

# **Racial Differences in Asthma Outcomes Among Children With Food Allergy and Asthma**

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# DISCLOSURES

- I have no financial disclosures

# BACKGROUND

- Food allergy and asthma often co-exist in the pediatric population.
- Food allergy increases the risk of developing allergic asthma especially in children who have early sensitization to food allergens.<sup>1</sup>
- Pathogenesis appears to be IgE-mediated with production of histamine and leukotrienes causing inflammation of the airways and bronchospasm following exposure of culprit food.<sup>1</sup>
- About half of pediatric patient with asthma also have food allergy and about half of pediatric patients with food allergy have respiratory symptoms.<sup>2,3</sup>
- Frequency of food sensitization for egg, milk, soy, peanut, wheat and fish is higher in patients with asthma.<sup>2</sup>
- Patients with multiple and severe food allergies often have poorly controlled asthma.<sup>3</sup>

# BACKGROUND

- The coexistence of asthma and food allergy has significant clinical relevance as it increases the risk of life-threatening asthmatic episodes in case of food allergic reactions.<sup>3,4</sup>
- Cutaneous and gastrointestinal reactions to food are more common but asthma is the most frequent cause of death during anaphylactic reaction induced by food.<sup>3</sup>
- Asthma can be triggered by exposure to culprit food allergen by ingestion (most common) or inhalation.
- Egg allergy has been associated with an increased risk of asthma-related emergency room visits and hospitalizations.<sup>5</sup>

# BACKGROUND

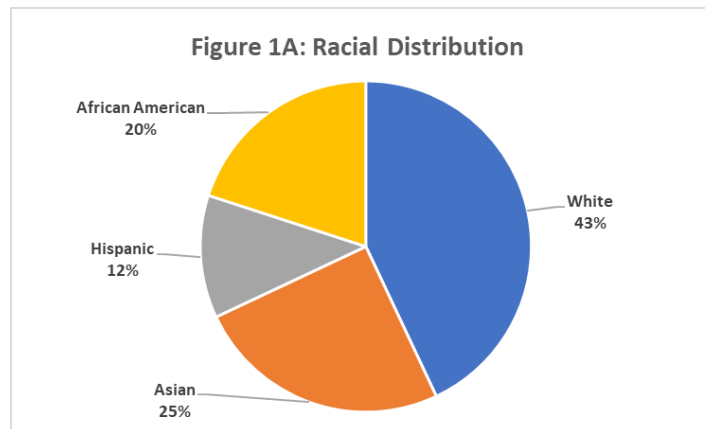
- While previous studies have shown racial differences in prevalence and outcomes of asthma and food allergy between African American and White children, very little has been reported regarding other races.
- Furthermore, the close link between sociodemographic factors and race need to be accounted for in these studies.

# METHODS

- We performed a retrospective cohort study at a single urban health system in Chicago of children under 12 years with comorbid food allergy and asthma.
- We compared frequency of asthma-related and food allergy-related emergency room visits amongst Asian-American, African American, White and Hispanic children.
- Associated demographic variables included race, age, gender, patient's insurance, and food allergen-type.
- Logistic regression was used to assess the odds ratio of events, adjusted for co-variables.
- All analyses were performed with SPSS, IBM v.22

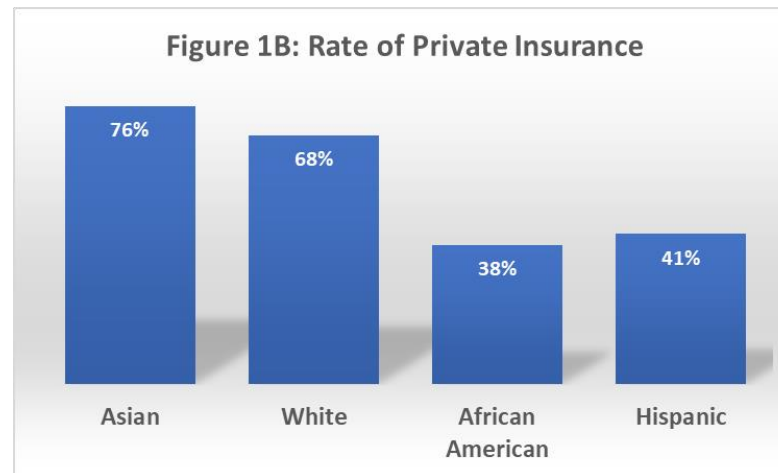
# PATIENT DEMOGRAPHICS

- A total of 173 participants with FA and comorbid asthma were included in the analysis.
- Racial distribution of the cohort (Figure 1A):



# PATIENT DEMOGRAPHICS

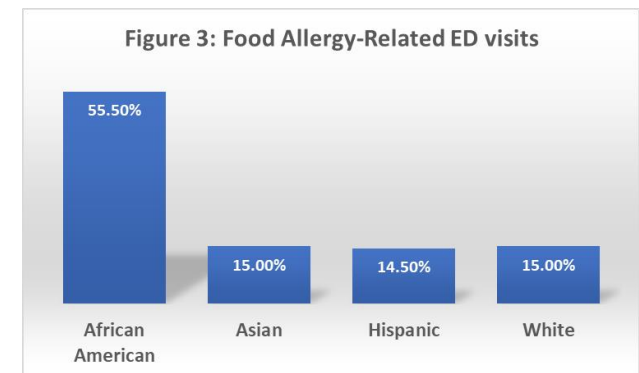
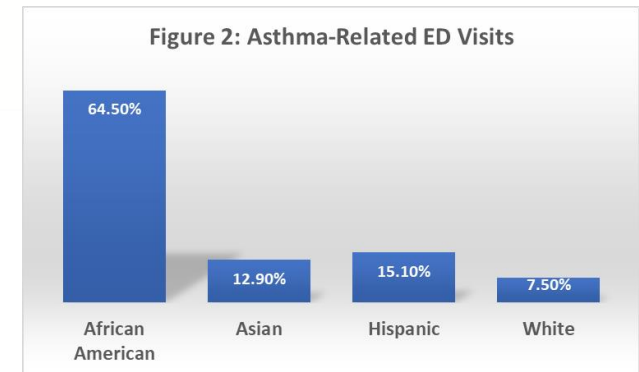
- The rate of private insurance (Figure 1B):





# RACE/ETHNICITY AND ASTHMA RELATED OUTCOMES

- Risk of asthma-related ED visits was highest among AA children at 64.5% compared to other groups (p-value <0.05; Figure 2).
- Risk of FA-related ED visits was highest among AA children at 55.5% compared to other groups (p-value <0.05; Fig 3).



# TYPE OF FOOD ALLERGEN AND ASTHMA RELATED OUTCOMES

- Egg allergy increased odds of asthma-related ED visits and hospitalizations when adjusted for age, sex and race (OR 2.8, 95% CI 1.8-3.7)
- This association was not seen with other food types including wheat, cow's milk, soy, peanuts, and tree nuts.

# DISCUSSION

- There are significant differences between racial/ethnic groups with regards to asthma-related and food allergy-related events.
- African American children have the lowest rate of private insurance and the highest frequency of both asthma-related and food allergy-related ED visits.
- On the other hand, Asian American and White children have a lower rate of asthma-related and food allergy-related ED visits.
- Asian American and White children have a higher rate of private insurance, indicative of less socioeconomic burden, and likely one factor contributing to better outcomes.
- Although all these children had some type of insurance, there are plenty of other factors linked to economic burdens that can result in lower access to outpatient and adequate care resulting in poor asthma outcomes.

# DISCUSSION

- Egg allergy appears to increase risk of asthma-related ED visits and hospitalizations, consistent with previous reports.
- It is possible that the higher risk is due use of egg in many foods as a hidden ingredient resulting in accidental exposure. <sup>5</sup>

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**THANK YOU**