

The atopic triad is associated with increased Atopic Dermatitis-related healthcare utilization and expenditures in pediatric patients: results from the Medical Expenditure Panel from 1996-2015

Nishadh Sutaria, BS¹, Youkyung S. Roh, BA¹, Justin Choi, BA¹, Thomas Pritchard, MPH¹, Deepa Patel, MD¹, Anna L. Grossberg, MD¹, Shawn G. Kwatra, MD¹

¹ Department of Dermatology, Johns Hopkins University School of Medicine, Baltimore, MD

Introduction

- Atopic dermatitis (AD) is an intensely pruritic inflammatory skin condition associated with significant morbidity and a dramatic reduction in quality of life.¹
- Subsets of patients with atopic dermatitis also have the atopic triad – indicating a higher rate of comorbid atopic disease, including allergic rhinitis and asthma.²
- Limited data are available on varying patient demographics and the impact on healthcare utilization among pediatric patients who have AD alone, compared to individuals with the atopic triad.
- We hypothesized individuals with the atopic triad have greater healthcare utilization reflecting higher AD severity.

Objectives

- To characterize the pediatric population with AD alone and with the atopic triad.
- To determine the impact of the atopic triad on AD-related healthcare utilization and expenditures in this population.

Materials and Methods

- The Medical Expenditure Panel (MEPS) from 1996 to 2015 was used to determine healthcare utilization and expenditures associated with AD.³ Survey respondents with AD, allergic rhinitis, and asthma were selected using corresponding International Classification of Diseases, Ninth Revision codes and limited to the pediatric population (age < 18). Respondents were grouped into two categories: those with AD alone, and those with AD, allergic rhinitis, and asthma (i.e. atopic triad). Healthcare utilization was measured by number of AD-related ambulatory visits and prescriptions, and expenditure was measured by costs for AD-related ambulatory visits and prescriptions.
- Baseline demographics were compared with Student's t-test for continuous variables and χ^2 for categorical variables. Mean annual healthcare utilization and expenditures were compared using Student's t-test. Multivariable linear regression models adjusting for age, race, sex, and insurance coverage (covariates) were used to determine the relationship of the atopic triad (independent variable) with number AD-related ambulatory visits, prescriptions, and their associated costs (dependent variables). Excess utilization and expenditures attributable to the atopic triad were calculated using β coefficients and national estimates of total patients. All analyses were performed taking into account the MEPS complex survey design and population weights.

Table 1. AD-related healthcare utilization and expenditures in pediatric patients with AD alone vs. atopic triad

	Atopic dermatitis alone	Atopic triad	P – value
Mean annual ambulatory visits (95% CI)	0.74 (0.69 – 0.78)	1.09 (0.67 – 1.52)	0.0001
Mean annual prescriptions (95% CI)	1.00 (0.95 – 1.05)	1.68 (1.23 – 2.14)	<0.0001
Mean annual expenditure for ambulatory visits (95% CI)	\$149.97 (\$126.61 – \$173.33)	\$298.52 (\$98.49 – \$498.55)	0.0581
Mean annual expenditure for prescriptions (95% CI)	\$80.11 (\$72.45 – \$87.77)	\$352.52 (\$172.05 – \$532.99)	<0.0001

Table 2. Multivariable regression of AD –related healthcare utilization and expenditures, adjusted for age, race, sex, and insurance coverage

	Atopic dermatitis alone	Atopic triad	P – value
Number of ambulatory visits, β (95% CI)	reference	0.342 (-0.083 – 0.767)	0.114
Number of prescriptions, β (95% CI)	reference	0.656 (0.201 – 1.111)	0.005
Cost for ambulatory visits, β (95% CI)	reference	\$51.71 (-\$36.89 – \$140.32)	0.252
Cost for prescriptions, β (95% CI)	reference	\$264.64 (\$67.79 – \$461.49)	0.009

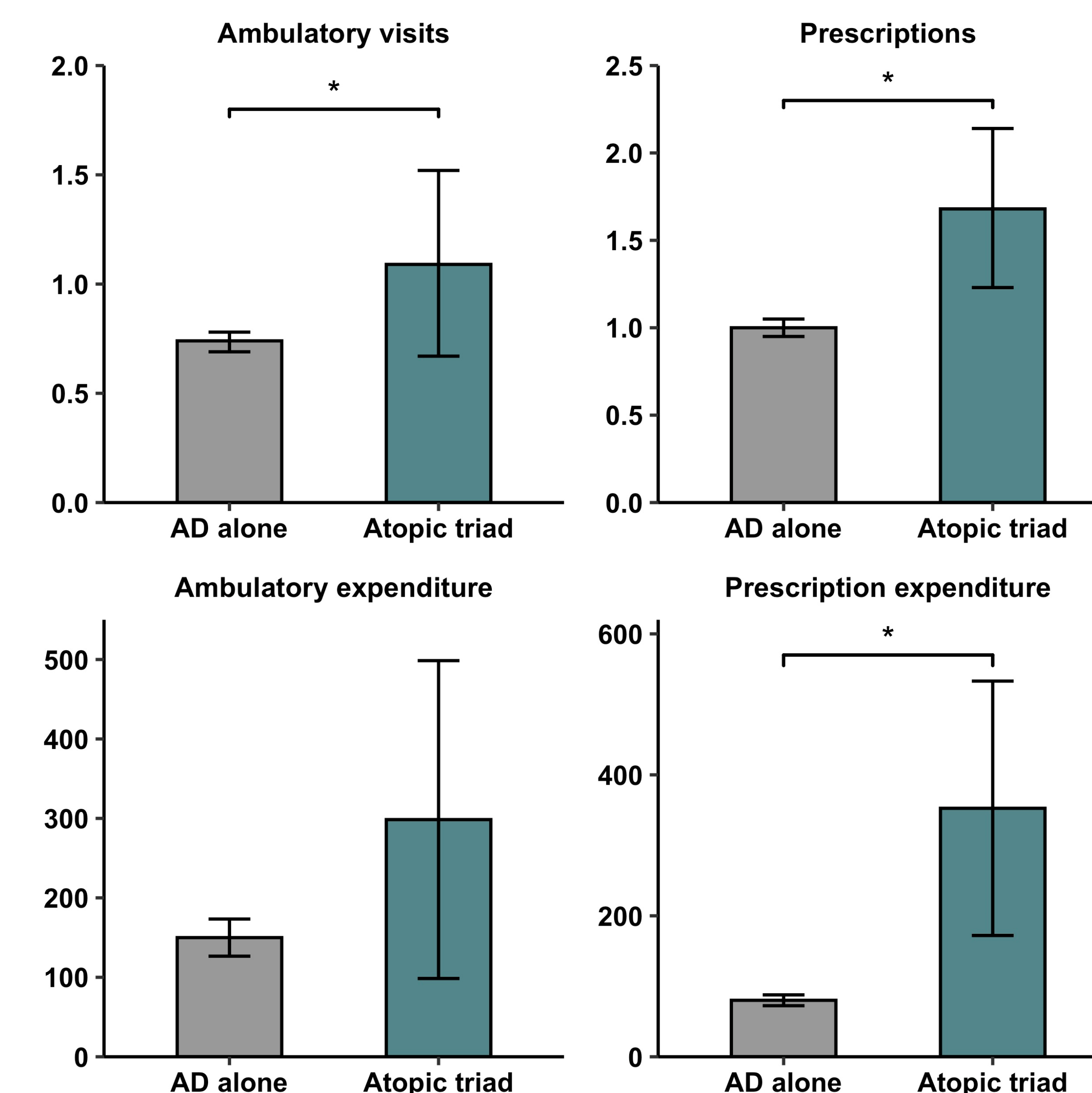


Figure 1. Mean annual AD-related ambulatory visits/prescriptions and corresponding costs. * denotes statistical significance.

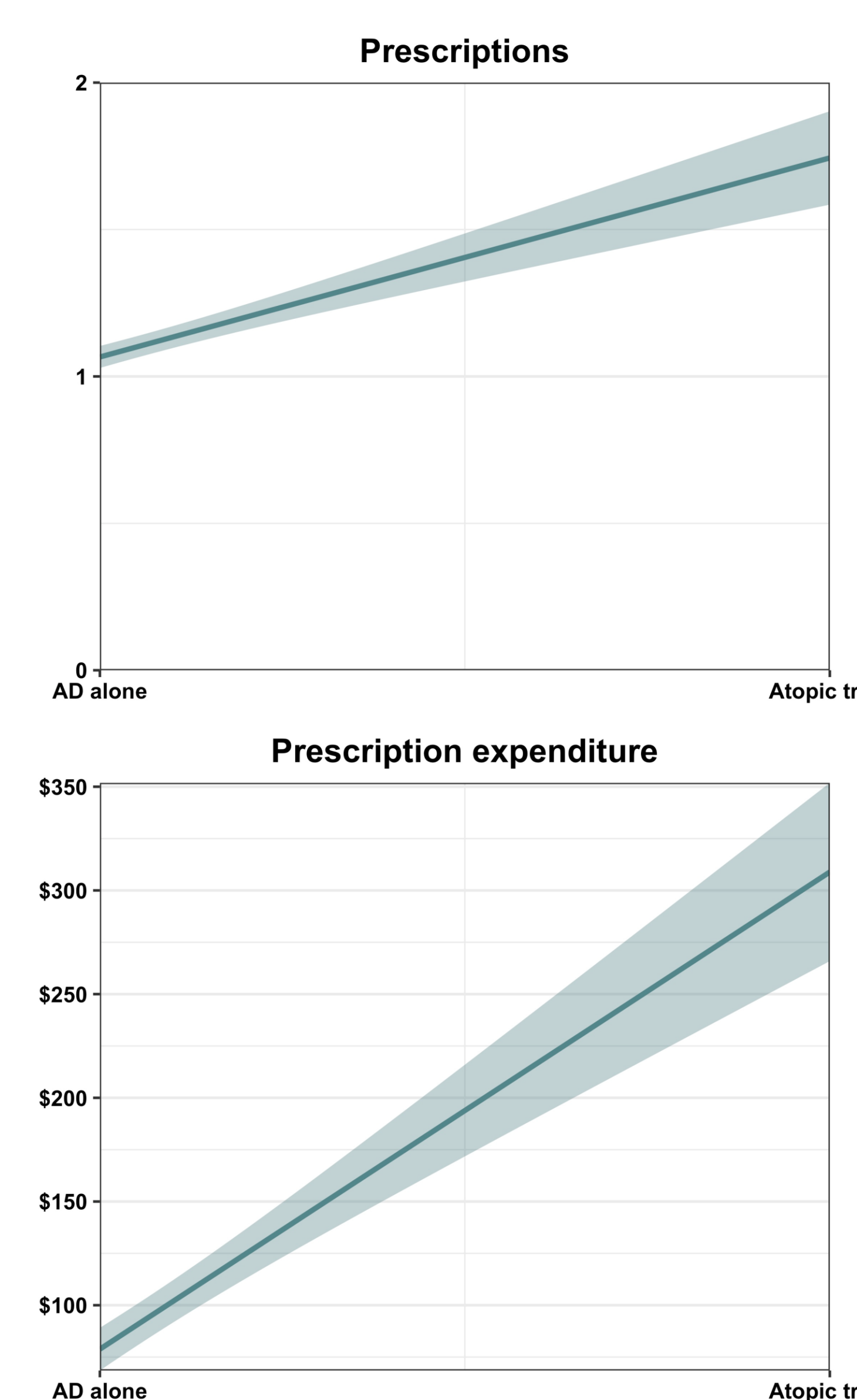


Figure 2. Linear model of mean annual AD-related prescriptions and prescription costs

Results

- From 1996 to 2015, the MEPS captured an estimated 29,471,338 pediatric patients with AD alone and 1,897,580 with the atopic triad.
- Patients with the atopic triad were more likely to be male (56.38% vs. 50.14%, P=0.005) and black (21.94% vs. 16.21%, P<0.001) than those with AD alone.
- Patients with the atopic triad had a higher mean annual number of AD-related ambulatory visits (1.09 vs 0.74, P<0.001) and AD-related prescriptions (1.68 vs 1.00, P<0.001), than those with AD alone (Table 1). Patients with the atopic triad also had a higher mean annual expenditure (\$352.22 vs. \$80.11, P<0.001) for AD-related prescriptions than those with AD alone (Table 1).
- Using multivariable linear regression adjusting for age, race, sex, and insurance coverage, presence of the atopic triad positively correlated with number of AD-related prescriptions (β 0.656, 95% CI: 0.201 – 1.111, P=0.005), and AD-related expenditure for prescriptions (β \$264.64, 95% CI: \$67.79 – \$461.49, P=0.009) (Table 2).
- Compared to AD alone, the atopic triad contributed an annual excess of 62,241 AD-related prescriptions and \$25,108,778.60 in expenditure for AD-related prescriptions.

Conclusion

- We found that pediatric patients with the atopic triad were more likely to be male and black than those with AD alone. We also found that the presence of the atopic triad contributed to increased AD-related healthcare utilization and expenditure among pediatric patients.
- These findings may reflect an increased severity of AD in those with comorbid atopic disease and underscore the systemic nature of AD. Therefore, clinicians must be aware of these associations, as optimal management of AD may also require adequate control of comorbid allergic rhinitis and asthma.

References

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