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Pediatric Asthma Self-Management: Impact of a Virtual Education Program

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Background

- Along the Delaware-Maryland-Virginia (Delmarva) eastern shore region asthma exacerbations account for numerous public-school clinic visits, missed school days, and emergency room (ER) visits, especially among middle schoolers.
- Currently, the Maryland eastern shore public school system does not offer self-management education to students diagnosed with asthma.
- ***This research explored the impact of a school-based nurse-led virtual education program, called Kickin' Asthma (KA), on frequency of asthma symptoms, spacer technique, rescue inhaler use, and frequency of ER visits among students diagnosed with persistent asthma in grades six through eight over three months.***

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Methods

- Upon Institutional Review Board (IRB) approval a system analysis (SWOT) of the school system was conducted to determine internal strengths, weaknesses, external opportunities, and threats that exist to project implementation and sustainability (Table 1).
- After patient onboarding, the virtual KA program was delivered over four 45-minute sessions through engaging digital media and hands-on learning.
- The program introduced instructional content on asthma facts, pathophysiology, common symptoms, warning signs, triggers, medications, devices, and skills for problem-solving and management during acute asthma exacerbations

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Methods

Table 1. SWOT Analysis Table

Strengths	Weaknesses
1. Dedication of school nurses 2. School nurses have previous asthma knowledge 3. Invested school health services supervisor 4. School administrators support at all three schools	1. Low parent involvement in school health activities 2. Limited availability of school nurses to help with project activities 3. Limited school system funding to pay for substitute nurse staffing 4. Short staffing of substitute nurses to cover health office for training/future KA implementation 5. School buildings currently closed due to COVID-19 pandemic requiring virtual project implementation
Opportunities	**Threats**
1. American Lung Association (ALA) staff eager to train nurses 2. Potential to expand program to all middle schools in the county 3. Potential to expand program to surrounding Maryland counties 4. KA materials provided free of cost by the ALA 5. Short training time to become a KA facilitator (~ 1 hour)	1. Training for KA facilitators only occurs a few times per year 2. Competing school health priorities 3. Newly updated KA curriculum, has not yet been extensively piloted with new changes 4. KA requires four separate sessions for implementation, can be time consuming 5. Unknown duration of COVID-19 pandemic impact on school buildings

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Results

- A total of 11 students enrolled averaging 12.45 years old (*SD* = 1.37). Eight students identified as male and three as female.
- All data analysis was conducted using IBM SPSS 26 statistical software.
- A Wilcoxon matched pairs signed rank test was used to compare medians of asthma questionnaire responses from pre-test to post-test at two measurement points: immediately following the asthma education intervention and three months following the asthma education intervention.
- A Wilcoxon matched pairs signed rank test was used to compare medians of spacer technique assessment scores over an identical timeframe.

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Results

Of note, results demonstrated an improvement in asthma-related sleep disturbance ($p < 0.05$), frequency of asthma controller medication use ($p < 0.05$), spacer use technique ($p < 0.05$) among adolescents with asthma, and a modest decrease in frequency of rescue inhaler use ($p = 0.53$).

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Conclusion

A virtual school-based asthma education can be a cost-effective intervention to improve student health outcomes. Future research is needed with larger sample sizes to evaluate whether similar school-based asthma education initiatives can reproduce benefits of improved disease-specific knowledge and skills.

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Questions

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Thank you!

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