



# Asthma Severity and Psychosocial Impairment in Children

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## Abstract

**Rationale:** Previous studies have shown a relationship between children's behavior and asthma morbidity. This study from the Chicago Initiative to Raise Asthma Health Equity evaluates whether psychosocial impairment is associated with asthma severity.

**Methods:** During an in-person interview with caregivers, we assessed demographics, child psychosocial impairment (Pediatric Symptom Checklist (PSC), Jellinek, 1988), asthma symptoms and asthma-related quality of life (Children's Health Survey for Asthma (CHSA), American Academy of Pediatrics, 1999) in 459 children with persistent asthma. Children were 41.4% female, mean age 10.5 years, 25.5% Hispanic, 56.1% African-American/non-Hispanic, and 17.6% Other. Caregivers were 94.1% female, mean age 38.3 years. Measures of asthma morbidity include the number of symptom days and nights and the CHSA subscales measuring the child's ability to carry out everyday activities and physical symptoms. Psychosocial impairment was defined as a PSC score of 28 or above.

**Results:** Multivariate analyses of the association between asthma morbidity and psychosocial impairment were conducted, controlling for demographic characteristics and cotinine levels. Impairment was associated with mean symptom nights (2.8 vs. 1.5 per 14 days,  $p=.001$ ). As compared with non-impaired children, impaired children were 11.8% less likely to carry out everyday activities and reported 12.2% worse physical health ( $p<.001$ ). Daytime symptom burden, beta agonist use, and exacerbations did not differ.

**Conclusions:** Findings suggest psychosocial impairment is associated with some key measures of asthma morbidity in this large diverse sample of urban children.

## Background and Objectives

- Previous studies have shown a relationship between children's behavior and asthma morbidity.

- Behavior problems in children have been shown to be higher in diseased populations.

- Do asthmatic children with psychosocial impairment have more symptoms and lower asthma-related quality of life?

## Methods

### Setting and Design:

- Population proportionate sampling of Chicago elementary schools to identify children and adult household members with asthma

- Cross-sectional survey, face-to-face interview with adults and caregivers of children with asthma

### Inclusion:

- N=459 Children 8-14 years old with physician diagnosed asthma requiring medication at least 8 weeks in the past 12 months

- Caregiver primarily spoke English and agreed to periodic interviews over 2 years

## Methods - continued

### Measurements:

#### Outcomes:

- **Asthma Symptoms:** Number of days (0-14), number of nights (0-14)
- **Asthma-Related Quality of Life (AQOL):** Activity and physical health subscales of the Children's Health Survey for Asthma (0-100 higher score, greater AQOL)
- **Short-Acting Beta Agonist Use:** Number of days (0-14)
- **Exacerbations:** Required hospitalization or emergency room visit in last 6 months (yes / no)

#### Main Predictor:

- **Psychosocial Impairment:** Dichotomous variable based on a score of 28 or above on the Pediatric Symptom Checklist (PSC)

#### Covariates:

- Age, gender, ethnicity, income, caregiver education, cotinine levels

#### Analyses:

- **Bivariate:** T-tests and Chi-square analyses
- **Multivariate:**
  - Negative binomial, least squares, and logistic regression, for symptom days/nights and beta agonist days, AQOL, and exacerbations, respectively
  - Rates were estimated for each model assuming mean values for all covariates.

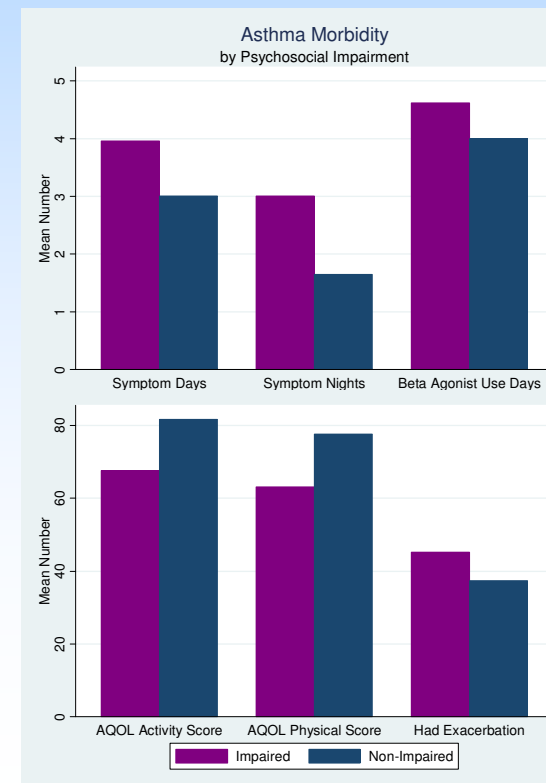
## Results - Characteristics of Sample

	Impaired n=135 (29%)	Non-impaired n=324 (71%)	p-value
Age (mean)	10.5 (10.3, 10.8)	10.5 (10.3, 10.7)	0.94
Gender (% Male)	67.4 (59.3, 75.4)	54.9 (49.5, 60.4)	0.01
Ethnicity (%)			
Hispanic	28.9 (21.1, 36.6)	24.1 (19.4, 28.8)	0.27
AA / Non-Hisp	55.6 (47.1, 64.0)	57.4 (52.0, 62.8)	0.63
Other	15.6 (9.4, 21.7)	18.5 (14.3, 22.8)	*
Household Income (%)			
<\$15,000	24.4 (17.1, 31.8)	17.0 (12.9, 21.1)	*
\$15-\$30,000	33.3 (25.3, 41.4)	26.2 (21.4, 31.1)	0.66
\$30-\$50,000	17.0 (10.6, 23.5)	19.8 (15.4, 24.1)	0.12
>\$50,000	25.2 (17.8, 32.6)	37.0 (31.8, 42.3)	0.01
Caregiver Education (%)			
< HS	16.3 (10.0, 22.6)	10.5 (7.1, 13.8)	*
HS Grad/GED	71.1 (63.4, 78.9)	67.6 (62.5, 72.7)	0.19
College Grad	12.6 (6.9, 18.3)	21.9 (17.4, 26.4)	0.01
Cotinine levels ng/ml (geometric mean)	2.1 (1.8,2.5)	1.4 (1.3,1.6)	<.001

\*reference category

## Results - Bivariate

	Impaired	Non-impaired	p-value
Symptom Days	4.0 (3.3, 4.6)	3.0 (2.6, 3.4)	0.01
Symptom Nights	3.0 (2.3, 3.7)	1.6 (1.3, 2.0)	<0.001
AQOL – Activities	67.6 (63.4, 71.8)	81.7 (79.5, 83.9)	<0.001
AQOL – Physical Health	63.2 (59.2, 67.2)	77.6 (75.5, 79.7)	<0.001
Beta Agonist Use	4.6 (3.8, 5.5)	4.0 (3.5, 4.5)	0.21
% with Exacerbations	45.2 (36.7, 53.7)	37.4 (32.1, 42.6)	0.12



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## Results - Multivariate

	Impaired	Non-impaired	p-value
Symptom Days	3.8 (3.0, 4.5)	3.0 (2.6, 3.4)	0.06
Symptom Nights	2.8 (2.0, 3.5)	1.5 (1.2, 1.8)	0.001
AQOL – Activities	69.0 (65.4, 72.6)	81.2 (78.9, 83.4)	<0.001
AQOL – Physical Health	65.0 (61.6, 68.4)	76.8 (74.7, 79.0)	<0.001
Beta Agonist Use	4.2 (3.2, 5.2)	3.9 (3.3, 4.5)	0.62
% with Exacerbations	41.5(32.5, 50.4)	36.6(31.0, 42.3)	0.37

### Covariates significantly related to outcomes (p<.05):

- Hispanics have more symptom days and African Americans have more symptom nights than the Other group.
- Having an exacerbation and lower AQOL (physical health) is associated with lower income.
- African Americans have lower AQOL (activities) than both Hispanics and the Other group.
- African Americans are less likely than Hispanics and more likely than the Other group to have an exacerbation.

## Conclusions

- Children with psychosocial impairment are associated with more asthma symptom days and nights.
- Lower asthma-related quality of life in activities and physical health occurred in those psychosocially impaired.
- Impairment groups did not differ in exacerbations or beta agonist use.
- Greater precision on relationships awaits further study.