
POPULATIONS AT RISK

Beliefs About Asthma and Complementary and Alternative Medicine in Low-Income Inner-City African-American Adults

Maureen George, PhD, RN, AE-C,¹ Kathleen Birck, FNP, RN,² David J. Hufford, PhD,³ Loretta Sweet Jemmott, PhD, RN, FAAN,⁴ Terri E. Weaver, PhD, RN, CS, FAAN⁵

¹Johns Hopkins University School of Nursing, Baltimore, MD, USA; ²Division of Family Child Health, University of Pennsylvania School of Nursing, Philadelphia, PA, USA; ³Department of Humanities, Penn State College of Medicine, Hershey, PA, USA; ⁴Division of Family Community Health and Center for Health Disparities Research, University of Pennsylvania School of Nursing, Philadelphia, PA, USA; ⁵Division of Biobehavioral and Health Sciences, University of Pennsylvania School of Nursing, Philadelphia, PA, USA.

BACKGROUND: The gap in asthma prevalence, morbidity, and mortality is increasing in low-income racial/ethnic minority groups as compared with Caucasians. In order to address these disparities, alternative beliefs and behaviors need to be identified.

OBJECTIVE: To identify causal models of asthma and the context of conventional prescription versus complementary and alternative medicine (CAM) use in low-income African-American (AA) adults with severe asthma.

DESIGN: Qualitative analysis of 28 in-depth interviews.

PARTICIPANTS: Twenty-six women and 2 men, aged 21 to 48, who self-identified as being AA, low-income, and an inner-city resident.

APPROACH: Transcripts of semi-structured in-depth qualitative interviews were inductively analyzed using the constant comparison approach.

RESULTS: Sixty-four percent of participants held biologically correct causal models of asthma although 100% reported the use of at least 1 CAM for asthma. Biologically based therapies, humoral balance, and prayer were the most popular CAM. While most subjects trusted prescription asthma medicine, there was a preference for integration of CAM with conventional asthma treatment. Complementary and alternative medicine was considered natural, effective, and potentially curative. Sixty-three percent of participants reported nonadherence to conventional therapies in the 2 weeks before the research interview. Neither CAM nor nonmedical causal models altered most individuals (93%) willingness to use prescription medication. Three possibly dangerous CAM were identified.

CONCLUSIONS: Clinicians should be aware of patient-generated causal models of asthma and use of CAM in this population. Discussing patients' desire for an integrated approach to asthma management and involving social networks are 2 strategies that may enhance patient-provider partnerships and treatment fidelity.

KEY WORDS: asthma; complementary and alternative medicine (CAM); African American; health beliefs; qualitative research.
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Asthma, one of the most common of all chronic illnesses, affects about 5% to 8% of the adult U.S. population¹ and typifies the growing health disparities gap between ethnic/

racial minorities and Caucasians.² Asthma prevalence, for example, is significantly higher and asthma mortality rates are nearly 3-fold greater in African Americans (AA) compared with Caucasians.¹ Individuals living in poverty experience even more profound health inequalities² and poor AA women have the highest death rate from asthma in Philadelphia.³ Although most people living in poverty have access to a source of asthma care, poor racial/ethnic minorities are less likely to receive high quality, continuity of care, or education essential for asthma control,^{4,5} and are less often prescribed inhaled corticosteroids (ICS).^{6,7} Inhaled corticosteroid are the cornerstone of therapy and remain the most effective anti-inflammatory agents available for the treatment of persistent asthma.⁸ The use of ICS reduces asthma morbidity and mortality^{9,10} but their acceptance remains poor in all groups, including AAs.^{11,12}

The Institute of Medicine's report *Unequal Treatment* suggests that racial/ethnic minorities may prefer less intensive treatments.² These preferences may have been shaped by experiences with institutionalized racism, may represent limited expendable incomes or may reflect greater use of culture-bound traditions, such as complementary and alternative medicine (CAM).^{2,13} The National Center for Complementary and Alternative Medicine (NCCAM) defines CAM as practices and products not presently considered part of conventional medicine.¹⁴ As a result of this broad definition, CAM can be considered to encompass a large and extremely diverse group of practices including: alternative medical systems (e.g., homeopathy, Traditional Chinese Medicine), mind-body interventions (e.g., prayer, yoga), biologically based treatments (e.g., botanicals), manipulative and body-based therapies (e.g., massage), and energy therapies (e.g., magnets).¹⁴ The prevalence of CAM is high;¹⁵ 4 billion people use alternative medicine and as much of 80% of the world's health care are based on these practices.¹⁶ Complementary and alternative medicine is commonly used for asthma.¹⁵

There are many reasons why patients may choose CAM in addition to, or as a substitute for, conventional care. Commonly, CAM is characterized as a more natural therapeutic approach to manufactured agents¹⁷ and some believe that CAM can reduce the need for conventional pharmacologic

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Address correspondence and requests for reprints to Dr. George: Johns Hopkins University School of Nursing, 525 N. Wolfe St, Baltimore, MD 21205 (e-mail: mgeorg16@son.jhmi.edu).

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Table 1. Interview Guide

I want to understand how you think about your asthma. This interview will focus on ways that you think about asthma and ways that you have been taught to control asthma or have learned to control asthma

Permissive stem. Everyone has a different explanation for why they have asthma

Question 1. Tell me why you have asthma. *Probes:* family history, living conditions, test of faith . . . What was going on in your life when you first got asthma? How long will you have asthma?

Permissive stem. Many patients have learned how to manage their asthma apart from taking prescribed asthma medicines. Others learn about asthma control through trial and error. Friends, family, or members of your community may have suggested certain approaches. For example, families often use home remedies for controlling asthma

Question 2a. What do you do for your asthma? Do you recall any home remedies used in your family? What were you taught to do to prevent an asthma attack? To cure asthma? *Probes:* protection against germs or the elements, chest rubs, things to drink or inhale, managing your bowels . . .

Question 2b. In some families, asthma is viewed as an imbalance in the body. What did your family believe? *Probes:* beliefs about temperatures, fresh air, foods or liquids. Tell me what caused this imbalance. Tell me how balance was restored

Question 2c. Many families also believe that certain types of foods or liquids are important for asthma. Tell me what your family or community thought about this. Tell me what you believe now. *Probes:* water, black coffee, teas, onion tonics, pot licker . . .

Question 2d. Many people use self-healing, energy healing, diet, plants and herbs, roots and leaves, and vitamins for asthma. Tell me what you use. *Probes:* herbs, vitamins, acupuncture, yoga, relaxation . . .

treatment, such as steroids.¹⁸ Complementary and alternative medicine is also seen as providing protection from illness¹⁹ or relief of symptoms²⁰ while offering others hope for a cure.²¹

There is risk associated with CAM use, however. Although patients prefer to integrate CAM into their conventional treatments, providers are infrequently informed of CAM use.²² In addition, patients may hold alternative causal models of illness.²³ According to Kleinman and Pachter,^{23,24} an individual's understanding of his or her illness is derived from their unique interpretation of ill-health's cause, symptom onset, physiologic response, natural history and individual preferences for providers and treatments. If patients have alternative models for disease causality, or when integrated CAM therapies are preferred but covertly used, then the patient may be at increased risk for poor clinical outcomes due to untoward drug-CAM interactions, unnecessary delays in seeking appropriate medical treatment and insufficient adherence to the medical plan with resulting and unwarranted intensification of conventional therapies. Under these circumstances, CAM use could contribute, in part, to observed health disparities. To address this question, large comparative studies will be needed. However, when little is known about how patients perceive illness and what treatment is preferred, qualitative research is a necessary first step. Qualitative research, a rigorous inductive data collection method, is the appropriate tool to uncover the unrevealed beliefs about a disease and its preferred treatment modalities.

METHODS

Participants

Ten percent of all eligible subjects were recruited during the study time frame (December 2001 and November 2002). There were 8 clinic physicians, with no individual provider referring more than 7 patients. Inclusion criteria specified that subjects be prescribed ICS for asthma, be less than 50 years of age and have less than a 10-pack year smoking history to increase the likelihood that subjects had asthma and were not experiencing respiratory symptoms due to other conditions, such as emphysema. Additional inclusion criteria stipulated that participants had to self-report their racial/ethnic background as AA or black, have prescription coverage, speak English and report living in a ZIP code that corresponded to an inner-city neighborhood. Individuals were excluded if they failed to meet

any of the inclusion criteria or lacked the mental capacity to understand the informed consent process.

The investigator reviewed eligibility requirements with the clinic physicians who approached potential subjects. The investigator met with only those individuals who expressed interest and met eligibility requirements. Subjects read the informed consent form independently followed by a verbal review of each section to elicit questions and to establish comprehension. This study was approved by the local Institutional Review Board and subjects received \$25 and either a free parking pass or mass-transit tokens for their participation.

Data Collection

After the informed consent form had been signed, demographic information, asthma history, and spirometry were obtained. The subject's chart was also reviewed to obtain health care utilization for asthma, dose of prescribed ICS and to confirm the presence of airflow reversibility. A single semi-structured in-depth individual qualitative interview then followed in exam rooms or clinic conference rooms at the site where participants received their asthma care. The purpose of the interview was to allow inner-city AA adults with asthma to describe their beliefs regarding the cause of asthma and their attitudes toward conventional and CAM treatment of asthma. The researcher was the sole interviewer and each session was guided by an interview schedule that consisted of open-ended questions and preestablished probes (Table 1). All interviews were audiotaped, transcribed verbatim and compared with field notes. Interviews lasted approximately 1 hour.

Coding and Analysis

The in-depth semi-structured interviews in this study followed the naturalistic inquiry approach^{25,26} and were guided by Kleinman's²³ alternative model of disease causality. Such qualitative research methods are particularly useful in identifying divergent beliefs, attitudes, and behaviors that otherwise would remain undisclosed.²⁶ For example, in naturalistic inquiry the researcher documents and translates the context-specific experiences of each subject using open-ended questions, probes, and clarification techniques. As seen in Table 1, permissive stems form the introduction to each question to encourage patient disclosure.

After the accuracy of the transcripts was established by comparing the transcript with the original audio recordings, the verbatim interviews were entered into a qualitative software package (NUD*IST, QSR International) that allows large amounts of data to be coded, or reduced, into recurring themes. Similar codes then are grouped together and serve as the basis of the qualitative findings. Such coding can be performed by 1 individual, audited and reconciled with content experts^{25,26} as in this study, or can be performed by more than 1 researcher working independently until consensus is achieved.^{27,28} Common themes that emerged from the interpretation of the initial transcripts were then explored in subsequent interviews with new subjects and the responses reanalyzed. This iterative process of data collection and interpretation, known as constant comparative content analysis, assures that relevant data “reduced” from the transcripts is retained while extraneous information is discarded leaving only critical codes, themes, and categories.

Although different from quantitative methods, qualitative research has a rigorous procedure for assuring the adequacy, or trustworthiness, of data collection and analysis: credibility, transferability, dependability, and confirmability.²⁵ Similar to internal validity, credibility was established in this study by peer discussion, by transcript review, and by member checks. In member checks, the investigators asked a subgroup of subjects to assess the accuracy of interpretations. Analogous to external validity, transferability addressed the applicability of the research findings to other populations and was considered on a case-by-case basis. The goal of qualitative research is not generalizability but rather credibility and relevance.²⁹ The criteria for dependability and confirmability were met by the creation of an audit trail and the maintenance of all study related records, including transcripts and audiotapes.

Owing to the reported heterogeneity of the clinic population (AA, African émigrés, Caribbean Islanders, and AA Muslims), the researchers initially anticipated that as many as 50 interviews might be required to achieve data saturation, that is, when no new information is discerned from subsequent interviews. The clinic population, however, proved to be less diverse and data saturation appeared to occur after 15 interviews. As indicated by qualitative methods, data saturation is confirmed by conducting additional interviews. However, during these additional interviews a previously unreported CAM was identified. This led the team to perform further interviews before determining that data saturation had been achieved at 28 interviews.

RESULTS

Participants

As noted in Table 2, 28 adults, aged 21 to 48, participated in the study. Two females declined. Twenty-seven participants self-reported their racial/ethnic background as AA; 1 as black. Participants were mostly young and female, typical of inner-city clinics following Medicaid reform in the 1990s when aid was restricted to only the sickest and most vulnerable populations (women and children). All subjects who enrolled completed the study, which consisted of 1 in-depth individual interview, office spirometry, and the completion of demographic and survey forms. The entire visit lasted less than 2 hours.

Table 2. Subjects' Demographic Characteristics (N=28)

Gender (M/F), n (%)	2 (7)/26 (93)
Age (median)	35.5
Race, n (%), AA/Black	27 (96)/1 (4)
Insurance n (%)	
Medicaid	21 (75)
Disability	5 (18)
Commercial	2 (7)
Education, n (%)	
< HS	5 (18)
Completed HS	22 (78)
College graduate	1 (4)
Occupation, n (%)	
Unemployed	16 (57)
Unskilled	3 (11)
Craft/clerical	1 (4)
Professional	3 (11)
Student	5 (18)
Household income*, n (%)	
< \$10,000	13 (50)
\$10,000 to 19,000	5 (19)
\$20 to 29,000	3 (12)
\$30 to 49,000	1 (4)
\$50 to 99,000	4 (15)
Marital status, n (%)	
Married	3 (11)
Single	23 (82)
Divorced	2 (7)

Data available only on 26 subjects.
AA, African American.

As seen in Table 3, subjects were characterized as having severe persistent asthma based on multiple indicators including their dose of daily ICS (mean beclomethasone equivalent dose 2,580 mcg/day) and excessive asthma morbidity. For example, 10 subjects (36%) were currently on oral steroids and 17 (61%) reported an emergency department visit for asthma in the previous 6 months resulting in 11 hospitalizations.

Patient-Generated Causal Models of Asthma

Most patients (64%) accurately identified genetic or environmental factors as a cause of their asthma. Interestingly, several patients offered alternatives to the biologically based model of asthma. Three respondents identified God as the source of their illness: one said asthma was a test of faith and a second saw asthma as punishment for immoral behavior. Five subjects identified psychosocial stress as the cause of asthma. The sources of stress included single parenthood, husband's death, mother's death, sexual abuse experienced as a child, and domestic violence experienced as an adult. One participant each reported alcohol abuse and dressing inappropriately in cold weather as the cause of their asthma. Importantly, nonbiologic causal models did not appear to affect an individual's willingness to use prescription asthma medication.

Prevalence and Type of CAM Use for Asthma

Complementary and alternative medicine was used by each of the 28 subjects in this study. Alternative medical systems and biologically based therapies (Table 4) were used more often than mind-body and manipulative/body-based approaches (Table 5). As healing attributed to prayer or laying-on-of-hands

Table 3. Asthma Severity Characteristics of Subjects (N=28)

	N (%) or Mean ± SD
Number on inhaled corticosteroids	28 (100)
Daily ICS dose (beclomethasone equivalent)	2,580 ± 228 mcg
Number requiring oral steroids in previous 6 mo	23 (82)
Currently on oral steroids	10 (36%)
Days on oral steroids/last 6 mo	64.53 ± 74.84
Number requiring hospitalization for acute asthma in previous 6 mo	11 (39)
Number requiring more than 2 rescue doses of albuterol in previous week	7 (26)*
Number reporting at least 1 nocturnal awakening due to asthma in previous week	18 (64)
Individuals ever requiring intubation for asthma	6 (21%)
Absolute FEV ₁ /FVC at time of interview	63.64 ± 12.26
FEV ₁ (% predicted) at time of interview	64 ± 17.67
Historical absolute FEV ₁ /FVC pre-BD	57.57 ± 11.61
Historical % predicted FEV ₁ pre-BD	54.33 ± 17.27
Historical % predicted FEV ₁ post-BD	72.28 ± 17.92

*Data available on 27 subjects.

FEV₁, forced expiratory volume in 1 s; FVC, forced vital capacity; BD, bronchodilator; ICS, inhaled corticosteroids.

was classified as mind-body practice, there were no reports of energy-based CAM in this group.

Biologically Based Therapies

Biologically based practices were the most commonly reported CAM in this study. Twenty-six participants (93%) reported applying camphor based or mentholated topical salves to their chest or perioral area during viral illnesses to prevent asthma exacerbations. Importantly, 10 subjects were instructed as children to ingest small amounts of these products; 2 individuals continued this potentially dangerous activity as adults.

Black coffee and water consumption were also popular among respondents (25% and 29%, respectively). Although

Table 4. CAM Ever Used for Asthma (N=28)

NCCAM domains	n (%)
Biologically based therapies	
Chest rubs (camphorated, black salve, tar, yellow salve, or mustard)	26 (93)
Commercial tea w/honey, lemon, and/or alcohol	19 (66)
Steam inhalation	16 (57)
Ingestion of topical camphorated chest rub product	10 (36)
Water	8 (29)
Onions	7 (25)
Black coffee	7 (25)
Herbs/vitamin ingestion	7 (25)
Fresh air	6 (21)
Hall's [®] tea—tea infused dissolved cough drops	6 (21)
Laxatives/colonic irrigation	4 (14)
Pot licker-water in which greens (mustard, collard) are cooked	3 (11)
Alternative medical systems	
“Balance”	
Bathing rituals and rain avoidance	25 (89)
Promoted heat	4 (14)
Promoted cold	3 (11)
Homeopathy	1 (4)
Acupuncture	1 (4)

CAM, complementary and alternative medicine; NCCAM, National Center for Complementary and Alternative Medicine.

Table 5. CAM Ever Used for Asthma (N=28)

NCCAM domains	n (%)
Mind-body interventions	
Prayer	19 (66)
Unstructured relaxation therapies	10 (36)
Biofeedback	2 (7)
Yoga	2 (7)
Breathing exercises	2 (7)
Meditation	1 (4)
Progressive muscle relaxation	1 (4)
Manipulative and body-based treatments	
Percussion	11 (39)
Tai bo	2 (7)
Chiropractic care	1 (4)

CAM, complementary and alternative medicine; NCCAM, National Center for Complementary and Alternative Medicine.

methylxanthine can be extracted from coffee beans,³⁰ respondents drank coffee without a clear understanding of its biologic basis of action. However, water ingestion was seen by subjects as a method to decrease the viscosity of pulmonary secretions thus contributing to asthma control.

Perhaps most interesting was the use of onions as a functional food by 7 patients (25%). One individual, in addition to adding raw onions to tea, created a mixture of onions, garlic, and bell peppers for inhalation. Others prepared onion tonics by mixing onions with alcohol, fresh peppermint, garlic, lemon, honey, and sugar. This mixture would remain at room temperature until the onion emulsified. A spoonful of liquid would then be separated from the solid materials and ingested.

Botanicals, including grains and spices, were also ingested including lobelia, goldenseal, mullein, sassafras, buckwheat, and ginger. Others used herbal teas, such as green, mint, catnip, and mullein, or prepared Hall's[®] tea (Cadbury Adams, Plano, TX) in which Hall's[®] cough lozenges were dissolved in herbal or commercial teas. Of concern, 1 individual used as many as 10 Hall's[®] lozenges in each cup of tea, posing a potential health risk.³¹ Further, 2 subjects reported use of Echinacea. Like ragweed, Echinacea is a member of the daisy family. Occasionally, worsening asthma may result from allergic reactions to products derived from the daisy family.³² Table 4 lists other biologically based treatments.

Alternative Medical Systems. A common feature of alternative medical systems is a belief that illness results from an imbalance. Although no participants described a belief in hot-cold balance per se, 4 participants (14%) described “warming” practices and 3 (11%) described “cooling” techniques. The application of warming therapies included the ingestion of small amounts of camphorated topical chest ointments or hot and spicy foods. Cooling strategies for asthma control included applying ice to the chest, avoiding getting overheated, avoiding bathing, or swimming in too warm water or lying naked on linoleum flooring.

In this study, 25 (89%) subjects also performed time-intensive protective rituals around bathing and avoided exposure to cold temperatures or wet weather. These times, referred to as “having your pores open,” were seen as periods when an individual was particularly vulnerable to germs. As such, these protective behaviors may be characterized as an attempt to maintain balance. For additional alternative medical practices, see Table 4.

Mind-Body Interventions. In the mind-body orientation to wellness, health is achieved by integrating the mental, emotional, and spiritual domains.³³ The most prevalent mind-body therapies in this study were prayer and relaxation therapies. Interestingly, relaxation methods were idiosyncratic and frequently included body positioning, distraction, lowered ambient lighting, and candle burning. As noted in Table 5, only 1 individual received formal training in progressive muscle relaxation.

Body-Based Manipulations. Few patients used body-based approaches with the exception of chest percussion (Table 5). Individuals who practiced percussion adopted the practice after having received chest physiotherapy during a hospitalization. These individuals had not been instructed in the technique and had not been advised to practice percussion at home. No respondent reported energy-based interventions.

Reasons for CAM Use

There was evidence that CAM was used in this study for many of the same reasons as previously reported.¹⁷⁻²¹ Themes characterized CAM as a natural approach to obtaining symptom relief, offering some a hope for a cure.

If I Can Go Back and Take Something Natural. Several subjects characterized CAM as a natural choice for disease control. For example, one woman said “I went to the natural store and bought some (herbs) . . . I was like ‘Let me try this’ because I was like ‘I’m tired of all this medicine’ . . . if I can go back and take something natural.” Many were encouraged to use CAM by their family and friends. One respondent said “I had a lot of people tell me different things. ‘If you just drink more water, you’ll breathe better.’ I’ve had people tell me to get a Back to Eden book. ‘You don’t have to take all that medicine. Just go buy the book and you’ll be fine.’” Another participant reported, “I remember someone telling me to go to the natural store and get something called chickweed. . . drink a lot of water. Someone said ‘Drink a lot of water—that helps flush your lungs out.’” In fact, one woman was told that herbal therapy was superior to prescription asthma medicine. She said “I heard about herbs—that herbs maybe can cure [asthma] or be a better form of medication.”

Only 2 participants promoted CAM as an alternative to conventional medical therapies due to their distrust of doctors and prescription therapies. For example, one said “[The doctor] asked me ‘Did I get a flu shot?’ and I told him ‘I never got flu shots, and I don’t think I ever will’ . . . I believe that people may be experimenting. You don’t know what the government has going on . . . ‘Out of fifty of these vaccines, we’re [(the government)] going to inject something else’ . . . Like Tuskegee experiment. So that’s why I would never use it [flu vaccination]. I mean, you don’t know what’s in the flu shots. They could be injecting you with HIV, hepatitis . . . I do think that it [HIV] . . . is some kind of man-made disease. I don’t know if was a conspiracy against minorities or . . . an experiment that went wrong—to make money.”

If What I am Using Failed to Work. Subjects believed that asthma symptoms could be managed by CAM. One subject said “It just seems reasonable now [to use] some of the old wise tale stuff [if asthma medicine] is not fully working . . . if my asthma medicine doesn’t [work] then I’ll resort to it—the folk stuff . . . it makes you breathe better . . . I would [use horse-

radish].” Another said. “I’ve tried laying on a linoleum floor, [when I’m] getting short-winded, so the wheezing can slow down . . . She [aunt] said ‘Lay on the kitchen floor . . . that’s the coldest and hardest floor.’ And we would lay there. We’d take our shirts off and just like put our chest to the floor . . . when it’s difficult to breathe and you’re already on the floor, you’re breathing light. To me it’s, like, it slows down [breathing] a little more and you’re not wincing . . . I still do it.” Self-prayer and intercessory prayer were also popular means of obtaining symptom relief among respondents. One subject reported “I really seen myself going down like really quickly . . . My grandmother called me up and she had a couple of ladies from the church call me . . . and we were all on the phone praying and . . . a few hours later I felt like I wasn’t sick at all. I felt like I was never sick.”

Some of These Things Can be Lifted. Many participants described near-death experiences averted by miraculous “laying-on-of-hands” or self-prayer. In fact, several individuals believed that cure from asthma was possible if they took the necessary spiritual steps. “Continue to pray, go to church, read my Bible and believe . . . I believe if we really have just that much faith . . . that some of these things [asthma] can be lifted [cured].”

ICS and CAM Use

All subjects in this study were prescribed twice daily ICS. At the completion of the interview participants were asked to recall the number of ICS doses missed in the last 2 weeks using a simple paper and pencil survey. A missed dose was defined as a self-reported missed AM or PM ICS dose in the prior 2 weeks. Using this definition, 10 participants denied any missed doses (data missing from 1 participant), 13 (48%) reported missing 6 or fewer doses and 4 (15%) reported missing 10 or more doses. Participants who reported using less than prescribed ICS therapy primarily did so because, in the subjects’ estimation, the recommended ICS dose was excessive. Specifically, participants did not believe that ICS was needed daily or when they were asymptomatic. Importantly, subjects denied substituting CAM for prescription medicine. Rather, patients used CAM alone only as a stopgap measure until prescription medicine could be secured. For example, water, coffee, or spicy foods were ingested as an asthma “rescue” strategy when quick-relief medication had inadvertently been left at home, had been exhausted or was otherwise unavailable.

Reasons for Conventional Prescription Use

Several themes that emerged from the analysis of the transcripts reflected subjects’ reasons for using conventional therapies, including trust in their provider, preference for the integration of CAM into conventional treatment and a supportive female care giving network.

You Good People. Although attitudes toward health care professionals were not specifically elicited in this interview, 12 individuals (43%) described how trust in their asthma provider was an important factor in their decision to accept prescription asthma therapy. One subject said, “Whatever you guys give me, I trust that it’s the right thing . . . because I have been knowing you and dealing with you for 10 to 12 years now. So you pretty much know me, and I pretty much know you,

and I know that I trust y'all." Another subject said "I don't believe that [I can take herbs] because it was hard enough for me to take the steroids, and well, do you think I'm going to take something new and trust it's going to work? No."

If Works. Most subjects (93%) preferred an integrated approach in which CAM was used to augment prescription therapies. For example, 1 participant said she used "tallow-that's beef grease . . . the grease that would come off-keep it, and then melt it. A tablespoon of that a day; that was to keep the lungs greased . . . it was good as far as keeping the inflammation off. It works but it has a very bad taste." In this theme, 2 subjects (7%) also described trialing alternative therapies and found CAM to be beneficial, except when asthma was more severe. "As an adult I got into herbs . . . herb teas. I start drinking that [tea] but I didn't really notice a difference . . . You put the lobelia under your tongue . . . it didn't work for me. My asthma was beyond what the herbs could do."

She Stays On Me. In the final theme, 68% of subjects described the vital role that female family members and friends played in support of the use of conventional and CAM approaches. One subject said "My mom-that's my backbone . . . she stays on me . . . oh everyday, you know? 'You shouldn't do this. Now you know you shouldn't do that.' Like this morning, I got up and took a shower and washed my hair and ran out the door . . . Why did I even do that . . . my pores open, you know? She stays on [me]. She rides me about my medicine everyday, taking my medicine."

In summary, this study demonstrated alternative models of asthma disease causality, extensive use of CAM, belief in CAM safety and effectiveness, under use of ICS, trust in providers, preference for integrated approaches and the influence of a female care giving network in a low-income inner-city AA community of adults with asthma.

DISCUSSION

From the inductive analysis, multiple nonbiological causes of asthma were identified including supernatural causation and social stress. Stress as a cause or as an exacerbating factor of disease has been previously reported in asthma,³⁴ chronic bronchitis,³⁴ diabetes,³⁵ and depression³⁶ where discordant views did not negatively impact on stated use of conventional medical care.^{34,35} In-depth interviews also revealed that every subject used at least 1 CAM for asthma. This prevalence rate is markedly higher than rates reported in the data from the 2002 National Health Interview Survey (NHIS).¹⁵ According to the NHIS, 71% of AA used CAM when healing prayer and megavitamins were included in the analysis. It is likely that rates of CAM use were much higher in the current study because individual in-depth interviews were used. This qualitative research technique is a more inclusive and effective data collection approach compared with surveys as open-ended questions allow for a more comprehensive evaluation of beliefs and attitudes than surveys' forced-answer responses. In addition, disclosure may be enhanced as a result of trust established during the interview process. Notwithstanding these methodologic considerations, the beliefs identified in this study reflect the view of a unique group that is less likely to be informative about beliefs of adults with asthma generally.

Subjects frequently selected "natural" CAM, such as coffee, with significantly weaker bronchodilatory effects than

those found in prescription asthma medications^{30,37} as a stop-gap measure when prescription rescue medication was unavailable. Remedies with no known bronchodilatory effects, such as water ingestion, were also used during acute events. Complementary and alternative medicine such as water and coffee ingestion, when used in potentially life-threatening situations, likely poses a substantial risk to the individual when its consumption leads to delays in seeking appropriate medical intervention. A small number of subjects were also ingesting potentially dangerous therapies: menthol in Hall's[®] lozenges, camphor and menthol in topical chest ointments, or Echinacea. One subject in this study reported dissolving as many as 10 Hall's[®] lozenges in 1 cup of tea. The risk of consuming more than the recommended 1 drop (active ingredient menthol 7 mg/drop) per hour may be harmful.³¹ Two patients reported eating small amounts of camphor- and menthol-based chest salves, estimated at less than 1/2 teaspoon a few times per year. The ingestion of small amounts of topical ointment is known to be fatal in children³⁸ and may pose a serious health risk for the adult. Finally, 2 patients reported Echinacea use, which has been associated with fatal allergic reactions.³²

There were numerous reasons given in support of CAM. Primarily, CAM was perceived as a natural and safe approach to asthma management, offered symptom relief and for some, promised a cure. Importantly, CAM was not used because subjects did not have access to conventional care; all participants had prescription coverage.

Nonadherence to conventional ICS therapy was also common. Although self-reported adherence is an untrustworthy measurement of true adherence, self-report consistently overestimates true adherence.³⁹⁻⁴² In this study, 17 (63%) of the participants admitted to missing ICS doses in the 2 weeks before the interview. Likely, this number is much higher. The reason for nonadherence was the perception that prescribed ICS doses were excessive and therefore unnecessary.

Several key themes emerged regarding reasons for both CAM use and conventional approaches to asthma. As reported in previous studies,¹⁷⁻²¹ CAM was perceived as safe, effective, and potentially curative. Alternatively, conventional approaches were used when there was a trusting patient-provider relationship, when prescription treatments could be integrated with CAM and when an influential female care giving network supported both CAM and conventional medication use. Having a trusting relationship with one's provider has been described previously as a necessary foundation for the acceptance of health advice.⁴³ The preference for combining CAM and conventional care has also been previously reported²² although the role of female friends and family in the decision to integrate therapies has not, to our knowledge, been reported elsewhere.

This study had several real or potential limitations. One limitation was that subjects were recruited from a single specialty asthma clinic. It is less common that inner-city patients receive continuous specialty care and as such these subjects are likely distinctly different than other racial/ethnic minority adults with asthma. For example, this group may be more motivated for self-care, may be more willing to accept conventional care and may be more likely to try any approach, including CAM, to achieve disease control. A second limitation is that subjects' accounts might have been misinterpreted or incomplete. Inadequate communication is more likely to occur when the racial/ethnic background of the health care professional is

different than the subject,^{24,44} as in this study. Despite this potential limitation, many CAM practices were divulged. Disclosure may have been augmented by the previous relationship the investigator had with many of the subjects although a significant number of the participants were unknown to the researcher at the time of the interview. Absence of prior contact with the members did not appear to yield differences in disclosure. It is also possible that participants spoke candidly as a result of a gender interaction as the researcher and most of the subjects were female. Sharing the same gender may have served as a substitute to bridge the racial/ethnic dissimilarity. Alternatively, the researcher, who was raised in the inner city, may have demonstrated a comfort and familiarity that enhanced communication. Disclosure may also have been augmented by the investigator being a nurse as the public consistently rates nurses as the most honest and ethical group of health care professionals.⁴⁵ Conversely, the Hawthorne effect may have been operative, that is, subjects may have answered in a manner to satisfy the research question. The inability to determine the accuracy of self-report is a limitation of any qualitative study.

There are several other limitations. The sample included only low-income AAs. Other racial/ethnic minority groups, such as Hispanics, are experiencing a widening of the asthma disparities' gap and have important health care beliefs that warrant investigation.^{2,24} In addition, interpretation was limited by the fact that all but 2 subjects were female. No quotes in this manuscript came from either male as they had relatively unique perspectives due to co-morbidities; one was HIV positive and one was on hemodialysis. Regardless, low-income inner-city AA females are an important group to study as they experience the highest death rates from asthma in Philadelphia.³ Taken together, it is impossible to determine if CAM use and alternative causal models were a function of poverty, gender or the ethnic/racial community. Lastly, the small number of participants and the uniqueness of this population does not allow for generalizable results. The goal of qualitative inquiries however is not generalizability but rather relevance and credibility. The identification of unknown health practices and beliefs in a population that experiences a disproportionate disease burden satisfies the requirements for relevance as information obtained from this study provides essential new knowledge for clinicians and researchers.

In summary, the findings of primary importance in this study are that low-income inner city AA adults report the use of conventional medicines when they trust their providers and routinely integrate CAM into a comprehensive asthma management plan. Further, ICS under use was common in the setting of a high use of CAM. An equally important secondary finding was the identification of a culturally relevant caregiving network that supported both CAM and the medical plan. The implication is that if trust can be established and if female care giving networks can be recruited, patients may be more willing to follow medical advice. In addition, open communication around patients' desire for integrated care is of paramount importance if one hopes to improve clinical outcomes. These may be important first steps to address health disparities.

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