Generating Rural Options for Weight-Healthy Kids & Communities

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Presentation Overview

- Study Background & Rationale
  - Childhood obesity
  - Rural environments

- Study Aims and Targets
  - Community
  - School
  - Family Home

- Data and discussion
Combined Prevalence of Overweight and Obesity among Children and Adolescents Aged 6 to 19 Years

Ogden et al., JAMA, January 2010
Relevance of generating rural options for weight healthy kids...

• >30% of US children are overweight and ~17% of them are obese
• Oregon’s rates lower (24.3%) and far short of the national goal (5%)
• Prevalence is higher among children in rural (36%) vs. urban (30%) areas

Relevance of generating rural options for weight healthy communities...

• Rural and remote communities face unique social and structural challenges that can have an impact on healthful eating and physical activity different from those found in urban places
Obesity in Rural Youth: Contributing Factors

• **Targeting Individual Behaviors**
  – Improve energy balance
  – Increase fruit and vegetable consumption
  – Increase physical activity levels
  – Decrease sedentary time
Childhood Obesity: Place Matters

- Rural residency increases the risk of childhood overweight and obesity
  - Rural Healthy People 2010
- Odds of obesity as much as 50% higher among rural elementary school children
  - McMurray et al., J Rural Health, 1999

Why?

- High poverty
- Lack of health services
- Geographic isolation
- Lack of transportation
- Fewer school-based PA opportunities
- Compromised rural landscapes
Factors We Want to Influence

International Factors
- Globalization of Markets
- Development
- Media Advertising

National/Regional Factors
- Transportation
- Urbanization
- Health
- Social Security
- Media & Culture
- Education
- Food & Nutrition

Community Factors
- Public & Active Transportation
- Public Safety
- Health Care
- Sanitation
- Local Food System
- Local Agriculture/Markets
- Built Activity Environment

Local Environment Factors
- Leisure Activities and Facilities
- Labor Influences
- Institutional Health
- Workplace Food and Activity
- Family/Home Food and Activity
- School Food and Activity

Individual Factors

Population Weight

Factors We Want to Influence

Energy Expenditure

Energy Intake

Image adapted from Kumanyika S K et al. Circulation 2008;118:428-464
Barriers to Obesity Prevention

- Achieving energy balance is an individual level expectation with multi-level level challenges.
- Individual, family, community level factors impact our health behaviors.

Are public health efforts in rural areas informed by rural residents?
Obesity Prevention in Rural Communities

• CHANGE Study
  – identify the perceived environmental factors that support or hinder physical activity among rural youth
  – Develop testable hypotheses to inform future interventions for reducing unhealthy weight gain associated with physical inactivity among rural youth

Hennessy et al., Am. J. Prev. Med., 2010
Model of perceived environmental factors that support or hinder physical activity among rural youth

KEY
RED – Always a barrier
GREEN – Always a support
BLUE – Can be either a support or barrier

Hennessy et al., Am. J. Prev. Med., 2010
GROW HKC Theoretical Framework

Healthy, Active Rural People and Places

- Individual
- Families and Social Networks
- Organized Groups
- Community Policies and Practices
- Regional, State, and Federal Rules and Policies

Building Coalitions & Partnerships

Planning & Advocacy

Community Participatory Research, Education, and Mobilization

Multi-Level, Multi-Sector Social Ecological Model

Attributes of People

Attributes of Place

GROW HKC Specific Aims

Aim One

To explore and model the rural obesogenic environment.

- **Settings:** Rural communities in WA, CO, NM, NV, AZ and Oregon
- **Approach:** CBPR using Extension ‘Train-the-Trainer’ model
- **Mechanism:** HEAL MAPPS
- **Deliverable:** Interactive data-driven prevention model providing research and practice applications

Aim Two

To plan, implement, and evaluate a multi-level intervention program

- **Settings:** Rural homes, schools, and communities in 3 Oregon counties
- **Approach:** CBPR and evidence-informed activities to optimize the behavioral environment to bring children’s energy equation into balance by default
- **Mechanism:** Δ home, school, & community food and PA behavioral environments
- **Deliverable:** Improved BMI among rural children aged 5-8 years old
How we will meet AIM ONE...

- **Mobilize** and involve local people – the ‘true’ experts
- **Train** community residents to use our CBPR HEAL MAPPS tools to
- **Assess** features of their rural community that make it easier or harder for children and families to eat healthfully and be physically active most every day
Healthy Eating Active Living
Mapping Attributes using Participatory Photographic Surveys

HEAL MAPPS TOOLS

COMMUNITY ENGAGED PARTICIPATORY ACTION RESEARCH

COMMUNITY PARTICIPATORY PHOTO MAPPING

FOCUSED GROUP DECISION-MAKING

MAPPS RESULTS CONSENSUS REPORT

COMMUNITY RESOURCES & READINESS CONVERSATION

grow healthy kids & communities

Oregon State University
How we will meet Aim 2...
Framework for Action: Health Impact Pyramid

- Child & Family Direct Education Delivery
- Family Home, School, Community
  – Situational, Physical, Policy Contexts

Socioeconomic Factors

Direct Education
Clinical Interventions
Long-lasting protective interventions
Changing H, S, C, Environments to Optimize Defaults
GROW HKC Oregon Counties
Intervention Design

**Condition**
- Rural, low income communities
  - Defined by elementary school with > 50% of student population eligible for free/reduced meals
- Study participants (elementary children and families) recruited from participating schools
- Intervention efforts directed toward
  - Community, School, & Family Home Nutrition and Physical Activity Environments

**Intervention**

- **Columbia**
- **Clackamas**
- **Klamath**
## AIM TWO intervention timeline...

<table>
<thead>
<tr>
<th></th>
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<tbody>
<tr>
<td>Child &amp; Family</td>
<td>Recruit</td>
<td>BMI; PA; Diet</td>
<td>BMI; PA, Diet</td>
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<tr>
<td>Family Home</td>
<td>FNPA/Family SOC; Engagement, Info Campaign</td>
<td>FNPA/FSOC Family home NPA context changes</td>
<td>FNPA/FSOC GROW HKH evidence-based program disseminated</td>
</tr>
<tr>
<td>School</td>
<td>SNPA; BMI, coalition; develop work plan; GROW HKC events</td>
<td>SNPA (mentored self-audit); School NPA contextual changes</td>
<td>SNPA GROW HKS evidence-based program disseminated</td>
</tr>
<tr>
<td>Community</td>
<td>HEAL MAPPS; coalition; develop work plan; SM campaign</td>
<td>Community NPA contextual changes</td>
<td>HEAL MAPPS GROW HKC evidence-based program disseminated</td>
</tr>
</tbody>
</table>
Community Environment

- CBPR - HEAL MAPPS
  Fall 2012 – Winter 2013
  - Residents perceptions of resources and readiness to address context for obesity prevention

“Safeway is expensive and difficult to access due to a lack of sidewalks and crosswalks.”
3. Vague Awareness Goal: Community can make positive changes
   - Low intensity, visible media
   - Special events
   - Conduct informal surveys to see how people feel about the issue

4. Preplanning Goal: Develop concrete strategies
   - Assess what’s going on in the community
   - Focus groups to listen to ideas

5. Preparation Goal: Gather pertinent information
   - Gather and present local data
   - Monitor climate to see how people are feeling about the issue
   - Increase media exposure
Community Environment

- **GROW Action Groups**
  - Recruited to meet readiness goals and move communities forward in stages of readiness

- **CBPR – R-CNPA Environment Audit Fall 2013**
  - Objective audit using GPS to gather data - to map availability, accessibility, and affordability of community nutrition and physical activity environmental attributes
School Environment

- Whole School BMI
  - Gender
  - Grade
- School Nutrition and Physical Activity Assessment (SNPA)
- Nutrition and physical activity behavioral assessments
Baseline Prevalence of Overweight and Obesity by Gender (n=1737)

- Overweight or obese (≥ 85th %ile)
  - Boys: 36%
  - Girls: 34%

- Obese (≥ 95th %ile)
  - Boys: 19%
  - Girls: 17%
Proportion of Obese Children by Grade – All Schools

<table>
<thead>
<tr>
<th>Grade</th>
<th>K</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
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<tbody>
<tr>
<td>Number Assessed</td>
<td>276</td>
<td>287</td>
<td>324</td>
<td>284</td>
<td>322</td>
<td>244</td>
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<tr>
<td>Mean BMI Percentile</td>
<td>65.7</td>
<td>67.5</td>
<td>69.3</td>
<td>65.7</td>
<td>69.2</td>
<td>69.7</td>
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<tr>
<td>p-value</td>
<td>-</td>
<td>0.216</td>
<td>0.047</td>
<td>0.489</td>
<td>0.057</td>
<td>0.048</td>
</tr>
<tr>
<td>Proportion Overweight / Obese</td>
<td>0.31</td>
<td>0.30</td>
<td>0.35</td>
<td>0.33</td>
<td>0.39</td>
<td>0.41</td>
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<tr>
<td>p-value</td>
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<td>0.145</td>
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<td>0.020</td>
<td>0.008</td>
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<tr>
<td>Proportion Obese</td>
<td>0.13</td>
<td>0.16</td>
<td>0.16</td>
<td>0.19</td>
<td>0.22</td>
<td>0.23</td>
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<tr>
<td>p-value</td>
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<td>0.158</td>
<td>0.150</td>
<td>0.027</td>
<td>0.002</td>
<td>0.002</td>
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</tbody>
</table>

1 All p-values were calculated using Kindergarten as the reference group.
School Nutrition and Physical Activity Assessment (SNPA)

• Background
  – Assess attributes of the school environment
  – Develop measure sensitive to change
  – Align ‘best practice’ strategies for change with community-driven actions

• Theoretical Framework
  – 5 Stage Community Readiness for Change Model
SNPA Model

• Physical Activity (N=16)
  – Indoor PA/Active Play Space
  – Fixed Outdoor Features/Space
  – Shelter & Shade Structures
  – Surface and Surface Markings
  – Neighborhood Features
  – Portable Equipment
  – PA & Wellness Policy
  – Structured Physical Education

• Nutrition (N=11)
  – Safe & Adequate Meal Service Area
  – School Meals
  – Healthy Food & Beverage Practices
  – Promoting Water Consumption
  – Nutrition & Wellness Policy
  – Health & Nutrition Education

Each item is scored and the tool provides a baseline measure that is sensitive to change. The SNPA also works as an intervention strategy identifying areas of “opportunity” to improve the SNPA environment.
1) **Assess** school resources and readiness to implement environmentally-focused interventions

2) **Plan and implement** partnerships and programs to change school contexts

3) **Evaluate** effectiveness of school-level program and policy efforts to increase resources and readiness to support school nutrition and physical activity behaviors
Data Sources, Informants, and Criteria

### Category: Policy Environment
### Area of Interest 16: Structured Physical Education

#### Required Data Sources:
- [ ] Direct Observation  
- [ ] Interview  
- [ ] Document Review  
- [ ] Other, please specify ________________

#### Informant:
- School Administrator
- Teacher, specifically ________________
- District Food Service Director
- Meal Service Manager/Cafeteria Staff
- Classified Staff/Volunteer, specifically ________________
- Wellness Committee
- Other, specifically ________________

#### Time:
- 10:30 AM / PM

#### PE Teacher

#### Description:
The school has a structured physical education/physical activity program that is coordinated and/or instructed by trained/credentialed physical educator(s).

#### Criteria:
- [ ] A – The school has a trained/credentialed Physical Education Teacher.
- [ ] B – Students participate in a minimum of 150 minutes of structured physical activity education per week.
- [ ] C – Physical education instruction is based on a written and sequential physical activity education curriculum that is consistent with state/national standards for physical education (see appendix).

Assess & mark all criteria using [-] for does not meet, [■] for meets, and [+] for exceeds the standard.
Scoring Areas of Interest

Criteria:
Neighborhood features include the following:

- Safe roadways with sidewalks, bicycle lanes, and clearly marked crosswalks
- Traffic calming features such as speed humps, chicanes, and curb extensions
- Signage that supports safe, active transport to and from school
- Bicycle storage racks
- Pathways to playgrounds and athletic facilities that avoid vehicular traffic

Next, use the scale to assign a level of implementation and readiness score. Each level is grounded by a description of the strength (quantity and quality) of criteria supported by data sources (observation, interview, document review). The scale description elaborates each level providing a numerical range for meeting criteria as well as a description explaining how and why the level is determined. In other words, when assigning a score for the Area of Interest, consider both the quantity and quality of how the criteria are met. Mark your response in the corresponding box after reviewing the scale descriptions.

<table>
<thead>
<tr>
<th>Level One</th>
<th>Level Two</th>
<th>Level Three</th>
<th>Level Four</th>
<th>Level Five</th>
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</thead>
<tbody>
<tr>
<td>No/very few criteria met</td>
<td>Some criteria met</td>
<td>At least half of criteria met</td>
<td>Most to all of criteria met</td>
<td>All and more criteria met</td>
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</table>
SNPA School Report can be leveraged to:

• secure grant funding
• document school-level changes resulting from national, state, and/or district policies
• evaluate school wellness, health and performance factors & practices
GROW HKC Schools - Baseline
SNPA, Nutrition, and Physical Activity Scores

SNPA Score Key:
1=No/low awareness/resources
2=Some awareness/resources
3=Preparation
4=Stabilization
5=Community ownership

School 1 School 2 School 3 School 4 School 5 School 6

SNPA Score

Clackamas Columbia Klamath

Schools by County

SNP, Nutrition, and Physical Activity Scores
GROW HKC Schools - Baseline Nutrition Environments

SNPA Score Key:
1=No/low awareness/resources
2=Some awareness/resources
3=Preparation
4=Stabilization
5=Community ownership

Schools by County:
- Clackamas
- Columbia
- Klamath

SNPA Score
1 1.5 2 2.5 3 3.5 4 4.5 5

Physical Environment
Situational Environment
Policy Environment
GROW HKC Schools - Baseline Physical Activity Environments

SNPA Score Key:
1=No/low awareness/resources
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Schools by County:
- Clackamas
- Columbia
- Klamath
Family Home Environment

- Family Nutrition and Physical Activity Assessment (FNPA)
- Family Stage of Change (FSOC)
- Family Physical Activity
  - Home environment audit
  - Accelerometry
- Family Nutrition
  - Home environment audit
Progress to date

• Community environment
  – HEAL MAPPS, fall 2012-winter 2013
  – R-CNPA GPS audit, summer 2013

• School environment
  – SNPA pilot, fall 2012
  – SNPA GROW partner schools, spring 2013
  – GROW HKC program – student HWAs, fall 2012 & spring 2013

• Family environment
  – Child/family study recruitment, spring 2013

Visit us at: http://extension.oregonstate.edu/growhkc/
Next Steps

• Fall/Winter Data Collection
  – FNPA/FSOC
  – Child BMI
  – Family Nutrition & Physical Activity

• Intervention Activities
  – Physical Activity Tool Kits
  – School-level strategies will emerge from SNPA data
  – Family-level strategies will emerge from FNPA/FSOC data
GROW HKC Research Team

• Principal Researchers
  – Deborah John, PhD
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• Co-Researchers
  – Melinda Manore, PhD, RD
  – Gail Langellatto, PhD
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• Research Assistants
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• State and County Partners
Questions and Discussion