

## Rationale

- At least 6.8 million children have asthma in US<sup>1</sup>
- Chicago childhood asthma prevalence, hospitalizations, and mortality rates are above national average<sup>2</sup> (13.9% in Chicago vs. 8% in US<sup>3</sup>)
- Chicago prevalence varies from 2% to 44% by community<sup>2</sup>

### Self-Regulation Theory

- Development of patient self-management skills is critical to controlling chronic disease<sup>4</sup>
- Personal asthma management strategies are gradually developed through trial and error as thought and behavior are modified in response to putative socio-environmental factors<sup>5</sup>

## Methods

- Partnered with a Middle School on the South Side of Chicago
- 11 students with asthma and 9 caregivers participated
- 34-session program grounded in community-based participatory research (CBPR) principles
- Students received mini tablets to investigate socio-environmental factors influencing their asthma using photovoice techniques
- Students also created Public Service Announcements to education their communities
- Wilcoxon signed-rank and t-tests were used to analyze pre-/post-intervention changes in participant, caregiver, and peer outcomes in:
  - Asthma knowledge
  - Self-efficacy
  - Empowerment
  - Quality of life
  - Asthma control

## Results

Theme	Questions	Selected Quotes
Asthma	<ul style="list-style-type: none"> <li>• How would you describe asthma?</li> <li>• List one thing to teach about asthma.</li> <li>• How would you teach asthma to your classmates?</li> </ul>	<ul style="list-style-type: none"> <li>• “Asthma is the act of having trouble breathing because of special or certain triggers”</li> <li>• “We can teach people that asthma is not contagious or a bad thing or doesn’t make anyone no different”</li> </ul>
PSAs	<ul style="list-style-type: none"> <li>• What is a central message about asthma that you would like to see in a PSA?</li> </ul>	<ul style="list-style-type: none"> <li>• “Information about asthma; what affects the lungs”</li> </ul>
SMART	<ul style="list-style-type: none"> <li>• What do you like about SMART?</li> </ul>	<ul style="list-style-type: none"> <li>• “I liked that it teaches us about our asthma”</li> <li>• “Everything: the way we go over things all together so everyone can understand it”</li> </ul>
Stress	<ul style="list-style-type: none"> <li>• How do you manage stress?</li> </ul>	<ul style="list-style-type: none"> <li>• You can relax, do things you like, you can do yoga, Pilates, go to the spa, do exercises”</li> </ul>
Community Factors	<ul style="list-style-type: none"> <li>• What things in your community affect or trigger your asthma?</li> </ul>	<ul style="list-style-type: none"> <li>• “Cockroaches, dust, dust mites”</li> <li>• “Gas from the grill, cigarette smoke”</li> <li>• “Pets [dander], dust in the air”</li> </ul>

Table 1. Themes, questions posed to students and select comments

	Pre-Intervention Mean (SD)	Post-Intervention Mean (SD)	Change in Mean	P-value
Asthma Self-Care Practices	45.44 (24.11)	60.04 (20.92)	14.61	0.09
Instrumental Support	4.42 (0.57)	4.47 (0.48)	0.045	0.89
Informational Support	3.92 (0.72)	4.2 (0.72)	0.26	0.19
Emotional Support	3.52 (1.08)	4.14 (0.89)	0.62	0.04*
Asthma Control	3.13 (0.48)	1.69 (0.56)	1.44	<0.01*
Asthma Quality of Life	4.32 (1.82)	6.13 (0.38)	1.81	0.01*
Asthma Knowledge	0.42 (0.10)	0.53 (0.16)	0.11	0.07
Socio-Political Empowerment	1.67 (1.95)	3.49 (1.21)	1.81	0.04*
Asthma Belief/Self-Efficacy	3.55 (1.29)	4.13 (0.44)	0.48	0.33

Table 2. Survey Total Results for Students

## Results Continued

	Mean Pre-	Mean Post-	Difference in Mean	P-value
Asthma Knowledge	0.72 (0.28)	0.83 (0.05)	0.11	0.17
Asthma Parents QOL	5.06 (1.24)	6.10 (1.03)	1.04	0.01*

Table 3. Survey Total Results for Caregivers

	Mean Pre-	Mean Post-	Difference in Mean	P-value
Asthma Knowledge	0.52 (0.13)	0.59 (0.14)	0.66	<0.01*

Table 4. Survey Total Results for School Community

## Conclusions

- Utilizing CBPR principles engages and empowers students in research process and improves self-management skills
- Photovoice allows students to investigate their communities to identify and communicate how they can affect one's health
- We are currently packaging this curriculum to allow science teachers to empower students to affect other health conditions

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### Resources

- Centers for Disease Control. (2012). Asthma. Summary health statistics for u.s. children: National health interview survey, 2012. Retrieved from <http://www.cdc.gov/nchs/fastats/asthma.htm>
- Gupta, R., Zhang, X., Sharp, L., Shannon, J., Weiss, K. (2008). Geographic variability in childhood asthma prevalence in Chicago. Journal of Allergy and Clinical Immunology, 123(6). PMID: 18243285
- Shalowitz, M., Sadowski, L., Kumar, R., Weiss, K., Shannon, J. (2007). Asthma burden in a citywide, diverse sample of elementary schoolchildren in Chicago. Ambulatory Pediatrics, 7(4). PMID: 17660097
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