

# Ignite-Sparking Youth to Create Healthy Communities: A Protocol for a Community-Centered Effort for the Prevention of Adolescent Obesity

Tandalayo Kidd<sup>1\*</sup>, Erika Lindshield<sup>1</sup>, Kendra Kattelman<sup>2</sup>, Koushik Adhikari<sup>3</sup>, Nancy Muturi<sup>4</sup> and Susan Zies<sup>5</sup>

<sup>1</sup>Department of Food, Nutrition, Dietetics and Health, College of Human Ecology, Kansas State University, 203 Justin Hall, Manhattan, KS 66506, USA

<sup>2</sup>Health and Nutritional Sciences Department, South Dakota State University, 100 Administration Lane, Brookings, SD 57006, USA

<sup>3</sup>Department of Food Science & Technology, University of Georgia, Athens, GA 30602, USA

<sup>4</sup>A.Q. Miller School of Journalism and Mass Communication, Kansas State University, 217 Kedzie Hall, Manhattan, KS 66506, USA

<sup>5</sup>College of Food, Agricultural, and Environmental Sciences, The Ohio State University, Columbus, OH 43210, USA

## Abstract

**Objective:** To observe outcomes of a community-centered approach to identifying behavioral and environmental factors that influence overweight and obesity in 6<sup>th</sup>-8<sup>th</sup> grade youth in selected low-income, racial/ethnic communities.

**Design:** Five-year, tri-state, quasi-experimental design with environmental assessments and a questionnaire measuring nutrition and physical activity knowledge and behavior conducted in all communities at pre and post.

**Setting:** Low-income, minority communities targeting 6<sup>th</sup>-8<sup>th</sup> grade youth.

**Participants:** One experimental and one control communities will be selected via each state's Cooperative Extension network through an application and review process with the random selection of participating communities.

**Intervention(s):** Academic institutions will work with community leaders to establish and help support community committees tasked to plan, implement and evaluate one nutrition and one physical activity intervention.

**Main Outcome Measure(s):** Assess environmental changes associated with increased intake and variety of fruits and vegetables; decreased intake of foods high in solid fats and added sugars; and an increase in physical activity among 6<sup>th</sup>-8<sup>th</sup> grade youth.

**Analysis:** Baseline and post environmental data and pre and post questionnaire data will be analyzed using t-tests, chi-square, and ANOVA with a  $p < 0.05$  to establish statistical significance.

## Introduction

A consensus is building among researchers that the obesity epidemic is driven by the environment, rather than solely by individual factors.[1-4] As Schwartz and Brownell noted, the gene pool did not change between 1970 and 2000, "yet the overall rate of being above the 85<sup>th</sup> percentile in body mass index (BMI) for children doubled in these years (from 15% to 30%), and the rates of being above the 95<sup>th</sup> percentile tripled (5% to 15%). Evidence reviewed supports the hypothesis that the environment is driving the changes in obesity rates [4]."

Powell et al. found significant inverse associations in low-income communities between the availability of food stores and adolescent BMI [5]. Furthermore, this relationship was three times greater among African-American adolescents than white or Hispanic adolescents. Additionally, a study of more than 200 neighborhoods found four times as many supermarkets in predominantly white neighborhoods as in predominantly minority neighborhoods. Sallis & Glanz reported that low-income racial/ethnic minority communities had less access to supermarkets and a greater concentration of fast food restaurants [6]. Availability of healthy foods, such as low-fat dairy products and fruits and vegetables, are often less and/or of poorer quality in the racial/ethnic minority and lower-income areas [7,8].

In addition to food access, research indicates that access to parks and other recreation facilities are fewer in low-income, low education, and racial/ethnic minority communities than neighborhoods with higher incomes.[5,9] A study in Austin, Texas showed that although predominantly Latino neighborhoods were more walkable than

high-income, mostly non-Hispanic white neighborhoods, the Latino neighborhoods had poorer safety ratings, maintenance, and aesthetics that may discourage residents from walking [10]. Given the findings related to limited healthy food outlets and physical activity opportunities, it comes as no surprise there are significant racial disparities in obesity prevalence among U.S. children and adolescents. [11].

Because the obesity issue is convoluted, the outside expert-driven research paradigm may not be the most efficient strategy [12]. The traditional approach to changing individual behavior through top-down knowledge transfer has not been effective in reducing the obesity rate. Research is beginning to demonstrate that holistic, community-based approaches that use local resources are the future of obesity prevention interventions [13-15]. Community-Based Participatory Research (CBPR) is a process that fosters community partnerships that allow investigators to work side-by-side with the target audience to understand, develop and create interventions desired by the target

**\*Corresponding Author:** Dr. Tandalayo Kidd, Department of Food, Nutrition, Dietetics and Health, College of Human Ecology, Kansas State University, 203 Justin Hall, Manhattan, KS 66506-1407, Tel: 785-532-0154; E-mail: [martan@ksu.edu](mailto:martan@ksu.edu)

**Citation:** Kidd T, Lindshield E, Kattelman K, Adhikari K, Muturi N, et al. (2016) Ignite-Sparking Youth to Create Healthy Communities: A Protocol for a Community-Centered Effort for the Prevention of Adolescent Obesity. Int J Nurs Clin Pract 3: 189. doi: <http://dx.doi.org/10.15344/2394-4978/2016/189>

**Copyright:** © 2016 Kidd et al. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

audience [16]. The partnership provides the opportunity to uncover the background information and knowledge needed to understand the issues that are relevant to the target audience, followed by a collaborative development of an intervention strategy suitable to the target audience. Furthermore, this partnership strengthens relationships to conduct culturally sensitive and appropriate research with diverse communities. The result is increased community trust because researchers will be seen as responding to the perceived needs of the target audience [17]. Working with an existing entity such as Cooperative Extension reinforces essential components of community-based research. Extension personnel are integrated into their communities and have extensive experience in community-based programs serving low-income families [18]. Thus, Extension personnel can be a valuable resource for developing community-based interventions. Transitioning Extension's role to one of facilitator, rather than as the expert educator may be an effective strategy in the obesity prevention efforts.

The "Ignite-Sparking Youth to Create Healthy Communities" project proposes to use community-centered efforts integrating research and Extension to engage adolescent youth, parents, and other community members in identifying strategies to promote healthy eating and physical activity in low-income ethnic communities. The primary aim of this project is to determine if community partnerships developed via community-centered efforts will assist selected low-income racial/ethnic communities in creating an environment that will be effective and sustainable in preventing overweight and obesity among 6<sup>th</sup>-8<sup>th</sup> grade youth. The secondary aim is to determine if environmental changes will increase dietary intakes of fruits and vegetables and increase physical activity among 6<sup>th</sup>-8<sup>th</sup> grade youth in selected communities.

## Methods

### Study design overview

This project is a five-year, tri-state, quasi-experimental design with research scientists partnering with Extension personnel in each state to facilitate the designing and delivery of respective community interventions. One control and one experimental community from each state, six total across the three states, will be selected to participate and will be responsible for creating and implementing one nutrition and one physical activity program addressing overweight and obesity among 6<sup>th</sup>-8<sup>th</sup> grade youth in their community.

Baseline environmental assessments will be conducted in all communities by the researchers under the guidance of Extension personnel and community stakeholders based on the habits and presence of the target population. Next, focus groups on community perceptions, barriers, and knowledge of healthy eating and physical activity will be conducted in the three experimental communities. The last assessment component will be the development of a questionnaire given to adolescents and administered at pre- and post- program intervention in both experimental and control communities. All data collected by researchers will be presented back to the community in a timely fashion for their knowledge, use and ownership. During years two through five of the project, each community, control and experimental, will receive \$5,000 per year to implement at least one nutrition and one physical activity program. The Extension personnel in the experimental communities will be trained on the community partnership component of the CBPR model to facilitate the forming of a community steering committee. This committee will be made up of interested parents,

community members, and 6<sup>th</sup>-8<sup>th</sup> grade youth to guide the development and implementation of the intervention within their communities. However, the three control communities' intervention development and implementation will be facilitated by Extension personnel without CBPR training and researcher partnerships or guidance.

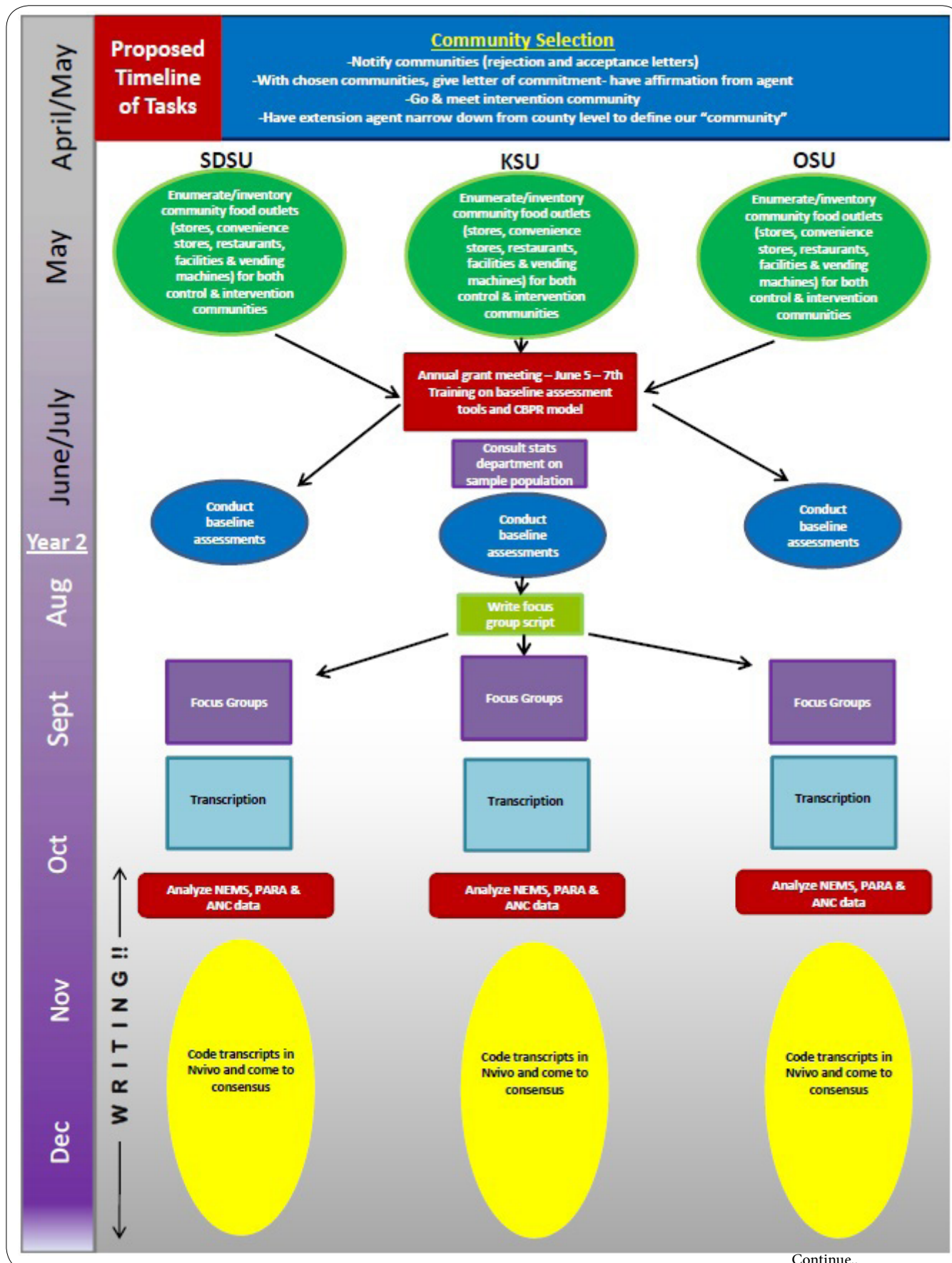
Figure 1 and Table 1 show a timeline of tasks as they relate to study design and objectives. Baseline and post-environmental data and pre- and post- questionnaire data will be analyzed using t-tests, chi-square, and ANOVA with a  $p < 0.05$  to establish statistical significance. This study has been approved by each university's Institutional Review Board.

		Milestones
Year 1	<ul style="list-style-type: none"> <li>Hire Program Coordinator</li> <li>Identify, adapt and/or develop assessment tools</li> <li>Develop focus group scripts</li> <li>Choose 2 communities in each state, 1 control and 1 intervention</li> <li>Hire Program Manager in each state</li> <li>Train Program Manager in Community-Based Participatory Research</li> </ul>	<ul style="list-style-type: none"> <li>Staff hired</li> <li>Tools developed</li> <li>Communities chosen</li> <li>Training provided to intervention communities</li> </ul>
Year 2	<ul style="list-style-type: none"> <li>Complete assessments and focus groups</li> <li>On-going support and training, as needed, for intervention communities</li> </ul>	<ul style="list-style-type: none"> <li>Pre-assessments completed</li> </ul>
Year 3	<ul style="list-style-type: none"> <li>Begin implementation of at least one nutrition and one physical activity intervention</li> <li>Interventions start</li> <li>Continue on-going support and training,</li> </ul>	<ul style="list-style-type: none"> <li>Interventions implemented</li> </ul>
Year 4	<ul style="list-style-type: none"> <li>Interventions continue</li> <li>Begin post-assessments</li> </ul>	<ul style="list-style-type: none"> <li>Interventions continue</li> <li>Post-assessments begun</li> </ul>
Year 5	<ul style="list-style-type: none"> <li>Complete post-assessments</li> <li>Analyze data</li> <li>Organize findings into "Best Practices" for dissemination</li> <li>Research manuscripts and conference proposals begun</li> <li>Provide training to control sites</li> </ul>	<ul style="list-style-type: none"> <li>Post-assessments completed</li> <li>Data analysis completed and disseminated</li> <li>Best practices identified and available on-line</li> </ul>

Table 1: Project Timeline and Milestones.

### Community selection

A request for proposals (RFP) will be prepared and disseminated via each state's Cooperative Extension network for communities that meet low-income and minority eligibility criteria. The researchers define "low-income" if the community meets one of the following definitions: county/community household income average is below





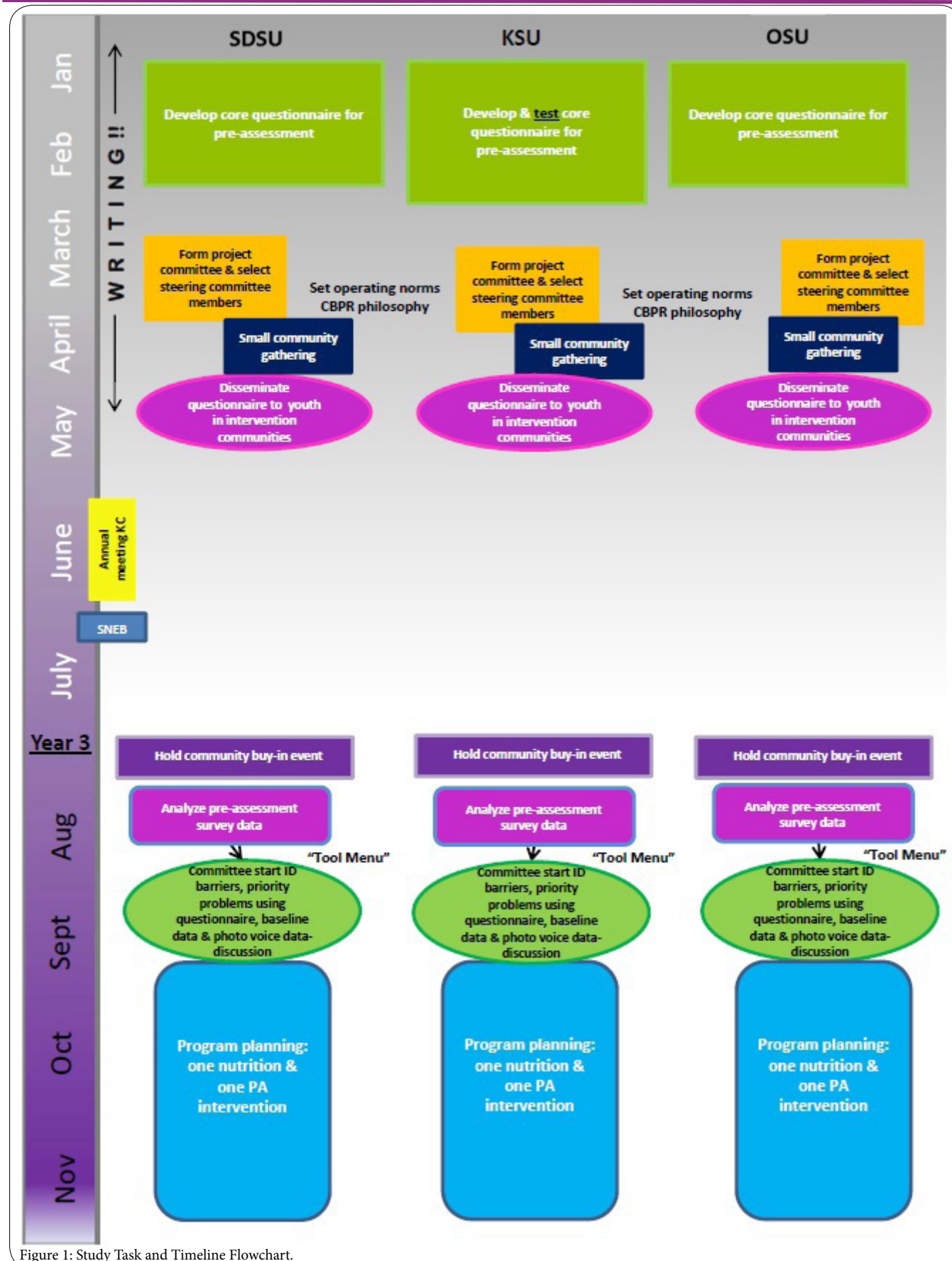


Figure 1: Study Task and Timeline Flowchart.

185% federal poverty level, county/community poverty level is higher than state average, county/community percentage of those who qualify for free or reduced-priced school lunches was higher than state average, or the majority (51% and above) of county/community residents qualify for free or reduced-priced school lunches. The researchers define "minority" if the community meets one of the following definitions: county/community had higher than the state average of non-Caucasian residents, or the majority (51% and above) of the county/community is comprised of non-Caucasian residents. Applications will be reviewed by the researchers. Two communities per state, matched for size and income guidelines, will be chosen to participate and randomly assigned to either the experimental or control group.

#### **Baseline assessment and analysis: tool selection and methodology**

Researchers' selected validated tools to assess baseline and post-intervention food environments include the Nutrition Environment Measures Survey for Stores (NEMS-S), Restaurants (NEMS-R) and vending machines (NEMS-V) to assess accessibility (availability and cost) and promotion of healthier food choices. The healthier food choices include lower calorie and lower fat restaurant options, smarter beverage choices, fresh, frozen and canned fruits and vegetables, whole grain products and lower fat meats, dairy and bakery items. Nutrition Environment Measures Survey (NEMS) was selected for use in the assessment of community food environments since it has previously been used in projects with similar aims and has been validated [19].

Validated tools selected to assess physical activity environments include the Physical Activity Resource Assessment (PARA) and the Active Neighborhood Checklist (ANC). These tools were chosen by researchers due to their multi-aspect assessment of many important factors pertaining to the built environment on physical activity levels, their ease of completion, and they were the most applicable to a variety of settings (frontier, rural and urban). PARA will be used to observe features, amenities and incivilities of recreational spaces, and community parks [20]. The ANC tool will be used to assess street-level features such as the availability and condition of sidewalks and roads, land use, lighting, and the walkability or bikeability of community street segments [21].

The food and physical activity environmental assessments will be conducted by researchers who have been trained on the selected tools. Data will provide a perspective on community environment, unveil areas for improvement and can measure any food and physical activity environmental change that may occur in these outlets throughout the life of the project.

#### **Focus groups**

The use of qualitative data from focus groups can be an effective way of gathering opinions from participants about the diversity of their views and experiences [22,23]. All three states will conduct focus groups with adolescents, parents and community stakeholders in their experimental communities to gather information on opinions, barriers, facilitators and ideas related to healthy eating and physical activity. Researchers will develop moderators' guides for youth and adults under the socio-ecological model (SEM) framework and literature focused on adolescent health behaviors [24]. The guides will be used by trained focus group moderators and co-moderators. Focus groups will be recorded, transcribed verbatim and coded by three independent coders per state before a consensus of themes is met. Results from the focus groups will be summarized and reported back to the communities.

#### **Questionnaire**

Data from focus groups will be used to guide the researchers in the selection of instruments to capture current youth health behaviors, determinants of those behaviors (perceptions, barriers, and facilitators), and youth empowerment. Each state will deliver the same questionnaire; however, each state will be allowed to add one section to query community behavior of interest. The questionnaire will be cognitively tested in each state, including their state-specific questions, with a convenience sample of 6<sup>th</sup>-8<sup>th</sup> grade youth for comprehension, content, organization and general feedback. The questionnaire will then be administered to consenting community youth pre- and post-intervention in all states. Participants who completed the pre-assessment will be contacted to complete the post-assessment to allow for data from the same individual to be paired. Also, the post-assessment will be administered to current community 6<sup>th</sup>-8<sup>th</sup> grade youth for a cross-sectional analysis related to fruit and vegetable intake, physical activity behavior and youth empowerment.

#### **Strengths and Limitations**

Many of the strengths and limitations of community-based models are inherently related.

Projects founded on community partnerships require substantial researcher time and effort in the creation and maintenance of positive academic-community relationships. The returns that result from the time invested are more impactful, appropriate and sustainable interventions.[16] Each project is fully realized within the context of the community resulting in effective interventions, but the specificity of interventions may limit its ability to be generalizable to other communities.

Project-specific strengths include the partnering of existing state Extension networks to facilitate project steps and potential continuation once funding has ended. The project's multistate design strengthens the potential for data to be more widely applied. Furthermore, this project will engage minority youth in planning and implementation; thus valuing often underrepresented voices, in addition to creating space for youth involvement and leadership.

This project has some limitations as well. These limitations include the chosen method of RFP dissemination to be sent solely via state Cooperative Extension networks. This approach could allow for the potential exclusion of qualified communities who do not have a strong Extension presence since Extension networks are highly variable state-to-state. Choosing to assess only physical environmental aspects versus social, political or cultural aspects will lead to the inability to measure the change in those areas. Lastly, the decision to not conduct focus groups in the control communities was made to minimize community interaction with researchers. The overall aim of the project is to determine community-focused best practice model for sustainable and effective adolescent obesity prevention programs that could be widely disseminated across national Cooperative Extension networks for other communities to utilize.

#### **Competing Interests**

The authors declare that they have no competing interests

#### **Acknowledgements**

This material is based upon work that is supported by the National Institute of Food and Agriculture, U.S. Department of Agriculture, under award number 2012-68001-19619.

## References

1. Anderson PM, Butcher KF (2006) Childhood Obesity: trends and potential causes. *Future Child* 16: 19-45.
2. Hill JO, Wyatt HR, Reed GW, Peters JC (2003) Obesity and the environment; where do we go from here? *Science* 299: 853-855.
3. Institute of Medicine. Preventing Childhood Obesity: Health in the Balance (2005) eds. Koplan JP, Liverman CR, & Kraak VA. National Academy Press, Washington DC, 319-326.
4. Schwartz MB, Brownell KD (2007) Actions necessary to prevent childhood obesity: creating the climate for change. *J Law Med Ethics* 78-89.
5. Powell LM, Slater S, Mirtcheva D, Bao Y, Chaloupka FJ (2007) Food store availability and neighborhood characteristics in the United States. *Prev Med* 44:189-195.
6. Sallis JF, Glanz K (2009) Physical activity and food environments: solutions to the obesity epidemic. *Milbank Q* 87: 123-154.
7. Wechsler H, Basch CE, Zybert P, Lantigua R, Shea S (1995) The availability of low-fat milk in an inner-city latino community: implications for nutrition education. *Am J Public Health* 85: 1690-1692.
8. Horowitz CR, Colson KA, Hebert PL, Lancaster K (2004) Barriers to buying healthy foods for people with diabetes: evidence of environmental disparities. *Am J Public Health* 94: 1549-1554.
9. Gordon-Larsen P, Nelson MC, Page P, Popkin BM (2006) Inequality in the built environment underlies key health disparities in physical activity and obesity. *Pediatrics* 117: 417-424.
10. Zhu X, Lee C (2008) Walkability and safety around elementary schools economic and ethnic disparities. *Am J Prev Med* 34: 282-290.
11. Ogden C, Carroll M (2009) Prevalence of obesity among children and adolescents: United States, trends 1963–1965 through 2007–2008. Centers for Disease Control and Prevention.
12. Chan RSM, Woo J (2010) Prevention of overweight and obesity: how effective is the current public health approach. *Int J Environ Res Public Health* 7: 765-783.
13. Economos CD, Hyatt RR, Goldberg JP, Must A, Naumova EN, et al. (2007) A community intervention reduces BMI z-score in children: shape up Somerville first year results. *Obesity* 15: 1325-1336.
14. Bogart LM, Elliott MN, Uyeda K, Hawes-Dawson J, Klein DJ, et al. (2011) Preliminary health eating outcomes of SNaX, a pilot community-based intervention for adolescents. *J Adol Health* 48: 196-202.
15. Hoelscher D, Springer AE, Ranjit N, Perry CL, Evans AE, et al. (2010) Reductions in child obesity among disadvantaged school children with community involvement: the Travis County CATCH Trial. *Obesity* 18: S36-S44.
16. Israel BA, Schulz AJ, Parker EA, Becker AB (1998) Review of community-based research: assessing partnership approaches to improve public health. *Annu Rev Public Health* 19: 173-202.
17. Meleis AI (1996) Culturally competent scholarship substance and rigor. *ANS Adv Nurs Sci* 19: 1-16.
18. Crawford PB, Schneider CL, Martin AC, Spezzano T, Algert S, et al. (2013) Communitywide strategies key to preventing childhood obesity. *California Agriculture* 67: 13-20.
19. Glanz K, Sallis JF, Saelens BE, Frank LD (2007) Nutrition Environment Measures Survey in stores (NEMS-S): development and evaluation. *Am J Prev Med* 32: 282–289.
20. Lee RE, Booth KM, Reese-Smith JY, Regan G, Howard HH (2005) The Physical Activity Resource Assessment (PARA) instrument: evaluating features, amenities and incivilities of physical activity resources in urban neighborhoods. *Int J Behav Nutr Phys* 255 Act 2: 13.
21. Macdonald JAM, Gagnon AJ, Mitchell C, Di Meglio G, Rennick JE, et al. (2011) Include them and they will tell you: Learnings from a participatory process with youth. *Qual Health Res* 21: 1127-1135.
22. Willis K, Green J, Daly J, Williamson L, Bandyopadhyay M (2009) Perils and possibilities: achieving best evidence from focus groups in public health research. *Aust NZ J Pub Health* 33: 131-136.
23. Stokols D (1996) Translating social ecological theory into guidelines for community health promotion. *Am J Health Promot* 1014: 282-298.

This article was originally published in a special issue:

**Community-Based Participatory Research Practices**

Handled by Editor(s):

**Dr. Alice M. Tse**  
**Department of Nursing**  
**University of Hawai'i at Mānoa**  
**United States**