

The Search for Culturally Tailored Inhaled Corticosteroid Adherence Interventions Continues: A Dearth of Effective Strategies for African Americans with Asthma



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Asthma affects more than 18 million adults in the United States, and asthma costs reach a staggering \$56 billion annually.¹ African Americans with asthma shoulder a disproportionate burden of the prevalence, morbidity, and mortality associated with the disease.² Although there is no cure, medications exist that can work to control the disease and prevent symptoms.³ One of the mainstay controller medications, inhaled corticosteroids (ICSs), delivers anti-inflammatory medication directly to the lungs at the site of symptom-inducing inflammation.³ ICSs, when used correctly, including adhering to the prescribed regimen (usually twice per day), have been found to decrease exacerbations, even those severe enough to result in hospitalization.⁴ However, adherence to ICSs among adults with asthma is low, and even lower among the 2.6 million adult African Americans with asthma.^{2,4,5} Although adherence is generally considered a difficult barrier to overcome, should African Americans improve adherence to ICS treatment, up to a quarter of all exacerbations in this population could be prevented.⁵

Therefore, in this issue of *Journal of Allergy and Clinical Immunology: In Practice*, Riley et al⁶ aimed to identify and assess patient- and family-level interventions that could improve ICS adherence among African American adults with asthma. The rationale for identifying specific interventions directed toward this population is supported by a systematic review that evaluated interventions to improve asthma outcomes among minority patients where the authors found that the most successful interventions included cultural tailoring.⁷ Furthermore, the focus on patient- and family-level interventions is supported by the

chronic care model, a priority of numerous medical societies, where patient-centered care has been shown to improve care with other chronic diseases.⁸ However, although several systematic reviews exist evaluating ICS adherence among the general US population, the studies identified by these reviews failed to provide insights for tailoring ICS adherence interventions to African American patients and their families because they rarely included African Americans and/or failed to specifically analyze interventions for this population, or did not specifically evaluate patient-centered approaches (Table I).⁹⁻¹²

The current study therefore aimed to address this gap by specifically quantifying the effectiveness of patient- and family-level ICS adherence interventions for adult African Americans with asthma. There is clearly a strong rationale for identifying interventions tailored to African American adults with asthma, due to the higher prevalence of this disease among this population and worsened overall outcomes. Furthermore, adherence is worse among this population, which could indicate a failure of current adherence interventions to be used for and/or effective among this population. Therefore, the major strength of this review is its attempt to identify specific, tailored interventions for a population that has been understudied and lacks clear consensus on best approaches.

Although the aim of this study was to elucidate information specifically for adult African Americans with asthma, the results found by this review were largely consistent with findings from other systematic reviews of self-care interventions among adults with asthma.⁷⁻¹² For instance, there remains a dearth of published studies on interventions to improve outcomes for minority patients with asthma, despite the disproportionate burden of poor outcomes faced by this population.^{6,8} Furthermore, the strength of the existing evidence remains low to moderate, limiting overall impact. In addition, despite a focus on interventions for this population, none of the studies in this review demonstrated significant effectiveness for improving adherence to ICSs.⁶ Although other systematic reviews and meta-analyses have found that interventions targeting self-care can improve outcomes, none of the 5 interventions included in this systematic review was successful in improving adherence.⁹⁻¹⁷

The means by which medication usage is measured is of paramount importance in studies of adherence. Three of the studies reviewed by Riley et al used objective measurements,¹³⁻¹⁵ 2 of which also used subjective adherence measures^{13,14}; the other 2 only used subjective measures.^{16,17} Subjective measurements of adherence have been proven to be significantly inaccurate, and this is a limitation of many adherence intervention studies.¹⁸ One interesting finding was that although none of the

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TABLE I. Summary of systematic reviews related to medication adherence among adults with asthma

Review	Title	Year	Asthma	ICS	Minority/African American	Patient/family
Riley et al ⁶	A systematic review of patient- and family-level inhaled corticosteroid adherence interventions in adult African Americans	2018	*	*	*	*
Press et al ⁷	Interventions to improve outcomes for minority adults with asthma: a systematic review	2012	*	†	*	†
Qamar et al ⁸	Patient-centered care and its effect on outcomes in the treatment of asthma	2011	*	†	†	*
Viswanathan et al ⁹	Interventions to improve adherence to self-administered medications for chronic diseases in the US	2012	†	†	NI	NI
Denford et al ¹⁰	Effective behavior change techniques in asthma self-care interventions: systematic review and meta-regression	2014	*	†	NI	NI
Moullec et al ¹¹	Efficacy of interventions to improve adherence to inhaled corticosteroids in adult asthmatics: impact of using components of the chronic care model	2012	*	*	NI	NI
Haynes et al ¹²	Interventions for enhancing medication adherence	2008	‡	†	†	†

NI, Not included.

*Asthma only, ICS only, African American only, entirely regarding patient/family.

†Chronic diseases but not asthma specifically, medications included but not specifically ICSs, minority patients but not African Americans, patient/family included.

‡Asthma included.

5 studies in the Riley et al review found that the primary intervention studied improved adherence,⁶ among the 4 randomized controlled trials, both the intervention and its comparator showed improved adherence in 3 of the randomized controlled trials,^{13,16,17} indicating that study participation and medication use tracking may have improved adherence even in the control groups. However, the fourth randomized controlled trial showed a decrease in both groups.¹⁴

One important implication of this study is the clear need for increased quantity and quality of studies that address ICS adherence among this vulnerable population. As previously discussed, this population is disproportionately affected by poor asthma outcomes, and is therefore a key demographic to reach for interventions to optimize medication use. In addition, because the outcome of interest is adequately measured medication adherence, further research in this area should continue to focus on coupling behavior change interventions that may have previously been assessed qualitatively, with objective measures of medication adherence, so that effectiveness can be accurately measured.

Despite the strengths of this study, there are some limitations with regard to the study design, findings, and conclusions. The area of this focus was quite specific and excluded other vulnerable populations, including children and other minority populations adversely affected by asthma. However, as noted above, there is a rationale for evaluating a discrete patient population, because cultural tailoring has been found to be among the more effective approaches for asthma interventions.⁷ Similarly, the focus on patient- and family-level interventions (excluding provider-focused interventions) also limits the scope of the review, and may have contributed to the scarcity of identified studies. However, again, because much of chronic disease management falls to the patients and their caregivers, this narrow scope may be justified. Finally, although not under the control of the authors, the paucity of studies limits the review's ability to aid readers, clinicians, patients, and families as to how to best address the need to improve ICS adherence in this population. Future work

could expand on this review to identify tailored interventions for improving adherence to medications in general, and not simply limit the scope to ICSs specifically. Another means of increasing the scope would be to include studies that focus on unintentional nonadherence/decreased true adherence, such as inhaler technique interventions. Studies of predominantly African American hospitalized patients have found that patient-centered inhaler education is more effective at improving inhaler technique and in reducing acute care utilization compared with brief verbal instructions,¹⁹ so this could be a potential area of future focus.

In conclusion, this systematic review identified an important gap of knowledge related to a patient population that faces a disproportionate share of the morbidity associated with uncontrolled asthma. Despite a rigorous review of the literature and assessment of bias, the authors found only 5 studies that met their inclusion criteria, none of which was found to be effective in improving ICS adherence, though 3 studies found improved adherence in both the intervention and control groups, likely due to the Hawthorne effect. The recent Lancet Commission on asthma stated that the scientific community should “develop tests capable of identifying poor adherence and treatment approaches capable of improving adherence.”²⁰ By identifying a key gap in the literature in African American adults, the study by Riley et al in this issue attempts to draw attention to an opportunity to advance knowledge in this key demographic group. Further research in this realm should focus on culturally appropriate and targeted interventions in high-risk asthma populations, coupled with rigorous monitoring of adherence as an outcome of interest.

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