ORIGINAL RESEARCH

CURRENT DEVELOPMENTS IN NUTRITION

Food and Nutrition of Indigenous Peoples

Journey to Promoting Structural Change for Chronic Disease Prevention: Examining the Processes for Developing Policy, Systems, and Environmental Supports in Native American Nations

Brittany Wenniserí:iostha Jock,[1] Tara Maudrie,[2] Sheila Fleischhacker,[3] Keshia Pollack Porter,[2] and Joel Gittelsohn[2]

[1]School of Human Nutrition, Centre for Indigenous Peoples' Nutrition and Environment (CINE), McGill University , St-Anne-de-Bellevue, Quebec, Canada; [2]Johns Hopkins Bloomberg School of Public Health, Baltimore, MD, USA; and [3]Georgetown University Law Center, Washington, DC, USA

ABSTRACT

Background: Obesity and chronic disease rates continue to be disproportionally high among Native Americans (NAs) compared with the US general population. Policy, systems, and environmental (PSE) changes can address the root causes of these health inequalities by supporting access to healthy food and physical activity resources.

Objective: We aim to describe the actors and processes involved in developing PSE changes supporting obesity prevention in NA Nations.

Methods: As part of the Obesity Prevention Research and Evaluation of InterVention Effectiveness in NaTive North Americans 2 (OPREVENT2) trial (ClinicalTrials.gov registration: NCT02803853), we collected 46 in-depth interviews, 1 modified Talking Circle, 2 workshops, and 14 observations in 3 NA communities in the Midwest and Southwest regions of the United States. Participants included Tribal government representatives/staff, health staff/board members, store managers/staff, and school administrators/staff. We used a Grounded Theory analysis protocol to develop themes and conceptual framework based on our data.

Results: Health staff members were influential in identifying and developing PSE changes when there was a strong relationship between the Tribal Council and health department leaders. We found that Tribal Council members looked to health staff for their expertise and were involved in the approval and endorsement of PSE changes. Tribal grant writers worked across departments to leverage existing initiatives, funding, and approvals to achieve PSE changes. Participants emphasized that community engagement was a necessary input for developing PSE changes, suggesting an important role for grassroots collaboration with community members and staff. Relevant contextual factors impacting the PSE change development included historical trauma, perspectives of policy, and "tribal politics".

Conclusions: This article is the first to produce a conceptual framework using 3 different NA communities, which is an important gap to be addressed if structural changes are to be explored and enacted to promote NA health. The journey to change for these NA Nations provides insights for promoting future PSE change among NA Nations and communities. *Curr Dev Nutr* 2022;6:nzab031.

Keywords: food environment, Native Americans, obesity prevention, United States, health policy, Tribal governments, food sovereignty, policy, systems, environmental change

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Address correspondence to BWJ (e-mail: brittany.jock@mcgill.ca).

Abbreviations used: AIHE, American Indian Healthy Eating; FDPIR, Food Distribution Program for Indian Reserves; IDI, in-depth interview; IHS, Indian Health Service; IRB, Institutional Review Board; NA, Native American; NHSR, non–human subjects research; OPREVENT, Obesity Prevention Research and Evaluation of InterVention Effectiveness in NaTive North Americans; PSE, policy, systems, and environmental.

Introduction

Obesity and related chronic disease rates for Native Americans (NAs) are disproportionally high compared with the United States (US) general population and reflect the need for environments that support healthy eating and active living. Nearly two-thirds (31.5%) of NA adults were overweight and 49.2% were obese in 2018 (1). Nearly 1 in 3 NA children are obese (2), which is more than twice the rate of non-Hispanic White children in the US (3). Accompanying these elevated obesity rates, NAs experience disproportionately high rates of nutrition-related chronic diseases: NAs have nearly 3 times the diabetes rate (4) and 50% more heart disease compared with non-Hispanic White Americans (5).

Such health inequalities cannot be understood without examining the impact of federal and state policies (6). For example, forced removal and relocation to reservations meant that NA Nations were either completely relocated or limited to significantly reduced land bases with poor-quality soil, disrupting their ability to participate in their traditional food systems and making food scarce (7–9). Second, the US

government developed the assimilationist residential/boarding school system to "kill the Indian and save the man" (10). These boarding schools caused profound collective trauma (11, 12) and separated NA children from their families, communities, and traditional food systems. Third, the Indian Health Service (IHS) has never been adequately funded, despite the provision of health care and protection in perpetuity for NAs in numerous treaties between the federal government and NA Nations in exchange for settlers' use of their traditional lands (13). These treaties also recognize NA Nations' inherent sovereignty and right of self-government, which serve as the foundation for using tribal policy to promote the health of NAs in tribal jurisdictions (14).

Because of this history, the current food environments of NA communities are complex and need to be understood holistically. NA communities have access to traditional foods, market foods purchased, and food-assistance programs, all of which need to be incorporated to understand the food environments of reservations (15). NA reservations are predominantly rural and only 25.6% of people living on reservations live within 1 mile of a supermarket, compared with 58.8% of the US general population (16). Recently, Love et al. (17) found that regular access to convenience stores, gas stations, and dollar stores was associated with elevated obesity and diabetes prevalence among rural NAs. The First Nations Development Institute's report on food prices found that typical grocery basket items were consistently more expensive in 40 reservations compared with the national average (18). When combined, the high prices and low availability of healthy food items encourage purchases of cheaper and less-nutrient-dense foods (19). Traditional food systems have provided healthy foods to sustain NA Nations for millennia and include all culturally-accepted foods that are available from local natural resources (7). There has been a documented worldwide "nutrition transition" from traditional food diets to "Western diets" with more reliance on processed foods and diets that have higher intakes of animal fats, hydrogenated fats, sodium, and sugar and lower intakes of fiber (7, 20). The USDA Food and Nutrition Service provides food assistance through many programs, including the Food Distribution Program for Indian Reservations (FDPIR) and Commodity Supplemental Food Programs that are specifically offered for tribes (21). While programs like FDPIR provide important resources to address urgent malnutrition deficiencies, a recent analysis described that FDPIR foods did not meet federal dietary guidelines and provided insufficient amounts of fruits, vegetables, protein, and refined grains (22).

Structural interventions aim to shift the risk factors of an entire population (23, 24), which is particularly important for NA communities experiencing high obesity and chronic disease burdens. Policy, systems, and environmental (PSE) changes refer to strategies to achieve structural changes and address the causes of social and health inequities (25). Policy changes are laws, ordinances, and regulations within legislative or organizational levels; systems changes impact the connections between institutions/organizations that promote access; and environmental changes happen to physical or social spaces or environments in which people live (21). There are several examples of studies that aim to promote PSE changes in NA Nations, including the American Indian Healthy Eating Project (14), Healthy Native North Carolinians Network (26), Healthy Children, Strong Families Study (27), Healthy Navajo Stores Initiative (28), Obesity Prevention Research and Evaluation of InterVention Effectiveness in NaTive North Americans 1 (OPREVENT1) (29), and Tribal Health and Resilience in Vulnerable Environments (THRIVE) (30).

Policy development theories, including Multiple Streams (31), Advocacy Coalition Framework (32), and Punctuated Equilibrium Theory (33), describe how policies are formed and identify opportunities for advocacy. Although these theories improved upon previous heuristics of policy adoption, there are key limitations to applying these theories to understand the promotion of PSE changes in NA Nations. First, it is unclear how they can be used to understand the development of systems or environmental changes. Second, their applicability to NA Nations has not been previously explored. Previous research by Orosz (34) highlighted the need to understand policy development processes in different contexts, as they are based in different "policy environments." Sarkar et al. (35) also noted the urgency of developing policy and other strategies to sustainably increase intake of traditional foods. It is particularly important to understand the processes for developing PSE changes in NA Nations since they are sovereign governments whose constitutions recognize their rights to protect the health and welfare of their citizens (14). It is important that researchers build a stronger understanding of how to best work with tribes as they are woven into the "fabric" of the US through government-to-government relationships (9). Previous research has shown that strategies that apply health policies to areas with the largest health disparities have the most promise for improving health (36). This analysis also builds on the recent research by Jernigan et al. (37) that described community readiness to develop policy and environmental changes and highlighted the need to identify facilitators and barriers to this process. To promote PSE changes in NA Nations, interventions need to be grounded in existing mechanisms for developing these changes. To address this research gap, this article aims to describe the existing actors and processes in NA Nations that are used to develop PSE changes for obesity prevention and the contextual factors that influence these processes.

Methods

This analysis was conducted for the formative research phase of the OPREVENT2 obesity prevention trial (Clinical Trial Registration: NCT02803853; 10 June 2016) to develop an intervention component promoting PSE changes with community stakeholders (38). Eight communities from the Midwest and Southwest participated in the overall study; 2 received the pilot intervention and 6 were randomized as part of the cluster-randomized controlled trial to receive either Round 1 (i.e., immediate intervention) or Round 2 (i.e., delayed intervention) of the OPREVENT2 intervention (38). Communities were selected for inclusion in formative research if they were a pilot or Round 1 community in OPREVENT2 and were willing to participate in this research (Round 2 communities did not participate in this study). Three communities participated in the formative research and the analysis for this article (**Table 1**). Data collection occurred in 2 phases: phase 1 to explore processes for enacting PSE change in-depth in 1 community and phase 2 to confirm and clarify findings in 2 additional communities. Phase 1 data collection occurred from September 2015 to September 2016 and included 30 in-depth interviews (IDIs), 1 modified Talking Circle, and 14 observations in Community 1. Phase 2 data collection occurred from July 2016 and November 2017 and involved 16 IDIs and 2 workshops in

TABLE 1 Overview of data-collection phases and community characteristics[1]

Community (region)	Data-collection phase	
	Phase 1	Phase 2
Community 1 (Midwest)	Participated	N/A
Community 2 (Midwest)	N/A	Participated
Community 3 (Southwest)	N/A	Participated

[1]N/A - Not applicable, did not participate in data collection phase, .

round 1 communities (Communities 2 and 3). All data were collected by the lead author, except for 11 IDIs in phase 2 which were collected by 2 trained researchers from the study team. Emergent design (39) guided the development of the phased data-collection approach to triangulate methods and participants to improve the credibility of our findings.

IDIs

In total, 28 interviewees, including 12 Tribal government representatives/staff, 9 health staff/board, 3 store staff/managers, and 4 school staff/administrators, from 3 communities participated in 46 IDIs (**Table 2**). IDI guides were developed based on the study team's previous work with NA communities (40, 41) and interview guides used in the American Indian Healthy Eating (AIHE) project (42). Interviews lasted between 12 min and 4 h (mean = 48 min), depending on the availability of participants. Interview topics included the following: Nation and institutional policy development process, systems initiatives to increase access to healthy foods or physical activity resources, and environmental supports influencing healthy eating or physical activity. Interviews were open-ended and exploratory, with the interviewer probing to expand on the stages and factors related to developing and approving health PSE change initiatives. Purposive sampling was used to identify professionals involved in the PSE change process, including Tribal government representatives/employees and health staff. As data collection proceeded, we used theoretical sampling to drive follow-up interview questions and identify participants to fill these gaps in our analysis (43), expanding to include school staff, store staff, health board members, and grant writing departments. We made efforts to achieve variability along these stakeholder groups to enhance the credibility of our findings. Participants were eligible for interviews if they were 18 years or older, were English-speaking, and had knowledge about community health-promotion activities or health policy development processes as part of their position in the community. After oral consent was obtained, audio recordings were collected with interviewee approval. However, at the request of 6 IDI participants, their IDIs were typed verbatim as much as possible and were expanded immediately after, while tracking any added text. Eight participants were interviewed multiple times to provide them with an overview of preliminary results and ask for their feedback to refine content (i.e., member checking).

Modified Talking Circle

A modified Talking Circle was conducted in Community 1 to explore health staff and board members' insights about food and physical activity environments and potential PSE changes in community 1 (Table 2). The modified Talking Circle guide was adapted from the AIHE project, as it is a culturally appropriate way to facilitate a group discussion for data collection (42). We planned and adapted this method to be culturally appropriate in the community context by consulting with community partners and elders. Their guidance suggested that we plan the modified Talking Circle with the local advisory board that was promoting PSE change locally. After oral consent was obtained, the session was audio-recorded and transcribed verbatim.

Observations

Observations of 14 community meetings or events were conducted in phase 1 to understand the existing structures for gathering community input on policy decisions. Field notes were recorded during community meetings or events (such as Tribal Council meetings, various board meetings, diabetes event, food giveaway) and expanded after the meetings were adjourned. All observations were conducted by the lead author and were conducted when the meetings were open to the public, she was granted permission, or invited to attend.

Workshops

Workshops were conducted in phase 2 data collection in Communities 2 and 3 to gather feedback on preliminary results and refine findings to include the PSE change processes from these additional communities. We used both purposive and convenience sampling to invite participants involved in the PSE change process. Two workshops were held with health staff, school staff, and Tribal government staff/representatives (Table 2). After consent was obtained, digital audio recordings of the workshop sessions were collected and transcribed verbatim for analysis.

Analysis

Grounded Theory is an analysis methodology that develops a conceptual framework that is "grounded" in the local descriptions of processes of interest (43). The data analysis process was inductive, drawing from principles of Grounded Theory (43). A multistep coding process was used by 1 coder (the lead author), which included initial coding, focused coding, axial coding, and memo-ing (43). The lead author (BWJ) is Kanien'kehá:ka (Mohawk) from Akwesasne and her interest in this field comes from her community's struggle with diabetes and obesity prevention and treatment. The lead author conducted this work as part of her doctoral dissertation in the field of public health and obesity prevention. She has an educational foundation in epidemiology, qualitative research, intervention design, and community-based partipatory research. She maintains strong connections to her community and strives to elevate Indigenous voices for partnership in health promotion efforts. Initial coding was used to code 5 transcripts "line-by-line" (43); these transcripts provided an overview of the PSE change processes from various perspectives from community 1. In vivo codes and gerunds were used for initial codes to remain grounded in the processes being described (43). The lead author pile-sorted all initial codes and developed categories to develop focused codes, which were more closely related to the research question and would become the primary analytic categories of a codebook. This codebook of focused codes was used by the lead author to code the remaining IDI and workshop transcripts (43). Last, axial coding was used to understand the dimensions of each focused code and to develop subcodes and relationships between codes. Data analysis included the use of clustering and freewriting memo-ing strategies to reflect on the researcher's role in shaping the research, create definitions for codes, and making connections between codes (43). Dedoose analysis software version 8.0.42 was used for coding and memoing ("Dedoose," SocioCultural Research Consultants, LLC, 2016).

TABLE 2 Number of participants and participant groups by method and community

Participant groups	Community 1 (Midwest)	2 (Midwest)	3 (Southwest)	Total participants
In-depth interviews (IDIs)				
Tribal government representatives and staff	6	3	3	12
Health staff	5	0	4	9
Store staff	0	1	2	3
School administrators and teachers	3	0	1	4
Modified Talking Circle				
Health board members and health staff	7	—	—	—
Workshops				
Health staff, school staff, and Tribal staff	—	8	3	11
Total	19	12	13	59

This research was approved by the Johns Hopkins School of Public Health Institutional Review Board (IRB), the Navajo Nation Human Research Review Board, and the IHS IRB as well as the participating NA communities. Based on the Johns Hopkins School of Public Health IRB review, the formative research of OPREVENT2 was deemed non–human subjects research (NHSR), since the data-collection instruments asked about the community in general and did not ask participants personal questions and because we were interviewing participants in their official positions in the community. This research complied with the Helsinki Declaration as revised in 1983. Due to the formative research NHSR status, written consent forms were not required, although we gathered verbal consent in advance of all IDIs, workshops, and modified Talking Circle, and prior to audio recording. We provided $20 for IDI participants, $50 for workshop participants, and after consulting with community gatekeepers to develop culturally appropriate compensation, we provided a healthy meal to modified Talking Circle participants. To protect participant confidentiality, minor details of quotes were omitted or changed and, where possible, we attributed quotes to participant groups.

Results

In the participating communities, PSE changes occurred in a variety of ways, with formal tribal policies being just one approach. Because of the richness of strategies that existed in NA Nations and communities to promote structural PSE changes, what emerged from this analysis was how community advocates navigated within decision-making structures to achieve the desired PSE changes. **Table 3** provides an overview of the key actors and their roles in developing PSE changes in NA communities.

Key actors and roles in developing PSE change

Community members: providing input on health issues and feedback on PSE changes.

Participants from all communities emphasized the need for community involvement when developing PSE changes. Buy-in from community members was necessary to develop PSE changes that successfully changed behavior. One participant stated,

> "Like the wellness policy, it's not adhered to because nobody really had buy-in on it . . . I really think, for our community, that it has to be parents, it has to be kids. They all have to be involved in it. Or it's not gonna happen." —School administrator/staff

Health staff also described the role of community members in developing programs and activities:

> "We try to get community feedback . . . So a lot of times, a lot of our newer ideas . . . is something that we've either identified through focus groups or through . . . our tribal population. Of things that are either looking for or they need . . . But . . . we try to have community buy-in...in most of our community health programs." —Health staff

Participants described both informal (passive) and formal (active) ways to engage community members. Passive engagement involved community members bringing their feedback and concerns to Tribal representatives or department staff concerning an issue, while active engagement involved Tribal representatives or department staff intentionally seeking feedback from community members. Examples of passive ways that were used to gather community input included the following:

TABLE 3 Key actors and their roles in developing PSE change[1]

Key actors	Role
1) Community members	Providing input on health issues and feedback on PSE changes
2) Health staff	Identifying PSE solutions and leveraging grants to promote PSE change
3) Grant writing departments	Promoting multisectoral collaboration
4) Tribal Council	Approving PSE changes
5) Contextual factors: Historical trauma, "tribal politics", perspectives of policy	Impacting the use of tribal policy

[1] PSE, policy, systems, and environmental.

community members attending Tribal Council or board meetings or going directly to departmental staff or Tribal Council members. Tribal Council meetings and other board meetings were typically a way for community members to engage with leadership and provide feedback on both the problems and proposed solutions. Community members could also raise their issues directly with local staff or Tribal Council members. Tribal representatives in 1 community particularly encouraged openness with community members and promoted an "open door policy" for tribal members to come in and talk about any issue. When asked about who typically comes forward with policies, 1 participant stated,

> "There's really no makeup of people who come in. It's anybody within the community. And staff comes, and . . . makes a recommendation, or . . . has an idea. Starts out as an idea, and it can develop into to . . . departmental policies over time . . . . People come and knock on my door . . . and we instruct the other directors as well . . . that we always have an open-door policy. If a tribal member comes in and has an issue . . . at least hear them out [and] point them to . . . whoever can help them . . ." —Tribal government representative/staff

Examples of active engagement of community members included focus groups/committees and community advisory boards. Focus groups or committees were formed to identify ways to address the health problems and issues that were raised and typically formed for a short period to address specific needs. One participant explained,

> "Usually the way that we work, is when there's an identified need, there's usually a group of people that . . . get together and talk about it first . . . . A group gets formed [of] people who would be interested or affected by the policy . . . come together and bring their expertise and then . . . we go to the Council and we say okay, 'here are the choices about how you could develop this'" —Tribal government representative/staff

One community formed an advisory board to develop chronic disease prevention initiatives in the community. This board meeting was held monthly with a small group of volunteer community members to gather feedback and input on health initiatives and generate new initiatives. In these meetings, health staff developed the agenda and involved the advisory board members in various activities, including brainstorming for events and activities, training members to collect data, recruiting for events, and providing training opportunities. One health staff member described the role of the advisory board:

> "I would say that they're involved in almost everything that [the health department has] done. If they're not directly involved, we've gotten our projects to them and said, 'What do you think? Well, how can we make it better?'" —Health staff

Advisory board members played an important role in advocating for health PSE changes with local decision-making boards. For example, advisory board members presented a smoke-free playground policy to Tribal Council alongside local health staff. Health staff perceived this to be a key reason for successful policy change. The feedback gathered at the advisory board meetings also provided a platform to promote collaboration between community members and health departments. As a result, health departments incorporated suggestions from advisory board members and developed PSE change through community involvement.

Health staff: identifying PSE solutions and leveraging grants to promote PSE change.

Health staff played a key role in developing PSE changes in NA communities because they were viewed as local health experts. Through their role as health providers, the local health staff was primarily concerned with managing and delivering health programs for the community. This role gave them frequent engagement with community members since they regularly connected with patients as part of their day-to-day work. People throughout the community looked to health staff for their health expertise. One person stated,

> "[Tribal Council is] put in [the] position to make decisions and, for [the] most part, [they] don't go out to seminars or whatever that['s] out there . . . . [Tribal Council members] surround [themselves] with people who you can trust to do that for [them] . . . I think the Councils depend on [health staff], and then they go out there, get info, bring it back, [and] incorporate it" —Tribal government representative/staff

We also found that the development of PSE change was encouraged and supported by grants that were managed by tribal health departments. Managing health grants gave health staff opportunities to develop PSE changes within the grant's existing tribal approvals and funding, including weekly farmer's market, farm stand, and walking paths. Many grants awarded to NA communities required a Tribal Council resolution. Therefore, if a PSE change was included in an existing Tribal approval for a grant, then further Tribal Council approval was not required, although it was common practice to keep Tribal Council regularly informed of all activities. Due to this, participants explained that grants were a significant driver for developing PSE changes in their communities. One participant explained how they were able to develop a walking trail with exercise equipment by leveraging resources and approval from an existing grant:

> "We . . . talked to the [Tribal representative] and let [them] know we wanted to put the equipment out there . . . . [It] kind of goes in a circle, because every grant we have Council resolutions, so even if we're not up there if it's in our work plan, they've already signed off on it on some level. So, if we're going to get a new grant, resolution, letter of support, [and get the grant approved] . . . . So when you think of it that way, they've already given their approval to do that." —Health board/staff

There were times when additional approval was particularly helpful in developing PSE change. Additional approvals were advantageous especially if the policy change was thought to be potentially contentious. For example, health staff sought additional approval for a smoking policy that would restrict smoking because health staff expected objections due to the prevalence of smoking in the community. When asked about why they chose to go to the Council for this PSE change, 1 health staff member said,

> "[It's] something that you know people may not be happy with. Going through that route makes it more of an environmental change instead of a you-want-to-do-it, kind of thing . . . . Smoking rates are so high, [so you] know you're already up against the majority of people who smoke." —Health board/staff

If a PSE change could not fit into existing funding sources, then progress on the initiative could be stalled. However, Tribal Councils would occasionally provide financial support for additional measures.

Grant writing departments: promoting multisectoral collaboration.
Promoting collaboration between departments and others in the community was described as an important strategy to developing PSE changes. Grant writing department staff recognized the opportunity to collaborate and brought people together when goals or missions overlapped. Since the grant writing department worked throughout the community and on various topics, they were uniquely positioned to connect staff based on their common goals. For example, in Community 1, there was increased community concern for improved road safety and infrastructure due to recent traffic fatalities involving pedestrians. The grant writing department connected the public works and health departments, who were also working to promote walking and physical activity in the community, and grant writers worked with the health department to write a grant to support community sidewalks. One grant writer explained,

> ". . . because I'm searching for grant funding and there a lot of times that everybody is coming to me, and I'm like 'wait a minute, I know this person has funding to do this . . . and that person is working on that' . . . and that's why I end up connecting sometimes different programs or departments. Because they're actually going after the same thing . . . so they can work on it together." —Grant writer

This collaboration had some notable advantages, including the sharing of resources and staff and working together to build political support. Some participants highlighted teamwork as an important skill for fostering such interdepartmental collaboration within the community and to work with both state and federal governments outside of the community. However, participants described that such collaborative work required additional time and effort and was not part of a staff member's everyday duties, which could be particularly challenging when staff capacity was limited. Despite this, working collaboratively was viewed as valuable and having the potential to create meaningful change in the community by helping stakeholders to develop collaborative solutions:

> "We still have a struggle with [getting out of silos] . . . because everybody is going about their day to day, 40-hour-a-week job doing it, and it's difficult to take the time to get out there . . . and that's one of the things where when there's grant funding, that I would say, I sometimes can be that person that goes, 'Wait a minute, someone over here is already doing that.'" —Tribal government representative/staff

Tribal Council: approving PSE changes.
Approval from Tribal Council was necessary for authorizing local tribal policies and grants, along with any associated expenditures since the Tribal Council was the primary governing board and oversaw all departments in the community. One participant explained that each department developed its internal, operational policies, and they subsequently submitted them to Tribal Council for consideration. We found that Tribal Councils generally acted as community gatekeepers and were less likely to be involved in identifying or promoting PSE solutions. Instead, Tribal Council members looked to department leaders and staff for guidance on strategies and approved the final PSE changes. This was especially the case with health staff since they had more expertise to provide health promotion recommendations.

> ". . . in general . . . [Tribal Council] wait[s] for . . . staff from those departments to bring and push the ideas of what they wanna see done . . . but . . . the ideas of creating new programs are really coming from the staff up to them for approval." —Tribal government representative/staff

In two of the communities, there was a high amount of trust, communication, and collaboration between the Tribal Council and the health staff, which allowed health staff to have flexibility to develop PSE changes. Health staff described meeting informally with the Tribal Council to develop grant ideas in early stages. One Tribal representative described the following:

> "The [Health Director] does pretty good at implementing new things. All he does is he just needs to update us. So, if he has a project that he's thinking of doing . . . . As long as he comes to Council, at least three of us that are available so that we can approve it . . . . And then he'll get approval and then do it . . . . He has a lot of flexibility because we trust his judgment" —Tribal government representative

Interviewees also shared that changes in health policies had occurred when there was turnover of Tribal Council members. Therefore, communities with more frequent elections and/or a changing Tribal Council may be less likely to have sustained health policies with administration changes.

We found that health policies were rarely enacted. When these health policies were enacted, they were developed by health staff under existing grants and programs. Instead of formal tribal resolutions or policies, communities typically used informal PSE changes to promote community health and wellness. The use of formal tribal policies was impacted by local contextual factors (described in the next section).

Contextual factors impacting the use of tribal policy

Historical trauma.
Participants described the role of several contextual factors that were relevant to the processes for developing PSE changes. Participants described how historical trauma created distrust of those from outside the community (e.g., outsiders). Participants described that, historically, federal and state policies were developed and used against NAs. Because of this history, outsiders coming into tribal communities could have dire consequences for their people, including removal from their homelands and abduction of their children. This historical trauma created distrust of outsiders and external policies:

> "[There is] historical trauma of being forced on reservation and being removed. Always goes back to is, we have elders here who were forced into boarding [school], people coming [from] off-reservation into [the] community was never a good thing before. Still that guarded feeling of someone coming from the outside, who hasn't lived here and isn't us, trying to change things. Until they fully understand, basis for a lot of things, coming in, [and understand that they] are really there to help you. That hasn't been the case historically. [Community members were] told they were here to help them, but when you look at what it resulted in, it wasn't helping them." —Tribal government representative/staff

Gathering community feedback and developing grassroots support was an important strategy in advocating for PSE changes since this feedback balanced perspectives from community members and outsiders of the community (including academic partners). The advantage of pairing community member and outsider voices was that community

members "validate" the recommendations of outsiders and, in turn, the outsider "validates" the community members' concerns:

> "I've been here a long time and most people know me, and I think there's a trust level there. So, I think when I talk [to] Council, they trust what I'm saying. But if I have three community members standing right next to me shaking their heads saying 'Yep, this is what we want' it's way more impactful. Because they're themselves saying this is something we want to do. It's not somebody from the outside saying you have to do it and I think that was huge when we passed the [policy] here." —Health board/staff

Participants explained that NA communities tended to experience conflicts to "internalized" historical trauma. While families have high social cohesion, participants described how conflicts often occurred between families within the community. Participants from two communities described the "crab in the bucket" phenomenon. In this allegory, NA communities are described as crabs in a bucket, where no one can escape or succeed because the others pull him/her down. Participants compared this to how it is difficult to make changes from within the community and that the perspectives of local community members alone are not always effective in initiating change. One Tribal representative/staff emphasized the need for outside facilitation, by another NA person if possible, since conflicts within the community would be difficult to manage by someone from the community. They described that the advantage of having an outside facilitator would be that this facilitator could bring people together without any involvement or awareness of existing conflicts. Bringing these voices together bolsters claims from both community members and outsiders:

> "I could give that to a[n outside] person . . . and [community members] will listen to [them], but not me because I'm from here. To start and build the program, you need outside facilitation. With everything." —Tribal government representative/staff

Tribal politics.

Participants also described the role of "tribal politics" in NA communities. One Tribal representative/staff described "tribal politics" as the "division of people with authority" from the community members or from those with related expertise, meaning that there comes to be no role for grassroots organization or expert input. Participants explained that decision-making authority was divided between various representatives and staff to ensure a continued role for input on policies. To counter concerns about "tribal politics," one Tribal representative/staff person emphasized the need for developing strong relationships with various staff and trusting their feedback. This strategy allowed health department staff to advocate for PSE change and resulted in effective changes, as we described above. One participant explained,

> "[Tribal politics, to me, is the] division of people with authority . . . it's like a group of people that have their minds made up and are not going to change because they've already got their goals in mind . . . it creates a division of people, the grassroots people are locked out from any decision-making. Because of that, there's a lot of things that don't happen. It's almost like we have to beg for the resources to make it happen." —Tribal government representative/staff

Perspectives of policy.

From our analysis, health policies were rarely used in participating communities and primarily addressed smoking restrictions. Because of the unique history of NAs, there were several varying perspectives about "policy." Some of the participants highlighted the historical and ongoing struggle with federal and state policies. Many participants often described that policies would always involve restricting individual freedom and would "dictate" how community members lived.

On the other hand, Tribal representatives tended to have a more nuanced view of policy and thought that policy in and of itself was not inherently good or bad and that "we can still develop policies that are good for the community, promote healthy eating". Some participants related policy to aspects of traditional culture. For example, two Tribal representatives compared the role of individuals in traditional ceremonies to "policy," explaining that they made sure protocols were followed. These Tribal representatives particularly explained the need to reclaim and transform policy to fit community needs. When asked about community members' perspectives about health policy, one Tribal representative explained,

> "I believe that policy has always been a way of life for tribal people . . . . Prior to the white man coming . . . Tribes functioned on a real high level . . . So, they obviously had policy. . . . Now coming after . . . the white man, I guess, [the US'] policy is what drove the tribes to the point where they were, in the sixties or the seventies, where they were desolate . . . [But] the tribes of course rose . . . up and said it's about time that [the] tribes to get back to developing our own policies, developing and leading our own way of life by dictating how we survived. So, I think policy . . . has worked for us because the tribes took it back to the more traditional ways and realizing that policy isn't such a bad thing . . . . Tribes have existed and developed because of taking that outside policy, taking the good policies and using them to our advantage and disregarding some of the bad policies that the federal government had placed on tribes." —Tribal government representative

Pathways for implementing PSE changes

Figure 1 presents the conceptual framework that was developed based on our analysis. Several types of actors were involved in distinct ways to develop PSE changes, including community members, health department staff and leaders, grant writing departments, and Tribal Council members.

Discussion

This analysis is the first to develop a conceptual framework on how NA Nations promote PSE changes within their communities. We found that NA Nations used systems and environmental changes in addition to policy changes to promote health in their communities. To successfully develop PSE changes, important factors included the reliance on health departments' expertise to develop and advocate for PSE changes, development of multisectoral partnerships, diverse ways to promote community member engagement (passive and active), and collaborative Tribal Council members who welcomed community member input and expertise. We also identified several important contextual factors that impacted the development of PSE changes, including historical trauma,

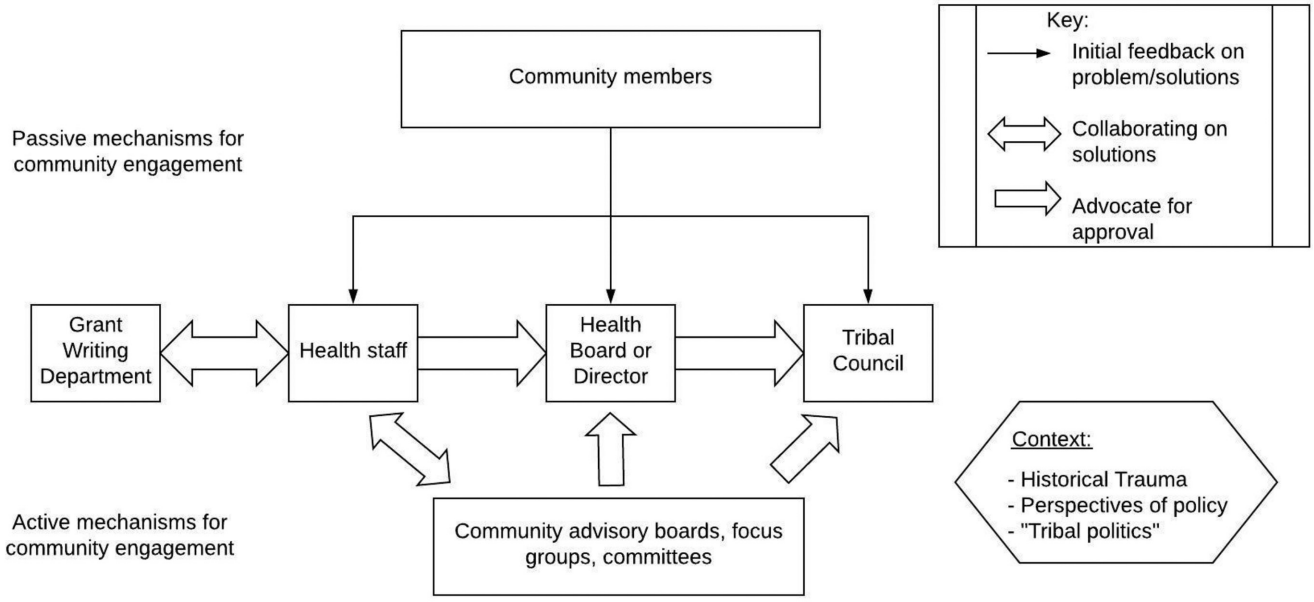

FIGURE 1 Actors, processes, and context for creating PSE change in NA communities. NA, Native American; PSE, policy, systems, and environmental.

varying perspectives of policy, and "tribal politics." This analysis adds to the existing literature on interventions designed to promote structural change in NA communities by providing an understanding of the ways that PSE changes are developed.

Based on this analysis, we found that tribal communities used a variety of ways to develop and implement structural changes to promote community health and included systems and environmental changes in addition to health policies. When this research began, we were primarily interested in understanding tribal policymaking for health promotion. It became clear as we began data collection that informal routes to promoting health such as systems and environmental change approaches were important to promoting health for participating communities. We then adapted our research questions and data-collection methods to reflect communities' use of PSE change. We also found that the development of PSE change was encouraged by health staff who leveraged external grants; specifically, establishing the initial tribal approvals for external grants supporting PSE changes allowed flexibility for health staff to develop and implement these changes. Other researchers have noted the important role of external grants in developing PSE changes (44). Previous research has also explored community readiness for policy and environmental change to support obesity prevention (37). There is growing research and interest in promoting the food sovereignty and expanding cultivation of local foods among NA Nations (45). Since 2016, the Seeds of Native Health campaign and annual conference has been central to facilitating community sharing and developing reports for promoting traditional foods and sovereignty (46). Tribes are also showing more interest in passing health policies for obesity prevention, like the Navajo Nation's Health Dine' Nation Act, which is a comprehensive junk-food tax passed in 2014 (47).

Second, Tribal Councils relied on local health departments for their expertise in developing PSE changes and were involved in the approval and endorsement of PSE changes. This finding demonstrates the importance of engaging a variety of stakeholders for policy development in NA communities. Jernigan et al. (37) also examined the role of Tribal government leadership in community readiness to developing policy and environmental change. Our research highlights the importance of leadership from health and grant writing departments in developing PSE change; future research to promote PSE change could examine the importance of leaders throughout the community. Li et al. (48) described the importance of "mediating" actors, who listen to community concerns and convey these concerns to government representatives and become policy champions, and knowledge translation literature refers to this role as "knowledge brokers" (49). Previous research has found that NA peoples exist in many different political systems, including federal, state, and tribal jurisdictions, which can lead NAs to feel that they are in a "chaotic soup of politics" (50) and possibly lead to a disdain for engaging in politics. Other researchers have described that failing to understand the influence of federal and state policies on NAs can lead to increased health disparities, which further emphasizes the importance of tribal engagement in health policy at the tribal, state, and federal levels (51). Future research examining how to promote PSE changes is needed to address community concerns, particularly given the high burden and little research on this topic.

Third, the development of PSE changes was facilitated by multisectoral partnerships. Based on our analysis, Tribal grant writers worked across departments to leverage and connect existing initiatives, funding, and approvals to achieve PSE change. Christens et al. (52) also highlight the effectiveness of using collective impact approaches that engage decision makers and leaders to work together on a common agenda as part of "grasstops" organizing for PSE change. Qualitative inquiry into intervention approaches based on collective impact can provide further understanding of the processes and dynamics that result in more

successful PSE change. Since funding is necessary for many PSE changes, a described strategy was to leverage existing grant funds and approvals by connecting people across different sectors who are working on similar initiatives. These results also demonstrate how NA Nations advance multisectoral partnerships to address the social determinants of health, as has been advancing across the globe as a result of WHO recommendations (53). We found that this collaboration required additional time and having limited staff capacity could limit their ability to form such multisectoral partnerships. Additional funding is needed to build community capacity. Previous research has described the need for funding to address the mental health inequalities of Indigenous populations (54). Given the important role of health department staff in developing PSE changes, adequate IHS funding could also influence PSE changes. This is especially needed, given the history of inadequate funding for this vital health service (13).

Fourth, all participants emphasized that community engagement was necessary throughout the process for PSE changes to be successfully enacted, suggesting an important role for grassroots collaboration with local community members. Previous research with Indigenous communities has described the importance of grassroots mobilization for developing PSE changes that support healthy eating and physical activity with NA Nations (27, 52, 55, 56). Adams et al. (27) found that engaging community members using Community Advisory Boards was highly successful for promoting PSE changes in NA Nations. Christens et al. (52) also described that grassroots mobilization was a powerful strategy to support PSE changes and highlight its complementarity with collective-impacts "grasstops" approaches. This research adds to the growing literature examining the impacts of community engagement on health outcomes and knowledge translation. A systematic review of community engagement approaches identified that "power-sharing, collaborative partnerships, bidirectional learning, and incorporating the voice and agency of the beneficiary communities in the research protocol" as the most effective strategies for improving health outcomes among minority populations (57). Previous knowledge translation research has highlighted the importance of meaningfully involving community members in research, incorporating significant power-sharing between community partners and researchers (58, 59), and drawing on Indigenous knowledge systems to support the translation of scientific findings into action (60). Similar to our findings, Li et al. (48) described the importance of conceptualizing public involvement as a process rather than an outcome; our research describes the important ways in which community involvement was incorporated throughout the process to result in PSE change. Participants emphasized that successful advocacy of PSE changes required combining insider and outsider voices. Community-based participatory approaches are particularly necessary for developing collaboration between insiders and outsiders, and previous research has shown that this is an effective approach for promoting health policy (61). Such findings highlight the importance of using such an approach for PSE changes and agrees with previous literature (51).

Last, relevant contextual factors that impacted the overall processes for developing PSE changes included historical trauma, perspectives of policy, and "tribal politics". Participants demonstrated resilience and resistance when it came to perspectives of policy; future interventions and research could explore the opportunities for and impact of such decolonizing perspectives of policy for health promotion. Previous research has similarly described the "tribal politics" of NA communities and the impact on mental health (50). Our results highlight what is particularly relevant to advancing PSE change. According to critical historical analyses, Indigenous peoples are typically wary of policies enacted under the guise of promoting tribal welfare (62). Similar to the different perspectives of policy we described, Greener et al. (63) also found varying perspectives of obesity between policymakers and health professionals and the broader public. Given our description of the varying perspectives of policy, additional research needs to examine the ways that policy is framed for each of these groups. Previous research has summarized different approaches to frame policy change, but Indigenous groups have been understudied (64).

This analysis has several strengths. First, using Grounded Theory for analysis facilitated the development of a conceptual framework that is rooted in the data and context. This methodology also allowed us to develop a framework that is more specific to federally recognized NA Nations and values Indigenous knowledge systems compared with policy theories that were developed based on Western societies. This is particularly important given the findings of previous knowledge translation research in Indigenous communities, which has highlighted the importance of incorporating Indigenous knowledge systems (56, 60). Previous research has noted how applying Western theories for deductive coding can reinforce notions that Western science and theories are dominant and universal (65). Second, our data collection occurred in several NA communities from 2 regions of the US, improving the transferability of our results to other federally recognized NA Nations. Third, the two-phase design allowed the research question to be first understood in-depth in one community that had a variety of developed PSE changes and, second, to confirm and clarify preliminary results in two other communities. Fourth, we conducted member-checking interviews to enhance the credibility of our findings. Fifth, we triangulated both data-collection methods and participant groups by utilizing complementary data-collection methods and including several stakeholder groups. This design improves the likelihood that our results credibly reflect local processes for advancing PSE changes.

This research also has several limitations. First, this analysis relied heavily on data from 1 community in the first phase of the research. However, the extended time in the field provided rich understanding of the processes in this community that assisted in developing the second phase of research. Second, the richest data for this research question came from IDIs and observations, while the modified Talking Circles described the community food environment and context in general. Third, although we included several communities, the extent to which the developed conceptual framework applies to other NA Nations has not been fully explored in this research; future research can explore the utility of this framework to other Nations. Due to the heterogeneity of NA Nations and communities in the US in terms of governance and health care structures, the transferability of these findings may be limited for self-governance tribes, since this would give NA Nations more control over how IHS funds were used to address community needs (66). Future research should examine and compare our findings with those of self-governance tribes. Fourth, although participants connected historical federal/state policies to historical trauma and current perspectives of policy, we did not have enough data to describe the contemporary ways that federal/state programs and policies impacted the PSE change process. Future research should investigate the ways that

federal and state regulations impact NA Nations' ability to develop PSE changes. Fifth, due to the NHSR status of this research, we only interviewed participants who were involved in the PSE change process in an official capacity, and so we did not include interviews with community members. We did, however, observe community members engaging in this process and its importance was strongly highlighted in IDIs and many interviewees were also community members. Future research should expand on this analysis by describing ways that community member and community advocacy groups can effectively promote PSE change. Finally, some of our interviews were short to accommodate participant availability, particularly for NA Nation representatives, who had very busy schedules but permitted several shorter meetings. We do not think that this impacted the quality of the data but was an important accommodation to include the voices of NA Nations' leadership.

In conclusion, we developed the first known conceptual framework describing how PSE changes are developed based on 3 NANs. Such a conceptual framework facilitated the development of an intervention component to promote PSE changes as part of a multilevel, multicomponent obesity-prevention study and can inform future efforts to promote PSE changes in other NA Nations (38). Understanding these existing processes is an important first step to identifying key actors and strategies for promoting PSE change in communities.

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Data Availability

Due to the agreements with participating NA Nations and respect for their sovereignty, we are unable to make data directly available. Requests for data access would need to be approved by each Tribal authority in advance of any distribution of deidentified data.

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