



Using community-based participatory research to develop healthy retail strategies in Native American-owned convenience stores: The THRIVE study

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ABSTRACT

In rural Native American communities, access to healthy foods is limited and diet-related disparities are significant. Tribally owned and operated convenience stores, small food stores that sell ready-to-eat foods and snacks primarily high in fat and sugar, serve as the primary and, in some areas, the only food stores. The Tribal Health and Resilience in Vulnerable Environments or “THRIVE” study, implemented between 2013 and 2018, is the first healthy retail intervention study implemented in tribally owned and operated convenience stores. THRIVE aims to increase vegetable and fruit intake among Native Americans living within the Chickasaw and Choctaw Nation of Oklahoma. The study comprises three phases: 1) formative research assessing tribal community food environments and associated health outcomes; 2) intervention development to assess convenience stores and tailor healthy retail product, pricing, promotion, and placement strategies; and 3) intervention implementation and evaluation. In this paper we share the participatory research process employed by our tribal-university partnership to develop this healthy retail intervention within the unique contexts of tribal convenience stores. We summarize our methods to engage tribal leaders across diverse health, government, and commerce sectors and adapt and localize intervention strategies that test the ability of tribal nations to increase fruit and vegetable purchasing and consumption among tribal members. Study processes will assist in developing a literature base for policy and environmental strategies that intervene broadly to improve Native community food environments and eliminate diet-related disparities among Native Americans.

1. Introduction

Native Americans experience rates of obesity, diabetes, and hypertension that exceed those of the United States general population (Jernigan et al., 2010). Interventions aimed to improve food environments, including farm-to-school programs and healthy retail interventions in corner stores, are recommended to prevent and control obesity (Khan et al., 2009; Committee on Accelerating Progress in Obesity Prevention, 2012). While many Native communities may be uniquely suited to implement these types of interventions because of their status as sovereign nations, few such interventions have been implemented and tested within Native communities. Historical events have shaped tribal food environments, including the removal and restriction of

Native people to reservations, and the subsequent reliance of Native people on surplus commodity foods provided to them by the US Department of Agriculture (Echo Hawk Consulting, 2015; US Department of Agriculture, 2012). However, the characteristics of Native community food environments and associated correlates remain poorly understood.

Of the limited research that has assessed Native community food environments, most studies have documented the physical environment, including the number and types of food stores, their location, and the foods sold in the stores. Two studies examined the Navajo Nation food environment and found that most areas lacked healthy food options, with fresh fruits and vegetables in poor condition and dramatically varying prices among stores (Pareo-Tubbeh et al., 2000;

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Gittelsohn et al., 2013). A study in California found that Natives had limited access to healthy foods and relied primarily on convenience stores that sold packaged and fried foods (Blue Bird Jernigan et al., 2011). Similarly, studies examining First Nations community food environments report limited availability of healthy food, poor food quality within existing stores, geographic barriers to accessing healthy foods, such as long distances to stores and closure of winter roads, and community members' reliance on convenience stores where few or no healthy foods are available (DyckFehderau et al., 2013; Skinner et al., 2013).

Interventions to improve Native community food environments are scarce. Four interventions, all conducted by Gittelsohn and colleagues, implemented cooking demonstrations and taste tests in grocery stores in First Nations, Inuit, and Native communities in the Southwestern United States and Canada (Gittelsohn et al., 2013; Curran et al., 2005; Ho et al., 2008; Mead et al., 2010). All of the interventions increased knowledge and frequency of healthy food purchasing. One of the trials, the Healthy Navajo Stores Study found that body mass index (BMI) showed a trend toward intervention impact among participants who shopped most frequently at the stores (Gittelsohn et al., 2013). These studies cited a lack of participation by convenience stores as well as a lack of engagement with tribal leaders and policymakers as study limitations.

The THRIVE study is a five-year community-based participatory research study to implement a healthy retail intervention in tribally owned and operated convenience stores and assess its impact on vegetable and fruit intake among Natives. The study, currently underway, is the first healthy retail study to be implemented in tribally owned and operated convenience stores and results will be published in a separate article upon the study's conclusion. In this paper, we share the three-phase consecutive process employed by our tribal-university partnership to design THRIVE and lessons learned as part of this process.

2. Background

2.1. Tribal-university collaboration

This partnership is guided by a participatory research orientation comprising university researchers and tribal health, commerce, and government leaders from the Chickasaw and Choctaw Nations. Approximately 24 partners were involved (12 per Nation), meeting every month. Memoranda of agreements were established at the beginning of the partnership, between the academic institution and both Nations, which included financial agreements as well as research agreements. The tribal Institutional Review Boards (IRBs) oversaw all aspects of the partnership. The study was reviewed and approved by the University of Oklahoma Health Sciences Center, Chickasaw Nation, and Choctaw Nation of Oklahoma IRBs.

2.2. Setting

Convenience stores are defined by the Association for Convenience and Fuel Retailing as retail businesses that provide the public a convenient location to quickly purchase a wide array of consumable products (predominantly food or food and gasoline) and services (Association for Convenience and Fuel Retailing, 2017). The tribal convenience stores in Chickasaw Nation and the Choctaw Nation of Oklahoma are similar to non-tribal convenience stores in size and scope but important differences exist.

First, the stores are not independently owned but owned and operated by the Chickasaw and Choctaw Nations. Chickasaw and Choctaw Nations are among the largest of the > 550 Native American Nations and together make up more than one-quarter of the land mass in the state of Oklahoma. The Nations have a combined population of > 70,000 Native Americans. Both Nations own and operate > 20 convenience stores across the southeastern portion of the state. All

revenue generated from these stores is used for tribal operations and health and social service initiatives. Tribal citizens who shop at the stores, upon showing a Tribal Identification Card, receive discounts on all purchases.

The stores sell widely marketed commercial snack products and have “hot boxes” which contain pre-fried foods that are sold for a quick and hot meal on the go. In addition to these general products the stores also sell tribal foods such as Bedré Chocolates (Bedre Fine Chocolates, 2017), a Chickasaw Nation product, Choctaw Farms Pecans (Choctaw Nation Store, 2017), and local Native art. These items are given priority locations within the stores including end cap spaces (i.e. spaces located at the end of the aisles and highly visible to customers) as well as placed near the cash registers. Unlike non-tribal stores, most or all tribal stores have tables and chairs, casinos, and “smoke shops” where commercial tobacco products are sold without state or county taxes, resulting in significant savings for shoppers. While the average time spent at a non-tribal convenience store is less than five minutes (Association for Convenience and Fuel Retailing, 2017) the additional aspects of the tribal stores encourage patrons to spend more time within these stores.

3. Methods/design

3.1. Phase one: formative research

We assessed perceived food environments, shopping behaviors and vegetable and fruit intake among Native adults living within the Chickasaw and Choctaw Nations. The questionnaire developed by our partnership included measures used in other food environment and food-related studies. Measures from Gustafson et al. (2011) were used to assess participants' perceptions of the availability, variety, quality, and cost of fresh vegetables and fruits in their town and the extent to which cost was a barrier to purchasing these foods. Additional questions measured the frequency of food shopping at six locations: grocery store, Wal-Mart, tribal convenience stores, small markets, Dollar Stores, and farmers' markets. An adapted item based on the USDA definition of food desserts assessed whether participants traveled further than 20 miles round trip to do their grocery shopping. We used Behavioral Risk Factor Surveillance System (BRFSS) measures to assess daily consumption of vegetables and fruits and number of servings of each (Centers for Disease Control and Prevention, 2013). We used items from Boehmer et al.'s (2006) obesogenic environment measures to assess the frequency of meals eaten weekly at three types of food venues: fast food restaurants, convenience stores or gas stations, and restaurants with waiter service. The survey also included self-reported weight and height which were used to calculate BMI and items from BRFSS to assess doctor diagnosed hypertension and diabetes. Sociodemographic characteristics and participation in tribal assistance programs such as Women, Infants, and Children (WIC) and Temporary Aid for Needy Families (TANF) were also assessed.

After pilot testing our survey trained tribal collaborators recruited and screened participants at community locations selected by the partnership including tribal community centers, clinics and community events (e.g. powwows, health fairs). Native men and women, at least 18 years old, and living within the Chickasaw and Choctaw Nations were eligible. Participants provided informed consent and then completed a paper survey or an electronic survey via iPad. Participants received a \$30 gift card for participating. Survey response (91.4%) was excellent and many participants expressed that they were pleased that the Nations were interested in improving the food environments.

3.2. Phase one formative research results

Overall, sociodemographic characteristics of participants were similar across both Nations (data not presented). The majority of participants were women (75%), married or living with a partner (60%), middle aged (mean = 43.8 ± 14.9 years) and had a high school

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