

Asthma Control and Sleep Outcomes in Urban Children with and without Atopic Dermatitis

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Introduction:

- Children with asthma are at risk for poorer sleep outcomes.
- Urban minority children are disproportionately burdened by poor sleep due to socio-contextual stressors and challenges with asthma regimens.
- Atopic dermatitis (AD) is highly co-morbid in children with asthma and can further increase risk for poor sleep.

Objectives:

- To examine the sleep outcomes in urban children with asthma alone versus children with asthma plus AD
- To determine whether AD increased risk for poorer asthma control in children with asthma alone versus asthma plus AD

Methods:

- Data are from a larger study of asthma and sleep in urban and ethnically diverse children (ages 7-9)
- A total of 241 children were enrolled: 206 with persistent asthma only (52% Latino-L, 31% African American-AA, 17% Non-Latino White-NLW), 35 with persistent asthma+ AD (43% L, 46% AA, 11% NLW)
- Diagnosis of asthma : Physician-diagnosed persistent asthma via EPR-3 guidelines
- Diagnosis of AD: Physician report of AD and/or patient was utilizing topical corticosteroid therapy
- Sleep outcomes (measured objectively using actigraphy; mean number of awakenings, sleep efficiency) were assessed over the course of 4 weeks during fall/winter season
- Asthma outcomes were assessed via handheld FEV1 measured BID for 4 weeks, asthma control test (ACT) and asthma questionnaire

Figure 1a Sleep Outcomes in asthma+AD
FEV1/# of awakenings

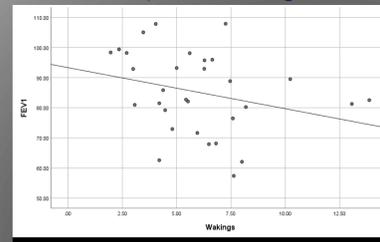


Figure 1b Sleep Outcomes in asthma alone
Asthma control (ACT score)/Sleep efficiency

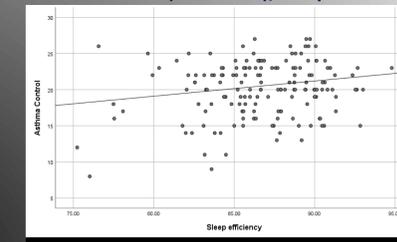


Figure 2a Asthma Outcomes (FEV1) in
asthma alone & asthma+AD

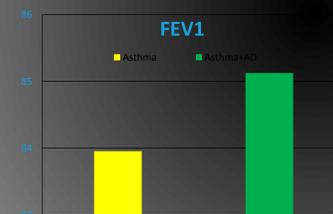
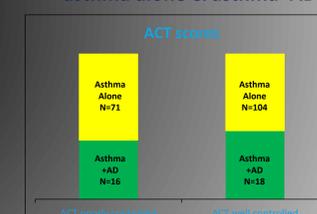


Figure 2b Asthma Outcomes (ACT) in
asthma alone & asthma+AD



Results:

Sleep Outcomes:

- In children with Asthma+AD: (Figure 1a)
 - Children with greater number of awakenings had a lower mean FEV1 ($\rho=-0.39$, $p=.03$)
- In children with Asthma only: (Figure 1b)
 - Better sleep efficiency was associated with better asthma control –ACT score ($\rho=0.17$, $p=0.03$)

Asthma Outcomes : In children with asthma alone vs. asthma+AD (Figures 2a/b)

- No difference in FEV1
- No difference in poorly or well controlled ACT scores
- No difference in parental reported asthma symptoms

Conclusions:

- In urban minority children with asthma+AD, sleep outcomes (number of nighttime awakenings) were poorer than their asthma alone counterparts and this was related to mean FEV1 values
- Further studies evaluating sleep and asthma outcomes in larger samples of urban ethnically diverse children with asthma+AD are warranted.
- Interventions for children with asthma+AD may need to focus on sleep with treatment recommendations tailored specifically for urban children's asthma, AD, and sleep needs

References:

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- Koinis-Mitchell D, Kopel SJ, Seifer R, LeBourgeois M, McQuaid EL, Esteban CA, Boergers J, Nassau J, Farrow M, Fritz GK, Klein RB. [Asthma-related lung function, sleep quality, and sleep duration in urban children.](#) Sleep Health. 2017 Jun;3(3):148-156.

Supported by Grant: Nocturnal Asthma and Performance in School (NICHD # R01HD057220, PI Koinis-Mitchell)