Findings from the Literature: School-Based Nutrition Interventions

Mary Roseman, PhD, RD
Associate Professor
Department of Nutrition & Hospitality Management
University of Mississippi
Introduction

From: A Content Analysis of Kindergarten-12th Grade School-based Nutrition Interventions: Taking Advantage of Past Learning

JNEB. 2011. 43:2-18

Department of Nutrition & Hospitality Management, University of Mississippi
Introduction

- 2005 Institute of Medicine Report – childhood obesity is a collective responsibility
  - Federal, state, and local governments
  - Communities
  - Schools
  - Industries
  - Media
  - Families

- Schools reach 95% of U.S. children 5-17 years of age
Introduction

Major studies of School-based Nutrition Interventions (SBNIs) from 1995 – 2000:

§ 1981-1995 – broad review of school-based interventions
§ 1980-1999 study – specifically reviewed evaluation measures
§ 1 study – interventions with at least a 6-month duration
§ 2 studies that focused on prevention or treatment of obesity
§ 4 studies focused on specific components (e.g., increasing F&V consumption, measuring a program)
§ 2 studies – adolescents only
§ 6 studies – limited to SBNIs with weight-related measures

Department of Nutrition & Hospitality Management, University of Mississippi
Based on recommendations from 12 of the 15 analyses, proposed 10 recommendations for school-based nutrition interventions:

1. Behaviorally focused
2. Multi-components
   - Family norms
   - Nutrition knowledge
   - Health food accessibility
   - Social environment
   - Others

Department of Nutrition & Hospitality Management, University of Mississippi
Recommendations for Analysis

3. Healthful changes to school or food environment
   § National School Breakfast and/or Lunch
   § A la carte
   § Vending
   § School store
   § Marketing and advertising

Department of Nutrition & Hospitality Management, University of Mississippi
Recommendations for Analysis

4. Family involvement
5. Student self-assessments
6. Quantitative evaluation
7. Community links
8. Ethnic and heterogeneous groups
9. Multimedia technology
10. Sequential programs, with sufficient duration and intensity

Department of Nutrition & Hospitality Management, University of Mississippi
Inclusion in the Review

1. English publication
2. Implementation in a school
4. Obesity- or nutrition-related health intervention
5. Quantitative measures
6. Grades K-12

Note: Multiple publications of the same study were counted as 1 intervention

Department of Nutrition & Hospitality Management, University of Mississippi
Exclusions

1. Clinically oriented
2. Focused only on a subpopulation
3. Physical activity, foodservice/vending, or before/after school programs
   § When they did not include a school nutrition education program

Department of Nutrition & Hospitality Management, University of Mississippi
Overview of Interventions

- 26 published studies in 9 year period
  - 17 (65%) – grades K-5
  - 6 (23%) – grades 6-9
  - 3 (12%) – grades 9-12

- 36 to 2,883 students

- 1 to 41 schools

Variation in measurement terms:
- Number of students
- Number of schools
- Combination of both
Overview of Interventions

- 26 published studies
  - 17 (65%) - randomized
  - 24 (92%) - controlled
  - 4 (15%) - matched pairs
  - 18 (69%) - pre/post

- Variety of measures
  - Surveys of knowledge and behaviors
  - Plate waste
  - BMI, anthropometrics
  - Focus groups, interviews, observations
  - Self assessments: food intake/diet recall and physical activity

Department of Nutrition & Hospitality Management, University of Mississippi
Overview of Interventions

Total = 26 interventions in 16 states

* 8 states with highest obesity rates among youths ages 10-17, 2007 National Survey of Children's Health
## Components of SBNI

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Incorporating classroom curriculum</td>
<td>85%</td>
</tr>
<tr>
<td>Involving parents at home</td>
<td>62%</td>
</tr>
<tr>
<td>Training teachers on classroom nutrition education</td>
<td>42%</td>
</tr>
<tr>
<td>Disseminating physical education materials</td>
<td>42%</td>
</tr>
<tr>
<td>Increasing fruits and vegetables</td>
<td>38%</td>
</tr>
<tr>
<td>Providing incentives for students or families</td>
<td>38%</td>
</tr>
</tbody>
</table>
# Components of SBNI

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lowering fat</td>
<td>31%</td>
</tr>
<tr>
<td>Training school nutrition staff</td>
<td>31%</td>
</tr>
<tr>
<td>Involving student peers</td>
<td>27%</td>
</tr>
<tr>
<td>Establishing physical activity goals</td>
<td>27%</td>
</tr>
<tr>
<td>Establishing school foodservice guidelines</td>
<td>15%</td>
</tr>
<tr>
<td>Providing school incentives</td>
<td>12%</td>
</tr>
<tr>
<td>Involving parents at school</td>
<td>8%</td>
</tr>
</tbody>
</table>

Department of Nutrition & Hospitality Management, University of Mississippi
## Analysis of 10 Recommendations

<table>
<thead>
<tr>
<th>Recommendation</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Behaviorally focused</td>
<td>100%</td>
</tr>
<tr>
<td>q Behaviors &amp; knowledge</td>
<td>85%</td>
</tr>
<tr>
<td>q Behaviors only</td>
<td>15%</td>
</tr>
<tr>
<td>2. Quantitative evaluation</td>
<td></td>
</tr>
<tr>
<td>q Food behaviors and eating patterns</td>
<td>96%</td>
</tr>
<tr>
<td>q Anthropometric measures</td>
<td>31%</td>
</tr>
<tr>
<td>3. Multiple components</td>
<td>88%</td>
</tr>
</tbody>
</table>

Department of Nutrition & Hospitality Management, University of Mississippi
## Analysis of 10 Recommendations

<table>
<thead>
<tr>
<th>Recommendation</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>4. Family involvement</td>
<td>62%</td>
</tr>
<tr>
<td>5. Healthy food &amp; school environment changes</td>
<td>54%</td>
</tr>
<tr>
<td>6. Sufficient duration and intensity (at least 6 mos)</td>
<td>42%</td>
</tr>
<tr>
<td>7. Multimedia technology</td>
<td>35%</td>
</tr>
<tr>
<td>8. Self-assessments (middle &amp; high school only)</td>
<td>33%</td>
</tr>
<tr>
<td>9. Inclusion of ethnic &amp; heterogeneous groups</td>
<td>15%</td>
</tr>
<tr>
<td>10. Community involvement</td>
<td>15%</td>
</tr>
</tbody>
</table>
Notables from 10 Recommendations

1. 100% usage of behaviorally focused interventions

2. Multi-component – Optimal and most effective blend of components has not been established
   § Lack of studies (27%) combined both physical activity and nutrition education
   § Pathways study of American Indians incorporated the largest number of components

3. Healthful changes in food and school environment
   § Nutrition educators eating with students
   § Rewards and recognition based on fruit and vegetable consumption

Department of Nutrition & Hospitality Management, University of Mississippi
4. Family involvement
   § Support for involving family, particularly in elementary grades
   § Increase participation through incentives and services to address work challenges
   § Creativity is important
      § Website, Facebook page, classroom role playing on how to talk to parents about health issues, family interviews on family health history, discussions about meals and exercise with parents, grocery shopping, parent forums, parent-child homework, cookbooks, recipes sent home

5. Self assessments
   § Include personalized feedback. Teach children how to assess their diet and make appropriate changes to create an improved diet
Notables from 10 Recommendations

6. Quantitative evaluation measures
   § Variety of methods used – lack of standardized methods
   § Value of qualitative data should not be overlooked: student, staff, faculty, and/or parent interviews and focus groups

7. Community involvement
   § NIH encourages use of “trans-site” interventions involving organizations and community stakeholders
   § CDC’s Community School Health Program model
   § Best incorporated in ethnic/minority/cultural programs (e.g., Pathways and Shape Up Somerville)
8. Ethnic/cultural or heterogeneous groups
   § Lack of high minority studies in literature
   § 2 interventions – 70% African American and 1 urban African American school

9. Innovative multimedia tools
   § Celebrity videos to excite and motivate children
   § Web-based instruction
   § Parent outreach and involvement

10. Duration, sequencing, and intensity
    § Challenges are great in the school environment
    § Better, consistent reporting and methods are needed

Department of Nutrition & Hospitality Management, University of Mississippi
Thank You!

Department of Nutrition & Hospitality Management, University of Mississippi