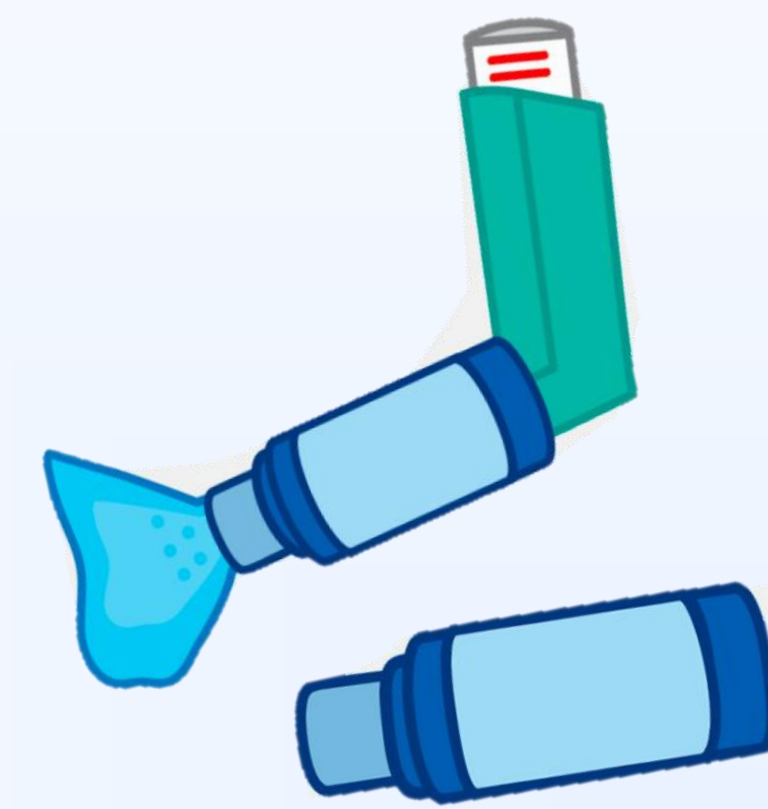




Introduction

- Asthma is one of the most common chronic diseases of childhood (affects 6.5% of children)
- Higher prevalence in the socially disadvantaged
- Asthma poses a significant economic burden on the healthcare system
- Children and their caregivers often find medication administration to be challenging
- Vital to address as improper use of inhaled medication is often associated with poor asthma control



Objective

The aim of this study is to assess whether the implementation of instructional videos in multiple languages with closed captioning helps to improve patient inhaler technique and compliance, especially for non-English speaking patients.

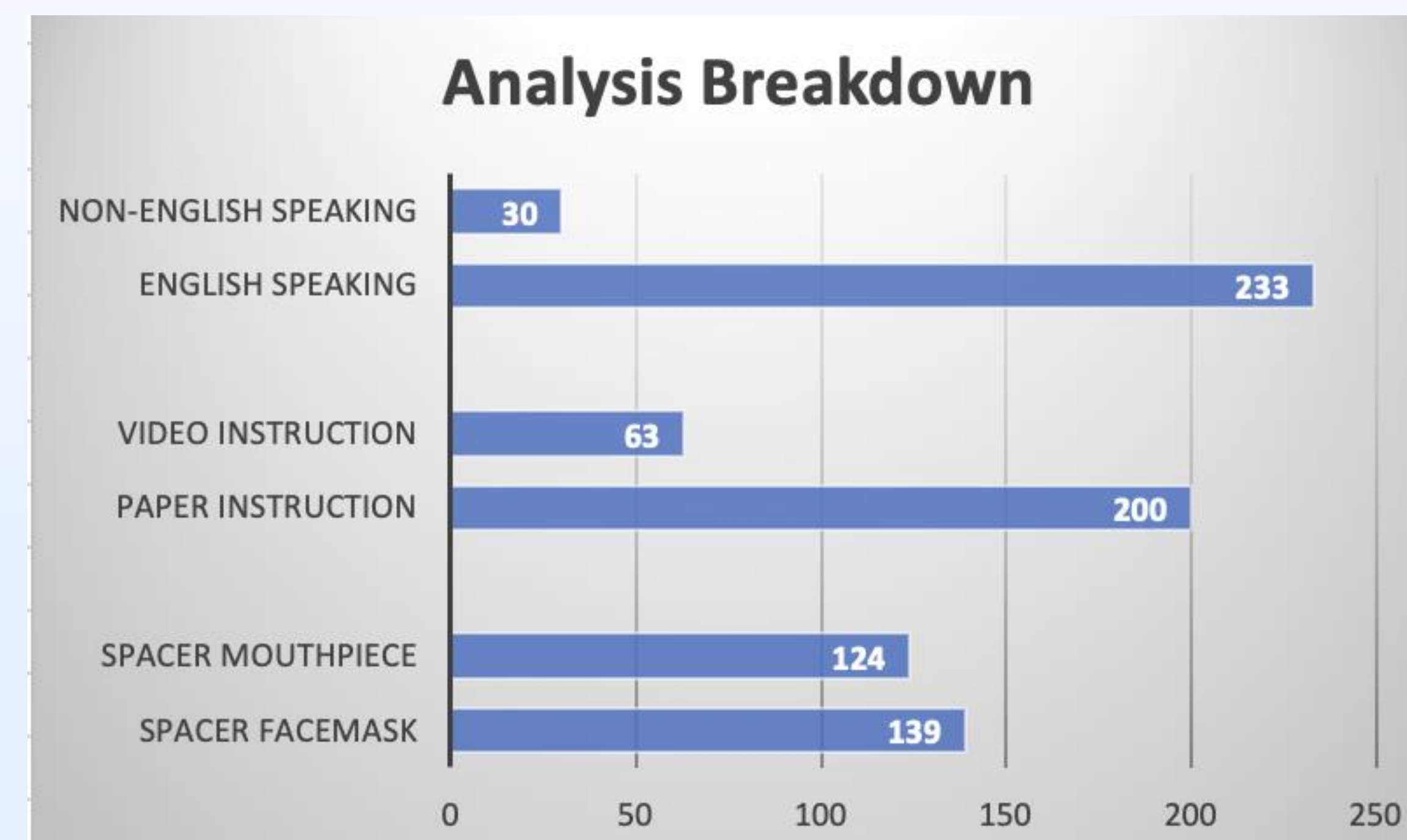
Methods

- Recruitment at our Pediatric Pulmonology Clinic
Inclusion Criteria: Ages 2-18
Exclusion Criteria: MDI or device not being used
- Divided into 2 groups with ~600 participants each:
Covering 8 different inhalation devices
 1. Control Group: demonstration and written instruction on use of prescribed device
 2. Treatment Group: demonstration and video instruction (English, Spanish, Russian, Arabic, Mandarin, or Cantonese) on use of prescribed device
 - Videos disseminated using QR codes
- Groups evaluated on their ability to demonstrate proper inhaler technique using a standardized medication administration evaluation form at follow up
- Numerical score converted into a percentage and compared using a two-sample t-test
- Boxplots generated to show distribution of scores for each aim
- P-values <0.05 considered statistically significant
- Analyses conducted using SAS version 9.4 (SAS Institute Inc., Cary, NC)



Results

Study is ongoing, analysis has been performed focusing on inhaler with spacer facemask and mouthpiece groups.



Device Group:

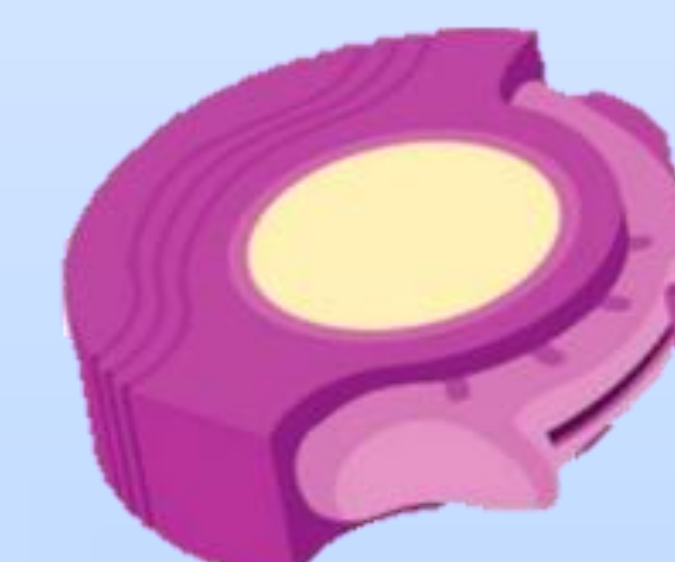
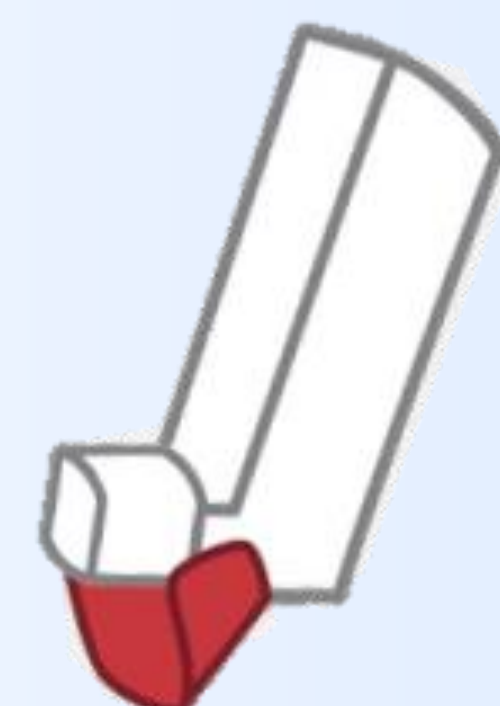
53% of participants in the spacer facemask group
47% of participants in the spacer mouthpiece group

Instruction Source:

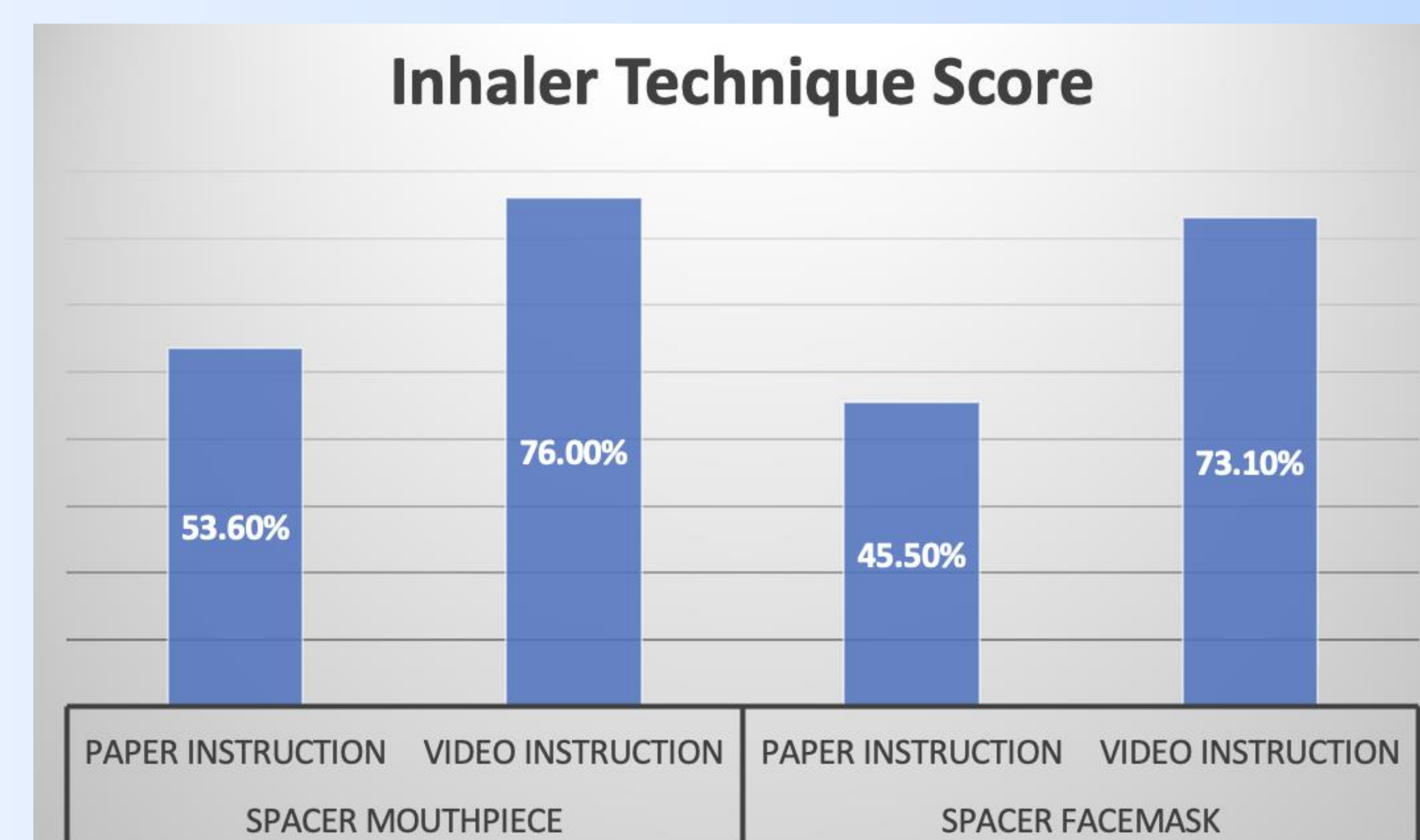
76% received paper instruction
24% received video instruction

Language Breakdown:

89% were English speakers
11% were non-English speaking



Inhaler Technique Score



A significant difference in the mean percentage score was found between the paper and video instruction groups for each device ($p < 0.0001$).

No significant difference in the mean percentage scores between English and non-English speakers within either the video or paper instruction groups.



Discussion

- Based on analysis for these 2 subgroups, video instruction has shown to be more effective than written instruction at improving inhaler technique
- Video instruction may be easier to follow and understand for both caregiver and child
- QR codes allow for easy at-home access to videos at any given point in time
- Improved inhaler technique can result in better compliance and therefore better control of asthma

Conclusion

Video instruction is more beneficial than written instruction in improving inhaler technique.

Larger sample size is required to determine whether non-English speakers may benefit more from video instruction as compared to written instruction.

References

1. "Asthma Surveillance Data." *Centers for Disease Control and Prevention*, Centers for Disease Control and Prevention, 10 May 2023, www.cdc.gov/asthma/national-surveillance-data/default.htm.
2. Antonio Riera, Aledie Navas-Nazario, Veronika Shabanova & Federico E. Vaca (2014) The impact of limited English proficiency on asthma action plan use, *Journal of Asthma*, 51:2, 178-184, DOI: 10.3109/02770903.2013.858266
3. Capanoglu M, Dibek Misirlioglu E, Toyran M, Civelek E, Kocabas CN. Evaluation of inhaler technique, adherence to therapy and their effect on disease control among children with asthma using metered dose or dry powder inhalers. *J Asthma*. 2015;52(8):838-845. doi:10.3109/02770903.2015.1028075
4. Carpenter DM, Lee C, Blalock SJ, et al. Using videos to teach children inhaler technique: A pilot randomized controlled trial. *J Asthma*. 2015;52(1):81-87. doi: 10.3109/02770903.2014.944983.
5. Erwin, Elizabeth A., and Kelly J. Kelleher. "Understanding the highs and lows of socioeconomic status." *Journal of Allergy and Clinical Immunology*, vol. 149, no. 5, 2022, pp. 1585-1586, <https://doi.org/10.1016/j.jaci.2022.03.007>.
6. Ferrante G, La Grutta S. The burden of pediatric asthma. *Frontiers in Pediatrics*. 2018;6. <https://www.frontiersin.org/article/10.3389/fped.2018.00186>.