Asthma's Relationship to Speech Production in Children

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Introduction

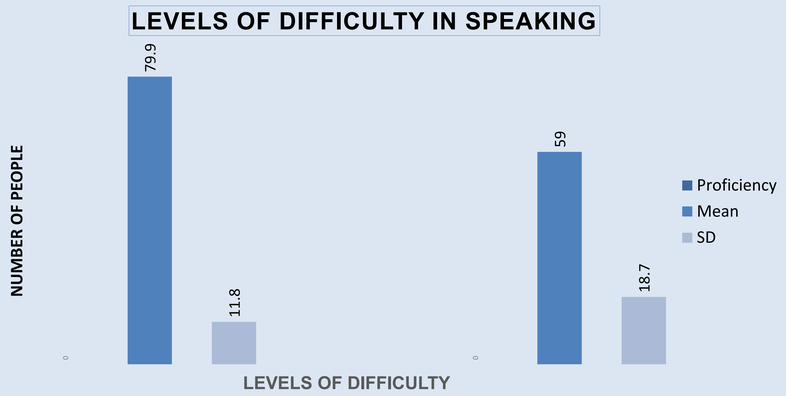
- Speech is produced during exhalation by a coordination of the vocal folds opening and closing. (National Institute on Deafness and Other Communication Disorders website, 2023). Asthmatic children have insufficient breath support, which can lead to poor coordination between respiration and phonation. The result: reduced stability and clarity in their speech production. (Asnaashari et al., 2012).
- Asthma is one of the most common chronic illnesses in children and adults, worldwide, and significantly impacts respiratory function. (Dharmage et al., 2019).
- In the United States, asthma affects approximately 6.5% of children (National Health Interview Survey, 2023).
- Research suggests that teaching asthmatic children breathing exercises that strengthen the coordinated breathing patterns is linked to higher proficiency in speech; disruptions in this coordination may negatively affect their speech production (Bunlam et al., 2024).
- Without this support, children with asthma may: hesitate to speak, miss meeting key speech milestones, and face delays in academic and social development (Al-khresheh, 2018).

Research Question: How large an impact does severe asthma have on speech production in the pediatric population?

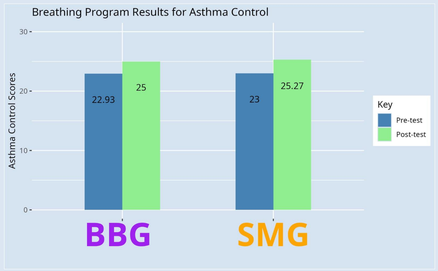
Approach

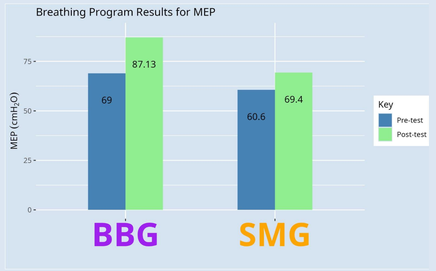
- This literature review examined peer-reviewed articles published from 1980 to the present, with most studies published in the late 2010s and onward.
- Research on asthma and speech production has increased in recent years, though much of the existing work focuses on comorbid conditions such as allergies and other respiratory disorders.
- Because respiration underlies all speech, this review explored whether poor asthma control contributes to reduced breath support and, in turn, impacts speech development.
- Articles were analyzed to identify patterns linking asthma severity to speech production challenges, as well as strategies shown to improve respiratory control and support clearer, more effective speech.
- The goal of this approach was to synthesize current evidence demonstrating that improved asthma management can promote stronger breath support and more typical speech development.

Findings



- The two graphs depict levels of control over asthma and difficulty with speaking in groups of adults and children (Al-khresheh, 2018).
- Based on personal perception of subjects on their difficulty level on their speech the results indicate the worse control over asthma leads to more challenges with speech.
- The findings demonstrate that adults who have had time to learn compensatory strategies still experience hardships with their speech production.





- Bunlam et al., (2024) analyzed breathing in 30 children, from ages 7-12 years old, who have asthma.
- They were divided into two groups: Sustained Maximal Inspiration Breathing (SMG) and Balloon Blowing Breathing (BBG).
- During SMG an individual inhales deeply to reach their highest level of lung expansion, holds that breath, and releases it in a controlled manner.
- During BBG an individual inhales to their maximal capacity and then blows out steadily into a balloon, thereby increasing the resistance of their breathing.
- Both groups engaged in an intensive 8-week breathing program; pre- and post- test scores were recorded.
- The BBG group was more successful in asthma control and maximal exhalation than the SMG group.

Conclusions

- Increased control of asthma can increase speech production (Al-khresheh, 2018).
- Learning how to breathe more efficiently at a younger age sets you up to meet typical speech production milestones (Bunlam et al., 2024).
- Breath support is essential for voicing (Asnaashari et al., 2012).
- Focusing on improving overall breath support may encourage young speakers to use their voice in the optimal manner (Ritz et al., 2011).
- The study with balloon breathing demonstrated an increase in control over asthma for young speakers (Bunlam et al., 2024).

Recommendations/Limitations

- Recommendation: Future research should focus on the development of a longitudinal study that will follow children with asthma throughout early development to track the effect of asthma on speech production.
- Additional research should explore other existing breathing strengthening exercises and their potential applications to children with asthma.
- Limitation: There is little research on how asthma affects children's speech production.

Acknowledgements

I want to thank Dr. Mlawski for her help on this poster and the entire Katz Speech Language Pathology faculty. I am so grateful for the faculty answering questions I have about the field.

To my parents, who have always supported me through all the challenges and momentous moments.

References