine that would help me.

- Auxiliary and alternative choices (alternative therapies, breathing exercises, exercise, relaxation)

Most patients verbalized interest in alternative therapies, but a few patients actually practiced these therapies. Patients shared stories of herbal medicines, breathing techniques, relaxation techniques and even exercises that helped them to improve their asthma and lung function. One of the positive consequences of these focus groups was that they provided shared educational time for stories and useful tips between patients and providers.

Patient: I tried taking a supplement I'd heard about, some grape seed extract, aloe; it seemed to help. But when cats got around, after you've hit the albuterol twice you start to think that it isn't going to work.

Provider: That is different for everyone and it is important to explore that. Yoga can be helpful; I'm a proponent of that, deep breathing. Your body is very different in how you react to those triggers. You've got to have that rescue. I'd be all for trying the remedies like eucalyptus, massage, acupuncture. I wouldn't rely specifically on that especially in an emergency situation.

Self-Governance/Adherence

Barriers were mentioned around self-governance and adherence in reference to patients taking their asthma medications.

- Asthma action plan

The asthma action plan is a document that allows patients to self-manage their daily care. The plan is divided into three zones: green, yellow and red. The green zone includes everyday medications taken to achieve good control. The yellow zone includes an addition of rescue medications to add when asthma symptoms are getting worse and when to call the provider. The red zone is a plan of action for an asthma emergency. There was wide variation on how an asthma action plan was utilized [29]. Some people considered it to be their first decision point before contacting a healthcare provider in the case of an exacerbation, whereas other people did not use it at all. In addition, it appeared that some patients were completely unfamiliar with the document, in spite of its importance for patient education and self-management according to the 2007 NAEPP guidelines [30].

Patient: And once I showed my sister and them how to use the asthma action plan, they haven't been hospitalized as much.

Nurse: It is a good idea to have an asthma action plan when you are in school in case your inhaler isn't working for you. Everyone needs to know, not just the nurse.

Patient: I don't think there was anything as far as a plan.

- Goal setting

Setting goals is a mainstay of patient engagement. Many providers talked about goal setting. They recognized the importance and enjoyed incorporating it into the visit but were limited by time. Many of the providers felt they lacked the time necessary time to set big goals or even small goals with patients. Other patients mentioned that exercise and nutrition goals had been set with their provider in order to help manage their asthma [11,14,31,32].

Patient: ...my goal is to be able to walk more and lose more weight, I've started a little bit, I've lost five pounds and um... so far it's just such a struggle, 'cause you know, anyway my asthma this year has been trying to get me down and my body is- I'm wore out, I'm tired.

Patient: I have to take care of family, so this is my goal, this is what I'm going to do. And I've got to find a good time of the day to walk because it is so humid. You know, if there's a breeze blowing I'm outside because I enjoy the breeze, but I have to, again, limit myself so it's just a little bit at a time and going. You know something to work for.

Patient: Yep. What he did in my case, he, we set the goals, he actually said to me, we're going to get you breathing easier, feeling better and that's, so ... and this is how we're going to do it. And we just talked about it. And I went along those lines with him too. There's everything, you have to keep a good attitude that has a lot to do with it.

- Lack of identity; not wanting to acknowledge disease [10]

Many patients had not come to recognize asthma as a disease, and had come to terms with the diagnosis and the impact on their daily life. They did not want to acknowledge

that it is something that will need to be dealt with the rest of their life. This theme is consistent with other qualitative asthma work [10,33].

Patient: I have a question, is asthma like a disease?

Nurse: ...my goal is to get the students to take on the responsibility of understanding that they have a disease.

- Disease management planning

Many providers planned ahead for office visits when they had a student with asthma coming in because of the required school documentation including an asthma action plan. However, other patients and providers were split on planning ahead for the office visit. Most patients would just go in to see their doctor when they felt bad not as a preventative measure.

Patient: We've dealt with this since she was 4 and now she's 11, so we don't preemptively call Dr. X. We kind of know what to do; we know that the fall, cold weather is the major trigger for her. So I don't generally call beforehand. I call her as we start seeing things that just aren't quite right. We do have a plan from prior conversations and know when to call.

Provider: ... if they're going to go to grandma's house, and grandma has five cats. And every time they go to grandma's house, they clamp down. I've done that (on providing medicines ahead of time) with kids, some kids before, you know.

- Triggers

Triggers come up frequently during any discussion of asthma, and many patients attempted to identify on their own what triggers exacerbations of their asthma other the causes are unknown. Many identified weather related triggers; some were household triggers, pets, furniture, carpet, food, air quality, etc. For example, one patient mentioned that he would not leave his house in the summer because the humidity would cause him to have an exacerbation. Another patient could not check her mail because the walk to the mailbox would cause an exacerbation (exercise has a trigger). Asthma triggers for many patients became such a part of their lifestyle that they avoid everyday activities and become complacent with their suffering [12].

Patient 1: I can walk around the corner to my daughter's house which is no further than here to my car out there and by the time I get over there I'm puffing and panting. And if it's real, real hot, it's like if it's real hot, it sucks the air right out of you.

Patient 2: Yeah, I become a prisoner in my own house, I feel like.

Patient 3: Yeah, but if it's real cold, it seems like the cold sucks the air too.

Patient: I noticed that synthetic carpet, cats, dogs, lint, all the stuff like that triggers it.

Patient: And, I'm not really sure what really triggers my asthma, but I know there are a lot of triggers for me because dust I know is definitely one and that's my biggest one. grass and it's a lot of stuff outside, so one of the things that I'm supposed to do, but don't do, is making everybody

take off their shoes before they enter my house. I don't even do it so, that's one of my problems, but I'm pretty new to asthma, so I'm still trying to pretty much learn and feel my way through the whole ordeal.

Education

Public education and asthma awareness was mentioned in every group with some variation. Some groups wanted to educate the public on the risks of asthma exacerbations based on lifestyle behaviors, such as smoking and perfume usage and air quality. Others wanted to focus on self-management skills and techniques, such as knowledge and use of medications [19,34]. Provider education was also emphasized pointing out the lack of education about various insurance formularies and types of asthma medications.

- School issues (politics, inhaler knowledge)

Pediatric patients spend more than 8 h/day at school, yet many patients and parents were concerned about the lack of communication between the school, patients with asthma and their parents. In the groups with pediatric patients and their parents, the discussion often centered on issues with school administration and communication. They felt that the schools made it difficult for their kids to manage their asthma, by not allowing them to carry their own inhalers. Communication between providers, school nurses, parents and teachers was school dependent and the level of involvement that parents/caregivers had in their students' lives [13,35]. There is little standardization from school to school contributing to the confusion [29]. In many schools those caring for the child during the school day did not understand the importance of having up-to-date inhalers available.

Parent: He has all his information here, so why can't he have it (albuterol inhaler) in his pocket. It's in his pocket. It's not like he's out playing with it.

- Controller versus rescue inhaler

Conflicting views were presented regarding controller and rescue medications. Despite providers feeling that they were clear about the differences between these two types of medications, many patients did not know the difference between their controller and rescue inhaler. Some patients used them interchangeably and others only used the one that seemed to work for them at the time.

Patient: I was like supposed to take so many puffs a day, and I over use it.

- Options

Providers seemed receptive to education about medication choices. Most providers did not give options due to limitations of formularies and insurance restrictions. When providers were offered new ways of thinking about options such as convenience, cost and effectiveness, they expressed openness to the idea.

Provider: You know with our new EMR now, we can go and write a prescription and it will give a general idea whether its green, white, or red and so we can give them

choices but some of those choices are limited based on formulary coverage.

SDM Provider: I think there's different styles in medicine but what I've heard from other patients regarding our practices, is that it may not be formal shared decision making every time but we're in a demographic that we're the physicians. So, when you do give them a choice a lot of the times the choice is well you're the doctor so you tell me what to do and so we start to learn our patients like who wants to be involved in that decision making. I always thinks it's like a cut off at like somewhere 55–60 where, all the people 60 and above, they're here for me to make the decision for them because that's their train of thought, that's their culture.

Patient: I feel like it's best for you just to tell me what to do, cause I had no idea what asthma was. I just had it like maybe ... two or three years and I didn't know and he told me, and that's what I went with and, I trust him to tell me what to do.

- Techniques

Effective use of inhalers was a frequent theme; many patients had limited understanding of how to effectively use inhalers. Several patients discovered that their techniques were faulty and that they were only receiving a portion of their dose. Although spacer devices are thought to be the most effective way to deliver inhaled medications, few patients are given spacers and even fewer are instructed on their use. According to the guidelines, most patients should be using spacers but the cost may be a significant barrier [22]. Due to the cost, some providers resist using them in medication delivery. In the majority of our focus groups, only half of the patients knew what a spacer was, but the remainders of participants were curious on how a spacer may improve the delivery of medication.

Provider: Yea, maintenance therapy is a very hard concept to get over and then I just think most people don't know how to use the inhaler either, so I try to go out of my way on explaining to them how, you know, how and I'll ask them well you show me you know kind of an imaginary inhaler and how you do it, and they go 'spoosh spoosh' and it's like no that's not how you have to use it. And I go through a full, uh.

SDM Patient: I had to change you know because I was using it the wrong way. But then when I went there and they taught me how to use it, I started to feel much better later on.

SDM Patient: I think it was a good experience because they taught me how to use my spacer. I had a spacer for my asthma, but I never used it before. They taught me how to use it so that it can help me and prevent me from having asthma attacks and stuff. It was a good visit for me.

For the theme of Self-Governance/Adherence and Cost, we heard comments similar to this last patient's comments around making medications last,

No, it's been awhile. But one of my meds I cut in half because a 30 day supply is \$75. There was no generic for

that one. It was pill form. It is important for doctors to really understand that just because a person dresses nice doesn't mean ... I can come in a beautiful suit but I can't afford my medication.

Many providers felt that insurance companies were a barrier to giving quality care and options.

It totally depends on what we can do. If we have options, we give them. Umm, and you know with the advent of EMR we are able to see more what's on formulary, what's available, umm for sliding scale patients, what referral is available, what investigation is available. For Medicaid and Medicare, the constant struggle with getting a test authorized before we even can get a result, before we can even get a patient scheduled for it, so for us I think, we don't always have the options for choices...

There was an obvious need for more education around the importance of using a controller medication.

Well, I wasn't sure about this medication because to tell you the truth, they had prescribed this medicine months ago, I think last year sometime, and I refused to take it. I just, I was comfortable taking my own medicine. I'm a person that doesn't change very much, to tell you the truth. And I know it's probably good for you, but I'm at that age now where I'm comfortable and I don't like medicines.

Discussion

The objective of this qualitative study was to better understand patient and provider perceptions of asthma and asthma care across a large healthcare system. The themes of Cost/Economic Barriers/Process, Self-Governance/Adherence and Education and multiple sub-themes emerged from focus groups with providers and patients.

Although our study provides a comprehensive qualitative report on the perceptions of asthma and asthma care across a large healthcare system, the study has limitations. The focus groups were conducted across different types of clinics as described in Table 1; however, the demographic characteristics of the focus group participants were not captured. Therefore, although all attendees were clinic patients with asthma, we were unable to verify that the demographics of the participants selected for the focus groups evenly reflected the clinic demographics. Although the number of focus groups captured a broad spectrum of clinics across the system as a whole, some of the focus groups had a low number of participants. The responses from these focus groups could show bias. In addition, qualitative data that are interpreted by multiple people can be prone to bias. The number of focus groups for each clinic group was at least four (Table 2), and all reached a point of saturation when the transcripts were analyzed. However, some studies suggest at least five for each clinic group when conducting qualitative research [36]. Since this is a qualitative study, quantitative results of the overall ACE study were not included which would have provided additional information about the impact of SDM and IAC on asthma care.

Of the main themes found in the qualitative analysis, many similar themes have been detected in other studies. For example, the following themes are mentioned in the literature. Communication issues between schools and parents [11,13], symptoms, activity limitation and use of rescue medication [14,37], patients' lack of identity with the disease [10,12,37] and cost of medications and change in formularies [25].

Although all three themes and many subthemes have been individually addressed in previous studies, here we describe themes repeated broadly across a larger integrated healthcare system. In addition, by incorporating both patient and providers in the focus groups, we provide a novel way for providers to more broadly appreciate patient perspectives. This sets the stage for changing the provider's approach to care delivery by having providers in the room, while patients discussed their perspectives on asthma management. These insights allow feedback to the providers of the broader process around asthma management and what needed to be improved and/or duplicated across the system [15,16,38]. Bringing providers and patients into a room to discuss a disease clarifies perspectives, motives and feelings for all participants involved [13,16,38]. Anecdotally, our team heard from providers that the combined groups (patients and providers together) helped them to understand the patients' perspective in a way most providers had not considered before. The combined focus groups also allowed providers to have a prolonged reflection on the patient perspective, which is difficult to achieve within the time frame of a medical visit. It is possible that gaining this perspective allows providers to better manage their patients, but further research is necessary to fully substantiate.

In conclusion, our findings provide useful insights into current needs around asthma care. There is a strong need for continuous educational interventions around asthma. Patient education about proper inhaler use, trigger avoidance and the importance of controller medications can be valuable in the long-term management of asthma among patients across all socioeconomic backgrounds. Also, provider education about medication cost, insurance coverage and patient-centered communication is needed. Our method of combining patients and providers in a focus group created a unique outcome, which allowed providers to understand patient perspectives better and vice versa. Future application of this methodology to other chronic conditions may be important to improving patient care by exposing providers to patient experiences that may only emerge during a group discussion.

Declaration of interest

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