



Journal of Health Disparities Research and Practice
Volume 10, Issue 4, Winter 2017, pp. 152 – 163
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School of Community Health Sciences
University of Nevada, Las Vegas

American Indian Youth: A Residential Camp Program for Wellness

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ABSTRACT

The American Indian Youth Summer Wellness Camp strives to increase physical activity and healthful eating among at-risk southwest American Indian youth. The Wellness Camp is one week in duration and involves youth, aged 10-15 years. Youth who attend camp are self-selected or referred by local tribal health programs. In any given summer, 35-60 youth attend camp. Approximately 20%-33% of youth return from one year to the next. We describe our program to increase healthy lifestyles among American Indian youth at risk for overweight, obesity, diabetes and cardiovascular disease. The Wellness Camp Program includes five primary components: (1) cultural capital, (2) structured education sessions, (3) anthropometric and risk behavior assessments, (4) physical engagement, and (5) health messaging. Within this article, we describe our program to increase healthy lifestyles among American Indian youth at risk for overweight, obesity, diabetes and cardiovascular disease.

Keywords: Cultural capital; nutrition education; 24 hour dietary recalls; youth risk behavior survey; body mass index; tribal partnerships; type 2 diabetes

INTRODUCTION

The American Indian Youth Summer Wellness Camp (hereafter Wellness Camp) strives to increase physical activity and healthful eating among at-risk American Indian youth. Although approximately 20 American Indian camps, both wellness and summer camps, are in operation, the number is small relative to the number of federally recognized American Indian and Alaska Native tribes in the U.S. (N = 566) (National Conference of State Legislatures 2017), and the majority of existing camps do not assess impact on health (Teufel-Shone et al. 2009). There also may be other American Indian youth wellness camps in operation that are unknown outside the immediate tribal community. Within this article, we describe our program to increase healthy lifestyles among American Indian youth at risk for overweight, obesity, diabetes and cardiovascular disease.

During the past 20 years, there has been a dramatic increase in obesity in the United States and rates remain high. More than one-third of U.S. adults (35.7%) and approximately 17%

(or 12.5 million) of children and adolescents aged 2—19 years are obese (US Department of Health and Human Services, Centers for Disease Control and Prevention 2017). A five year study on insurance claims found obesity rates increased in children (aged 6-9 years, 76%) and adolescents (aged 10-13 year old middle schoolers, 97% and aged 14-16 year old younger high school students, 115%) (FAIR Health, Inc. 2017). Overweight children are likely to become overweight adults (2000-2011 E-Health International Inc. 2016). Obesity in childhood is defined by a body mass index (BMI) greater than the 95th percentile for age and sex (August GP et al. 2008) and American Indian youth have the highest prevalence of obesity of all ethnic groups in the U.S. (Caballero B et al. 2013; Crawford PB et al. 2001; Dalenius K et al. 2012; Schnell LM and Gallo MV 2012; Story M et al. 1999). Community-based data show that in one southern Arizona tribe, 78.6% of children and youth ages 0-18 years are either overweight or obese (Krause A 2014). Youth who attend camp are self-selected or referred by local tribal health programs because of the presence of risk factors for type 2 diabetes, including family history (type 2 diabetes in a first degree relative), obesity, impaired glucose tolerance, hyperinsulinemia, metabolic syndrome, and gestational diabetes. Higher rates of type 2 diabetes have been reported among southwest tribes and type 2 diabetes is increasingly diagnosed among children and adolescents from these populations (Dabelea D et al. 1999).

The Wellness Camp was established in 1991 with a focus on teaching youth about diabetes prevention, physical activity education, diet education and tribal cultural values within the framework of positive youth development and self-efficacy improvement (Catalano RF et al. 2004; Colip L et al. 2016; Eccles J and Gootman 2002; Meyer DJ et al. 1991). Social Cognitive Theory (SCT) provided the basis for our approaches (Bandura A 1977). A central tenant of the theory is that people are more likely to change their behaviors if they have the behavioral capability including the knowledge and skills to perform a particular behavior, as well as a sense of self-efficacy, and have observed the behavior performed by a credible role model (Martin JJ et al. 2011; Ramirez E et al. 2012).

METHODS

The Wellness Camp is one week in duration and involves youth, aged 10-15 years, from 15 different southwest tribes, primarily in Arizona. The Wellness Camp includes an essential tribal-university partnership and a planning committee comprised of the University of Arizona (UA) camp director and tribal health personnel including: a pediatrician, a physician assistant, a registered nurse, two registered dietitians, several certified physical activity instructors, tribal wellness coordinators, a Tribal Diabetes Program Director, and several tribal Community Health Representatives (CHRs). The team was assembled by recruiting interested individuals with approval from their direct supervisors. The planning committee meets bi-monthly throughout the year. A free conference call service is utilized for those who cannot travel to attend the meeting in person.

Consent

All interested parents and youth are provided with a packet of documents including information about the Wellness Camp, an application form, an emergency contact information form, a medical history form, a release to treat form, a photo release form and a consent to participate in camp. Those who commit to attend the Wellness Camp complete the forms and attend a local community pre-camp meeting. The respective participating tribes have local meetings with all camp participants and parents within the month before camp. This meeting is

used as the forum to answer any questions and address any concerns the parents might have. Parents are given a copy of their signed consent forms. Signed original consents are stored at UA in a locked file cabinet.

All youth are asked to sign an agreement on camp rules and receive a list of suggested items to bring to camp. Parents and participants are informed that although all necessary precautions are undertaken to ensure a safe environment for participants, we expect minor pain and discomfort from biometric measurements (e.g., finger sticks, muscle soreness from physical activity, and possible unintentional injuries like a sprained ankle). Campers are told they can refuse to answer any question they do not want to answer and quit participation at any time without losing their participation in the Wellness Camp. All identifying information is handled in a secure manner and only by trained project personnel. All data is held in the strictest confidence at all times. Opportunities for both parents and participants to ask questions are provided at all meeting points.

Program

The Wellness Camp Program includes five primary components: (1) cultural capital, (2) structured education sessions, (3) anthropometric and risk behavior assessments, (4) physical engagement, and (5) health messaging. We assign 2-3 same-sex adult counselors to all cabins, each of which houses between 5-7 youth. A list of rules and responsibilities are included in the registration application and are reviewed on the first evening of the Wellness Camp. All project staff members undergo training on privacy, confidentiality, and identification and reporting of sexual abuse. Meals follow an established menu designed by the tribal registered dietitians to ensure all meals and snacks have food groups represented and are low in sugar, fat and salt. Portion sizes are monitored and a salad bar is offered at lunch and dinner. The Wellness Camp schedule of activities is shared in advance with all adult counselors and instructors and is also reviewed with youth on the first evening of the Wellness Camp.

Cultural Capital

In forming of the Wellness Camp, it was important to leverage cultural capital in building and sustaining the intervention program for youth. From early lessons learned, it was important to make the Wellness Camp environment a friendly one to facilitate health awareness and to encourage behavioral change (Fisher TL et al. 2007; Joe JR 2014). We define cultural capital as the aggregate of holistic approaches, native language, traditional healing, tribal history, traditional arts and games, and tribal voices. The native partners initially introduced these components and remain the primary instructors of these components. The cultural instruction includes tribal games, subsistence activities practiced by tribes – taking of game, planting and harvesting, gathering of edible plants and berries, food preparation, singing and dancing and storytelling. “As grandfathers, fathers, and grandsons hunt or fish, and as grandmothers, mothers, and granddaughters gather, stories are shared about the creation, peoples’ places in the world, the significance of the land, and special features thereof. These stories, and their reaffirmation through the manner in which subsistence proceeds, transmit core elements of the culture from one generation to the next” (Manson S 1997). The Wellness Camp provides an environment that reinforces the notion of connectedness with tribal community, shared norms, beliefs, talents and expectations. (Joe JR, 2014). Cultural capital includes a strength-based approach and resiliency.

Structured Education Sessions

The daily schedule include structured education sessions including nutrition, menu preparation, energy-in and energy-out (calorie counting and expenditure), type 2 diabetes prevention, heart health, how to read nutrition labels, ChooseMyPlate (food groups and serving portioning) (United States Department of Agriculture 2017), mindful eating, traditional foods and traditional medicine. All sessions are led by tribal health personnel including physicians, nurses, registered dieticians, tribal wellness personnel and CHRs, and are 50 minutes in duration. Classes are interactive and are administered in small groups. Pre- and post-tests are administered, and sessions and instructors are evaluated by the youth. All education sessions are structured so that learned skills and knowledge can be incorporated easily into home life. We have included a copy of our daily schedule (Table 1) and education topics (Table 2).

Table 1. Wellness Camp Daily Camp Schedule

7:30 Tribal Reflection/Morning Prayer

7:40 Daily walk – 50 mins

8:30 BREAKFAST

9:30 Session #1 – 50 mins
-Education Session (Group 1) / Exercise Session (Group 2)

10:30 SNACK

10:45 Session #2 – 50 mins
-Education Session (Group 2) / Exercise Session (Group 1)

12:00 LUNCH

1:00 Group Arts and Crafts

2:30 Group Physical Activity

3:30 SNACK

3:45 Session #3 – 50 mins
-Education Session (Group 1) / Exercise Session (Group 2)

4:40 Session #4 – 50 mins
-Education Session (Group 2) / Exercise Session (Group 1)

5:30 DINNER

6:30 Group Activity

Table 2. Wellness Camp Educational Topics

Nutrition

Food Groups
Reading Nutrition Labels
8-5-2-1-0 Let's Go!
Go, Slow, Whoa Foods
Energy In-Energy Out
Snack Preparation
Garden Club
Where Fats & Weight Come From
Traditional Food Demonstrations
ChooseMyPlate

Physical Activity

Yoga
Tabata
Line Dancing
Zumba
Traditional Games
Running
Walking
Dodgeball
Basketball
Charades
Scavenger Hunt

Anthropometric and Risk Behavior Assessments

We conduct point-in-time measurements using a field-based protocol to collect:

Diet - 24-hour dietary recalls - 3 days, 2 weekdays and 1 weekend, within 6 weeks pre- and post-camp.

Demographics - name, age, sex, mailing address, home phone number, cell phone number, name of parent or guardian, tribe, school, and grade – as part of registration packet and on first day of camp.

Anthropometric measures - Body Mass Index (kg/m^2 , z score and percentile), body fat (%), blood pressure (mmHg and percentile), and waist circumference (cm and percentile) – first and last day of camp. Weight, height, body fat (%), fat-free mass (kg), fat mass (kg) are taken without shoes (Tanita®); the same scale is used for baseline and follow-up measures. Blood pressure is taken by a health care provider using a regular or large adult automated cuff, depending on the size of the participants arm. Waist circumference is taken at the umbilicus by trained personnel using Gulick II tape measures.

Behavioral risks as reported on a survey (first evening of camp). The Survey includes questions on physical activity, nutrition, hours of television watched, tobacco use, alcohol use, drug use, bullying, sexual behaviors, and behaviors that contribute to unintentional injuries and violence,

Journal of Health Disparities Research and Practice Volume 10, Issue 4 Winter 2017

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modeled after the Centers for Disease Control and Prevention Youth Risk Behavior Surveillance System Survey.

Cardiovascular fitness using the Progressive Aerobic Cardiovascular Endurance Run (PACER) 20-meter test – second day of camp.

Biometric measures - fasting glucose (mg/dL), HbA1c, fasting total cholesterol (mg/dL) – youth have these drawn once on a pre-assigned morning of camp, by cabin). Random blood sugar, HbA1c, and total fasting cholesterol readings are taken by a health care provider (Accutrend® Plus System).

Physical activity - wrist accelerometers: amount of time spent in moderate- and vigorous-intensity physical activity, daily steps, and hours of restful sleep – 5 days at camp and one week per month thereafter for 6 months.

Individual results are shared with parents and a copy is placed in the youth's medical chart at their home tribal community clinic with parent's knowledge and consent. Aggregate results (no tribe or individual is identified) are made available to tribal leadership, tribal health personnel and tribal program personnel for use in reports, planning and grant writing. For those youth with out-of-range biometric values, referrals for appropriate medical or other needed follow-ups are made with full knowledge and cooperation of parents. All results and reports are shared with tribal personnel and participants in lay terms to ensure understanding of findings. The measures are reassessed at 3 and 6 months at most local tribal community sites. A tribal community health facility within each site is used (e.g., diabetes program office, tribal clinic, wellness center) as a central meeting point for youth returning for follow-up.

For Wellness Camp data collection, we utilize a general multi-purpose room set-up with privacy screens separating the stations. The youth rotate from station to station. Two readings are collected for blood pressure, height, and waist circumference. If the measures are off by more than 10 units for blood pressure and/or more than 0.5 inch for height and waist circumference, a third measure is taken. Study data were collected and managed using REDCap electronic data capture tools hosted at UA (Harris et al. 2009). REDCap (Research Electronic Data Capture) is a secure, web-based application designed to support data capture for research studies, providing 1) an intuitive interface for validated data entry; 2) audit trails for tracking data manipulation and export procedures; 3) automated export procedures for seamless data downloads to common statistical packages; and 4) procedures for importing data from external sources. The data are then exported to SPSS (version 24) and SAS (version 9.4) for data analyses. All paper files are stored within locked file cabinets and all electronic files are on password protected laptop computers, accessible only to project staff members.

Education sessions on physical activity and nutrition are also conducted at these follow-up sessions. The education sessions reinforce calorie count, food label reading and our 8-5-2-1-0 Let's Go! messaging (8 hours of sleep¹, 5 fruits and veggies, 2 hours or less of screen time, 1 hour or more of physical activity, 0 sugary drinks) (The Barbara Bush Children's Hospital 2007), for example. Parents were also provided with nutrition and physical education materials.

¹ The American Indian Youth Summer Wellness Camp program added the '8' for 8 hours of sleep per night to 5-2-1-0 Let's Go!

Physical Engagement

The Wellness Camp focuses on educating participants about physical activity in an effort to help them achieve and maintain healthy weight. The physical activities include a daily morning walk (or run for those electing more vigorous activity), and structured exercise sessions including: traditional games (Lacrosse, stick ball, archery), Tabata (high intensity interval training), Zumba, Yoga, circuit training, dancing, volleyball, basketball, dodge ball, baseball, kick ball, and scavenger hunts. All sessions are led by tribal certified physical activity instructors and are 50 minutes in duration. Sessions are structured to accommodate various intensity levels with an introductory stretch period at the onset. We stress safety as being paramount and include safety instruction as part of our program.

Health Messaging

In our Wellness Camp, we strive to continually reinforce the health messages presented in the structured lectures, by using several approaches. For example, we introduce youth to 8-5-2-1-0 Let's Go! messaging and disseminate copies of Indian Health Service Eagle Books - beautifully illustrated books for youth with American Indian characters and wise animals designed to inspire and encourage young readers to find joy in physical activity, eating healthy foods, and learning about health (Indian Health Service 2016). On the last day of camp we administer an overall evaluation, with each of these aforementioned components of the wellness camp evaluated separately.

RESULTS

Because American Indians are disproportionately affected by overweight and obesity (Story M et al. 1999; Story M et al. 2003), leading risk factors for diabetes and heart disease, efforts such as the Wellness Camp are needed to address the high rates among its youth. In summer 2016, 52% of youth were referred for follow-up with local primary care providers with hemoglobin A1c values equal or greater than 5.7% or total fasting cholesterol values greater than 200 mg/dL. Through the Wellness Camp we are engaging American Indian youth between the ages of 10-15 years to learn about exercising regularly, maintaining healthy weight, and eating healthy foods. If children are taught how to live healthy lives when they are young, we hope they will grow up to be healthy adults and in turn, teach their kids healthy habits.

Our camp program has evolved over the years and we share several important lessons learned. In order to increase our chances of maintaining contact with youth and sustaining participation for follow-up and sustained participation in camp, for example, we have developed close collaborations with tribal health program personnel who are well known and respected within their respective communities. In addition, tribal health program personnel are introduced to and gain access to tribal community members they may not have previously engaged. We focus our program on youth that are old enough (10-15 years) to take care of themselves and to be away from their parents for an extended period of time. We have had one or two youth become homesick and this is because we do have youth that are away from home and family for the very first time. The Camp Director, medical professionals and the tribal community health personnel meet one-on-one with youth to work through the stressors. We balance our instruction so that the lessons are interactive, fun and replicable at home. Youth are given aids to help maintain newly acquired knowledge and skills, e.g., measuring cups and spoons, a basketball, a jump rope, and a Frisbee. As we increase our follow-up activities post-camp, we are increasingly involving the parents and siblings to sustain attitudes and beliefs of our campers. In post-camp

discussion with parents, parents have shared how their children are more active and more mindful of foods being eaten and that they are drinking less sugared beverages. By involving families in post-camp activities and education, youth and families have an opportunity to participate in tribal health program initiated activities which they may not have attended previously. The majority of youth who attend our camp come from underserved communities. According to the US Census, 25.3% of American Indians live at or below the poverty line (US Census 2017); therefore, it is important to have wellness programs be cost effective for tribal communities and families. Funding for the Wellness Camp came from private, foundation, state, and federal funds sought throughout the year. Some tribes utilized local Special Diabetes Project for Indians (SDPI) (Wilson C et al. 2005) funds to pay for youth attending the Wellness Camp from their respective communities.

We have incorporated an extensive field-based protocol to assess individual behavior risks, to educate youth about their own health profile, and to refer youth who may need medical attention. We are providing information and skills at a critical development stage for learning healthy lifestyle behaviors. We provide each youth and their parents with anthropometric and biometric measures thereby availing them with timely personal health information. We refer any youth with out-of-range measures for follow-up with their primary care provider, thereby receiving timely attention and needed care. It is helpful that we have a tribal pediatrician, nurses and community health representatives present who can ensure appropriate follow-up is completed. Finally, we have incorporated changes within our camp program in response to feedback received from the youth. For example, we have retained and expanded physical activities most enjoyed by youth (archery and Zumba) and have modified the camp menu to reflect foods most favored (ground turkey meatloaf and whole wheat pancakes). We have continued education sessions rated the highest (Garden Club) and included topics that were needed (portion size based on daily caloric intake reported on 24-hour dietary recalls).

DISCUSSION

There are a couple of limitations to our wellness program. One limitation of our intervention is its brevity. It would be unreasonable to assume that we can alter lifelong habits after just one week. However, findings from Henderson et al. (2007) focused on one-week or more camp outcomes as perceived by almost 2,300 campers, parents and staff from more than 90 camps from across the country showed that parents believed their children changed positively from the beginning of a camp session to the end of camp on 10 different youth development constructs measured: leadership, positive values and decision making, positive identity, making friends, spirituality, environmental awareness, social comfort, independence, peer relationships, and adventure/exploration. Although there is a paucity of results and outcomes assessments of American Indian-specific wellness camps, program participants do appear to more physically active (Weaver HN, Jackson KF 2010) and respond positively to the experience (Meyer DJ et al. 1991). The other limitation is the absence of including coping strategies to deal with stigma associated with obesity for our youth. It is crucial to help obese persons adopt strategies that can improve their daily functioning in the larger social systems and to potentially reduce negative consequences of future prejudiced encounters (Puhl R, Brownell KD 2003).

CONCLUSION

The onset of obesity can be subtle and may be present years prior to diagnosis. The Wellness Camp model provides tribes with an additional means to address current obesity risks of their youth (Gachupin FC et al. 2017). Wheelock et al. (2016) reported that increased blood pressure, high triglycerides and prevalence of diabetes (about 7% among severely obese adolescents) were all correlated with increased BMI. Based on data from youth attending our Wellness Camp, 2011-2016, between 56% (2011) to 87% (2016) of participating youth have BMI-for-age above the 95th percentile (Gachupin et al. 2017). Six out of ten children and teens have at least one risk factor for cardiovascular disease while 2 out of 10 have two or more risk factors for cardiovascular disease (2000-2011 E-Health International Inc. 2016). The younger the onset of obesity, the more time complications, including diabetes and cardiovascular disease, have to develop (Nadeau KJ et al. 2016; Pavkov ME et al. 2006). Because American Indians are disproportionately affected by obesity, a leading risk factor for diabetes and heart disease, efforts such as the wellness camp are needed to address the high rates among its youth (Islam-Zwart K and Cawston A 2008).

FUNDING SOURCE

This research was funded by the Arizona Area Health Education Centers Program Career Development Award, Arizona Cancer Center Health Disparities Program, Association of American Indian Affairs, Diabetes Action Research and Education Foundation, Marin Community Foundation and the Mayo Clinic Spirit of EAGLES

ACKNOWLEDGEMENTS

We would like to acknowledge the camp participants, their parents and tribal health personnel.

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