



# The Obesity Research Prevention and Evaluation of Intervention Effectiveness in Native North Americans (OPREVENT)

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American Indians have the highest burden of chronic diseases among all ethnic groups in the United States. Cardiovascular disease is twice that of the general US population and diabetes is diagnosed 2.2 times greater among American Indians than the general US population. The adjusted prevalence of obesity has increased more than 25 percent within a ten-year period across all U.S. regions from 1995-1996 to 2005-06. Health and economic consequences of chronic conditions that limit American Indians are serious, including higher prevalence of end-stage kidney disease and lower life expectancy than the U.S. average.

Interventions designed to address chronic conditions to date tend to focus upon individual behavior change with little impact upon reversing and stopping these trends. Novel interventions are needed at multiple levels of influence to address the rising obesity trend. In this newsletter article, we provide a synopsis of our most recent community-based obesity prevention intervention that is currently being implemented to tackle adult obesity. This effort is funded by the U.S. Department of Agriculture.

The Obesity Research Prevention and Evaluation of Intervention Effectiveness in Native North Americans (OPREVENT) is an intervention trial that is designed to address the following two research questions:

1. What is the impact of a multi-site, multi-institutional trial on the intake of (a) fruits and vegetables, total energy intake, and total fat intake; (b) total energy counts and percent of time spent in sedentary activity?; (c) body-weight index (BMI), waist circumference, and percent body fat?
2. Is exposure to the intervention associated with improvements in knowledge, self-efficacy, risk perception, outcome expectations, behavioral intentions, and social support?

Additional research questions are:

1. What are the feasible and sustainable intervention strategies that would permit children to serve as change agents in their homes to improve diet and increase physical activity of adult household members?

2. What are the feasible and sustainable intervention strategies that would occur in local worksites that would lead to increased physical activity and improved diet among American Indian (AI) community members?

Indigenous peoples globally suffer very high rates of obesity and related conditions, as a result of the role of multifactorial determinants. AI adult BMI in both urban and rural reservation settings have been on a steady rise, with women having higher burden of overweight and obesity than men. Obesity is a primary risk factor for diabetes mellitus, cardiovascular disease, and other chronic conditions. Research indicates a direct association between dietary fat and energy intake and obesity. On average, AI diets are high in fat and caloric content, and physical activity is low. Environmental factors such as the presence of food stores are associated with diet patterns. Limited worksite wellness programs in AIs have achieved diet and physical activity goals, increased energy expenditure, and led to a reduction in body fat. Body image perceptions also influence AI communities' motivation for action. Family environment and social support, particularly

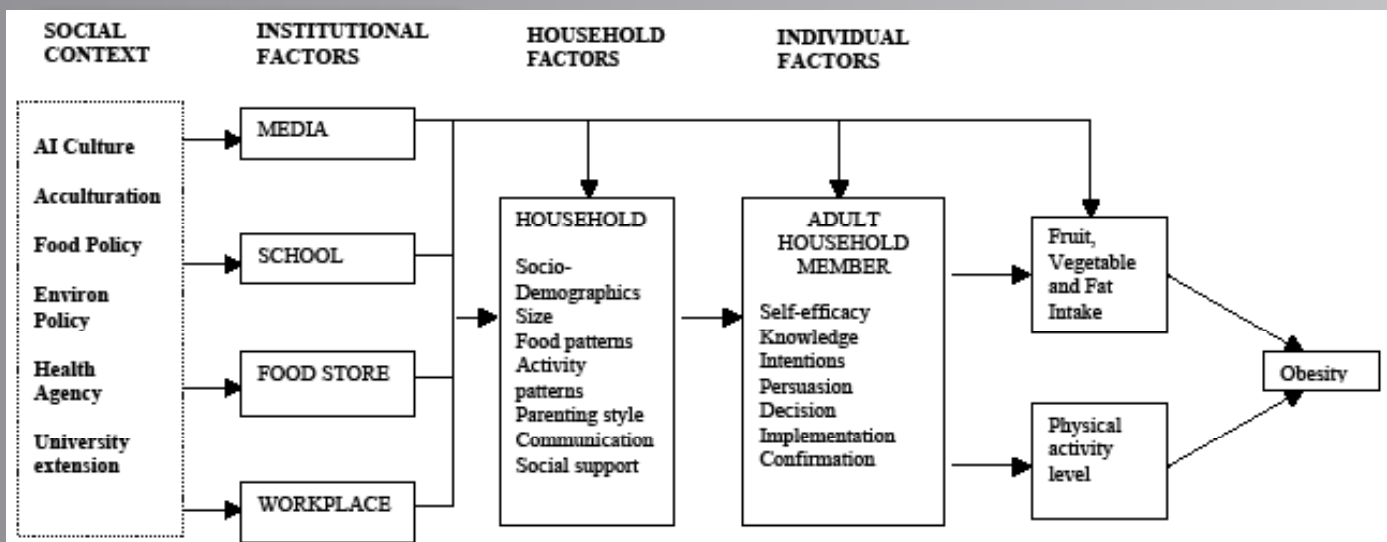


Figure 1. The conceptual framework of OPREVENT.

Table 1. Study Phases.

<b>Phase &amp; Description</b>	<b>Timeline</b>	<b>Sample Size</b>
<b>Phase 1: Tribal approvals/CACs, Formative Research, Measurement protocol preparation</b>	<b>Months 1-9</b>	<b>N=60 N=90</b>
<b>Phase 2: Baseline data collection, Intervention development, Process evaluation</b>	<b>Months 10-27</b>	<b>N=504 (84/community)</b>
<b>Phase 3: Intervention implementation (Round 2), maintenance data collection</b>	<b>Months 28-45</b>	<b>N=504 (84/community)</b>
<b>Phase 4: Data analysis and dissemination</b>	<b>Months 31-48</b>	<b>N=504 (84/community)</b>

through the extended family network, is vital to adult dietary and physical activity habits among AIs. Children can impact adult diets, such as increasing adult fruit and vegetable (FV) intake per day, and decreasing fat consumption. Overall, modest improvements in diet and physical activity can reduce the risk of obesity and heart disease among adults, such as walking 15 minutes per day and eating 100 kilocalories less at each meal or substituting high calorie drinks with diet drinks.

OPREVENT is being led by a multidisciplinary team that has years of experience designing, implementing, and evaluating community-based AI interventions. Our school-based, food store and multi-disciplinary projects have reported significant improvements in diet and physical activity related knowledge, self-efficacy, and intentions, reduced fat intake, increased healthy food purchasing habits, and positive policy changes. Our most recent project, Zhiwaapenewin Akinomaagewin (ZAFT) was implemented between 2003 and 2006 as a multi-level multi-institutional

program to improve diet and physical activity in seven First Nations communities. Our intervention improved overall knowledge and healthy food acquisition frequency.

Our project, OPREVENT, is theoretically informed by the Social Cognitive Theory and the Diffusion of Innovations Theory. The Social Cognitive Theory (SCT) suggests that individuals are both products and producers of their social environment, and that there is a dynamic, reciprocal relationship between personal factors, the environment, and health behaviors. The Diffusion of Innovations Theory provides a systematic framework for how an innovation gets adopted by the target population. Diffusion is the process by which an innovation is communicated (planned and spontaneous) through certain channels over time within social systems that involve interpersonal social networks. Antecedent variables that affect the process of innovation diffusion include the characteristics of the innovation, nature of the adopter, the social context, communication channels, and the nature of

the change agent.

The conceptual framework of OPREVENT depicts a visual graphic of how we envision the role of the media, food stores, schools, households, and worksites in the prevention of adult obesity among AI communities (Figure 1).

The OPREVENT study design is a randomized, controlled community trial in six American Indian communities in Michigan and New Mexico (Table 1). The four phases to OPREVENT are outlined in Table. 1.

There are three intervention and three comparison (delayed intervention) communities. Delayed intervention communities will receive all the benefits of the study including our training materials and intervention materials. The study consists of formative research and pre-post intervention surveys. OPREVENT involves community engagement, including Community Advisory Councils (CACs) and workshops and stakeholder participation, partnerships with health agencies and

Table 2. Intervention Components.

Phase	Theme	School Program		Food Store Program	Work Program	Health Services Program (incl. media)
		Curriculum	Child Change Agent			
1	Start Your Day Moving	3rd: What is Healthy? 4th: Body Class	Training basic principles	Breakfast demo	Group for PA challenge	Breakfast demo; Community media <sup>2</sup>
2	Living Lower Fat	3rd: Everyday Foods 4th: Activity Pyramid, Fat	Family goals: healthy cooking	Drain & rinse demo	Pedometer challenge	Cooking contest; Drain/rinse demo
3	Healthy Drinks	3rd: Sometimes Foods 4th: Sugar Facts	Family goals: food buying 1	Drinks taste test	Healthy Office Snacks	Family Fun Night; Drinks taste test;
4	Healthy Breaks	3rd: Being Active, Everyday Snack Attack, 4th: Fiber Facts	Family goals: snacks	Snacks taste test	Smart Lunch Choices	Take an exercise break; Healthy snacks taste test
5	5 a Day/Shop wisely	3rd: Next Year 4th: Label Reading	Family goals: food buying 2	FV taste tests	Cross-worksite challenge	Store tours, Gardening
6	Reinforcement	Additional teacher training	Summer family goal setting	Summer Materials	Team Walk-a-Thon	Health Fair



Pictured: OPREVENT's two Michigan American Indian tribal communities.

Our school-based, food store and multi-disciplinary projects have reported significant improvements in diet and physical activity related knowledge, self-efficacy, and intentions, reduced fat intake, increased healthy food purchasing habits, and positive policy changes.

University extension personnel. There are four OPREVENT components: a community media campaign, school to home, worksite, and food stores (Table 2). For the school-to-home component, OPREVENT will modify existing school-based curriculum that was developed for grades three through five and that have been administered and evaluated in previous American Indian interventions by Dr. Gittelsohn and colleagues. OPREVENT will expand upon previous interventions by developing a curriculum for grades two and six. The study's program evaluation methods are outlined in Table 3.

Currently, our researchers are in the first phase of the study in both Michigan and New Mexico.

Overall, the goals of our study include the following:

1. To develop sustainable community

obesity prevention program through collaborative partnerships with tribal leadership, health agencies, schools, worksites, local USDA extension programs.

2. To advance knowledge of the relationship between behavioral and environmental factors and obesity among American Indian populations.
3. To reduce obesity in American Indians communities. This is the first study of its kind to address the multifactorial nature of adult obesity in these six communities.■

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For references, see next page.

Table 3. Program Evaluation Methods.

<b>Evaluation Method</b>	<b>Comments</b>
<b>Quantitative Food Frequency Questionnaire</b>	<b>Developed for American Indian/Alaska Native populations</b>
<b>Anthropometry, body composition, accelerometry</b>	<b>Pre- and post-intervention assessment</b>
<b>Impact Questionnaires</b>	<b>Pre- and post-intervention (Household adult, food stores, worksite, school)</b>
<b>Environmental observation checklists</b>	<b>Pre- and post-intervention (Worksites, food stores)</b>
<b>Process Evaluation forms</b>	<b>During intervention (Worksites, schools, food stores, family/household)</b>



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