School-based Early Prevention Interventions Improve Body Mass Index Percentiles: Preliminary Results the HOPS Study

Danielle Hollar, PhD; T. Lucas Hollar, Doctoral Candidate; Arthur S. Agatston, MD
The Agatston Research Foundation, Miami Beach, FL

Introduction:
The Healthier Options for Public Schoolchildren (HOPS) Study aims to understand the efficacy of prevention efforts that address nutrition and physical activity implemented in the elementary school setting.

Hypothesis:
We assessed the hypothesis that HOPS Study interventions reduce obesity rates more so than traditional school-based dietary and physical activities.

Methods:
The HOPS Study, implemented in fall 2004, includes approximately 4,713 children (approximately 43% Hispanic) attending six elementary schools.

Data are collected at baseline/fall and follow-up/spring (demographic information, height, weight, BMI percentiles, sedentary behavior and food consumption data).

HOPS Study interventions include modified dietary offerings, nutrition and lifestyle educational curricula, school gardens, and other school-based wellness projects, with the goal of reducing childhood obesity rates in a manner that is replicable in other public school settings.

Demographic Information of Participating Schools
Year 2003-2004 Data
District: The School District Osceola County

		Male	Female	White	Black	Hispanic	Ind/Alsk	Asian/ Pac	Multi-Racial	Total
Intervention Schools	Kissimmee Charter Elem	301	320	254	62	241	2	23	39	621
		48.5%	51.5%	40.8%	10.0%	38.8%	0.3%	3.7%	6.3%	
	Mill Creek Elem	493	441	307	132	414	1	15	65	934
		52.8%	47.2%	32.9%	14.1%	44.3%	0.1%	1.6%	7.0%	
	Partin Settlement Elem	434	404	300	87	375	2	7	37	836
		51.8%	48.2%	43.0%	6.8%	44.7%	0.2%	0.8%	4.4%	
	PM Wells Charter Elem	238	247	152	36	250	1	16	23	485
		49.1%	50.9%	31.3%	7.4%	52.6%	0.6%	33.3%	4.7%	
Intervention School Totals		1466	1412	1073	287	1285	8	61	164	2878
		50.9%	49.1%	37.3%	10.0%	44.6%	0.3%	2.1%	5.7%	
Usual Activities Schools	Four Corners Elem (Charter)	363	376	349	55	315	1	15	20	739
		49.1%	50.9%	47.2%	4.7%	42.6%	0.7%	2.0%	2.7%	
	Pleasant Hill Elem	565	531	526	66	408	0	17	57	1096
		51.6%	48.4%	48.2%	7.4%	52.6%	0.6%	3.3%	4.7%	
Usual Activities School Totals		928	907	875	121	723	1	32	77	1835
		50.6%	49.4%	47.8%	6.6%	39.4%	0.3%	1.7%	4.2%	
Grand Totals		2394	2319	1950	408	2008	13	93	241	4713
		50.8%	49.2%	41.3%	8.7%	42.6%	0.3%	2.0%	5.1%	

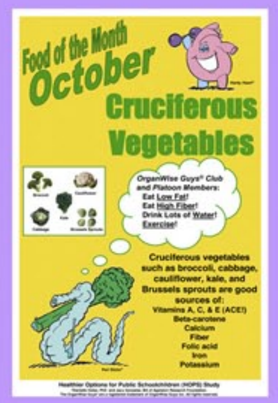
Samples of HOPS Study Tools:

HOPS Breakfast Menu

HOPS Lunch Menu

Control Breakfast Menu

Control Lunch Menu



Results:
Analyses are based on a total of 3,200 matched-cases (defined as a complete set of both baseline and follow-up data) of HOPS children (48% Hispanic; 1,549 out of 3,247). Overall, 2005-2006 data show statistically significant differences between treatment groups with respect to changes in BMI age- and gender-specific z-scores.

	Changes in BMI Z-Scores Mean (SD)
Intervention (n=2,135)	-.07 (.64)
Control (n=1,112)	-.02 (.44)
p-value	.004*

Analyses of subgroups show statistically significant differences between intervention groups for BMI risk groups as well as some quintiles, when controlling for one control school with a particularly rigorous physical activity program.

	Changes in BMI Z-Scores by Risk Group Mean (SD)			Changes in BMI Z-Scores by Quintile Mean (SD)				
	Normal (< 85%)	At Risk (>= 85% - <95%)	Overweight (>=95%)	1st Quintile	2nd Quintile	3rd Quintile	4th Quintile	5th Quintile
Intervention (n=2,135)	-.03 (.77)	-.14 (.44)	-.13 (.34)	.14 (1.00)	-.095 (.58)	-.13 (.58)	-.15 (.48)	-.13 (.26)
Control (n=599)	.08 (.39)	-.02 (.29)	-.04 (.20)	.23 (.44)	.01 (.34)	-.002 (.34)	-.01 (.28)	-.05 (.20)
p-value	.001*	.001*	.003*	.388	.016*	.018*	.000*	.002*

Summary of Conclusions:
Early results show HOPS Study interventions improve BMI percentiles of elementary aged children. Additional data collection and analyses, over time, will provide important data to inform school-based obesity prevention strategies.

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