

The ASTHMAXcel Adventures Mobile Application for Pediatric Patients: A Subgroup Analysis

Anjani Singh, MD¹; Brian Hsia, BS¹; Obumneme Njeze, BS¹; Emine Cosar, MD¹; Iris Lin BS¹; Sunit P. Jariwala, MD²

¹Albert Einstein College of Medicine and Montefiore Medical Center, Bronx, NY, ²Montefiore Medical Center, Bronx, NY

Rationale

- There is a lack of published literature regarding the sociodemographic characteristics of pediatric patients that use asthma self-management tools, such as mobile applications.
- This study evaluates the impact of ASTHMAXcel Adventures on distinct pediatric subgroups.

Methods

- ASTHMAXcel Adventures is a mobile app with games and videos that educate patients and promote self-management.
- At baseline, 4 months, and 6 months, we administered the app and evaluated the following outcomes: Asthma Control Test (ACT), Pediatric Asthma Impact Scale (PAIS), and healthcare utilization (ER visits, hospitalizations, steroid use).
- The paired 2-sample t-test evaluated change from baseline, and was performed for all outcomes and subgroups.

Results

- 39 patients (male=20) were enrolled. In the 7-11yo age group, there were statistically significant improvements in ACT at 4 and 6mo (17.2 vs 19.4, $p=0.02$; 17.2 vs 20.3, $p=0.001$), PAIS at 4 and 6mo (46.4 vs 36.2, $p=0.005$; 46.4 vs 31.0, $p=0.0002$), and reduced prednisone use at 6mo (0.5 vs 0, $p=0.03$).
- Patients 12-14yo had significant improvements in ACT at 4mo (16.0 vs 21.8, $p=0.005$).
- Male patients had significant increases in ACT at 4 and 6mo (15.7 vs 20.1, $p=0.001$; 15.7 vs 20.9, $p=0.0001$) and reduced prednisone use at 6mo (0.5 vs 0, $p=0.02$).
- Black patients had significant improvements in ACT at 4 and 6mo (16.1 vs 20.6, $p=0.003$; 16.1 vs 19.6, $p=0.03$), and PAIS at 4 and 6mo (47.1 vs 33.4, $p=0.001$; 47.1 vs 28.4, $p=0.0001$).

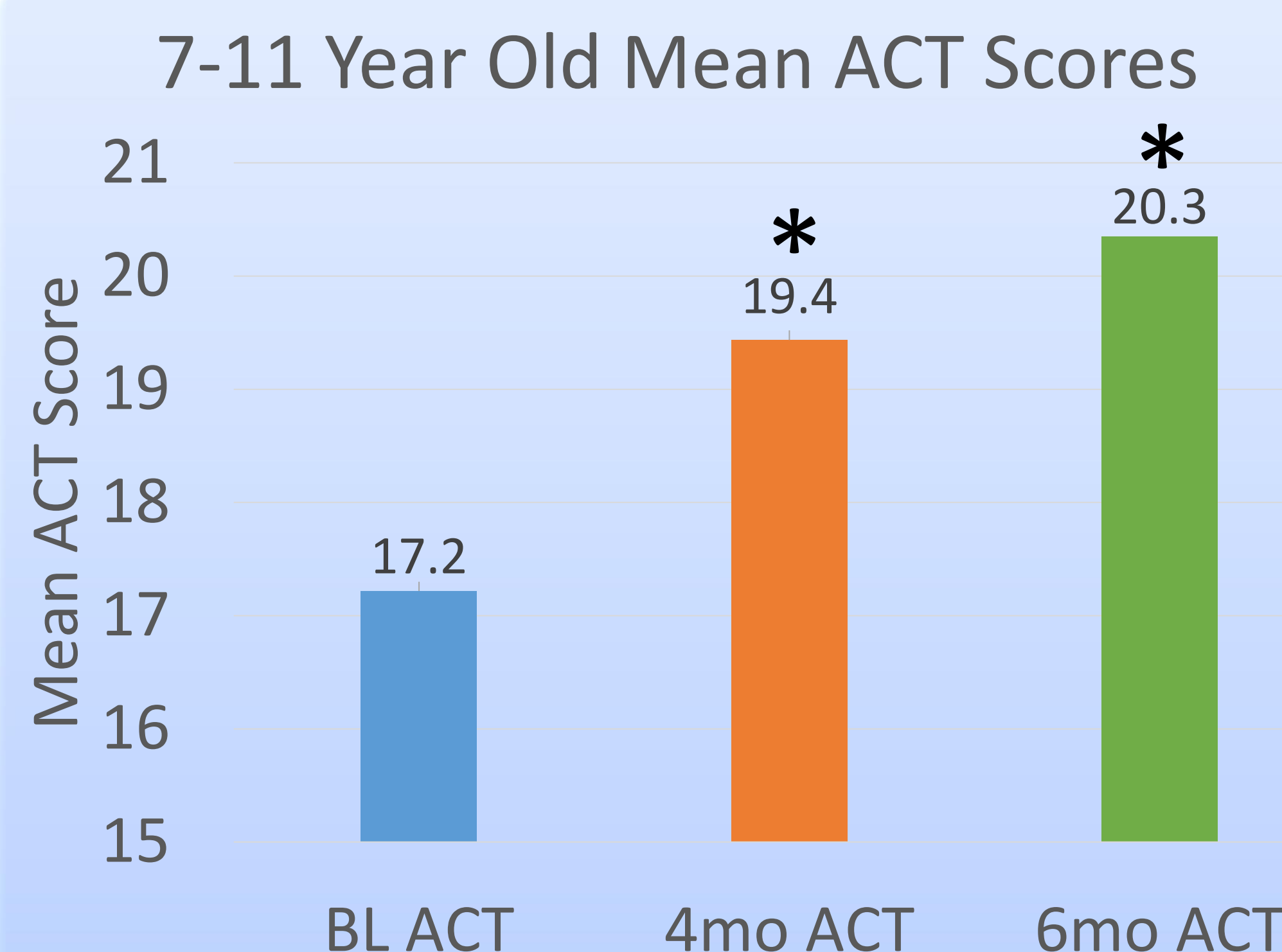


Figure 1. Mean ACT, asthma control, scores among 7-11 year olds. Higher ACT score reflects better outcomes [n=24 (by 4mo), 23 (by 6mo)].

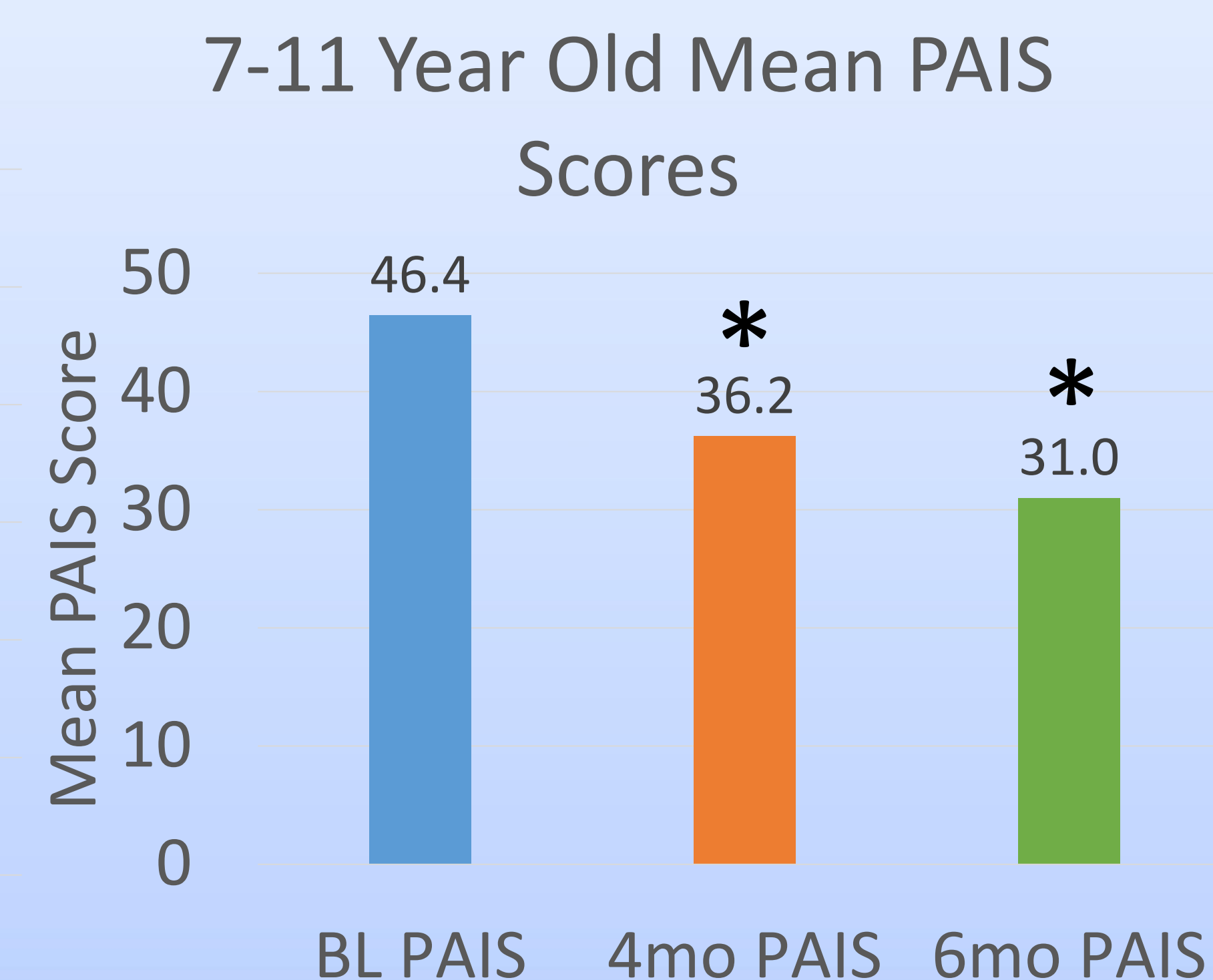


Figure 2. Mean PAIS, quality of life, scores among 7-11 year olds. Lower PAIS score reflects better outcomes (n=23)

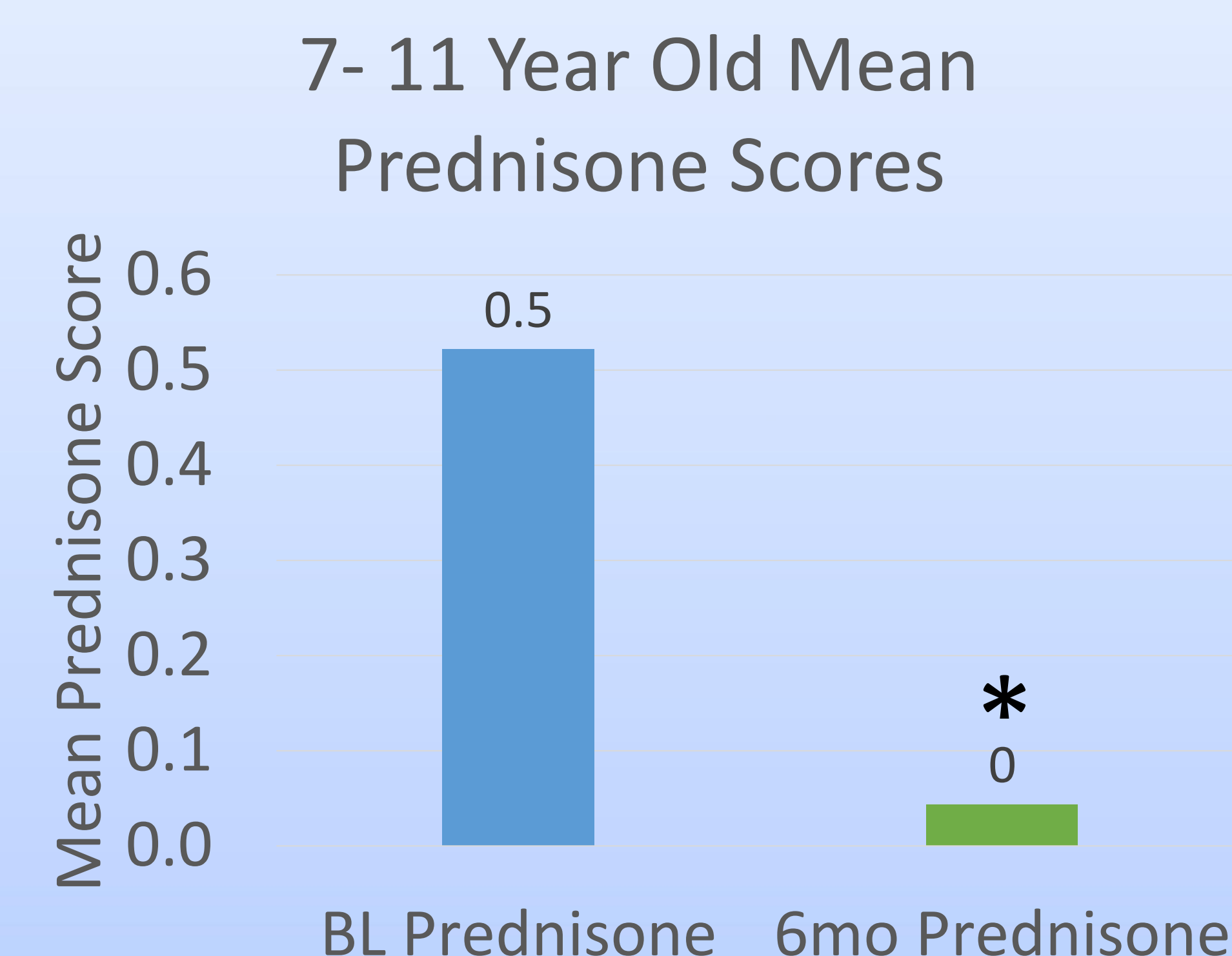


Figure 3. Reduced prednisone use among 7-11 year olds from baseline to 6mo (n=23).

Conclusion

- ASTHMAXcel has been associated with improved outcomes in young patients, male patients, and Black patients. Larger studies are needed to validate these results.

Acknowledgments

- This work was supported by grants from the Stony Wold-Herbert Fund and American Lung Association.