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## Health Beliefs, Treatment Preferences and Complementary and Alternative Medicine for Asthma, Smoking and Lung Cancer Self-Management in Diverse Black Communities

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### Abstract

**Objectives**—The purpose of this literature review is to characterize unconventional health beliefs and complementary and alternative medicine (CAM) for asthma, smoking and lung cancer as those that are likely safe and those that likely increase risk in diverse Black communities. These findings should provide the impetus for enhanced patient-provider communication that elicits patients' beliefs and self-management preferences so that they may be accommodated, or when necessary, reconciled through discussion and partnership.

**Methods**—Original research articles relevant to this topic were obtained by conducting a literature search of the PubMed Plus, PsychINFO and SCOPUS databases using combinations of the following search terms: asthma, lung cancer, emphysema, chronic obstructive pulmonary disease (COPD), smoking, beliefs, complementary medicine, alternative medicine, complementary and alternative medicine (CAM), explanatory models, African American, and Black.

**Results**—Using predetermined inclusion and exclusion criteria, 51 original research papers were retained. Taken together, they provide evidence that patients hold unconventional beliefs about the origins of asthma and lung cancer and the health risks of smoking, have negative opinions of standard medical and surgical treatments, and have favorable attitudes about using CAM. All but a small number of CAM and health behaviors were considered safe.

**Conclusions**—When patients' unconventional beliefs and preferences are not identified and discussed, there is an increased risk that standard approaches to self-management of lung disease will be sub-optimal, that potentially dangerous CAM practices might be used and that timely medical interventions may be delayed.

**Practice implications**—Providers need effective communication skills as the medical dialogue forms the basis of patients' understanding of disease and self-management options. The preferred endpoint of such discussions should be agreement around an integrated treatment plan that is effective, safe and acceptable to both.

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## 1. Introduction

The improvement in health outcomes due to advances in research and technology have not been experienced equally by all peoples; disproportionate numbers of racial and ethnic minorities live in poverty with limited access to quality health care, both in the United States (US) and globally [1,2]. Income and access inequities contribute to increased burden of disease and poor clinical outcomes in a variety of conditions [2,3], including lung disease [4]. For example, while asthma prevalence rates (2005–2009) **are** estimated at 8.2% in the U.S., prevalence **is** higher among Blacks (11.1%), and persons living below the poverty level (11.6%) [5]. Measures of poor control, such as emergency room visits, hospitalizations and death due to asthma **are** also higher in Blacks compared to Whites [5]. While poor asthma outcomes in Black communities are likely the result of multiple complex factors, one contributing influence is insufficient adherence to inhaled corticosteroid (ICS), the cornerstone of asthma control [4]. Although ICS adherence has been disappointingly low in all groups [4], compared to Whites, Blacks have lower ICS use even when its covered by insurance [6] or given free as part of a clinical trial [7,8].

In addition, while Blacks in the U.S. smoke at comparable rates to Whites (22% for Whites vs. 21% for Blacks) [9] and smoke fewer cigarettes per day [10], Blacks suffer greater health consequences, such as higher rates of lung cancer [11]. This may be due, in part, to higher rates of menthol cigarette smoking; 70% of Blacks smoke menthol cigarettes [12]. Higher blood cotinine levels, a nicotine byproduct, have been reported with menthol cigarette smoking, increasing the likelihood for addiction [11]. Moreover, menthol cigarette smokers have lower quit rates [11]: Together, smoking and its related health care costs exceed \$193 billion annually [13]. Most importantly, Blacks undergo surgical resection for lung cancer less often than Whites [14] which may be due to a combination of lower referral rates [15] and higher refusal rates [16]. Rejection of advice, such as ICS use and surgical resection, **has** been attributed, in part, to negative attitudes and beliefs about medical and surgical treatments [7,8,16–18] and distrust of providers [3,16,19].

Rejection of some, or all, of standard biomedical approaches has also been attributed to a preference for less conventional care in the Black community and more culture-bound healing traditions that include complementary and alternative medicine (CAM) [3]. The National Center for Complementary and Alternative Medicine (NCCAM) defines CAM as “a group of diverse medical and health care systems, practices, and products that are not generally considered to be part of conventional medicine” [20]. Approximately 80% of the world’s health care is CAM-based [21]. A large U.S. survey conducted in 2002 found that 40% of adults **reported CAM use** in the previous 12 months [22].

When biomedical approaches are **employed** with CAM, the term *complementary* is used. Care that is used in place of conventional medical or surgical approaches is called *alternative*. Self-management that combines both conventional biomedical and CAM treatments is referred to as *integrative*. CAM encompasses alternative medical systems (e.g. traditional Chinese medicine), mind-body approaches (e.g. yoga), energy therapies (e.g. magnets), body-based treatments (e.g. massage) and biologically-based therapies (e.g. herbs). Use of these practices **is** greatest in Whites with higher educational attainment and higher income [22]. However, spiritual-, plant-, animal- and mineral-based healings, often referred to as *folk medicine* or *home remedies*, are also widely used CAM approaches for health promotion and disease treatment [22,23]. When CAM is defined broadly to be inclusive of spirituality, then CAM use is higher in Blacks (68–71%) than in Whites (50–60%) [22].

Many patients may also have culturally-defined explanations for why symptoms develop and disease manifests itself. These are referred to as explanatory models of disease causality [24]. These are important to elicit as lay representation of disease causality may serve as impediments to accepting health care advice [3].

Taken together, these data provide compelling evidence that negative attitudes towards standard biomedical treatments, unconventional beliefs about disease origin and high use of CAM is relatively common. This is important for clinicians to know because not all CAM is safe and not all unconventional beliefs are harmless. The purpose of this literature review therefore, is to answer the following questions:

- Are there explanatory models for the origins of asthma and lung cancer in Black communities that differ from biomedical views of causality? If yes, do these pose an obstacle to the adoption of healthy behaviors?
- What do these communities believe about conventional biomedical approaches to treat asthma and lung cancer?
- What health beliefs about asthma, smoking and lung cancer can be found in these communities?
- Do these communities use CAM to treat asthma or lung cancer?
- Do patients and providers talk about CAM use?

In answering these questions, the reader may gain culturally-relevant knowledge that can be applied to other populations or to other chronic conditions to improve patient-centered care. However, these findings must be interpreted cautiously as great diversity exists even in homogeneous communities; this review describes beliefs and care preferences of diverse Black communities. It is also critically important that clinicians avoid assumptions or stereotyping based on this review or based on encounters with a limited number of patients. In addition, patients' willingness to share their unconventional beliefs or practices should be recognized as is a demonstration of his or her trust in providers. Therefore, it is incumbent on providers to respond to these disclosures with the utmost respect and professionalism. As will be demonstrated by this review, very few unconventional beliefs or CAM practices are unsafe. Rather, the vast majority, even if untested or ineffective, are likely safe. As such, these approaches have served an important role in disease management in the community for generations and should be actively supported. The onus is on providers therefore, to recognize their value and accommodate their continued use. Lastly, and most importantly, when patients express doubt about providers' motives for recommending treatments, these suspicions should not be dismissed lightly; there is historical precedence for past medical experimentation and exploitation [3].

## 2. Methods

### 2. 1. Procedures

A literature search of the PubMed Plus, PsychINFO and SCOPUS databases was conducted using combinations of the search terms: asthma, lung cancer, emphysema, chronic obstructive pulmonary disease (COPD), smoking, beliefs, complementary medicine, alternative medicine, complementary and alternative medicine (CAM), explanatory models, African American, and Black. Search limits were not set for any parameter, including age of publication or language.

Inclusion criteria stipulated that retained publications be primary research papers describing beliefs about, or CAM use for, asthma, lung cancer, COPD or smoking in populations described as Black, African American, African émigrés, or people of Caribbean heritage. To

that end, the author purposely elected to use the term *Black* in this paper to reflect the heterogeneity of the subjects contributing data to the included studies. Manuscripts were excluded if they did not contain content on health beliefs or CAM use in asthma, lung cancer, smoking or COPD, or did not include the target population.

### 3. Results

Table 1 provides a summary of the search results for each database using the search strategies described. A total of 51 manuscripts were retained after applying the inclusion and exclusion criteria: 32 were asthma-related (21 specific to children or their caregivers and 11 to adults) and 19 were related to smoking and lung cancer. All manuscripts were available as full texts through downloads or via interlibrary loan services. Only one non-English language study (German) was identified through the searches and was not retained as it did not meet inclusion and exclusion criteria. No COPD or emphysema studies were retrieved using these methods **and therefore this condition is not addressed** in these results

#### 3.1 Pediatric asthma

Table 2 provides a summary of the 21 studies of asthma beliefs, treatment preferences and CAM practices reported by caregivers or children with asthma. The research consisted primarily of survey data and qualitative interviews, although there was one randomized controlled trial. Subjects were recruited from the Northeast, Midwest and Southern US (described by the investigators as African American, Black, Black Caribbean, Afro Caribbean or interracial), in London (described as Black Caribbean) and in the Netherlands (described as Surinamese Creole).

**3.1.1 Beliefs about the origins of pediatric asthma**—Although the majority of caregivers ascribed the origins of asthma to the conventional notion of genetic and environmental interaction, others identified exposure to rain or cold weather as the cause of asthma's development. While it is well recognized that cold weather can *trigger* asthma, these caregivers believed that exposure to the elements *caused* asthma's development [25–27]. Other EMs identified exposure to “contagions” [28–30] that included breast milk [29] or held a lay orientation to disease that diverged from the biomedical model [31,32].

**3.1.2 Beliefs about conventional treatment of pediatric asthma**—Caregivers and children admitted non-adherence to ICS [28,33–35] voicing concern about its safety [28,32,34–36]. Caregivers feared that their child would develop an addiction to ICS [32,37] and thought it prudent to reserve its use as a last resort [32]. Others were concerned about overmedicating their child [28] and thought it was important to stop ICS as soon as asthma control had been achieved [32]. The only exception to these studies was a study of Surinamese mothers living in Western Europe who ascribed positive attributes to ICS [27].

**3.1.3 Use of CAM for pediatric asthma**—Prevalence of CAM use for pediatric asthma ranged from lows of 9–25% [38,39] to highs of 71%–89% [26,40–43]. The most common CAM included prayer [26,39,40,41,43,44], Vicks Vaporub® [25,26,41,43,44], herbs and herbal teas [25,26,41,43,44] medicinal use of foods such as onions, garlic [36,43,44], castor and cod liver oils [43], honey [25], relaxation techniques [36,40], home remedies [28,39], massage and manipulative therapies [42,43], vitamins [39], breathing, visualization and biofeedback techniques [36]. Although CAM was mostly used with prescription medicines, 27% of adolescents used CAM instead of their prescribed ICS [41]. Caregivers [43,44] and adolescents [40,41,45] believed CAM to be an effective substitute for daily ICS and could be used first, before short-acting  $\beta_2$ -agonists, for the treatment of acute asthma [43].

**3.1.4 Disclosure of CAM use for pediatric asthma**—Urban adolescents in New York deferred disclosure of CAM use believing that providers lacked knowledge of the types of home remedies used in their community [45]. However, they were more likely to disclose use [41] than caregivers [43]. Some adolescents reported that their provider did not query them about CAM use [45] and others reported that seeing a physician for asthma was a last resort when self-management with CAM and prescription therapies failed [28].

### 3.2 Adult asthma

Table 3 provides a summary of the 11 studies of asthma beliefs, treatment preferences and CAM practices reported by adults with asthma. The research consisted primarily of cohort studies and qualitative interviews. Subjects were recruited only from the US, including the Northeast, Mid-Atlantic, Midwest and Southern regions and were described by investigators as either Black or African American.

**3.2.1 Beliefs about the origins of adult asthma**—Only one study documenting explanatory models of disease causality was retrieved for adult asthma [19]. In this study, most adults (64%) accurately identified genetic or environmental factors as the cause of their asthma. Three subjects identified God as an alternative explanation for asthma's development: one characterized it as a test of faith while a second saw it as punishment for immoral behavior. Five identified stress as a cause, with several noting the onset of symptoms during acute periods of trauma (domestic violence, child sexual abuse) and grieving (death of a spouse or parent). Similarly to the caregivers, one subject attributed the cause of asthma's development to cold weather exposure (as opposed to cold weather serving as a trigger) and vulnerability created by alcohol abuse.

**3.2.2 Beliefs about conventional treatment of adult asthma**—Negative attitudes towards ICS was common with subjects expressing concerns about their safety [8,18,46,47] attributing serious yet unfounded side effects to ICS, such as cancer, infertility or organ failure [18]. In several studies subjects voiced concern that tolerance or addiction would develop with regular ICS use [7,8,17,18,47] and believed that they were being overmedicated [7,17,18,48,49]. Fears of being experimented on were also noted [19]. Negative attitudes towards ICS was associated with lower ICS use [49] even when the medicine was provided free-of-charge as part of a clinical trial [7,8,48].

**3.2.3 Use of CAM for adult asthma**—CAM prevalence rates were high: 96–100% [17,19]. The most commonly employed CAM were Vicks Vaporub<sup>®</sup>, steam inhalation [19,46], prayer [17,19], fresh air, breathing and relaxation techniques [17]. In addition, routines to avoid getting wet or being exposed to cold temperatures after bathing were common. Subjects described these periods as being times of increased susceptibility to germs, colloquially referred to as “having open pores” [19]. The medicinal use of foods was also reported, most often teas, black coffee [19,46], water [17], and onions in the form of tonics [19]. Magico-religious cures for asthma were also documented in a 1971 study of voodoo practices in New Orleans, Louisiana [50]. In a large survey recently conducted in a borough of New York City, 25% of respondents reported receiving their information about asthma from an herbalist and 13% from a spiritual leader; these subjects had lower asthma knowledge scores compared to those who reported health care professionals as their source of asthma information [51].

Most adults (84–93%) preferred an integrated approach to daily asthma control characterized by taking less than the prescribed ICS dose in combination with CAM [17,19]. Like caregivers and adolescents, adults believed CAM to be an effective substitute for daily ICS [17,19,46] and would use CAM before short-acting  $\beta_2$ -agonists to treat acute asthma

[17,46]. CAM was described as safe [17,19] and allowed subjects to customize a treatment plan that was uniquely their own [17].

**3.2.4 Disclosure of CAM use for adult asthma**—Little is known about CAM disclosure in this population of adults with asthma. In a small qualitative study in which half of the participants were Black, no subject disclosed CAM use to their provider [46].

### 3.3 Smoking and lung cancer

Table 4 provides a summary of the 19 included studies: 11 studies explored adults' beliefs about smoking and 8 addressed treatment preferences and CAM practices for lung cancer. The research consisted primarily of correlational surveys and qualitative studies. Subjects were recruited from all the major US regions and were described by the researchers as either Black or African American.

**3.3.1 Beliefs about the origins of lung cancer**—Subjects in several studies minimized the contribution of smoking to lung cancer genesis [52], instead citing air pollution [52,53] or chemical exposure [52] as more plausible explanations. Smoking was believed to be less harmful than publicized [54,55] and smoking cessation was not seen as reducing the risk of lung cancer [56,57].

**3.3.2 Beliefs about smoking and conventional treatment of lung cancer**—Smokers received emotional benefits from cigarettes that included improved coping and stress management [58–61]. Menthols were incorrectly identified as safer than non-menthol cigarettes [62,63] with the exception of one survey of New Jersey residents [64]. In fact, medicinal effects were attributed to menthols [63,65] that extended to their use as a treatment for asthma symptoms [65]. If lung cancer were to develop, many subjects felt that surgical resection was unnecessary [15,53,66]. In fact, subjects were suspicious of providers' motives in recommending surgery, believing that surgery might only benefit the surgeon by providing additional income or a training opportunity to develop surgical skills [53]. One subject went so far as to describe resection as medical experimentation [53]. In addition, approximately one-third of subjects believed that the tumor's exposure to air during surgery could cause the cancer to spread [16,53,67]; a belief endorsed by twice as many Blacks as Whites [16,53,67].

**3.3.3 Use of CAM for lung cancer**—Perhaps due to concern over tumor spread or surgeons' motives for recommending resection, subjects expressed a preference for CAM [53,66]. Green tea, home remedies and natural remedies were specifically mentioned as alternatives to surgical resection [53]. Others reported that vitamins or exercise could offset the harmful effects of smoking [57,68].

**3.3.4 Disclosure of CAM use for lung cancer**—In one study, subjects indicated they would be more likely to trust their health care provider if the provider allowed an integrated approach to cancer treatment that included CAM [53]. However, no explicit information on CAM disclosure in lung cancer in this population was available.

## 4. Discussion and conclusion

### 4.1. Discussion

This review found that, in diverse Black communities, there are unconventional explanatory models for the origins of asthma and lung cancer, a preference for CAM over medical and surgical intervention, and a desire for integrated treatment plans. A wide variety of CAM was reported however, these might have been missed if the provider failed to inquire broadly

about home remedies, spirituality and folk care. In addition, there is some data to suggest that even if queried, patients may be reluctant to disclose CAM use. However, it is critically important for providers to know what health beliefs and practices inform and influence patients' self-management decisions as some pose considerable risk despite appearing, at first, to be innocuous.

These beliefs and behaviors are neither new nor unique to lung disease or to the Black community. For example, alternative explanatory models for asthma have been described in other ethnic-racial groups [69] and in other diseases [70–73]. Explanatory models are important to elicit for several reasons. First, it allows the patient and provider to compare and contrast the similarities and dissimilarities in their orientation to disease and treatment preferences. When dissimilar, models of disease causality may serve as a barrier to care as providers may assign treatments to which the patient is unwilling or unable to adhere. For example, this review found that differences in explanatory models for lung cancer (smoking not seen as the cause) may counteract smoking cessation attempts. Further, unconventional explanatory models for the origins of pediatric asthma (asthma “germ” spread in breast milk) may prove a daunting barrier to behaviors known to decrease the risk of asthma's developing, such as sustained breastfeeding or breast milk exclusivity. Other research has previously documented that non-biomedical explanatory models for asthma were a formidable barrier to the implementation of asthma action plans [74].

Negative attitudes towards medical and surgical treatments were common in the reviewed studies and contributed to suboptimal ICS adherence and lung cancer resection rates. Patients had concerns about the safety of treatments and were suspicious of providers' motives in making the recommendations. These misgivings are valid considering the history of racism and medical experimentation experienced by Blacks in accessing medical care [3]. However, negative attitudes are of particular importance to address when behaviors with known deleterious effects, such as smoking menthol cigarettes, are viewed as healthy, and when surgical interventions with proven benefits, such as lung cancer resection, are deemed unnecessary.

These studies also demonstrated that a wide variety of home remedies were employed for pediatric and adult asthma self-management. CAM is also used by other racial-ethnic groups and for other diseases [22]. The difference is that while Whites use more “conventional CAM”, like yoga and acupuncture [22], diverse Black communities favor more “unconventional CAM”, like folk or home remedies [3]. Importantly, these tradition-bound remedies have several uniquely different characteristics than CAM. While CAM tends to be used by more geographically- and ethnically-racially diverse groups, have written texts and a formal method of training and licensure, home remedies are more regionally-based, more narrowly accepted within a particular racial or ethnic group, and are transmitted orally from generation-to-generation [75].

Relatively little is known about the efficacy of home remedies although NCCAM would likely classify most as safe but ineffective. However, these remedies and their accompanying behaviors are not without risk. First, patients in several studies reported that they replaced ICS with CAM to allow for complete substitution of ICS or to reduce the daily ICS dose. This has the real potential to result in under-medication, increasing the risk of a life-threatening event. In addition, both children and adults reported replacing short-acting  $\beta_2$ -agonists with CAM, such as teas and black coffee, for the management of acute asthma at home. While coffee beans and tea leaves contain methylxanthines from which prescription bronchodilator therapies are derived [76], the dose of methylxanthine available from natural sources is considerably less potent than their commercial counterpart. Although not unsafe in and of themselves, teas and black coffee may not be powerful enough to

manage acute asthma. In this scenario, CAM use may lead to unnecessary delays in instituting more potent medical treatment which may place the patient in grave danger during a life-threatening event.

Importantly, this review identified only three potentially dangerous CAM: ingestion of topical camphor-based chest rub products, Echinacea and ingestion of large quantities of throat lozenges [19]. Although toxicity is rarely associated with the ingestion of camphor-based ointments, there have been case reports of seizures and fatalities in children [77–79]. In addition, deteriorating asthma control has been reported with Echinacea use, likely due to an associated ragweed allergy since Echinacea and ragweed are members of the same plant family [80]. Lastly, case reports of urticaria and asthma, as well as decreases in international normalized ratio levels of patients on warfarin have been attributed to overdosing on the over-the-counter menthol throat lozenges [81–83].

Disclosure of CAM use was low in these studies. It is not apparent if this was because of patient reluctance or failure of providers to inquire about CAM use. However, based on other research, there appears to be ample evidence that providers do not ask [84,85] and patients do not disclose [84,86–88]. Moreover, even if asked, Blacks may disclose CAM use less frequently than Whites [86,89] or Asians [86]. Reasons for patient nondisclosure include a belief that providers fail to share a common understanding of the decision to use CAM [85], do not support CAM [85,87], are not respectful of, and open to CAM [85], are uninterested [87,88], and lack meaningful CAM knowledge [85,87]. However, disclosure of CAM is important so that potentially dangerous behaviors or treatments can be identified and replaced with safe practices.

However, providers may feel poorly prepared to discuss CAM with their patients [90–92]. Patient-provider racial-ethnic concordance can serve as a “short-cut” to understanding culturally unique perspectives of disease and preferences for treatment, creating a climate that facilitates communication [93]. Unfortunately, the current health care team lacks ethnic and racial diversity [94–96], undermining the professions’ ability to provide culturally-competent care to increasingly diverse groups. In the setting of such discordant relationships cross-cultural miscommunication is more common [3]. As a consequence, providers may label patients as “noncompliant” and dismiss them as uninterested in their own health. In so doing, the physician imposes his or her plan on the patient and blames the patient for its rejection. Thus begins a vicious cycle in which both parties attempt to exert power and fail to communicate, leading to mutual frustration and conflict. Under these circumstances, patient-centered care is not pursued or attainable [3].

There are several limitations to this review. First, much of the data comes from correlational surveys and qualitative studies of small numbers of subjects, limiting the generalizability of findings. In addition, convenience samples were used, which introduces bias. Further, all included studies were conducted in the US or Western Europe limiting extrapolation of findings to other populations in other regions. Lastly, beliefs and CAM use were not systematically evaluated for asthma, smoking and lung cancer in other racial and ethnic groups. It is likely that some, if not many of these beliefs are shared by other groups.

## 4.2. Conclusion

In summary, patients’ beliefs about disease genesis and treatment often differ from the health care providers’. It is critically important that these differences be identified and reconciled as some can result in rejection of healthy behaviors, likely smoking cessation and breastfeeding. It is the responsibility of providers to be open-minded and courteous when learning of patients’ unconventional beliefs and preferences. Providers should work to actively change only those beliefs or behaviors with known health consequences. If these



differences are not discussed then the medical plan may be rejected while potentially dangerous behaviors, such as smoking, go unchecked. As importantly, the provider misses an opportunity to work together with the patient to develop an integrated plan acceptable to both. Recognition and acceptance of differences is a necessary first step to participatory decision making, a critical component of patient-centered care [3].

### 4.3 Practice implications

Effective patient-provider communication is necessary for providers to develop an accurate understanding of how patients' beliefs and practices inform their health behaviors. Patients indicated that they were more likely to implement an integrated plan that accommodated their safe but unconventional beliefs and practices with standard biomedical approaches [17,53]. Strategies such as these facilitate patient-centered care, offering great promise for bridging the health inequalities gap and addressing the critical public health needs of vulnerable communities.

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**Table 1**

## Search results

	PubMed Plus	PsychINFO	Scopus
<b>ASTHMA + AA or Black + EM</b>	0	0	0
<b>ASTHMA + Black or AA + belief</b>	47	21	41
<b>ASTHMA + Black or AA + CAM, complementary or alternative medicine</b>	17	12	14
<b>LUNG CANCER + AA or Black + EM</b>	0	0	0
<b>LUNG CANCER + Black or AA + belief</b>	7	15	15
<b>LUNG CANCER + Black or AA + CAM, complementary or alternative medicine</b>	1	5	2
<b>SMOKING + AA or Black + EM</b>	1	0	1
<b>SMOKING + Black or AA + belief</b>	49	65	101
<b>SMOKING + Black or AA + CAM, complementary or alternative medicine</b>	1	5	47
<b>COPD or EMPHYSEMA + AA or Black + EM</b>	0	0	0
<b>COPD or EMPHYSEMA + Black or AA + belief</b>	1	0	1
<b>COPD or EMPHYSEMA + Black or AA + CAM, complementary or alternative medicine</b>	0	0	0

AA= African American; EM= explanatory model

**Table 2**  
 Characteristics of Included Studies: Caregivers' and Children's Beliefs about, and CAM Practices for Pediatric Asthma

Author, Year	Design	Population	Results	Comments
1. Adams, 2007 [44]	Survey; Correlational	66 caregivers of urban children with asthma recruited from 3 clinics in Boston, Massachusetts; 42 (65%) Black	<ul style="list-style-type: none"> <li>79% of caregivers reported CAM use in the past year (results not reported by race-ethnicity)</li> <li>Caregivers of older children reported more positive beliefs about CAM</li> <li>Beliefs about CAM were positively associated with risks for non-adherence to ICS medications</li> </ul>	Prayer, Vicks Vaporub®, massage, herbs, oils and foods were most common among Black respondents
2. Ang, 2005 [39]	Survey, descriptive	53 caregivers of children with asthma recruited from primary care and subspecialty care clinics in Stony Brook, New York; 17% Black or interracial	<ul style="list-style-type: none"> <li>25% of Black caregivers reported CAM use</li> <li>67% of caregivers wanted CAM to be a part of their child's asthma care (results not reported by race-ethnicity)</li> </ul>	Prayer, home remedies, vitamins were most common among Black respondents
3. Bokhour, 2008 [33]	Qualitative; individual interviews	37 caregivers of children with asthma recruited from 3 Boston, Massachusetts clinics; 47% Black	<ul style="list-style-type: none"> <li>18% of Black caregivers were intentionally non-adherent to ICS therapies; they were more likely to characterize asthma as intermittent</li> </ul>	
4. Bonner, 2002 [38]	Randomized controlled trial	119 families of children with asthma recruited from a general pediatric practice or pulmonary clinic in New York City, New York were randomized to intervention (education) or control conditions; 22% Black, 76% Latino	<ul style="list-style-type: none"> <li>At time of enrollment, 9% of all families reported having a non-western view of asthma management, including treatment with herbal remedies</li> <li>Those in the education condition reported less endorsement of herbal treatment after the intervention</li> </ul>	
5. Branganza, 2003 [43]	Cross-sectional survey	310 caregivers of children with asthma outpatient attending a pediatric clinic in the Bronx, New York; 37% Black	<ul style="list-style-type: none"> <li>89% of Black caregivers reported CAM use</li> <li>59% perceived CAM to be as effective as ICS or <math>\beta_2</math>-agonists</li> <li>44% used CAM as first treatment of acute asthma</li> <li>Only 18% informed their provider about CAM use</li> </ul>	Rubs, prayer, massage, teas and oils were most common among Black respondents
6. Cane, 2001 [25]	Qualitative; focus groups	66 mothers of children with asthma living in London; unspecified number reported their race-ethnicity as Black Caribbean		Teas and rubs were most common among Black Caribbean respondents
7. Conn, 2005 [34]	Survey, correlational	67 caregivers of children aged 3–7 with asthma in Rochester, New York; 41 (61%) Black	<ul style="list-style-type: none"> <li>Only 22% of caregivers reported being completely adherent with ICS</li> <li>The most common ICS concern was with safety</li> </ul>	Results not reported by race-ethnicity; majority of subjects were Black



Author, Year	Design	Population	Results	Comments
8. Cotton, 2011 [40]	Survey, correlational	151 adolescents with asthma recruited from a children's hospital in Cincinnati, Ohio; 85% Black	<ul style="list-style-type: none"> <li>71% used CAM for symptom management in prior month</li> </ul>	Relaxation and prayer were most common among Black respondents
9. Handelman, 2004 [28]	Qualitative, interviews using ethnographic methods	19 low income children aged 5–12 and 17 mothers recruited from pediatric asthma and primary care clinics at a pediatric hospital in Boston, Massachusetts; 13 (68%) Black, African or Black Caribbean	<ul style="list-style-type: none"> <li>23% believed they were being overmedicated with ICS</li> <li>18% feared addiction to ICS</li> <li>9 of the 13 'Black' children believed they developed asthma after exposure to a contagion</li> <li>2 of the 13 'Black' caregivers believed their child developed asthma from pollution or chemical exposure</li> </ul>	Herbs and home remedies were most common among respondents Results not reported by race-ethnicity
10. Klein, 2005 [45]	Qualitative, focus groups	81 White, Black and Hispanic/Puerto Rican adolescents and young adults with asthma, diabetes or eating disorders recruited from school health classes (suburbs) or teen centers (urban) in Monroe County, New York	<ul style="list-style-type: none"> <li>Those with CAM experience found CAM to be effective</li> </ul>	Results not reported by race-ethnicity, by disease state or by urban/suburban residence
11. Laster, 2009 [35]	Qualitative, focus groups	28 parents of children with asthma were recruited from an asthma camp, from an outpatient child psychiatry clinic or from an ongoing asthma research trial in Atlanta, Georgia; 93% Black	<ul style="list-style-type: none"> <li>Caregivers administered ICS medication intermittently fearing addiction</li> </ul>	
12. Mansour, 2000 [36]	Qualitative, focus groups	40 Black parents of children 5 to 12 years old with asthma were recruited from 4 schools in low-income, urban Cincinnati, Ohio	<ul style="list-style-type: none"> <li>Parents were most concerned about the safety of ICS</li> </ul>	Parents preferred alternative treatments, such as calming techniques, breathing exercises, visualization or biofeedback techniques, and dietary manipulations.
13. Mazur, 2001 [26]	Qualitative, structured individual interviews	48 caregivers of children with asthma recruited from a specialty asthma clinic in Houston, Texas; 21 (44%) Black	<ul style="list-style-type: none"> <li>81% used CAM to treat their child's asthma</li> </ul>	Prayer and over-the-counter treatments were most commonly used by Black caregivers
14. Naimi, 2009 [37]	Mixed: observational cohort and qualitative individual interviews using grounded theory	40 teens, aged 15–18, were recruited from allergy and adolescent clinics in Philadelphia, Pennsylvania; 75% Black	<ul style="list-style-type: none"> <li>Median ICS adherence obtained by overt electronic monitoring was 43%</li> <li>6 subjects did not believe ICS was necessary; 3 feared addiction</li> </ul>	Results not reported by race-ethnicity.
15. Peterson, 2002 [29]	Qualitative, individual interviews using ethnographic methods	20 Black caregivers of children with asthma recruited from local clinics (10 each from	<ul style="list-style-type: none"> <li>60% had a biologic orientation to disease causation.</li> </ul>	

Author, Year	Design	Population	Results	Comments
16. Reznik, 2002 [41]	Survey, correlational	Seattle, Washington and New Orleans, Louisiana  160 inner city high school students who self-identified as having been diagnosed with asthma were recruited from the Bronx, New York; 26% Black	<ul style="list-style-type: none"> <li>Alternative explanations for the origins of asthma included obesity, breast milk or exposure to an asthma contagion</li> <li>80% reported CAM use for asthma</li> <li>54% disclosed CAM use to provider</li> </ul>	Rubs, teas, prayer, massage and foods were most commonly used Results not reported by race-ethnicity
17. Rich, 2002 [30]	Qualitative, content analysis of videos using grounded theory methods	20 adolescents and young adults recruited from pediatric and specialty care clinics at urban pediatric hospital and at an urban health clinic in Boston, Massachusetts; 10 (50%) Black	<ul style="list-style-type: none"> <li>Most believed in a hereditary origin of asthma</li> <li>Alternative explanations for the origins of asthma included exposure to an asthma contagion</li> <li>Most subjects were ambivalent about taking ICS</li> <li>One subject felt that ICS was a form of medical experimentation</li> </ul>	Results not reported by race-ethnicity
18. Sidora Sidora Arcoleo, 2007 [42]	Secondary analysis	228 parents of children with asthma, aged 5–12, recruited from six pediatric primary care practice sites in Rochester, New York; 37% Black, 8% Latino	<ul style="list-style-type: none"> <li>83% of Black caregivers used CAM to treat their child's asthma compared to 64% of White caregivers</li> <li>399 unique CAM therapies were reported by 147 caregivers</li> <li>CAM was used in more severe disease</li> </ul>	Mind-body therapies and manipulative therapies were reported most frequently by respondents Results not reported by race-ethnicity
19. Sidora Arcoleo, 2010 [31]	Survey, correlational	109 caregivers of children aged 7–15 with asthma were recruited from pediatric asthma/allergy and general pediatric clinics and the emergency room at a public city hospital in the Bronx, New York; 54% Black or Afro-Caribbean	<ul style="list-style-type: none"> <li>Caregivers in the Bronx were compared to a sample obtained from upstate New York (see Yoos, 2007)</li> <li>Bronx parents had a higher degree of discrepancy between their lay illness representation and the biologic model of asthma than the comparison group</li> </ul>	
20. Van DelleM, 2008 [27]	Qualitative; focus groups	40 children with asthma and 28 mothers of children with asthma from the Netherlands, Turkey, Morocco or Surinam living in Amsterdam, the Netherlands Subjects were recruited by one physician from a larger multicenter home study. 9 children and 6 mothers were Surinamese Creole, defined as having a mixed African and European background..	<ul style="list-style-type: none"> <li>Majority believed in a genetic causation of disease.</li> <li>Surinamese mothers held the most positive attitudes towards ICS</li> </ul>	
21. Yoos, 2007 [32]	Survey, correlational	228 caregivers of children with asthma aged 5–12 recruited from 6 pediatric clinics serving predominantly urban, minority families or community pediatric practices serving	<ul style="list-style-type: none"> <li>There was a high degree of discrepancy between the caregivers illness representation and the biologic model of asthma</li> </ul>	

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Author, Year	Design	Population	Results	Comments
		primarily middle-class families in upstate New York; 37% Black	<ul style="list-style-type: none"><li>• 27% thought ICS should be a last resort</li><li>• 33% believed that children should be taken off ICS as quickly as possible</li><li>• 71% worried about ICS side effects</li></ul>	

ICS: inhaled corticosteroid

**Table 3**  
 Characteristics of Included Studies: Beliefs about, and CAM Practices for Adult Asthma

Author, Year	Design	Population	Results	Comments
1. Apter, 1998 [48]	Cohort, correlational	50 adults recruited outpatient clinics in Hartford, Connecticut and its suburbs; 11 (20%) Black and 18 (36%) Hispanic	<ul style="list-style-type: none"> <li>Black and Hispanic subjects had significantly lower mean ICS adherence rates measured objectively over six weeks compared to White subjects</li> <li>12% of subjects believed their asthma was too mild to warrant ICS treatment</li> </ul>	Results not reported by race-ethnicity
2. Apter, 2003 [8]	Cohort, correlational	85 adults recruited from specialty, primary care and general medicine practices in Philadelphia, Pennsylvania; 65% Black	<ul style="list-style-type: none"> <li>Black subjects had significantly lower mean ICS adherence rates measured objectively over six weeks compared to White subjects</li> <li>More concern about the safety of ICS was associated with lower adherence rates</li> </ul>	Results not reported by race-ethnicity
3. Baptist, 2010 [46]	Qualitative; focus groups	46 adults recruited from Ann Arbor and Detroit, Michigan; 43.5% Black	<ul style="list-style-type: none"> <li>Subjects feared ICS side effects</li> <li>Use of CAM (home remedies) was common</li> <li>CAM users preferred CAM to prescription therapies for acute asthma and for daily control</li> <li>No CAM user discussed CAM use with provider</li> </ul>	Steam inhalation, teas, Vicks Vaporub®, and coffee was reported by respondents; results not reported by race-ethnicity
4. George, 2003 [18]	Qualitative; focus groups	15 Black females recruited from specialty or primary clinics in Philadelphia, Pennsylvania who had either declined to participate in a study of objective ICS use or who had less than 50% ICS adherence in the study	<ul style="list-style-type: none"> <li>Subjects believed they were being overmedicated with ICS and that they were better judges of their need for ICS than their providers</li> <li>Subjects feared that ICS could cause liver or kidney damage, infertility, and cancer</li> <li>There was concern that tolerance or addiction to ICS could occur</li> <li>One subject reported that she has been told that ICS could serve as a birth control method</li> </ul>	
5. George, 2006 [19]	Qualitative; semi-structured individual interviews using the naturalistic inquiry approach	28 Black adults, aged 21–48, recruited from a specialty clinic in Philadelphia, Pennsylvania	<ul style="list-style-type: none"> <li>36% held a non-biological explanatory model for asthma</li> <li>All subjects (100%) reported CAM for asthma</li> <li>93% preferred an integrative approach to asthma self-management (CAM and ICS)</li> <li>CAM was characterized as natural, effective, and potentially curative</li> <li>Many subjects perceived that they were being overmedicated with ICS</li> </ul>	Vicks Vaporub®, teas, steam inhalation, black coffee, water, bathing rituals, rain avoidance and prayer were most common among respondents Three potentially dangerous Cam therapies were reported: ingestion of large quantities of Hall's®, lozenges, ingestion of Vicks Vaporub®, and Echinacea

Author, Year	Design	Population	Results	Comments
6. George, 2009 [17]	Qualitative; two semi-structured individual interviews using the naturalistic inquiry approach	25 subjects recruited from specialty and primary care clinics in Philadelphia, Pennsylvania Baltimore, Maryland and Washington DC; 76% Black	<ul style="list-style-type: none"> <li>Two subjects likened ICS use to medical experimentation</li> <li>96% used 19 unique types of CAM for acute asthma</li> <li>52% chose CAM for the initial treatment of acute asthma</li> <li>84% preferred an integrated approach (CAM and ICS) for acute asthma</li> <li>Safety, attack severity, speed and strength of integrated care and the ability to develop a tailored treatment plan were reasons given for CAM use</li> </ul>	Fresh air, water, unstructured relaxation/breathing techniques, and prayer were most common among respondent Results not reported by race-ethnicity
7. Le, 2008 [7]	Cohort, correlational	86 subjects recruited from a specialty clinic and through advertising in Baltimore, Maryland; 71% African American, 1% Hispanic, 5% "other" minority group	<ul style="list-style-type: none"> <li>Compared to White subjects, minority subjects had significantly lower mean ICS adherence rates measured objectively over four weeks</li> <li>Many subjects believed they were being overmedicated with ICS</li> <li>Fear that ICS tolerance could develop or that ICS use could lead to serious adverse side effects was associated with lower ICS adherence rates</li> </ul>	Results not reported by race-ethnicity
8. Poniemam, 2009 [47]	Cohort, correlational	261 adults were recruited from general internal medicine clinics in East Harlem, New York, and New Brunswick, New Jersey; 30% Black, 57% Latino.	<ul style="list-style-type: none"> <li>49% worried about ICS side effects of ICS therapy</li> <li>37% worried about addiction or tolerance to ICS</li> </ul>	Results not reported by race-ethnicity
9. Webb, 1971 [50]	Qualitative; individual interviews	23 women receiving care at public health clinics in Jefferson, Lafayette, St. Landry, and St. Martin Parishes, Louisiana; race not reported; all photos are of Black patients	<ul style="list-style-type: none"> <li>11 subjects with asthma reported folk beliefs derived from local Voodoo practices</li> </ul>	The most common beliefs included two cures for asthma: <ol style="list-style-type: none"> <li>1 placing hair from a child with asthma into a hole bored in a tree at the height of the child; when the child outgrows the height of the hole, asthma will be cured;</li> <li>2 the transfer of asthma from humans to a Chihuahua kept as a house pet</li> </ol>
10. Wells, 2008 [49]	Mixed methods-Cohort, correlational survey and analysis of electronic ICS refill rates	1,006 patients who were both members of a large health maintenance and received care from a multi-specialty medical	<ul style="list-style-type: none"> <li>Compared to Whites, Blacks had lower ICS refill rates</li> </ul>	

Author, Year	Design	Population	Results	Comments
11. Zahradnik, 2011 [51]	Descriptive, survey	group in Southeast Michigan; 33.4% Black	<ul style="list-style-type: none"> <li>Compared to Whites, Blacks did not perceive ICS as a necessity, did not see their providers as a source of asthma control and were less ready to take ICS</li> </ul>	Results not reported by race-ethnicity
		278 adults recruited from 16 Brooklyn, New York health fairs and community events; 44% Black	<ul style="list-style-type: none"> <li>91% identified providers as a source of asthma information 25% identified herbalist as the source of asthma information; and 13% identified a spiritual leader as their source</li> <li>Subjects who identified an herbalist or spiritual leader as their source of asthma care has lower asthma knowledge scores</li> </ul>	

ICS: inhaled corticosteroids

**Table 4**  
 Characteristics of Included Studies: Beliefs about, and CAM Practices for Smoking and Lung Cancer

Author, Year	Design	Population	Results	Comments
1. Ahjevych, 1993 [58]	Survey, correlational	187 Black women were recruited from health clinics and community sites in a metropolitan area of Ohio	<ul style="list-style-type: none"> <li>Smoking to cope predicted nicotine dependence</li> </ul>	
2. Allen, 2010 [65]	Qualitative; focus groups followed by a descriptive survey	16 subjects, all Black, were recruited by advertising in hospital and medical waiting rooms in South Los Angeles, California. They provided data for a phone survey that was administered to 720 Black adult smokers, identified by census tracts as living in Los Angeles County	<ul style="list-style-type: none"> <li>Menthol cigarette smokers believed that menthol had medicinal effects, including asthma symptom relief and treatment of fevers, sore throats and congestion</li> <li>Menthol cigarette smokers believed that menthol cigarettes had less nicotine and fewer added chemicals</li> </ul>	
3. Brownson, 1992 [55]	Survey, correlational	2092 adults in St. Louis and Kansas City, Missouri randomly selected from 60 census tracts in by random digit dialing; 75% Black	<ul style="list-style-type: none"> <li>Compared to Whites, Black subjects were less likely to believe smoking is addictive and that smoking is harmful to health</li> </ul>	
4. Cykert, 2003 [66]	Survey	181 adults, without lung cancer, were recruited from medical clinics and community sites in Florida and North Carolina. 38% Black	<ul style="list-style-type: none"> <li>Compared to Whites, Black subjects were less likely to opt for resection if they distrusted the diagnosis and believed in alternative cures</li> </ul>	
5. Finney Rutten, 2008 [68]	Secondary analysis	6149 adults enrolled in the National Cancer Institute's Health Information National Trends Survey, obtained via national random digit dialing; 11% Black	<ul style="list-style-type: none"> <li>Compared to Whites, Black were more likely to believe that exercise or vitamins could counteract the effects of smoking</li> </ul>	
6. George, 2010 [53]	Qualitative, focus groups	21 participants (11 with chronic obstructive pulmonary disease and 10 with lung cancer) recruited from the Veterans Affairs system in Philadelphia, Pennsylvania; 43% Black	<ul style="list-style-type: none"> <li>Blacks were more likely to doubt that lung cancer resection surgery was effective or indicated</li> <li>Black participants believed that surgeons performed unnecessary surgery for monetary gain or to acquire technical skill</li> <li>Black subjects preferred CAM as a treatment for lung cancer</li> </ul>	
7. Lathan, 2006 [15]	Cohort; correlational	14,224 Medicare-eligible patients with non-metastatic lung cancer had their tumor registry and claims data analyzed from the	<ul style="list-style-type: none"> <li>Both Black and White subjects believed that exposure to air during surgery could cause tumor spread</li> <li>Both Black and White subjects were skeptical that smoking caused lung cancer</li> <li>Black patients obtain surgery for lung cancer less often than whites, even when they have access to care</li> </ul>	

Author, Year	Design	Population	Results	Comments
8. Latham, 2010 [52]	Survey, correlational	Surveillance, Epidemiology, and End Results program between 1991 to 2001; 8% Black 1872 respondents to a national random digit dialing survey answering questions about lung cancer; 8% Black	<ul style="list-style-type: none"> <li>Compared to Whites, Blacks were less likely to believe that lung cancer was caused by a lifestyle behavior</li> </ul>	
9. Manfredi, 1992 [56]	Qualitative; survey	246 Black residents of subsidized public housing in Chicago, Illinois and 117 Black adults and 496 Whites living in non-public housing in metropolitan Chicago	<ul style="list-style-type: none"> <li>Black subjects, regardless of place of residence, were more likely than Whites to believe the risk of lung cancer is the same for smokers and nonsmokers</li> </ul>	
10. Margolis, 2003 [16]	Cross-sectional survey, correlational	626 patients recruited from outpatient clinics and medical practices at the Philadelphia, Veterans Affairs Medical Centers in, Philadelphia, Pennsylvania and Los Angeles, California; and the Medical University of South Carolina, Charleston, South Carolina; 61% Black	<ul style="list-style-type: none"> <li>37% of subjects believed that exposing the lungs to air during surgery for lung cancer causes tumor spread; 61% of Blacks thought the belief was true compared to 29% of Whites</li> <li>5% of Whites versus 19% of Blacks would oppose surgery on the basis of the belief</li> <li>5% of Whites versus 14% Blacks would not believe their doctor on this issue</li> </ul>	
11. Pletch, 2003 [59]	Qualitative, focus groups using naturalistic inquiry approach	15 Black pregnant women recruited from a home visiting program in Milwaukee, Wisconsin	<ul style="list-style-type: none"> <li>Subjects reported using smoking to manage stress</li> </ul>	
12. Powe, 2007 [60]	Survey, correlational	438 students enrolled in historically Black colleges	<ul style="list-style-type: none"> <li>Male subjects were more likely to attribute emotional benefits to smoking compared to females</li> </ul>	
13. Price, 1994 [67]	Survey, correlational	500 residents of the state of Ohio randomly selected from a list of individuals making less than \$18,000 annually who had a telephone and completed the survey; 15% Black	<ul style="list-style-type: none"> <li>39% of respondents thought that the tumor exposure to air during surgery would cause the disease to spread</li> </ul>	Results not reported by race-ethnicity
14. Reimer, 2010 [57]	Survey; correlational	6369 subjects recruited in a national random digit dialing survey; 17% Black	<ul style="list-style-type: none"> <li>Black smokers were more likely to endorse false beliefs about smoking</li> <li>Blacks were more likely to believe that the effects of smoking could be undone by exercise or taking vitamins</li> </ul>	
15. Richter, 2008 <sup>62</sup>	Qualitative; focus groups	54 Black smokers obtained from a database in Atlanta, Georgia	<ul style="list-style-type: none"> <li>Subjects described menthol cigarettes as refreshing</li> <li>Subjects attributed greater health problems with smoking non-menthol cigarettes</li> </ul>	
16. Shervington, 1994 [61]	Qualitative; focus groups	42 Black women in New Orleans, Louisiana	<ul style="list-style-type: none"> <li>Subjects reported using smoking to manage stress</li> </ul>	



Author, Year	Design	Population	Results	Comments
17. Unger, 2010 [63]	Qualitative, individual interviews; correlational	720 Black smokers recruited from community sites in Los Angeles, California	<ul style="list-style-type: none"> <li>Menthol smokers were more likely to characterize menthol cigarettes as having more medicinal effects and less harmful effects than those who smoked non-menthol cigarettes</li> </ul>	
18. Wackowski, 2010 [64]	Survey; correlational	3062 young adults, smokers and recent quitters recruited by state-wide random digit dialing in New Jersey; 22% of current smokers were Black	<ul style="list-style-type: none"> <li>Blacks believed that smoking menthol cigarettes was more risky than regular cigarettes</li> </ul>	
19. Wilkenson, 2009 [54]	Cross-sectional survey, correlational	2074 smoking and non-smoking subjects enrolled in an epidemiological case-control study in Houston, Texas; 14% Black and 8% Hispanic	<ul style="list-style-type: none"> <li>Minorities were more likely to believe that air pollution causes more lung cancers than smoking</li> </ul>	After controlling for socioeconomic status, the racial/ethnic-based differences in cancer knowledge disappeared