Use of Inhaled Corticosteroids among Hispanics in the United States

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Asthma is a major public health concern affecting 9.3% of children and 8.0% of adults across the United States (1). This burden of asthma is disproportionately distributed, however, with differences in prevalence, morbidity, mortality, and treatment practices among racial and ethnic groups (2). Given this heterogeneity, many studies of asthma have examined the effects of race and ethnicity on asthma-related outcomes.

In this month's issue of *AnnalsATS*, Kharat and colleagues (pp. 174–183) used data from the 2009 U.S. Medical Expenditure Panel Survey to compare receipt of a prescription for inhaled corticosteroids between Hispanic and non-Hispanic white individuals with self-reported asthma (3). The authors' focus on receipt of an inhaled corticosteroid prescription is appropriate, given that inhaled corticosteroids are important controller medications for persistent asthma. After analyzing data from 1,469 children and adults with asthma (corresponding to a larger weighted sample), the authors found significant ethnic differences in inhaled corticosteroid use in adults, but not in children. Among adults, Hispanics had 40% lower odds of receiving prescription than non-Hispanic whites (95% confidence interval [CI] for the adjusted odds ratio [aOR] = 0.3–0.9). A strength of the study is the authors' use of a publicly available survey that captures data on the cost and use of health care by children and adults in the United States (4).

Consistent with the findings of Kharat and colleagues among adults, a combined analysis of children and adults in the U.S. National Ambulatory Medical Care Surveys showed that Hispanics were 43% less likely to have a prescription for an inhaled corticosteroid than non-Hispanic whites (95% CI for aOR = 0.23–0.61) (5). In contrast, a multiethnic study of 198 adults hospitalized for asthma found no significant difference in inhaled corticosteroid prescription between Hispanic and non-Hispanic whites (6). However, that study had limited statistical power due to small sample size (6).

Previous findings in children have generally differed from those of Kharat and colleagues, reporting that Hispanic children are less likely to use an inhaled corticosteroid than non-Hispanic white children. Among 1,485 children who participated in the National Asthma Survey, Hispanic children with current asthma were 43% less likely to have used any inhaled corticosteroid in the last 3 months than non-Hispanic white children (95% CI for aOR = 0.40–0.90) (7). Expanding on these results, McQuaid and colleagues found that Hispanic children (including Puerto Ricans or Dominicans in Rhode Island, as well as Puerto Ricans in Puerto Rico) were less likely to adhere to treatment than non-Hispanic white children in Rhode Island (8).

The study by Kharat and colleagues has major limitations. First, cross-sectional data on asthma and inhaled corticosteroid

prescriptions were based entirely on self-report, which are vulnerable to reporting and recall biases. Second, reported receipt of an inhaled corticosteroid prescription does not necessarily indicate adherence to the prescription, which are important considerations in asthma care. Other investigators have implemented methods to minimize reporting and recall bias by using electronic inhaler sleeves, dosage counters for inhaled drugs, and electronic pill bottle caps in their study of asthma medication use and adherence among Hispanics and non-Hispanics (8). Third, lack of self-reported inhaled corticosteroid prescription may have been due to prescription of other controller medications for asthma, an issue addressed in some of the previous studies of racial/ethnic disparities in inhaled corticosteroid use (6–9). Fourth, there was limited information on barriers to treatment other than health insurance. Fifth, and most important, there was no categorization of Hispanics into subgroups.

When studying racial or ethnic differences in asthma, participants must be categorized into appropriate subgroups. For example, "Hispanic" broadly refers to any peoples with roots in Spain or areas previously under Spanish rule, including Mexico, large parts of Central and South America, and some Caribbean Islands. Given profound heterogeneity in racial ancestry, place of birth, and area of residence among U.S. "Hispanics," it should be no surprise that there is a correspondingly high degree of heterogeneity in asthma burden among

(Received in original form January 7, 2015; accepted in final form January 7, 2015)

S.B. was supported by Grant AI093538 from the National Institutes of Health. J.C.C. was supported by Grants HL073373, HL079966, and HL117191 from the National Institutes of Health and by an endowment from the Heinz Foundation.

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Ann Am Thorac Soc Vol 12, No 2, pp 241–242, Feb 2015

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DOI: 10.1513/AnnalsATS.201501-008ED

Internet address: www.atsjournals.org

Hispanic subgroups (10, 11). In fact, asthma is more variable between Hispanic subgroups than across broadly defined racial/ethnic groups in the United States. For example, among children and adults in the National Health Interview survey (2001–2010), the prevalence of current asthma was highest in Puerto Ricans (16.1%) and lowest in Mexican Americans (5.4%), with intermediate values for non-Hispanic whites (7.7%) and non-Hispanic blacks (11.2%) (2). Despite both subgroups belonging to the “Hispanic” category, Puerto Ricans and Mexican Americans have the highest and lowest mortality rates from asthma, respectively, of *any* ethnic group in the U.S. mainland (12). Moreover, treatment preferences have been shown to vary among Hispanic subgroups. For example, Puerto Ricans are less likely to use inhaled corticosteroid than individuals of Mexican descent (13).

To date, few studies have examined differences in the use of controller medications between members of specific Hispanic subgroups and non-Hispanic whites. In a study of 2,499 children with current asthma from the National Health and Nutrition Examination Survey, Mexican Americans had 40% lower odds of using preventive asthma medications (including but not limited to inhaled corticosteroids) than non-Hispanic whites (95% CI for aOR = 0.4–0.9) (9). In that study, there was no difference in inhaled corticosteroid use *per se* between ethnic groups, a finding that could be explained by insufficient statistical power in the stratified analysis (9).

To truly understand both the extent and the causes of differences in inhaled corticosteroid use between Hispanics and non-Hispanic whites, large longitudinal studies are needed in well-defined Hispanic subgroups and appropriate comparison

groups (e.g., non-Hispanic whites). Such studies should examine the relative contributions of determinants of access to healthcare (e.g., socioeconomic status and health insurance) and other potential risk factors for ethnic disparities in treatment, including inadequate health literacy or language barriers, cultural beliefs (e.g., fear of adverse effects), cultural competency of healthcare providers, and true biological (e.g., genetic) differences in treatment response (which may lead to nonadherence among nonresponders). In parallel with these efforts, clinical trials using multifaceted approaches should further help us identify cost-effective interventions to eliminate inadequate use of inhaled corticosteroids in Hispanic subgroups at high risk for asthma morbidity. ■

Author disclosures are available with the text of this article at www.atsjournals.org.

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