Effectiveness of home based early intervention on children's BMI at age 2: randomized controlled trial

Key Intervention Messages:

- Breast is best
- No solid for me until 6 months
- Only water in my cup
- I eat a variety of fruit and vegetables every day
- I am part of an active family

Intervention materials available at www.healthybeginnings.net.au/

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Li Ming Wen, *Louise A Baur, Judy M Simpson, Chris Rissel, Karen Wardle, Victoria M BMJ 2012; June 26, 344:e3732 doi: 10.1136/bmj.e3732*

Pre-school Day Care Centers: Target of Opportunity

- About 75% of children between 3-6 years are in some type of out-of-home child care.
- More than 50% of children are in centers; others in family child care homes
- **NAP SACC:**

  -Nutrition And Physical-activity Self Assessment for Child Care (Ammerman, 2007)

  -Developed by University of North Carolina School of Public Health (Dianne Ward, PhD)

- Statewide Program in Preschool Day Care Centers with Louisiana Office of Public Health Maternal and Child Health and LSU Health Sciences Center

Identifying Differences in Knowledge, Attitudes & Self-Efficacy of Preschool Childcare Providers

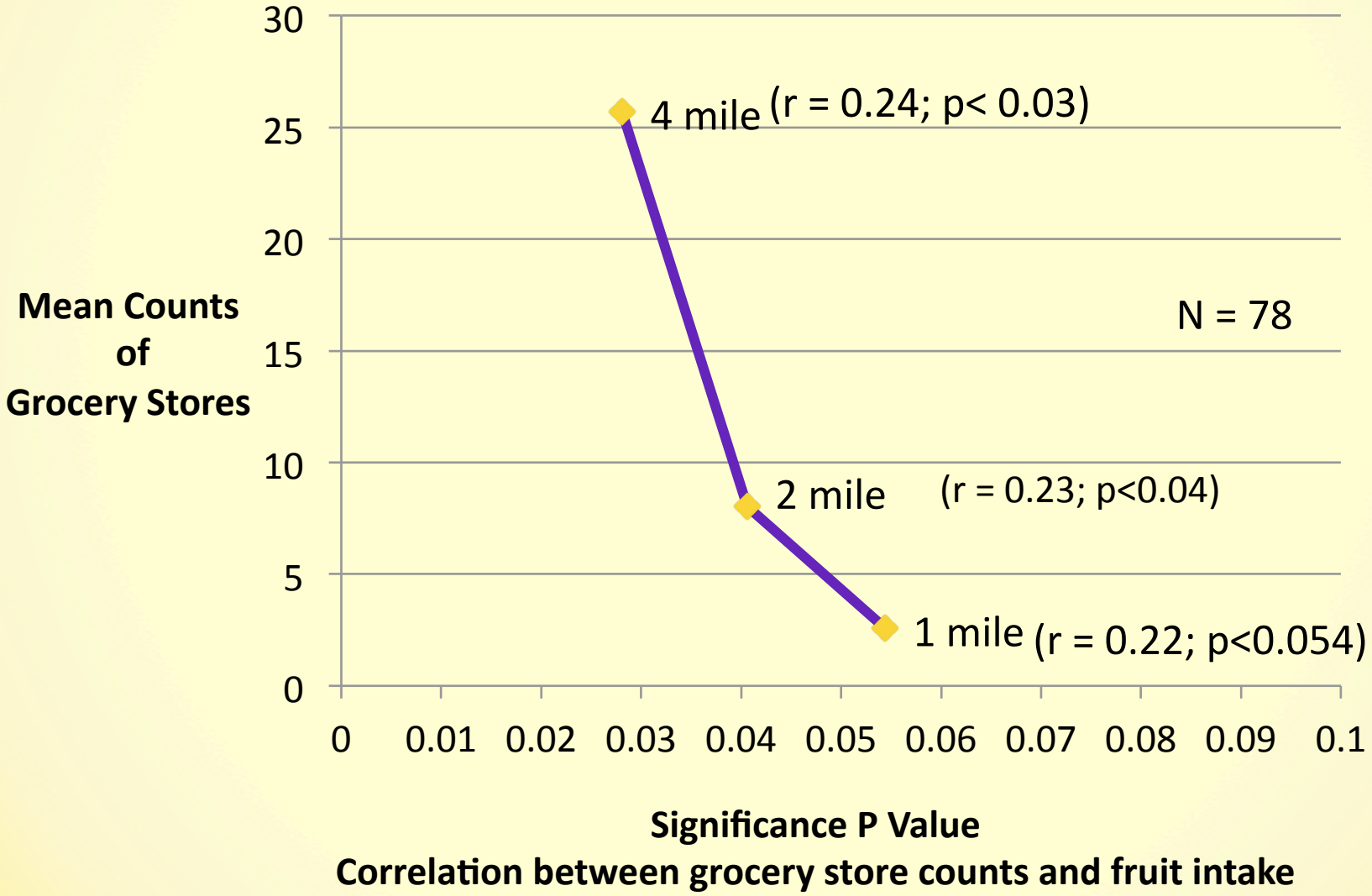
Are these Measures Associated with Nutrition and Feeding Practices in Childcare Centers?

Arguello, Tseng, Mohler, Clesi, Lewis, Volaufova, Sothern, Obesity, 2013

Results

Knowledge Item Total Score: <17 = Less Healthy ≥17 = More Healthy (17 = 53%)	**More Healthy Centers (7)** **N=79** **Mean (Std / %)**	**Less Healthy Centers (8)** **N=47** **Mean (Std / %)**	**All (15)** **N=126** **Mean** **(Std / %)**	**P-value** **(α=0.05)**
Overall Knowledge (Range of scores: 0-9)	7.49 (Std=1.33)	6.85 (Std=1.37)	7.25 (Std=1.37)	0.0105*
New foods, such as fruits and vegetables, may need to be re-introduced multiple times before children accept them.	78 (98.73%)	42 (91.30%)	120 (96.00%)	0.0409*
It is important to let children determine how hungry they feel so that they learn physical hunger cues.	53 (68.83%)	23 (51.11%)	76 (62.30%)	0.0513*

Relationship Between Increased Availability of Grocery Stores with varying distances around Pre-schooler's Residence and Fruit Intake



Kepper, M, Tseng, T, Volaufova, J, Scribner, R, Nuss, H, Sothern, M. Pediatric Obesity, 2015,11(5): e6-e8..

Nutrition and Physical Activity Self-Assessment in Child Care Centers (NAPSACC) Intervention - Physical Activity Results

(Bonis, M., Loftin, M., Ward, D., Lewis, L., Volaufova, J., Tseng, T., Clesi, A., Mohler, M., Arguello, A., Sothern, M., Childhood Obesity, 2014, 10(4): 334-341

Objectively Measured Physical Activity Level (Accelerometry)			Minutes (Mean + SD)	
			Pre-Intervention	Post-Intervention
Treatment	110	Sedentary	488.0 ± 20.7	476.6 ± 26.6*
		Light	27.7 ± 9.6	29.9 ± 13.3
		Moderate	17.1 ± 8.4	22.7 ± 10.4*
		Vigorous	7.2 ± 4.7**	10.8 ± 6.3*
		Total PA	52.0 ± 20.9	63.4 ± 26.6*
		Total	540	540
Control	99	Sedentary	482.8 ± 40.4	480.3 ± 36.1
		Light	27.7 ± 16.2	29.8 ± 17.3
		Moderate	19.1 ± 16.1	19.1 ± 12.6
		Vigorous	10.4 ± 11.2**	10.8 ± 8.4
		Total PA	57.2 ± 40.5	59.7 ± 36.1
		Total	540	540

* Significant to pre-intervention value; ** Significant to intensity level of the other group; $p < 0.05$

Benefits of Home Gardening

Promotes higher dietary diversity scores in children

- increase in diet variety

Associated with more frequent consumption of vegetables

Cabalda, et al, J Am Diet, Assoc, 2011

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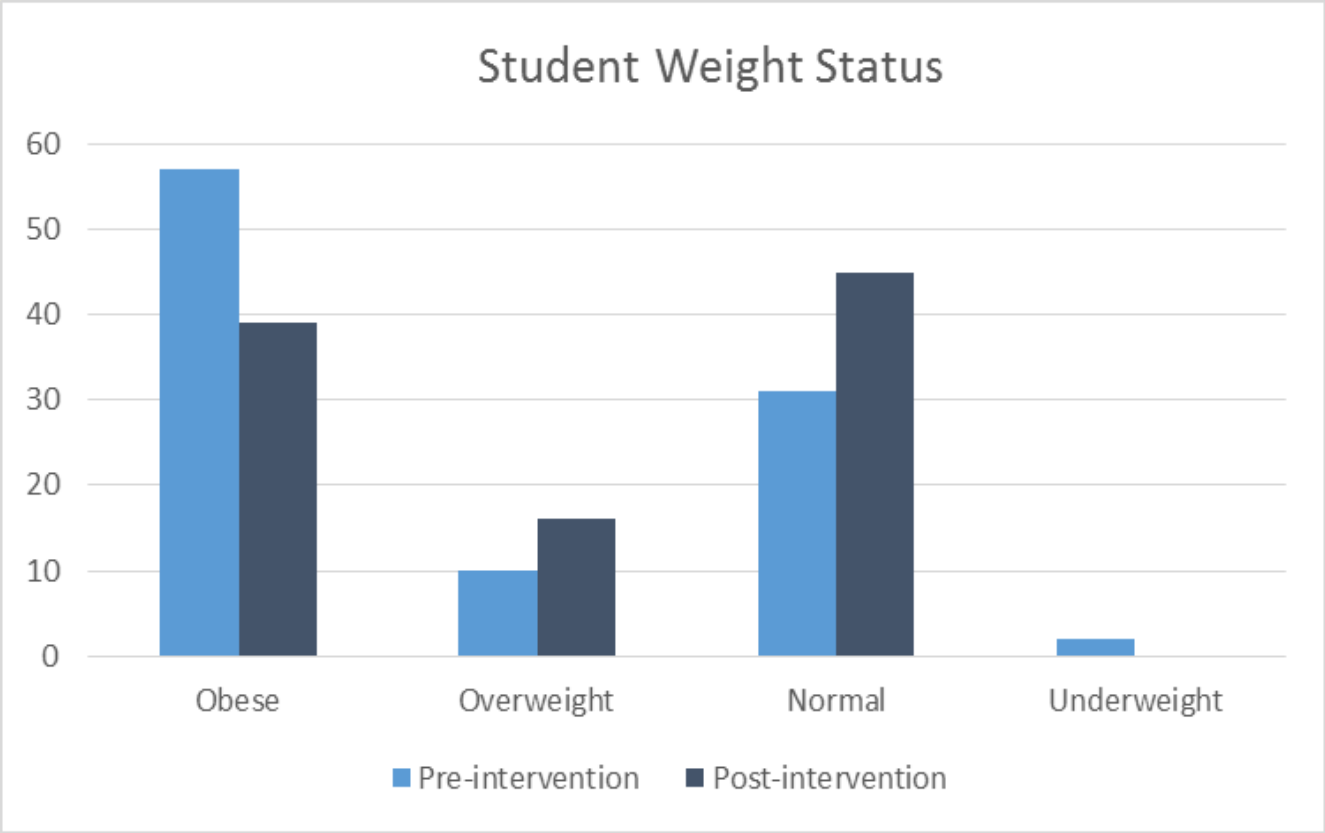
The Texas! Go! Eat! Grow! Pilot Study

- RCT to measure impact of nutrition *plus* gardening *or* physical activity intervention on weight in third graders. The 5 month pilot study focused on feasibility of the two interventions and testing the measurements.

- Both arms focused on improving healthy eating and improving physical activity in the students and parents.



- Measurements included: Student knowledge, vegetable preferences, vegetable consumption, and home food availability ($p<0.05$ for all measures).

Spears-Lanoix, E, Lisako, E, McKyer, E, Evans, A, McIntosh, W, Ory, M, …, Warren, J. (2015). Using family-focused garden, nutrition, and physical activity programs to reduce childhood obesity: The Texas! Go! Eat! Grow! Pilot Study. *Childhood Obesity,* 11(6), 707-714.

Texas! Go! Eat! Grow! Results

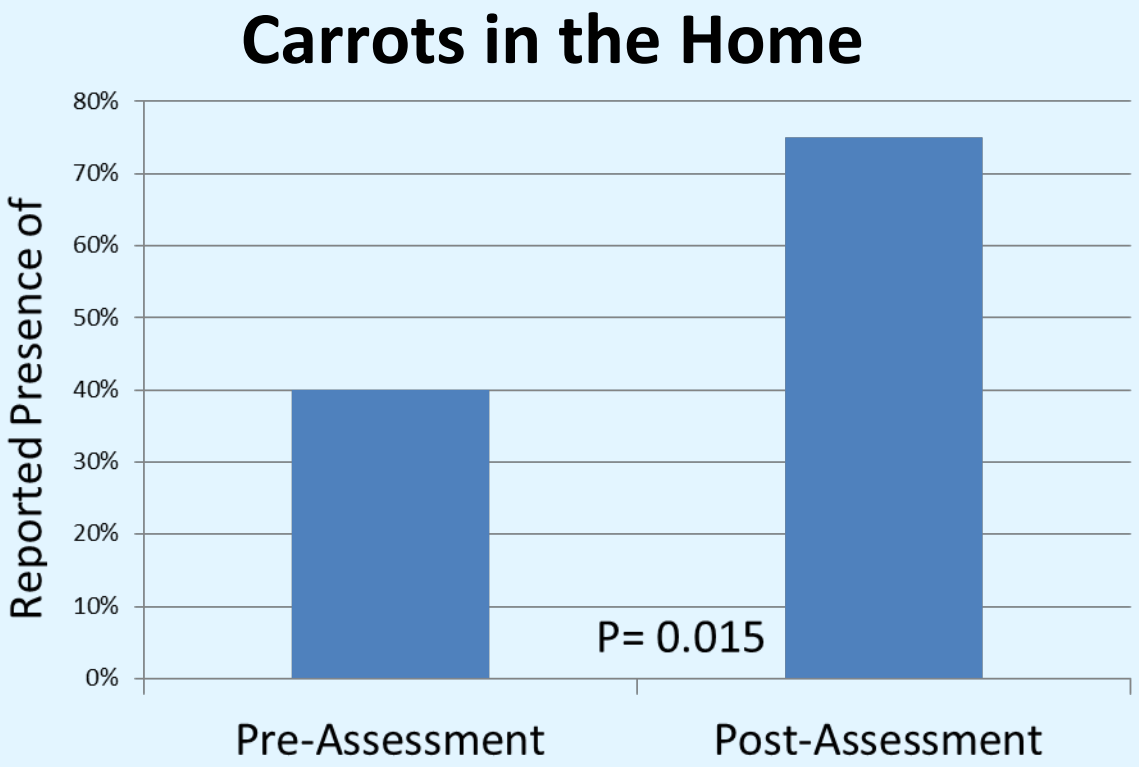
Table 1. Parent, Child, and Parent/Child Behaviors Targeted for Intervention Piloting

	Dietary behaviors		Physical activity	
	Fruits and vegetables	**Sugar-sweetened drinks**	**Physical activity**	**Sedentary time**
Parent	↑ Availability to their child	↓ Availability to their child	↑ Opportunities for their child	↓ Opportunities for their child
Child	↑ Consumption	↓ Consumption	↑ Frequency	↓ Frequency
Parent x Child	↑ Preparing foods together	↑ Eating meals together	↑ Gardening together	↑ Physical activity together

Table 5. Results of t-Tests on Outcome Variables

Food and Beverage Related	Pre		Post		T	df	Two-sided p-value
	Mean	SD	Mean	SD			
Child Knowledge scores	3.12	1.41	4.36	1.70	4.16	32	0.00
Child Vegetable preferences	18.07	9.77	20.43	9.93	2.41	29	0.02
Child Vegetable (only) consumption	13.03	5.31	15.42	5.25	3.98	30	0.00
Child fruits and vegetable consumption	7.46	2.56	8.43	3.97	1.94	40	0.06
Parental provision of vegetable options	16.76	5.00	21.00	5.78	2.37	41	0.02

Makin Groceries Results:
Caretakers – Presence of Carrots in the Home



Self-reported - in the previous 2 weeks.
Paired t-test (N=20)

Burns, Brown, Tortu, Nuss, Sothern, Obesity, 2011; The Obesity Society, 2011, Orlando FL

Objectives:

- **Describe evidenced-based strategies for improving nutrition and physical activity in the family home.**

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Evidenced Based Strategies

Family Routines

- Regular family meals during early adolescence contribute to healthful eating habits 5 years later
- Dining out results in higher intake of soft drinks, fast food, saturated fat, and lower intake of healthy foods.
- Independent of diet and exercise, 4-year-olds were 40 percent less likely to be obese if they:

  Strategies:
  - Limited TV to < two hours daily,
  - Dined as a family at least 6 nights a week
  - Slept at least 10 1/2 hours on weekdays.

Scientific Support:

Larson, JADA, 2009 ; Fulkerson, Obesity, 2008 Anderson & Whitaker, Pediatrics, 2010, 125; 3:420-28; Berge, et al, J of Peds, 2014

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