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Non-Technical Summary

The problem of obesity in children is in the forefront of research efforts across disciplines. A plethora of data support that physical health outcomes such as metabolic, orthopedic, pulmonary and endocrine conditions and mental health outcomes such as sleep disorders, social exclusion, and depression are associated with obesity, and data are emerging that suggest childhood obesity is associated with poor academic performance. Many risk factors have been associated with children being overweight or obese, including rural residency. Attributes of the rural environment make it difficult for children to access and eat healthy foods, walk or bike to destinations and participate in physical activity and recreational sport programs. Furthermore, features of rural schools, particularly those in under-resourced communities, are such that students often face long bus commutes, minimal/no provision of health and physical education by certified teachers, and few resources to support health and/or enrich the academic environment. Rural community features pose unique challenges for rural residents that differ from those faced by individuals residing in more metropolitan regions. Nevertheless most evidence-based strategies to combat obesity have been developed and tested in non-rural settings. The overarching goal of the Generating Rural Options for Weight-Healthy Kids & Communities (GROW HKC) project is to prevent obesity in rural children. Toward this end, we will take a solution-focused, two-pronged approach. Our first aim is to understand the rural obesogenic environment. To do so Oregon State University (OSU) will partner with Extension Services in six Western States to engage rural people in community-based participatory research efforts to (1) assess features of rural communities that are viewed as obesity preventing/promoting, community resources and readiness to implement and support environmentally-based obesity prevention efforts, (2) create a database to aggregate the data from community assessments, and (3) develop a new eXtension Community of Practice as a vehicle to help practitioners and the public learn from our research findings. Our second aim is to plan, implement, and evaluate a multi-level intervention targeting rural home, school, and community behavioral settings to promote healthful eating and increase physical activity, and thus improve body mass index among rural children aged 5-8 years old (grades K-3). Toward this end, we will develop and test the GROW HKC obesity prevention program in rural communities from three counties in Oregon. Applying a "people and places" framework, our intervention will utilize evidence-based strategies to affect positive changes in person-level attributes and in family home, school, and community environments related to healthful eating and physical activity.

Accomplishments

Major goals of the project

The goal of the Generating Rural Opportunities for Weight-Healthy Kids & Communities (GROW HKC) project is to prevent obesity in rural children. We will take a two pronged approach. Our first aim is to understand the rural obesogenic environment. To do so Oregon State University (OSU) will partner with Extension Services in six Western States to engage rural people in community-based participatory research efforts to: (Objective 1) assess features of rural communities that are

viewed as obesity preventing/promoting, measure community resources and readiness to implement and support environmentally-based obesity prevention efforts, create a database to model the data from community assessments, and (Objective 2) develop a new eXtension Community of Practice as a vehicle to help practitioners and the public learn from our research findings. OUTPUTS: Initial outputs of Aim One activities will be addressed during project years 1-2 and will include: GROW HKC community-campus teams and trainers in Oregon and partnering Western states, community profile and plan inventory including narrative maps and environmental attributes, and an eXtension CoP interested in rural obesity prevention. Our second aim is to plan, implement, and evaluate a multi-level intervention targeting rural home, school, and community behavioral settings to promote healthful eating and increase physical activity, and thus improve body mass index among rural children aged 5-8 years old (grades K-3). Toward this end, we will develop and test the GROW HKC obesity prevention program in rural communities from three geographically diverse counties in Oregon. Our intervention will employ a "people and places" framework and utilize evidence-based strategies to affect positive changes in person-level attributes and in family home, school, and community environments related to healthful eating and physical activity. Aim 2 objectives include implementing and evaluating a comprehensive multi-level intervention (Objective 3) to promote healthy eating and increase physical activity on obesity (change in BMI) among rural kindergarten through 3rd grade children, and (Objective 4) to increase supports and remove barriers in home, school, and community food and physical activity environments. OUTPUTS: Outputs of Aim Two activities include: 1) improved children's knowledge, skills, dispositions, and healthful eating and physical activity behaviors; and 2) families, schools, and communities use GROW HKC strategies to improve home, school, and community food and physical activity environment. Long-term outcome of Aim Two is no change or improved BMI scores in rural children grades K-3.

What was accomplished under these goals?

AIM 1 OOUTCOMES in PY 2 include five HEAL MAPPS reports that have been provided to communities to support community-based initiatives to prevent childhood obesity: John, DH & Gunter, KB (2012). Philomath, OR HEAL MAPPS Community Report; Rudolph, J, Etuk, L , John, DJ, Gunter, KB, (2012). Clatskanie, OR HEAL MAPPS Community Report; Case, P, Wayne, L, Etuk, L, John, DJ, Gunter, KB, (2012). Bonanza, OR HEAL MAPPS Community Report; Halverson, B, Sterrett, K, Etuk, L, John, DJ, Gunter, KB, (2012). Molalla, OR HEAL MAPPS Community Report; Calodich, S, Etuk, L, John, DJ, Gunter, KB, (2012). Port Townsend, WA HEAL MAPPS Community Report. SIGNIFICANT IMPACTS resulting from these outcomes include three grants that were submitted by communities with support from GROW project staff and based on information gained in the HEAL MAPPS processes and/or the SNPA assessment. Clatskanie, OR secured a \$5,000 Youth Advocates for Health (YA4-H!) grant from OSU to promote youth involvement in healthy eating, active living (HEAL) through community gardens. Bonanza, OR received \$500 to supplement healthy foods at the elementary school food services, and Molalla was the recipient of an \$8,000 HEAL grant from Clackamas County DHHS to support the development of a walking/running trail on Molalla elementary property. The project includes a joint use agreement to allow community access to the trail. Additionally, one of our multi-state partners, after becoming trained to support HEAL MAPPS processes in Washington State, submitted and was awarded a 2-year, \$50,000 grant to deliver HEAL MAPPS in rural tribal communities to improve community health and enhance local food systems. Thus this USDA NIFA grant was leveraged to secure a total of \$63,500 additional dollars at the local level to support obesity prevention in rural communities in the Northwest region. AIM 2 OUTCOMES in PY 2 include an understanding of the overweight an obesity prevalence in the elementary schools enrolled in the GROW intervention programs. Of the 1920 children assessed in grades k-6, 36% were overweight (having BMI values for their age and gender > the 85th percentile); 19% were obese (having BMI values for their age and gender > the 95th percentile). Prevalence did not differ by age, but a greater proportion of children in older grades (3rd-6th) were classified as overweight and obese. Reports were generated and shared with each participating school.

What opportunities for training and professional development has the project provided?

OUTPUTS: AIM 1 OUTPUTS: Oregon HEAL MAPPS (Healthy Eating, Active Living, Mapping Attributes through Participatory Photographic Strategies) training was July 2012; Multi-state partner (AZ, CO, NM, NV, TX, WA) HEAL MAPPS training was June 2012. WA field partners HEAL MAPPS training took place in Wenatchee, WA in November 2012. OR (n=7) and WA (n=1) communities have completed HEAL MAPPS training, focus group, and community conversation activities. AIM 2 OUTPUTS: Whole school height and weight data were collected on 1,920 children in K through grade 6 (n=1061 boys; n=859 girls) in 6 schools participating in the AIM 2 intervention. School nutrition and physical activity environmental data were collected in our intervention schools (n=3) using the School Nutrition and Physical Activity (SNPA) Environmental Assessment Tool. PRODUCTS: A HEAL MAPPS Training Manual and tool kit was developed to support needs assessment and intervention activities. Also listed under publications; A Field Transfer Application for Garmin GPS units used in our community-based HEAL MAPPS processes, and a Processing Extension for ArcGIS. Both were developed by GeoMobile Innovations Inc. specifically for our project to support data transfer and analyses of GIS data; The Family Stage of Change (FSOC) Instrument was developed and pilot tested to assess families readiness to change behaviors and family home environmental characteristics; The SNPA Environmental Assessment tool was developed to assess school resources and readiness to improve nutrition and physical activity environments, suggest appropriate improvement strategies, and score impacts resulting from environmentally-based treatments. The SNPA was pilot tested in three elementary schools to obtain process and reliability data; The Balanced Energy Physical Activity (BEPA) Tool Kit was developed with grant funds from this project and funds from SNAP Ed of USDA to help nutrition educators, teachers, and caregivers provide physical activity into

every direct education occasion with children pre-k-grade 6. DISSEMINATION via PRESENTATIONS: Gunter, KB & John, DH. Generating Rural Options for Weight Healthy Kids & Communities. Presented at the Northwest Environmental Health Conference, Portland, OR. February 2012; John, DH & Gunter KB. HEAL MAPPS (Healthy Eating Active Living, Mapping Attributes through Participatory Photographic Surveys. Oregon State University Extension In-Service Training, Wilsonville, OR. March 2012; John, D, Gunter, K, Manore, M, Langellotto, G, Etuk, L. Generating Rural Options for Weight Healthy Kids & Communities. Journal of Nutrition Education and Behavior, 2012; (44)4S:S84. Society for Nutrition Education and Behavior Annual Conference, Washington DC. July 2012; Etuk, L., Greenwald, C., John, D.H., & Gunter, K. Generating Rural Options for Weight-Healthy Kids & Communities: Preventing Obesity in Rural Children in Partnership with GeoMobile Innovations, Inc., Willamette Valley GIS User Group, Corvallis, OR. November 2012. DISSEMINATION via WEBSITES: GROW HKC <http://extension.oregonstate.edu/growhkc/>, and HEAL MAPPS (not yet live) websites; The BEPA website: <http://extension.oregonstate.edu/physicalactivity/BEPA> PARTICIPANTS: GRANT SUPPORTED PERSONNEL with major contributions: Deborah John, PD/PI, provided overall project leadership, led the development of the HEAL MAPPS Training manual and all HEAL MAPPS activities and contributed significantly to all activities and outputs detailed in the progress report. Kathy Gunter, PD/PI, provided overall project leadership, led the development of the Family Stage of Change (FSOC) Tool and school-based height and weight data collection activities and contributed significantly to all activities and outputs detailed in the progress report. Lena Etuk, Co-I, contributed to the development of the HEAL MAPPS Training Manual and all HEAL MAPPS activities and was responsible for managing the GIS data resulting from HEAL MAPPS processes. Melinda Manore, Co-I, contributed to the development of the SNPA, the FSOC, HEAL MAPPS activities, and intervention curricula. Gail Langolotto, Co-I, contributed to HEAL MAPPS activities, the development of the SNPA, and supported field faculty in acquiring community-based ancillary funding related to garden education. Brendan Klein, Research Assistant, contributed to all aspects of the project related to individual, family, and school level activities. Patty Case, Beret Halverson, and Jenny Rudolph, Extension Field Faculty, led all Aim 1 & 2 community-based efforts in their respective Oregon Counties (Klamath, Clackamas, Columbia) and were supported by Field Educators Laurie Wayne, Kelsey Sterrett, and Allison OSullivan. Kristin Trost, Project Coordinator, has supported all aspects of the project as needed. Jenny Jackson, Graduate Assistant (Doctoral Trainee) contributed to the development of the SNPA, the FSOC, and to the HEAL MAPPS processes. Alinna Ghavami, Graduate Assistant (MPH Trainee) contributed to all aspects of the HEAL MAPPS processes. Multi-state partners Anne Lindsay (UN R), Shirley Calodich (WSU), Sonja Koukel (NMSU), and Kay Hongu (UA) have all made major strides to implement HEAL MAPPS in their respective states. COLLABORATORS and PARTNERS. Major collaborators and partners include: University of Nevada, Reno Extension; University of Arizona Extension; Washington State University Extension; Texas A&M Extension; New Mexico State University Extension; Colorado State University Extension; Oregon State University SNAP Ed Program; Oregon State University Extension Family & Community Health and 4H Programs; Clatskanie and Rainier Elementary Schools, Columbia County; Molalla and Estacada Elementary Schools, Clackamas County; Chiloquin and Bonanza Elementary Schools, Klamath County; GeoMobile Innovations Inc. TRAINING and PROFESSIONAL DEVELOPMENT ACTIVITIES not reported above: The following graduate students have been learning through project activities and are conducting research toward the completion of their degrees relative to the project: Patrick Abi-Nader, PhD, Physical Activity and Public Health; Jennifer Jackson, PhD, Public Health. We have engaged undergraduate students (n=2) and MPH students (n=2) in internships. We have delivered trainings to OSU Extension faculty, and state health department partners about HEAL MAPPS and the application of the SNPA in several training workshops. TARGET AUDIENCES: TARGET AUDIENCES Target audiences included residents from geographically, economically, and ethnically diverse rural communities in the Western United States. In 2012, activities took place in seven communities in Oregon and Washington. A second target audience included children from six elementary schools in three Oregon Counties. All targeted schools were in rural communities where over 50% of enrolled students were eligible for free and reduced price meals or free milk. EFFORTS The study rationale, design, and results were disseminated via lectures and invited talks by the PIs to university graduate and undergraduate students, colleagues, and community groups. Methodologies and tools developed through the project were integrated into courses taught by the PIs, and shared through workshops delivered to Extension personnel. The HEAL MAPPS Manual and process has been shared with collaborators on other projects and written in to several successful grant applications as a mechanism to understand environmental factors contributing to healthy eating and physical activity across cultures (e.g. Latino and Native American populations). PROJECT MODIFICATIONS: Nothing significant to report during this reporting period.

How have the results been disseminated to communities of interest?

{NO DATA ENTERED}

What do you plan to do during the next reporting period to accomplish the goals?

{NO DATA ENTERED}

Participants

Actual FTEs for this Reporting Period

| Role | Faculty and Non-Students | Students within Staffing Roles | | | Computed Total by Role |
|----------------|--------------------------|--------------------------------|----------|----------------|------------------------|
| | | Undergraduate | Graduate | Post-Doctorate | |
| Scientist | 0 | 0 | 0 | 0 | 0 |
| Professional | 0 | 0 | 0 | 0 | 0 |
| Technical | 0 | 0 | 0 | 0 | 0 |
| Administrative | 0 | 0 | 0 | 0 | 0 |
| Other | 0 | 0 | 0 | 0 | 0 |
| Computed Total | 0 | 0 | 0 | 0 | 0 |

Target Audience**Products**

| Type | Status | Year Published | NIFA Support Acknowledged |
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Citation

HEAL MAPPS Training Manual John DH, Gunter, KB, Etuk L.(2012). The purpose of this training manual is to introduce the Healthy Eating Active Living: Mapping Attributes through Participatory Photographic Surveys (HEAL MAPPS) program, and to train users to apply the HEAL MAPPS process and tools collaboratively with community-based research partners. This manual is a 105-page step-by-step resource intended to guide users through the entire HEAL MAPPS process, from planning to execution to dissemination of findings.

Other Products**Changes/Problems**