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Self-Management of Acute Asthma among Low-Income Urban Adults

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Abstract

One approach to address asthma disparities has been to create evidence-based guidelines to standardize asthma care and education. However, the adoption of these recommendations has been suboptimal among many providers. As a result, low-income minority patients may not be receiving adequate instruction in asthma self-management. In addition, these patients may fail to follow guideline-based recommendations. We conducted 25 interviews to identify the extent to which urban low-income adults have received training in, and implement, self-management protocols for acute asthma. Twenty-five adults (92% female; 76% African American; mean age 39) were enrolled. Only one subject had received asthma self-management training and only 10 (40%) used short-acting beta-2 agonist-based (SABA) self-management protocols for the early treatment of acute asthma. No subject used a peak flow meter or an asthma action plan. Most (52%) chose to initially treat acute asthma with complementary and alternative medicine (CAM) despite the availability of SABAs. Importantly, 21 (84%) preferred an integrated approach using both conventional and CAM treatments. Four themes associated with acute asthma self-management emerged from the qualitative analysis. The first theme *safety* reflected subjects' perception that CAM was safer than SABA. *Severity* addressed the calculation that subjects made in determining if SABA or CAM was indicated based on the degree of symptoms they were experiencing. The third theme *speed and strength of the combination* described subjects' belief in the superiority of integrating CAM and SABA for acute asthma self-management. The final theme*sense of identity* spoke to the ability of CAM to provide a customized self-management strategy that subjects desired. It is unclear if subjects' greater use of CAM or delays in using SABA-based self-management protocols were functions of inadequate instruction or personal preference. Regardless, delays in, or under use of, conventional self-management protocols may increase the risk for an untoward outcome. To that end, all patents' acute

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asthma self-management strategies should be evaluated for their timeliness and appropriateness. This would be of particular importance for vulnerable populations who bear a disproportionate burden of the disease and who have the fewest resources.

Keywords

acute asthma; self-management; complementary and alternative medicine (CAM); minority; health disparities; qualitative

INTRODUCTION

In response to increasing asthma prevalence, morbidity and mortality, particularly among low-income minority patients, the National Institutes of Health (NIH) developed provider guidelines to standardize and direct patient diagnosis, treatment and education in the United States. The first asthma guidelines were released in 1991 and subsequently revised three times, most recently in 2007 (1). Despite these extraordinary efforts, guideline adoption has been disappointingly low (2,3). Poor acceptance among practitioners can result in inadequate translation of the guidelines' key care and education messages to high-risk minority patients.

Guidelines discuss the importance of training patients on asthma pathophysiology, trigger identification and remediation, use of asthma medicines, devices and written asthma action plan to aid in the identification of symptoms and appropriate response (1). However, a meta-analysis of 24 studies conducted between 1993 and 2003 demonstrated a considerable gap between what the guidelines propose to be fundamental self-management behaviors and what training and resources patients have received (4). For example, written asthma action plans based on measurements of peak flow are integral to patients' self-management, directing both their daily regulation of asthma and the early treatment of exacerbations. More than 70% of providers report providing written asthma action plans to their patients although only about 30% of patients report having received a plan (4,5). This gap may contribute to inadequate home treatment of acute asthma, inappropriate treatment delays, and increased risk of hospitalization (1,6).

Even in the setting of a formal self-management training program, acute asthma exacerbations may not be fully eliminated (7). Other causes for patients' inadequate implementation of self-care protocols may include an impaired perception of acute asthma (1), limited health literacy (8,9) or preference for unconventional self-management strategies. Since previous studies have clearly demonstrated the negative impact of poor symptom perception and limited health literacy on asthma self-management, we undertook this exploratory study to more closely examine to what extent SABA protocols and unconventional self-management strategies, including complementary and alternative medicine (CAM)(10,11), were employed among a vulnerable population of low income urban adults with acute asthma.

METHODS

Qualitative research is an inductive method of data collection and analysis that enhances understanding of the unique experiences, perspectives and behaviors of individuals. Naturalistic inquiry is appropriate to use when little is known about the phenomenon of interest, such as self-management of acute asthma in this study. We therefore conducted semi-structured interviews between January of 2005 and May 2006 with 25 low-income adults recruited from both specialty (S) or primary care (PC) sites: 2 in Philadelphia (S and PC), 1 in Baltimore (S) and 1 in Washington, DC (PC). One interview focused exclusively on self-management of acute asthma at home.

This convenience sample of adults met inclusion criteria that stipulated a physician-diagnosis of persistent asthma necessitating treatment with an inhaled corticosteroid (ICS), ages 21–55 years, and insurance coverage that included a prescription drug plan. Insurance was an important inclusion criterion because the investigators did not want inaccessibility to medical care or cost of medicines to unduly influence the self-management decisions that subjects made. Exclusion criteria included inability to speak English or lacking in the mental capacity to understand the informed consent process. This study was approved by the Institutional Review Board at the University of Pennsylvania for the two Philadelphia sites and the Johns Hopkins University for the Baltimore and DC sites. Subjects received $60 for the interviews and for completing an asthma diary for the 4–6 weeks between interviews, as well as either a free parking pass or mass-transit token.

Data Collection

After informed consent was secured, demographic data and asthma history were obtained. All information was self-reported; no charts were available for review although dosing information was obtained via direct inspection of ICS labels. Having a current ICS prescription in their name served as a proxy for physician-diagnosed persistent asthma in this study. Examination rooms or administrative offices were used to conduct the semi-structured in-depth individual qualitative interviews. The purpose of the interview was to solicit the patients' current home management of acute asthma and to compare that report to guideline recommendations. Each interview lasted approximately one hour and was conducted by the principal investigator. A sample interview guide can be found in Table 1.

Qualitative Analysis

Interviews were taped using audio cassettes, and then transcribed verbatim generating "word data" that was "reduced" using an iterative process typical of naturalistic inquiry. Common codes were grouped together into recurring themes that were then explored 4–6 weeks later in the second interview with enrolled subjects or in subsequent interviews with new subjects (12,13). This process of data collection and interpretation retained relevant data while discarding extraneous information. When new participants failed to provide unique perspectives on acute asthma self-management at home we concluded that data "saturation" had occurred, that is, that the breadth of experiences we could elicit from subjects had been exhausted. Data collection therefore ceased with data saturation.

RESULTS

Twenty-five low-income adults with asthma meeting inclusion and exclusion criteria were enrolled and completed the interview. They were predominantly female (92%) and African American (76%). Although most had completed high school or obtained a GED (84%) a large number were unemployed, low-income and eligible for government medical benefits. Most had had asthma since childhood. Based on their current ICS dose and asthma guideline's severity classifications, 80% of our subjects had moderate- or severe-persistent asthma. Table 2 contains additional demographic characteristics.

Of the 25 subjects enrolled, seven (28%) reported a prior history of intubation. Five (20%) subjects stated that they had had an emergency department visit for acute asthma in the 6 months prior to the interview, 4 of whom were uniquely different than those with an intubation history. Considering both demographic and disease-specific characteristics, subjects appeared to be a vulnerable population and therefore an important group to have received asthma self-management training.

Use of Guideline-Based Acute Asthma Self-Management Protocols

As seen in Table 3, one subject reported having received and utilized guideline-based training for acute asthma self-management, correctly stating the protocol for early intervention with repetitive SABA dosing. Further, only 10 individuals (40%) reported using SABAs as an early treatment for acute asthma. Of those who used SABA, 19 (76%) used less than the guideline-recommended dosing. Perhaps most disconcerting, no subject measured their peak flow or consulted a written asthma action plan as part of their self-management at home.

Use of Unconventional Self-Management Strategies for Acute Asthma

Most subjects (52%) chose an unconventional approach for the initial treatment of acute asthma. Twenty-one (84%) expressed a preference for an integrated approach in which both SABAs and unconventional treatments were used in concert to manage escalating symptoms and 96% (24) employed such an integrated approach. Broadly, these treatments can be defined as complementary and alternative medicine (CAM) in that they represented a "group of diverse medical and health care systems, practices, and products … not generally considered part of conventional medicine (14)." In this study, 96% (24) of subjects used 19 unique types of CAM for acute asthma, including fresh air (71%), water (67%), unstructured relaxation techniques (58%), idiosyncratic breathing techniques (50%) and prayer (38%). Table 4 provides a complete listing of the 19 unique CAMs employed.

Themes Associated with Self-Management of Acute Asthma

Four themes emerged from the analysis of the transcripts. S*afety* compared the perceived safety of CAM to the perceived risks associated with SABAs. The second theme, *severity* reflected the belief that milder asthma can be-and should be-treated with CAM alone. The third theme *speed and strength of the combination* highlights the belief that the combination of CAM and SABA provided superior relief than either therapy alone. Finally, CAM use helped individuals establish a greater sense of themselves as unique individuals, a theme we characterized as *sense of identity*. Table 5 provides a summary of the thematic responses.

Safety—Despite the belief by many providers that patients habitually overuse their SABAs during acute asthma exacerbations, only four individuals interviewed described such overuse. In fact, subjects were reluctant to use "too much" SABA due to the belief that tolerance might develop or that SABAs were "toxic." Moreover, one subject reported a fear of becoming addicted to SABAs. This disinclination to use SABA was counterbalanced with an enhanced desire to use CAM owing to its perceived safety. One subject said "I tried to get him to give me nature-only medicines. I read up on all medicine. I go to the web and be checking out, you know, side effects of a lot of things. But a lot of times it still doesn't ease my mind."

Severity—Delays or under use of recommended SABA self-management protocols may place individuals at grave risk during severe exacerbations. However in this study, patients routinely made treatment decisions based on their interpretation of symptom severity and not objective measure such as peak expiratory flow rates. Occasionally these interpretations were not sound. For example, one subject stated that she ascribed more mild severity to symptoms that occurred at rest although national guidelines would characterize these as more severe symptoms (1). More commonly CAM was used for milder exacerbations and SABAs were reserved for more severe symptoms. "If the asthma's not bad, like say, I get a little bit of wheezing, I just get water or just a home remedy, just get the water or just sitting calm … sometimes I try to overcome it without my medicine … I don't want to use too much," said one subject.

Speed and Strength of the Combination—Subjects described how the combination of SABA and CAM worked to provide symptom relief more quickly and more effectively. This synergism was described as “a boost” and a “balance.” One individual believed that the combination promoted greater bronchodilation and another stated, “it’s like a combination, alright? In the summertime I … I open the freezer to get the cold air … then I goes to the sink and get some water … it [SABA] works faster. You get relief.”

Sense of Identity—Some subjects described wariness towards the medical establishment that extended to the use of prescription medicines, seen by some in the extreme as experimentation or exploitation. Using CAM allowed subjects to tailor a treatment for themselves as individuals. One subject sought repeated specialist consultations hoping to receive different treatment recommendations only to find consensus. “I’ve done been through four specialists for asthma because I’m taking the same thing over and over [ICS and SABA]. I don’t feel like an individual, as far as that’s concerned. I feel like I’m just another in line, you know, ‘Take your number.’ ” Although many patients might welcome consensus in the face of multiple consultations, others reject “cookie cutter” management derived from standardized treatment guidelines.

In summary, in-depth qualitative interviews with low income adults in three large Eastern cities demonstrated a profound lack of knowledge and training in acute asthma self-management, a high use of CAM and a preference for the combination of CAM and lower-than-recommended doses of SABA for acute asthma management. Content analysis of transcripts identified that the perceived safety of CAM and risk of SABA, the severity of symptoms, the speed and strength of CAM-SABA combinations, and the desire for tailored management approaches led to self-management decisions. Failure to use peak flows, asthma action plans or delays in implementing SABA self-management protocols likely places many of these individuals at greater risk. Whether these health behaviors and beliefs reflect a personal preference for less conventional or intensive treatments, as previously described in minority populations (15), or are simply a function of inadequate instruction, they may explain, in part, the health disparities seen in asthma morbidity and mortality.

DISCUSSION

This study conducted in 2005 and 2006 demonstrated poor implementation of evidence-based protocols for home self-management of acute asthma among low-income urban adults, even though standardized guidelines were released more than a decade earlier. Despite several updates and public health efforts, evidence suggests that guideline adoption among practitioners remains disappointingly low (2,3). By extension, if provider adoption is low or communication is poor, dissemination of appropriate asthma self-management practices to patients is also likely to be limited. Those living in poverty therefore would be particularly vulnerable to poor disease outcomes due to their limited access to appropriate, culturally sensitive education and resources.

In national surveys, 30% of patients indicate that they have received self-management training that includes a written asthma action plan based on either symptoms or peak flow monitoring (5). What is not known is whether these survey participants used the asthma action plans or peak flows during acute asthma episodes. No patient in this study indicated that they referred to an asthma action plan or measured peak flow in response to intensifying asthma symptoms at home. Perhaps this is due to patient-related factors, provider-related factors or both. For example, patients may fail to recall that self-management tools were available to them. Alternatively, health literacy may have presented a barrier to self-management.

A previous study demonstrated an association between inadequate quantitative literacy, an integral component of asthma self-management, with higher hospitalization rates in a similar population (16). African Americans also report that they understood what their doctor said less often, and are less involved in health care decisions than they would like to be, compared to Caucasians (17). In addition, culturally derived health beliefs have been associated with suboptimal asthma self-management in minority communities (10,18,19). Conversely, poor minorities may have less access to self-management materials due to insufficient provider behavior. This is unfortunate as the strongest scientific evidence for enhanced asthma outcomes in adults is associated with self-management using written asthma action plans in the setting of regular medical review (20).

Anecdotally it appears that fewer providers are prescribing peak flow meters. This may be due to the lack of evidence to refute or support the superiority of written asthma action plans based on peak flow compared to plans using symptoms (1,21). However there is little evidence that symptom-based self-management training has been offered in the place of peak flow training. For example, in a study of 85 practices affiliated with 5 not-for-profit Medicaid managed care organizations there was limited use of any asthma self-management strategies with only 44% of providers reporting that they provided written asthma action plans and 50% providing referrals to an asthma educator for self-management training (22).

It has been suggested that delays in seeking timely and appropriate medical care in the setting of overuse of SABAs, has contributed, in part, to asthma mortality (1,23,24). To the best of our knowledge, this is one of the first studies to survey patients on their training in, and use of, evidence-based self-management protocols for acute asthma. The fact that interviews demonstrated a report of near-absent exposure to self-management training in a vulnerable population with asthma makes the extraordinary investment in support of expert panels, compared to the passive dissemination of such protocols, appear strikingly unbalanced.

Despite the widespread belief that patients are overly reliant on SABAs, few patients in this study reported overusing SABAs for home self-management. In fact, it appears that concern about SABA overuse, perhaps derived in part from the heavy media coverage of the black box warnings on long-acting $beta_2$-agonists, has reached patients. Subjects in this study had a strong distrust of all asthma prescription therapies that extended to SABAs. It may be that in the few minutes that a provider has to deliver asthma self-management messages during the clinical encounter, they may have focused on the overuse and safety of SABAs to the detriment of being able to provide training on potentially life-saving protocols. It is also possible that self-management training is just not possible considering the time restraints that providers currently face and the lack of high-quality, locally available, free, low-cost or reimbursable asthma self-management training.

Somewhat surprisingly, while subjects denied overusing SABAs, they did report a high use of CAM practices for acute asthma self-management and a preference for integrating conventional and CAM treatments for asthma. Although previous studies have shown that CAM is commonly employed as part of a daily asthma self-management plan (10,11,25–27), clinicians are just now developing an appreciation for its use in acute asthma among inner-city children and adolescents (25,26) and those accessing specialty care (27). Our study suggests that CAM for self-management of acute asthma is common among in urban minority adults. Perhaps this is not surprising considering the Institute of Medicine's report that concluded that minorities are less likely to select conventional care compared to Caucasians (11). Importantly, none of the CAM reported in this study were dangerous. Nonetheless CAM use may have contributed to the under use of SABAs or delays in seeking care that placed individuals at increased risk.

Patients' preference for CAM was not unique. As in other studies, CAM use was seen as safer than conventional treatment (10,11,19), the combination of CAM and conventional care was viewed as superior to either treatment alone (10,28) and CAM alone was often seen as adequate for treating milder symptoms (29,30). The single most surprising finding that emerged from the qualitative analysis was that CAM use allowed patients to tailor or personalize their treatment plan resulting in enhanced sense of control. This is important as an inherent tension has always existed between the desire to standardize guidelines to improve clinical outcomes and patients' yearning to be seen as an individual warranting customized treatment (19).

To that end, it is imperative that providers and patients discuss their preferences for asthma self-management to identify concordance or to negotiate a treatment plan acceptable to both parties. Unfortunately, patients may believe that their provider would not understand or support their decision to use CAM (31,32). As a consequence, patients may conceal their desire for CAM from their providers (28,31,33–35). Compared to Asians (33) and Caucasians (33,36), African Americans are less likely to disclose CAM use and are less likely to experience optimal relationship-centered care as manifested by patient-provider communication, partnership and concordance (28,37–44).

In turn, providers may not inquire as to patients' CAM practices due to time constraints or a lack of expertise creating, in essence, a de facto "don't ask, don't tell" policy (28,35). However, communication about CAM may benefit patients by assisting in the identification of dangerous drug-herb interactions, by promoting greater rapport with their providers, or by facilitating the development of tailored interventions. Similarly, health care providers may benefit from improved CAM communication by acquiring enhanced cultural competency.

More than half of the subjects in this study had had asthma since childhood and therefore should have had multiple opportunities to receive asthma training. Further, based on the amount of ICS prescribed 80% of subjects had moderate-to severe-persistent asthma, an at-risk group in which training also should have been seen as essential.

The absence of asthma action plans, peak flow monitoring and SABA-based protocol training for acute asthma self-management therefore is difficult to explain. Perhaps subjects were trained as children but not since asthma action plans, peak flow meters and SABA protocols became standard self-management tools. Perhaps subjects simply forgot what they had been taught, a "decay" in knowledge typical in educational programs. Or perhaps subjects' providers erroneously assumed that they had previously received education, or did not need preparation, when in fact they had considerable gaps in self-management knowledge. Further, racial/ethnic minorities, urban residence and poverty have all been associated with discontinuous primary care (21), lower health literacy (8,9,16), poorer patient-provider communication (17) and culturally derived health beliefs (18,19), any of which may have made it less likely that appropriate training was available to these participants.

An alternative explanation however is that these individuals received training and intentionally disregarded it. Although all but one subject denied receiving training, social desirability may have prevented others from admitting their conscious rejection of conventional asthma self-management protocols. What is clear is that participants preferred CAM, or an integration of CAM and conventional care, over medical care alone due to distrust of prescription asthma medications, perceived safety and efficacy of CAM, and a desire for a treatment plan uniquely tailored to them as individuals.

There are many limitations with this study. First, qualitative studies sacrifice "power" in the quantitative sense in order to gain a deeper appreciation for individuals' personal experiences and perspectives. Also, no attempt is made to verify the "truthfulness" of subjects' report of self-management but only to document the "insiders"' viewpoint. Second, this study used

convenience sampling to enroll subjects. As a result self-selection bias may have made it less likely that participants had previous asthma training, that is, they may have been motivated to enroll in this study because they lacked self-management training. Third, although care was taken to recruit from three cities and from both primary care and specialty practices, most recruits were African American females with moderate to severe asthma. In part, this may represent the higher proportion of women who patronize urban clinics compared to men, but it may also indicate a selection bias on the part of the recruiters or providers. Taken together, the design of qualitative studies and the over-representation of African American females with more severe asthma greatly limit the generalizability of these findings. Making inferences to larger groups however is never the goal of qualitative research.

In this study only one individual received conventional acute asthma self-management training and most preferred self-management integrating CAM and SABA. If safe CAM could be incorporated into conventional training then patients may get the added benefit of a tailored treatment plan that enhances the patient-provider partnership. It is unclear however if participants' self-management behaviors were a function of personal preference or failure to receive requisite training.

Regardless, without peak flows or asthma action plans, the failure to rapidly execute a self-management strategy that includes conventional SABA-based self-management protocols places individuals at unnecessary risk. However, organizational and systematic barriers to self-management training exist. For example, health care professionals need the time, resources, and financial support to provide, or refer patients to, asthma training programs. The best training programs would be culturally relevant, free, low-cost or reimbursable, and community-based. Patients who receive such training may still reject standardized protocols however until there is equal access to asthma self-management training, there is little hope that we might reduce asthma morbidity and mortality in vulnerable populations.

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TABLE 1

Interview guide for self-management of acute asthma.

Permissive Stem: Many patients have learned how to take care of their asthma at home either from their provider, friends and family or through trial and error. This interview will focus on what you have learned to do in response to worsening asthma symptoms at home.
1. First, tell me how you know that you are having worsening asthma?
2. Now, walk me through each step of what you do when you have worsening asthma at home.
Probes: Then what?
Then?
After that?
3. Finally, tell me how you learned to respond to worsening asthma symptoms.
Probes: Have you ever had asthma training? What were you taught? When did you receive the training? From whom?

TABLE 2

Demographic characteristics, $N = 25$

	Total n (%)	Phila Spec	Phila Primary	Balt Spec	DC Primary
Gender (M/F)	2 (8)/23 (92)	0/6	0/8	2/4	0/5
Age Median	38.9	41.0	33.8	36.5	40.4
(range)	(21–52)	(21–49)	(21–52)	(21–48)	(36–48)
Race/ethnicity n African American/Caucasian	19 (76)/6(24)	6/0	6/2	4/2	3/2
Insurance					
Medicaid only	10 (40)	2	3	3	2
Medicaid/Medicare	10 (40)	4	3	1	2
Commercial	1 (4)	0	0	0	1
Other	4 (16)	0	2	1	1
Education					
<HS	2 (8)	0	1	1	0
Completed HS/GED	21 (84)	5	6	5	5
Some college/college graduate	2 (8)	1	1	0	0
Occupation					
Unemployed	16 (64)	4	5	5	2
Manual/service	5 (20)	1	3	0	1
Craftsman/clerical	2 (8)	0	0	1	1
Skilled/professional	1 (4)	0	0	0	1
Student	1 (4)	1	0	0	0
Household income					
<$10,000	10 (40)	2	3	3	2
$10,000–19,000	5 (20)	1	3	1	0
$20–29,000	4 (16)	1	2	0	1
1$30–49,000	2 (8)	0	0	1	1
≥$50,000	1 (4)	0	0	0	1
Number w/childhood asthma	14 (56)	6	2	4	2

	Total n (%)	Phila Spec	Phila Primary	Balt Spec	DC Primary
Number ≥400 mcg daily budesonide or fluticasone	20 (80)	6	6	3	3

TABLE 3

Management of acute asthma.

	Total (n)
Used guideline-based SABA self-management protocol	1
Underused SABA	19
Overused SABA	4
Used ICS and SABA	5
Used CAM only	1
Used integrated approach (CAM and SABA)	22
Used peak flow	0
Used asthma action plan	0

TABLE 4

CAM for self-management of acute asthma.

	Total (n,%)
Number of unique CAM types used	19
Fresh air	17 (71)
Water	16 (67)
Relaxation	14 (58)
Breathing exercises	12 (50)
Prayer	9 (38)
Tea	8 (33)
Air movement with fan/air conditioner	8 (33)
Steam inhalation	6 (25)
Application of cool treatment	3 (13)
Positive self-talk	3 (13)
Black coffee	2 (8)
Chest percussion	1 (4)
Orange juice	1 (4)
Cola product	1 (4)
Humidifier	1 (4)
Pet therapy	1 (4)
Hall’s lozenges	1 (4)
Spicy foods	1 (4)
Hard candy	1 (4)

TABLE 5

Thematic responses obtained from transcript analysis

Theme	Definition	Exemplars
Safety	Perception of CAM as safe and short-acting beta-2 agonists as less safe	"I think I prefer the natural … 'cause I experience less side effects … I just feel like the natural is really less riskier … to tell you the truth I don't like using any prescription medicines."
		"it would be better for them [providers] to try something a little more natural [rather than using prescription medicine]."
		"I'm saying all drugs prescribed are toxic."
Severity	Perception of underlying disease intensity considered in making decisions about acute asthma self-management	"A minor one [attack] where I had to open the doors, get some air, sit in front of the fan."
		"If it's really really bad, even after the first one [nebulizer treatment], I'm dialing 911."
		"When I'm having an asthma attack I'll do the breathing treatment and if that's not stimulating enough I'll make some tea, hot tea, and try and drink that. And if that doesn't succeed then I'll have to take a certain milligram of Prednisone."
Speed and strength of the combination	The combination of CAM and short-acting beta-2 agonists is superior to either approach used alone	"I think it would be more or less a combination with that tea, as well as the prescription drugs [SABA] … Always have the tea as well [as the SABA], to help."
		"It's putting all your eggs CAM and SABA in one hand and you just juggling them around … trying to see if it's going to balance out [make the best combination]."
		"Home remedies are only good for a certain extended period [shorter time periods] … prescription medicine-it helps for long-term- like for 12 hours [longer time periods]."
Sense of identity	Desire to receive a tailored intervention	"It seems like I'm the in-between guinea pig. I see that in the FDA, and all the medicines prescribed."
		"They kind of work well with me, as far as them not putting me on a lot of medications or overlapping medications that's not helping me … You may become immune to the medicines. They have to constantly change medications [to control asthma]."