A Snapshot of Local NAP SACC Effectiveness:
A Partnership between LSU Health Sciences Center, University of New Orleans, Pennington Biomedical Research Center and LA Office of Public Health, Maternal and Child Health

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Scientists Should Practice What They Preach

30-minute rule

- The ability to focus and pay attention begins to decline after 30 minutes of intense mental activity – less time for children

- After 30 minutes of computer or written work take a 3-5 minute break

Classy Moves Physical Activity Breaks

- **Rocky** (martial arts/boxing moves)
- **Raise the Roof** (overhead press)
- **Hot Seat** (chair squats)
- Do the **Swim**
- Music break (dance to one song)
- **Off the Wall** (wall push-ups)
- **Flex at Your Desk**
- Stand like a tree and balance
- Reward positive behavior with indoor or outdoor play periods
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Classy Moves Physical Activity Breaks

- Do the *Swim*
- Music break (dance to one song)
  “*We can dance if we want to... as long as there is music, you’re never gonna lose it...*”  
  *(Men Without Hats)*
- Off the Wall (wall push-ups)
- Flex at Your Desk
- Stand like a tree and balance
- Reward positive behavior with indoor or outdoor play periods
Preschool Children are not Little Adults

- Movement is required for cognitive development
- Enjoy unstructured physical activity (play)
- Play fosters healthy emotional development
- Unable to stay focused for long periods of time
- Immature metabolic systems

Sothern, M. Profile of the Overweight Child, in Safe and Effective Exercise for Overweight Youth, CRC Press, 2014
Play is essential to the social, emotional, cognitive, and physical wellbeing of children beginning in early childhood……

It is essential that parents, educators, and pediatricians recognize the importance of lifelong benefits that children gain from play……

Regardless of their socio-economic status, all children have the right to engage in safe and regular physical activity that will decrease the incidence of lifelong health disparities

Pre-school Outdoor Play is not an Option

- Promotes creativity and imagination while building dexterity and physical strength
- Encourages healthy brain development
- Improves self-advocacy skills
- Improves social skills: working in groups, sharing, negotiating, resolving conflicts
- Increases Vitamin D levels
- Improves symptoms of ADHD
- Improves well-being and problem solving

Pre-school Day Care Centers: Opportunity to Prevent Childhood Obesity

- 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 (NCHS, 2007)

**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, UNO, PBRC
Sampling and Selection Criteria

• The sampling frame included parishes: Orleans, Jefferson, Lafourche, Calcasieu and Quachita, which were selected based on obesity prevalence data.

• Day care centers were selected using a stratified sampling method.

• The study aimed to include a number of head start centers.

• Inclusion Criteria:
  • 2-5 years old
  • Enrollment in participating child care centers

• Exclusion Criteria:
  • Parents unwilling or unable to communicate with study staff or provide informed consent
  • Chronic medical condition or disease that is life threatening or would interfere with the measurements of the study
26 centers

Intervention Group
13 centers

Control Group
11 centers

2 centers drop out

Baseline

Intervention

Intervention Group
11 centers

Control Group
11 centers

2 centers drop out

6-month Follow up
Measurement Methods (Pre and Post 6-month Intervention)

• **Physical Activity**
  - Physical activity was measured in each participant by Actigraph accelerometer (Model GT1M) for 2 “child care center” days.
  - The accelerometer data was downloaded and analyzed by the LSUHSC study staff.

• **Environment & Policy Assessment & Observation (EPAO)**
  - 64-item tool
  - 33 items described nutrition practices and behaviors
Methods: Weight Status

• **Height**
  - The participant was required to remove their shoes and have their heels, buttocks and upper part of the back remain in contact with the stadiometer.

• **Weight and Body Fat**
  - An electronically calibrated bioelectrical impedance analysis (BIA) scale (Tanita Model TBF-300A) will be used to obtain the weight in kilograms and body fat % of each study participant.

• **Waist circumference:** taken at the umbilicus.
# Children’s Nutrition Questionnaire

**What Have You Been Eating Lately?**

“During the past 4 weeks, how often did you eat a serving of each of the foods listed here?”

**Mark only one X for each food**

**Example:**

<table>
<thead>
<tr>
<th></th>
<th>last 4 weeks</th>
<th>each week</th>
<th>each day</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of times</td>
<td>0</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Milk</td>
<td></td>
<td>1</td>
<td>2–4</td>
</tr>
<tr>
<td>Hot chocolate</td>
<td></td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>

**What kind of milk does your child usually drink? (Check one)**

- [ ] Breast milk
- [ ] Whole milk
- [ ] 1% milk
- [ ] Chocolate milk
- [ ] Formula
- [ ] 2% milk
- [ ] Skim milk
- [ ] Other _____________

**Continued on next page**
Methods

• **Food Environment (GIS)**
  • Parent/guardian of each participating child was asked to provide home residential address
  • The home residential address was used to identify characteristics in the neighborhood that contribute to increased risk for obesity
Methods: Knowledge and Feeding Practices

- **Subjects:** Childcare center providers (directors, cooks, staff and teachers) from centers who participated in the NAPSACC program

- **Recruitment:** Telephone calls to each center director to request participation in a follow-up survey and to obtain signed agreement
  - 21 centers

- **Response rate:** 71% (15 of 21 centers)

- **Categorize centers using EPAO** (Benjamin, et al, 2007)
  - 64-item tool
  - 33 items described nutrition practices and behaviors
  - 16 items identified to categorize centers
    - Scored on 0-2 point scale (Maximum Score of 32)
    - *Cutoff point at 17 = score of 53%*

- **Center Identification**
  - Centers implementing *More Healthy Nutrition & Feeding Practices* (score of ≥ 17)
  - Centers implementing *Less Healthy Nutrition & Feeding Practices* (score of < 17)
Methods: Knowledge and Feeding Practices

- Developed & distributed *Childcare Provider Nutrition Survey*
- **Quantitative 37-item survey**
- **Health Belief Model**
- Adapted from EPAO items
- Approved by IRB

<table>
<thead>
<tr>
<th>HBM</th>
<th>Survey Area</th>
<th>Response</th>
<th>Questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Demographics</td>
<td>Open-ended</td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>Sources of Nutrition Information</td>
<td>Yes/No</td>
<td></td>
<td>9</td>
</tr>
<tr>
<td>Knowledge</td>
<td>Yes/No</td>
<td></td>
<td>9</td>
</tr>
<tr>
<td>Perceived Benefits</td>
<td>Attitudes</td>
<td>5-point Likert “Not Important” to “Very Important”</td>
<td>6</td>
</tr>
<tr>
<td>Perceived Barriers</td>
<td>Barriers</td>
<td>5-point Likert “Not Likely” to “Very Likely”</td>
<td>3</td>
</tr>
<tr>
<td>Self-efficacy</td>
<td>Self-efficacy</td>
<td>Likert “Not Likely” to “Very Likely”</td>
<td>3</td>
</tr>
<tr>
<td>Nutrition Workshops</td>
<td>Yes/No</td>
<td></td>
<td>2</td>
</tr>
</tbody>
</table>
NAP SACC Results:
Louisiana preschool children obesity by race and gender

<table>
<thead>
<tr>
<th>Race</th>
<th>Gender</th>
<th>Normal or underweight</th>
<th>Overweight</th>
<th>Obese</th>
</tr>
</thead>
<tbody>
<tr>
<td>White</td>
<td>Boy</td>
<td>73%</td>
<td>18%</td>
<td>9%</td>
</tr>
<tr>
<td>White</td>
<td>Girl</td>
<td>78%</td>
<td>11%</td>
<td>9%</td>
</tr>
<tr>
<td>Black</td>
<td>Boy</td>
<td>76%</td>
<td>11%</td>
<td>13%</td>
</tr>
<tr>
<td>Black</td>
<td>Girl</td>
<td>63%</td>
<td>24%</td>
<td>13%</td>
</tr>
</tbody>
</table>

Legend: Normal or underweight, Overweight, Obese
Louisiana Black preschool children, aged 2-5 years, had a significantly ($p = 0.025$) higher intake of coke at least once or more per month, when compared to whites.

Louisiana Black preschool boys had a significantly ($p = 0.011$) higher intake of coke at 91.67% at least once or more per month, when compared to white boys at 46.15%, respectively.

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

![Graph showing correlation between grocery store counts and fruit intake.]

- 1 mile (r = 0.22; p<0.054)
- 2 mile (r = 0.23; p<0.04)
- 4 mile (r = 0.24; p<0.03)

N = 78

### Objectively Measured Physical Activity Level (Accelerometry)

The table below presents the minutes of physical activity (mean ± SD) for Pre-Intervention and Post-Intervention periods, categorized by intensity levels (Sedentary, Light, Moderate, Vigorous) and groups (Treatment, Control). Significant changes are indicated by asterisks (*) and double asterisks (**) where applicable.

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


<table>
<thead>
<tr>
<th></th>
<th>Treatment</th>
<th>Pre-Intervention</th>
<th>Post-Intervention</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sedentary</td>
<td>110</td>
<td>488.0 ± 20.7</td>
<td>476.6 ± 26.6*</td>
</tr>
<tr>
<td>Light</td>
<td>27.7 ± 9.6</td>
<td>29.9 ± 13.3</td>
<td></td>
</tr>
<tr>
<td>Moderate</td>
<td>17.1 ± 8.4</td>
<td>22.7 ± 10.4*</td>
<td></td>
</tr>
<tr>
<td>Vigorous</td>
<td>7.2 ± 4.7**</td>
<td>10.8 ± 6.3*</td>
<td></td>
</tr>
<tr>
<td>Total PA</td>
<td>52.0 ± 20.9</td>
<td>63.4 ± 26.6*</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>540</td>
<td>540</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Control</th>
<th>Pre-Intervention</th>
<th>Post-Intervention</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sedentary</td>
<td>99</td>
<td>482.8 ± 40.4</td>
<td>480.3 ± 36.1</td>
</tr>
<tr>
<td>Light</td>
<td>27.7 ± 16.2</td>
<td>29.8 ± 17.3</td>
<td></td>
</tr>
<tr>
<td>Moderate</td>
<td>19.1 ± 16.1</td>
<td>19.1 ± 12.6</td>
<td></td>
</tr>
<tr>
<td>Vigorous</td>
<td>10.4 ± 11.2**</td>
<td>10.8 ± 8.4</td>
<td></td>
</tr>
<tr>
<td>Total PA</td>
<td>57.2 ± 40.5</td>
<td>59.7 ± 36.1</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>540</td>
<td>540</td>
<td></td>
</tr>
</tbody>
</table>

* Significant to pre-intervention value; ** Significant to intensity level of the other group; p < 0.05
### Results: Day Care Center Staff Knowledge and Feeding Practices:

<table>
<thead>
<tr>
<th>Knowledge Item</th>
<th>More Healthy Centers (7)</th>
<th>Less Healthy Centers (8)</th>
<th>All (15) N=126 Mean (Std / %)</th>
<th>P-value (α=0.05)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall Knowledge&lt;br&gt;(Range of scores: 0-9)</td>
<td>7.49 (Std=1.33)</td>
<td>6.85 (Std=1.37)</td>
<td>7.25 (Std=1.37)</td>
<td>0.0105*</td>
</tr>
<tr>
<td>New foods, such as fruits and vegetables, may need to be re-introduced multiple times before children accept them.</td>
<td>78 (98.73%)</td>
<td>42 (91.30%)</td>
<td>120 (96.00%)</td>
<td>0.0409*</td>
</tr>
<tr>
<td>It is important to let children determine how hungry they feel so that they learn physical hunger cues.</td>
<td>53 (68.83%)</td>
<td>23 (51.11%)</td>
<td>76 (62.30%)</td>
<td>0.0513*</td>
</tr>
</tbody>
</table>
Day Care Center Staff Knowledge and Feeding Practices: Limitations and Conclusions

• Limitations
  • Comparing Center-based (EPAO) vs. Individual-based (survey) data
  • Potential Social desirability bias in the Childcare Provider Nutrition Survey

• Conclusions
  • Higher nutrition knowledge among childcare providers is associated with staff in centers implementing more healthy nutrition practices
  • Childcare providers in intervention centers implemented healthier nutrition practices compared to providers in control centers of the NAPSACC program
  • State policies are needed that support nutrition education and information on feeding practices for administration and staff in preschool child care settings
Key Takeaways

• Environmental change as a result of NAP SACC implementation, which reduce media time and encourage outdoor play in day care centers, increase objectively measured physical activity in pre-school youth.

• Childcare providers participating in the NAP SACC intervention implement healthier nutrition practices in their preschool day care center compared to controls.

• Higher nutrition knowledge among childcare providers is associated more healthy nutrition practices.

• State policies that support increased outdoor play, nutrition education, healthy feeding practices in preschool child care settings are needed.
Acknowledgements

Louisiana NAP SACC Research Team:
Marc Bonis, PhD, Tung Sung Tseng, PhD, Ann Clesi, MS, Leslie Lewis, MPH, Maura Kepper, PhD, Amanda Arguello, MPH, RD, Henry Nuss, PhD, Julia Volaufova, PhD, Richard Scribner, PhD, Robert Newton, PhD, Stephanie Broyles, PhD, Robert Uddo, MPH, Lauren Griffith, MPH, Meg Skizim, MPH, Kristin Cornwell, MPH student

Special Thanks to Joan Wightkin, PhD

LSUHSC: Schools of Public Health and Medicine, Department of Pediatrics, Behavioral and Community Health Sciences, University of New Orleans, Human Performance and Health Promotion, Pennington Biomedical Research Center, Maternal and Child Health, LA Office of Public Health

Jim Finks Endowed Chair Research Fund; U.S. National Institutes of Health: NIDDK (CNRU) 1P30 DK072476, R01 HD49046; NIMHD 5U54MDO08176-02