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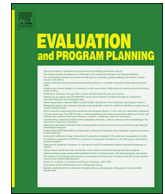
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Is culturally based prevention effective? Results from a 3-year tribal substance use prevention program

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ABSTRACT

American Indian youth substance use is a major public health concern. To date, there has been limited evaluation of American Indian youth substance use prevention programs. Evaluation of prevention programs is necessary to understand the aspects of programming that are effective or not effective. This mixed-methods evaluation focuses on select outcomes of a 3-year culturally-based prevention program located in six American Indian communities in the Rocky Mountain Region. The goals of the prevention program are to reduce binge drinking by 30% and increase community readiness by 1-point over a 5-year period. In the first year of the program, community members worked with program staff to develop an evaluation plan that would measure the following outcomes: lowering substance use, increasing community readiness, and increasing the reach of prevention messaging through culturally based prevention. The primary research questions this outcome evaluation sought to answer were as follows: 1) Are there differences in American Indian youth who participate in these activities? 2) Was the prevention program effective in increasing community readiness over a 3-year period? 3) Did community involvement in prevention activities increase overtime? Results from this evaluation indicate that substance use was similar among intervention ($n = 200$) and non-intervention youth ($n = 369$). This was somewhat surprising because Intervention youth reported higher levels of social support and community connections than non-intervention group youth. Community readiness decreased $-.81$ point from 2015 to 2017. The reach of prevention activities increased 365% from 2015 to 2017. We provide lessons learned that may help other communities as they document outcomes related to prevention efforts. Substance use is a multi-faceted problem facing our communities, families, schools, and nation. Innovative, effective, culturally-based prevention programs like the one highlighted in this paper underscore the need for primary prevention strategies.

1. Introduction

Youth substance use is a major public health concern. Policy makers, leaders, professionals, researchers, and families are calling for immediate efforts to prevent substance use among the Nation's youth. Policy and prevention efforts are particularly important for American Indian youth who are placed at higher risk for substance use than any other population in the U.S due to historical and present-day traumas, exposure to violence, discrimination, and numerous social inequalities (Centers for Disease Control & Prevention, 2009). Previous research has found that American Indian youth initiate substance use earlier, are more likely to use multiple substances, and experience more severe consequences than non-American Indian youth (Boyd-Ball, Véronneau, Dishion, & Kavanagh, 2014; Sarche & Spicer, 2008).

Disparities impact American Indian populations throughout their lifespan through alcohol and drug related morbidity and mortality—in one Northern Plains tribe, American Indians were 14 times more likely to die from chronic liver disease than Whites living in the same area. American Indians are also more likely than any other population to experience alcohol related deaths due to accidents, suicide, trauma, and homicide (Rocky Mountain Tribal Epidemiology Center, 2017). However, a strength found in American Indian populations is that they have more lifetime abstainers than any other population. The American Indian-Services Utilization, Psychiatric Epidemiology, Risk and Protective Factors Project (AI-SUPERPPP) study found abstinence rates from 20% in Northern Plains men to 50% in Southwest women (O'Connell, Novins, Beals, & Spicer, 2005).

Understanding what places American youth at risk for substance

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abuse is needed for effective prevention programming. Hawkins, Cummins, and Marlatt, (2004) explored risk factors that are unique to American Indian youth and report that ethnic dislocation (May, 1982), acculturation stress (LaFromboise, 1988), alienation from larger culture (Moncher, Holden, & Trimble, 1990), discrimination (Whitbeck, Hoyt, McMorris, Chen, & Stubben, 2001), and excess amounts of unstructured time on reservations, where youth consume alcohol out of boredom (Edwards & Edwards, 1988) increase risk of substance use. Martinez, Ayers, Kulis, and Brown, (2015) explored urban American Indian youth intentions to use substances and found that grandparent and peer norms were the strongest predictors of substance use. Other research has found that a lack of family communication about alcohol, tobacco and other drugs is a risk factor for substance use among American Indian youth (Hurdle, Okamoto, & Miles, 2003). An exploratory study of social context of Southwest American Indian youth substance use found that youth who were offered drugs by their family members, friends, and other peers were more associated with different types of substance use (Kulis, Okamoto, Rayle, & Sen, 2006). Lack of social support and low self-esteem are also risk factors for substance abuse in American Indian youth (LaFromboise, Hoyt, Oliver, & Whitbeck, 2006). Combined, American Indian youth are placed at higher risk for disparities related to substance use due to a multitude of factors.

Addressing the disproportionate risks that American Indian youth face requires focused and effective substance use prevention programming. Previous studies have found that effective prevention programs include multiple characteristics. Nation et al. (2003) report nine characteristics of effective programs: comprehensive, varied teaching methods, sufficient dosage, theory driven, positive relationships, appropriately timed, sociocultural relevant, outcome evaluation, and well-trained staff. Other studies report the importance of using a bi-cultural competence skills approach to preventing substance use among American Indian youth (Herman-Stahl, Spencer, & Duncan, 2003; Schinke et al., 1988). Previous community-based prevention initiatives have shown that effective programs include the community, are culturally driven, and focus on resilience (Carter, Straits, & Hall, 2007).

American Indian and Alaska Native (AI/AN) youth substance use prevention programs are often approached from a public health programming perspective. The Indian Health Service (IHS), the Substance Use and Mental Health Services Administration (SAMHSA), and various state, county, and private organizations have funded substance use prevention to address high prevalence of alcohol and drug use among AI/AN youth. However, detailed evaluation of these AI/AN youth substance use prevention programs are limited. Reasons for limited access to evaluations may include limited evaluation resources, limited interest or capacity in publishing academic journals, and differences in how prevention and treatment are defined from Western psychological models and Indigenous ways of knowing and being in the world.

Evaluation of youth substance use prevention programs is necessary to understand the aspects of programming that make a program effective or not effective. Without rigorous evaluation and empirical evidence, prevention programs may continue to be used, but not produce reductions in youth substance use. Drug Abuse Resistance Education (DARE) is the most widely published example of a prevention program that was not effective, but that continued to be used because there was not sufficient evidence from an evaluation process to determine that it was not effective (Ennett, Tobler, Ringwalt, & Flewelling, 1994).

Most published prevention programs were developed and evaluated based on White or multi-ethnic populations that live in urban and metropolitan areas of the United States. In some communities, prevention programs developed for non-American Indian populations have been adapted by adding a cultural element, for example a beadwork class or visit to a museum with American Indian artifacts (Moran & Reaman, 2002). These kinds of cultural adaptations fail to address the unique socio-cultural context of American Indian tribal nations (Kelley, Witzel, & Fatupaito, 2017). The lack of published studies and empirically validated evaluation of prevention programs for American Indian

youth has led to a gap in the knowledge base about what is effective and what cultural components have the strongest impact on the intervention population and outcome of interest.

Evaluating substance use prevention programs in community settings is challenging. Small sample size, concerns about confidentiality, community engagement, limited participation or difficulty with retention, emerging capacity of workforce to implement prevention programming and evaluation, and differences in how success is measured are common challenges reported by evaluation practitioners (Letiecq & Bailey, 2004). This paper addresses some of these challenges and adds value to the limited outcome evaluation literature on culturally-based prevention. The primary research questions this outcome evaluation sought to answer were as follows: 1) Are there differences in American Indian youth who participate in culturally-based prevention activities compared with American Indian youth who do not participate in these activities? 2) Was the prevention program effective in increasing community readiness over a 3-year period? 3) Did community involvement in prevention activities increase overtime?

1.1. The context and evaluation framework

The increase in youth substance use across the U.S. prompted SAMHSA to develop and fund community-based prevention programming based on the Strategic Prevention Framework (SPF) and Partnerships for Success framework (PFS). Tribes began working with the tribal consortium in 2009 when the consortium received funding from SAMHSA to implement culturally-based prevention activities using the SPF and PFS frameworks. The consortium serves eleven tribal nations, ten of these are on reservations and one is located in an urban area. This project was funded again in 2015 and this outcome evaluation focuses on the last 3-years (2015, 2016, 2017) of the project. The overall purpose of the initiative is to expand prevention activities to reduce underage drinking while promoting a holistic wellness movement. The program is guided by principles of community-based participatory research (CBPR) that supported the use of tribal knowledge, community engagement, and values of reciprocity and humility (Jumper-Reeves, Dustman, Harthun, Kulis, & Brown, 2014). There are five tribal site coordinators, four are located on reservations and one is located at an urban Indian location. Site coordinators work in their communities to develop and implement culturally-based prevention activities for youth ages 12–20 using a variety of tribal-based practices (Kelley et al., 2017). Two full-time staff members manage and coordinate prevention programming at the lead tribal consortium. Site coordinators work in partnership with program staff and an evaluation team to support programming and collect data to document outcomes related to prevent efforts. One senior evaluator leads an evaluation team comprised of tribal elders and tribal college students (undergraduate and graduate) to implement a variety of evaluation activities. Tribal elders and college students live in the communities and are enrolled tribal members.

The following definitions were used throughout the evaluation to document outcomes associated with the prevention program. Substance use includes binge drinking, any illegal drug, marijuana, prescription drugs, methamphetamine, and inhalants. Substance use prevention includes culturally-based prevention activities that are designed to prevent use through tribal best practices and activities. Examples include powwows, basketball clinics, language camps, street dances, soccer, and traditional dancing and drumming.

The prevention program employed passive parental consent procedures. Prior to the survey, prevention staff worked with tribal prevention site coordinators to develop letters that would be used to inform parents/guardians of the prevention initiative. Following procedures for survey participation based on tribal protocols, the prevention initiative followed passive consent procedures. Each tribal site had a different approach for consenting youth, some required parents to consent before youth participated in a prevention activity. Youth who

Table 1
Evaluation Outcomes, Indicators, Tools, and Verification.

Selected Outcomes	Indicators	Evaluation Tools	Means of Verification
Lower substance use among American Indian youth	Percentage of youth who do not use illegal substances	16 item survey intervention and non-intervention groups.	Survey results.
Increase community readiness to support prevention	Community readiness scores increase	CRA Interviews.	CRA transcripts and coded results.
Increase in the number of community members reached through culturally-based prevention.	Number of community members reached by activity and year.	Site tracking matrices by activity type, frequency, duration, and reach.	Quarterly reports submitted to evaluation team.

had implied parental consent and assented to participation completed the anonymous survey during various prevention activities. The prevention initiative followed IRB procedures for the IRB(s) of record. The initial evaluation plan was developed by the lead evaluator in the first 6-months of the prevention initiative. It was then sent to the consortium staff and tribal site coordinators for review, revision, and approval. Measures were developed by the community and the final evaluation plan was approved by SAMHSA, the funding agency.

1.2. Framework for the evaluation

This evaluation focuses on select outcomes of the 3-year program. These include lowering substance use, increasing community readiness, and increasing the reach of prevention messages through culturally based prevention. Their indicators, evaluation tools, and means of verification are further described in [Table 1](#).

2. Methods

2.1. Setting

The program sites include five reservation communities and one urban Indian location in the Rocky Mountain Region. A total of 47,066 American Indians that live in these six locations and of these 8805 are between the ages of 12–20 (the target population) ([Billings Area Indian Health Service \(BAIHS\), 2017](#)).

2.2. Participants

Community Readiness Assessment (CRA) interviews were conducted by site coordinators and program staff with 30 key respondents from each tribal community ([Edwards, Jumper-Thurman, Plested, Oetting, & Swanson, 2000](#)). The CRA focused on two issues identified by the grant: binge drinking ages 12–20 and prescription drug misuse and abuse ages 12 to 25. There were four dimensions of readiness assessed: community knowledge of efforts, leadership, community climate, and community knowledge of the issue.

Individual surveys were completed by the intervention group and non-intervention group. Two-hundred American Indian youth from six communities who participated in culturally-based prevention activities made up the intervention group and the non-intervention group included 369 youth enrolled in general education classes from reservation schools. The independent variable used to answer this question was participation in culturally-based substance use prevention activities (intervention) versus nonparticipation in culturally-based substance use prevention activities (nonintervention).

Culturally-based prevention activities were designed by the communities based on their culture, capacity, resources, and needs. Activities were delivered by local site coordinators and tracked by the evaluation team and program staff. Information on the selection, implementation, tracking, and use of culturally based prevention activities has been published in a separate paper authored by the team, *A Review of Tribal Best Practices in Substance Abuse Prevention* ([Kelley et al., 2017](#)).

2.3. Materials

This evaluation utilized the community readiness assessment (CRA), project data and reports, and a 16-question survey to answer three outcome evaluation questions:

- 1) Was the prevention program effective in increasing community readiness over a 3-year period?
- 2) Did community involvement in prevention activities increase overtime?
- 3) Are there differences in American Indian youth who participate in culturally-based prevention activities compared with American Indian youth who do not participate in these activities?

2.4. Community readiness assessment (CRA)

Was the prevention program effective in increasing community readiness over a 3-year period? Community readiness is defined as the degree to which a community is ready to take action on an issue. Increasing community readiness for prevention is a goal of the prevention program. The team used the CRA methodology developed by the Tri-Ethnic Center to conduct interviews ([Oetting et al., 1995](#)).

2.5. Prevention program data

Did community involvement in prevention activities increase overtime? Project data (i.e. monthly reports, site visit reports, participant survey data, focus group data, community meeting data, and prevention activity records) were collected by the evaluation team to track the kinds of activities occurring in each community and the reach of these activities by year. Evaluation reports are generated quarterly and annually. Tribal specific evaluations are conducted by the team when requested by site coordinators. The team has produced more than 10 tribal and consortium based formal evaluations of the prevention program in the last three years. Evaluation results are shared with tribal site coordinators and tribal leaders of the tribe—to protect tribal sovereignty, confidentiality, and community knowledge results are not shared with other tribes in the consortium, state, or region.

2.6. Individual participant surveys

In the first year of the program, participant surveys were piloted and developed by the community. Questions were based funding agency requirements about past 30-day substance use and questions that the community wanted to include around social support, self-esteem, and culture. The goal of individual surveys was to document the prevalence of past 30-day substance use in American Indian youth living in tribal communities served by the prevention program. This evaluation utilized survey data to compare differences between American Indian youth who participate in culturally-based prevention activities compared with American Indian youth who do not participate.

The individual survey included the following measures:

2.6.1. Drug and alcohol use

To assess the prevalence of drug and alcohol use, the survey

included three questions related to drug and alcohol use. Drug and alcohol use questions were adapted from the Youth Risk Factor Behavior Survey (YRBS) Standard Questionnaire (Centers for Disease Control and Prevention, 2017). “In the past 30 days, how many days did you use a mind altering substance/illegal drug?” Response options were a number between 0 and 30. 2) “How many days did you have 5 or more alcoholic beverages on the same occasion in the past 30 days?” Response options were a number between 0 and 30. 3.) “How many times in the past 30 days have you used the following drugs?” The response options included a list of drugs. Response options were marijuana, synthetic marijuana, prescription drugs, meth, other illegal drugs, and inhalants with the following frequencies: 0 (0 times), 1 (1 or 2 times), 2 (3 to 5 times), 3 (6 to 9 times) or 4 (10 or more times). Responses for all drug and alcohol use questions were combined to create an additional variable for all substance use (Cronbach’s $\alpha = .536$).

2.6.2. Culture

Because culture is based on values and traditional practices, community members developed the following question, “How important are spiritual values and practices in your daily life?” Response options were based on a 4-point scale of 1 (not important) to 4 (very important).

2.6.3. Community connections

Youth were presented with three statements developed by the community and asked their level of agreement for each: 1) My community honors traditional values and practices such as respect for elders and generosity. 2) My community does not approve of people my age drinking alcohol or doing drugs, and 3) In my community, when someone speaks our language they are respected and honored. Response options were based on a 5-point scale of 1 (disagree) to 5 (strongly disagree). Responses were combined to create an additional variable for community connections (Cronbach’s $\alpha = .736$).

2.6.4. Social support

Youth were asked a series of questions to describe their level of agreement with 5 statements related to social support (e.g., There is a special person who is around when I am in need). Participants responded using a 5-point scale, ranging from 1 (disagree) to 5 (strongly agree), a subscale of the Multidimensional Scale of Perceived Social Support (Zimet, Dahlem, Zimet, & Farley, 1988). Responses were combined to create an additional variable for social support (Cronbach’s $\alpha = .751$).

2.6.5. Self-Esteem

The Rosenberg Self-Esteem Scale (Rosenberg, 1965) was used to assess self-esteem. Participants were asked their level of agreement with 7 statements based on questions Rosenberg developed that were deemed effective and appropriate by the study team (e.g., I take a positive attitude toward myself). Response options were based on a 5-point scale of 1 (disagree) to 5 (agree). Responses were combined to create an additional variable for self-esteem (Cronbach’s $\alpha = .829$).

2.6.6. Family communications

Youth were asked, “In the past 12 months, have you talked with at least one of your family members about the dangers of tobacco, alcohol, or drug use?” Response options were Yes or No.

2.7. Procedures

For each outcome evaluation question, data were compiled by local site coordinators and sent to the lead evaluator for review, transcription, and analyses. The evaluation team, elders, interns, tribal site coordinators, and program staff worked together to ensure the data accurately represented the program and were sufficient to answer the three outcome evaluation questions. Tribal site coordinators collected

all survey data.

CRA respondents were selected by site coordinators based on representation of different community segments including health professionals, mental health, law enforcement, elders, community members at large, and schools (Oetting et al., 1995). An average of six CRA interviews were conducted by trained program staff, evaluation team members, and partners in each community. CRA interviews occurred via phone or in-person based on respondent preference. Interviews included 13 questions per issue and lasted between 30–60 minutes each.

Participant survey data were collected using purposive homogeneous sampling methods. Purposive homogeneous sampling identifies individuals with similar characteristics (age, culture, similar life experience) (Etikan, Musa, & Alkassim, 2016). Intervention youth were defined as youth participating in at least one prevention activity. Non-intervention youth were selected by site coordinators from local middle and high schools, Table 4. These youths had not completed the survey previously or participated in an intervention activity where they completed the participant survey. Site coordinators worked with local middle and high schools to conduct the survey during school hours. Following school-based procedures for data collection, non-intervention youth completed the survey and received a pen or sunglasses for their participation.

Program data were collected by the evaluation team throughout the 3-year program and documented in the way of process and outcome evaluation reports submitted to the funding agency and tribal communities.

2.8. Analysis strategy

SPSS version 24.0 was used to conduct all statistical analyses. The team examined differences in intervention and non-intervention groups using descriptive statistics and one-way ANOVAs. The team reviewed program data (process and outcome) and entered frequency and participant counts into MS EXCEL. These data were summarized to reflect community participation in activities and efforts to increase community readiness.

CRA results were analyzed using NVivo version 11.0 using content analysis methods and following the CRA methodology (Edwards et al., 2000). Interviews were transcribed and coded using a five-person team from a university program partner, Montana KIDS COUNT. Interviews were scored one at a time and scored separately by two people (non-Native graduate students). Based on the dimensions of community readiness identified previously, each statement received a score from 1 to 9 according to a dimension specific scale. After interviews were scored twice, scorers met to review and arrive at a consensus score for each dimension and interview. Scores for each dimension were averaged across all interviews from a community resulting in four dimension specific scores. These were averaged across four dimensions resulting in a final community readiness score. To maintain confidentiality of communities, the program team then created an average community readiness score for the program overall using the averages from each community.

To create an intervention group, the team analyzed survey responses based on youth who participated in culturally-based prevention activities (intervention group). The non-intervention group included youth from local middle and high schools who did not participate in culturally-based substance use prevention activities (nonintervention). The intervention and nonintervention groups were contrasted using the following dependent variables: substance use, social support, self-esteem, community connections, family communication, and the importance of culture.

Table 2
Examples of Intervention Activities to Reduce Underage Drinking 2017.

Activity	Frequency	Target Population	# Participants
Drug free Activities			
Reduce Underage Drinking			
Basketball Clinic	2 Times Per Year	Youth	470
Spiritual Run	Annual	Youth, parents, cultural leaders, community.	107
Drum Group/Beading Class	Weekly	Youth	80
Cultural Camp	Annual	Youth and parents.	25
Creators Game	Annual	Youth, parents, cultural leaders, community.	300
Sober New Year's Eve Dance	Annual	Youth, parents, and community.	200
Horse Culture Camp	Annual	Youth	288
Sweat Lodge	Bimonthly	Youth, parents, cultural leaders, community.	720
Storytelling	Annual	Youth, parents, and community.	100
Prevention messaging			
Reduce Underage Drinking			
Native Language Summit	Annual	Staff	1
Legislative Outreach	Annual	Policy makers	200
Culture Classes	3 Classes Per Year	Youth and teachers	60
Cultural Exchange	Annual	Youth and parents.	700
Oral Presentations	Annual	Policy makers, prevention programming staff, and adults.	30
Youth Leadership Conference	Annual	Youth and parents.	9
Youth Leadership Council Training	Annual	Youth and adults.	26
Traditional values			
Reduce Underage Drinking			
Language Coalition	Weekly	Elders, teachers, and community.	5
Elder Curriculum	Annual	Youth	20
Tribal historian Teaching	Weekly	Youth	80

3. Results

3.1. Are there differences in American Indian youth who participate in culturally-based prevention activities compared with American Indian youth who do not participate?

A key challenge of evaluating rural and reservation community prevention initiatives is the small sample size and the lack of consistent prevention programming. To address these challenges, the team collected survey data from youth at middle schools and high schools in the communities. The team worked with site coordinators to meet teachers at the local schools. Teachers were given the surveys along with incentives for students who completed surveys (pens, water bottles, bags, and flashlights). These students served as the non-intervention group. The intervention group consisted of youth who participated in consortium sponsored culturally-based prevention activities (see Table 2). A comparison of intervention and nonintervention groups show similarities in Mean age, but differences in the number of youth completing surveys who live on reservations compared with urban Indian settings.

One-way ANOVAs were used to examine differences between groups, Table 5. The mean scores for social support differed significantly at the 5% level: $F(1,522) = 15.81$; $p = .00$. Social support was higher among intervention youth than non-intervention youth. The mean scores for community connections differed significantly at the 5% level: $F(1,545) = 4.92$; $p = .027$. Community connections were higher among intervention youth than non-intervention youth. These results suggest that youth who participate in cultural activities may have greater social support and greater connections to their community. Substance use was not significantly different among groups. The mean score for family communication differed significantly at the 5% level: $F(1,560) = 3.79$; $p = .05$. Non-intervention youth reported more frequent family communication about the dangers of drugs and alcohol than intervention youth.

3.2. Was the prevention program effective in increasing community readiness over a 3-year period?

The Community Readiness Assessment was conducted in April 2011 through February 2017 with tribes involved in the tribal consortiums past and present prevention initiative. The current prevention

program's goal is to increase community readiness by 1 overall point from 2014–2019. To compare changes in CRA scores, the team calculated mean scores by year and differences in CRA mean scores. CRA mean scores increased from 2011 to 2014, then decreased in 2015 and 2017. The overall decrease in CRA scores was -.81

3.3. Did community involvement in prevention activities increase overtime?

The prevention team targeted tribal community members who are part of the communities involved in the prevention program. The reach, defined as the number of people who received information about culturally based prevention or attended a prevention activity, increased 365.70% from 2015 to 2017 despite limited involvement and funding for two tribal communities in 2017. In 2015, the prevention program's first year, 3009 youth and family members were reached. In 2016, 8792 youth and family members were reached. In 2017, prevention programming reached 14,013 (Fig. 1). The largest increases were in direct community-based youth activities and the increase in use of social media (Facebook and tribal websites) (Table 2).

Tribal site coordinators work with non-profits, schools, tribal health programs, tribal colleges, social service organizations, law enforcement, and tribal leaders. Tribes utilize a variety of media sources to promote culturally-based prevention messaging, Table 2.

Prevention activities are designed to increase community readiness to support prevention, Table 3 highlights 2017 activities, the frequency that they occurred, the target population, and the number of participants reached. The types of culturally-based prevention activities varied by community. The evaluation team works with site coordinators and program staff to collect information monthly.

4. Discussion

The aims of this evaluation were to document outcomes associated with community-based prevention programming. The team developed culturally-based prevention programming targeted for youth ages 12–20 and their families living in urban and reservation locations with three select outcomes: 1) community participation in prevention activities, 2) substance use differences among youth participating in cultural activities (intervention group) compared with youth who did not participate (non-intervention group) and, 3) increases in

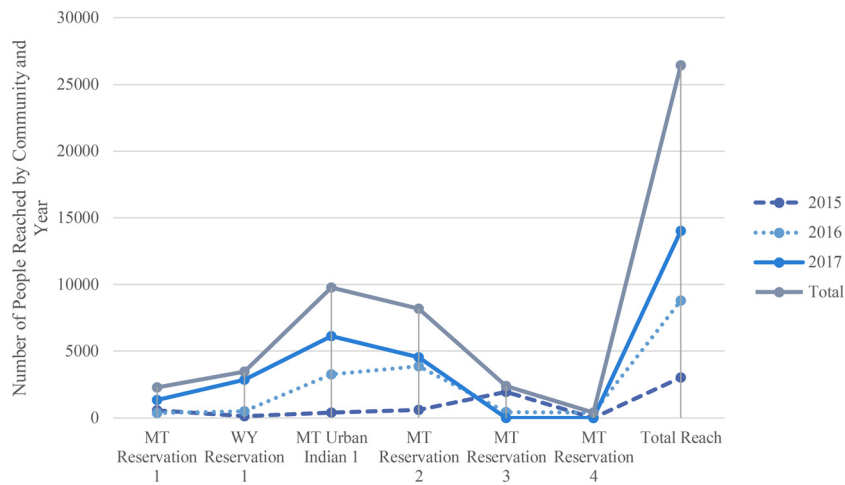


Fig. 1. Increase in the number of community members reached between 2015–2017.

Table 3
Examples of Intervention Activities to Increase Community Readiness 2017.

Activity	Frequency	Target Population	# Participants
Involve Leadership			
Community Readiness Assessment	Bi-Annual	Leaders and community members.	15
Tribal Leader Presentations	Quarterly	Tribal leaders and community members.	320
Tribal Action Planning	Annual	Community	300
Promote Collaboration			
Partnerships with community-based programs	Quarterly	Community, health programs, and schools.	75
Partnerships with State Education Association	Varies	Schools	15
Broaden Community Participation			
Community Block Party	Annual	Community, youth, and parents.	300
School-based Outreach	Annual	Youth, teachers, and community.	244
Buffalo Hunt	Annual	Youth, teachers, and cultural leaders.	12
Traditional dancing demonstrations	Quarterly	Youth, adults, community, and policy makers.	100
Powwow booth	Annual	Community	750
Community-based Meals	Weekly	Community, youth, and homeless.	398
Consistent Media Approach			
Facebook Page	Once	Community	7059
Tribal Website	Once	Community and partners	Varies
Activity Calendars	Monthly	Community, youth, and parents.	Varies

Table 4
Comparison of Intervention and Non-Intervention Groups (N = 569).

Measure	Intervention (n = 200)				Non-Intervention (n = 369)			
	n	%	M	SD	n	%	M	SD
Age			14.12	1.90			14.39	1.51
Gender								
Female	119				210			
Male	80				164			
Reservation	132	23.1%			351	61.6%		
Urban	68	11.9%			18	3.2%		

Table 5
Means and Standard Deviations for Intervention and Non-Intervention Groups.

Measure	Intervention		Non-Intervention	
	M	SD	M	SD
Binge Drinking	.38	1.88	.33	2.33
Any Illegal Drug	1.12	4.13	1.00	4.02
Marijuana	.46	1.06	.40	1.04
Prescription Drugs	.08	.41	.03	.23
Meth	.06	.37	.05	.36
Inhalants	.08	.43	.03	.27
Social Support Scale	20.75**	4.29	19.14	4.47
Community Connections	13.24**	4.12	12.58	2.73
Importance of Culture	2.99	.86	2.88	.94
Family Communication	1.38**	.95	1.51	.64

** p < .05.

community readiness overtime.

Community participation increased 365.7% from 2014 to 2017 and these results suggest the program was effective in reaching youth, community, and elders through various culturally based prevention activities. These results also suggest that time facilitates the growth and reach of community-based prevention programs. This is consistent with previous research and theory (Butterfoss, Goodman, & Wandersman, 1996; Wandersman & Florin, 2003).

Substance use was similar among intervention and non-intervention youth (Table 5). This was somewhat unexpected because previous studies have reported that youth who participate in cultural activities are less likely to abuse substances (Donovan et al., 2015; Gone & Calf Looking, 2011). However, other prevention studies in American Indian youth have reported non-significant changes in substance use after prevention programming (Dorpat, 1994; Rowe, 1997).

Differences in protective factors were observed among intervention youth. Community connections were higher among intervention youth and this may explain some of the reasons why culturally-based prevention is effective (Walters, Simoni, & Evans-Campbell, 2002). Youth who feel more connected to their community and culture are more likely to rely on their family and community, cultural strengths, and spirituality and traditional healing practices (Donovan et al., 2015). Non-intervention youth were more likely to report family communication about the dangers of drugs and alcohol in the last 12-months than intervention youth. Reasons for these differences may be explained by the absence of parents in intervention youth or differences in how families communicate risks.

Increases in CRA scores were not observed from 2015 to 2017. Possible explanations include changes in leadership and policy related to prevention, level of community involvement in prevention activities,

and focusing on multiple areas of community readiness (prescription drug misuse and abuse, binge drinking, and underage drinking for youth 12–17 and 18–20). Other factors identified by the team include not interviewing the same individuals for time 1 (2015) and time 2 (2017), methodological limitations of the CRA, differences in how questions were asked based on the individuals conducting the interviews, and differences in how individuals perceive readiness and substance use in their community. This is not the first evaluation that demonstrated decreases in community readiness after a prevention effort. The 2017 North Dakota Readiness Assessment for primary prevention of violence against women reported no change in community readiness across the state despite involvement in a primary prevention effort aimed at increasing readiness (North Dakota Department of Health, 2017). The team is in the process of discussing these results with communities and redirecting prevention programming to increase readiness for prevention.

4.1. Limitations

The results of this outcome evaluation must be interpreted with caution. First, the homogenous purposive sampling approach used to collect survey data from intervention and non-intervention youth introduces selection bias. Second, youth may have answered self-report survey questions based on social desirability, where they wanted to be viewed more favorably by others. Third, the increases of reach in community activities could be related to better tracking of activities and participation at the community level. Fourth, it is possible that youth in the non-intervention group participated in other cultural activities but were not sampled in this outcome evaluation. Fifth, documenting the impact of universal prevention strategies employed by site-coordinators to reduce substance use was difficult. It is likely that youth and community members benefited but from universal prevention efforts, but these data collected based on intervention on non-intervention group data. To address this limitation, the team reviewed 2015 YRBS binge drinking rates for American Indian students living on reservations in the State. Binge drinking was higher among YRBS American Indian youth than youth served by this prevention program (30.85% vs. 7.40%) (Montana Office of Public Instruction, 2017). This suggests that American Indian youth involved in culturally-based prevention activities may be less likely to binge drink than other American Indian youth in their communities. Last, the relatively small sample of American Indian youth represented in this outcome evaluation should not be generalized to other populations or groups. Despite these limitations, this outcome evaluation resulted in several lessons learned.

4.2. Dissemination and implementation lessons learned

Results from this outcome evaluation show that culturally-based prevention programming is successful in reducing risk factors associated with substance use in American Indian youth. This prevention program reduced risk factors associated with youth substance use (limited social support, low self-esteem, limited community connections, lack of family communication, and low importance of culture) by increasing youth access to cultural activities, promoting opportunities for social-support, strengthening community connections and support for prevention activities, and hosting a variety of sober activities (Table 1). Community members, tribal leaders, and site coordinators feel that these reductions are likely due to the community-driven approach of prevention, where community members design and implement universal prevention strategies that are culturally-tailored and contextually based. Previous Indigenous researchers and communities agree and call for more community involvement in prevention programs to address high rates of substance (Allen, Mohatt, Beehler, & Rowe, 2014). Lessons learned from this 3-year outcome evaluation may help other tribal communities, tribal consortiums, and state/federal prevention programs.

First, meet communities where they are at. Understand that community readiness to support and implement prevention activities varies by time, place, and culture. Some communities have a workforce that is more skilled at computers, public speaking, public policy, and health education. Others possess great strengths in traditions, practices, Native language, and teachings. A key difference in culturally based programming is that it is based on thousands of years of knowing. Tribes possess a rich history and knowledge base that can inform prevention work. This kind of prevention involves working with what is in the community rather than adding foreign programming, ideas, curricula, and practices that are not based on the language, values, traditions, and beliefs of a tribal communities. Building on community strengths rather than weaknesses is important for tribal communities. The team feels that too much focus on deficit based programming and health disparities can perpetuate stigma and discrimination that American Indian people encounter in the current public health system.

Second, use the best available data. The team listened to communities. They said they were tired of completing surveys and never getting any results or interventions to address their needs and concerns identified. In some cases, secondary data or administrative data may be available—for example the 2015 YRBS was used to examine differences in binge drinking among American Indian students involved in culturally-based prevention activities compared with all American Indian reservation youth. These data can be used to compare differences in population based risk factors like substance use without oversampling the community and overburdening community members with surveys.

Third, if one approach does not work, try another one. In the first year the team tried monthly online process evaluations using Qualtrics—this did not work. Low response rates, firewalls, and limited communications meant that process data were not being communicated back to the evaluation team. Some of these challenges relate to communication infrastructure in rural and tribal communities where modern high-speed telecommunications, computer systems, and internet may not be available. An estimated 24% of rural Americans do not have internet access compared with 17% of urban Americans (US Census Bureau, 2016). The team acknowledged that direct, face-to-face communications were the preferred method for sharing information (Caldwell, Davis, Du Bois, & Echo-Hawk, 2005). Face-to-face communications were not feasible due to the distance, time, and funds required to travel to each site. The team decided to end the monthly online evaluation process and set-up phone calls monthly as a way to check-in with site coordinators to document process-based activities, challenges, strengths, and technical assistance needs. This worked. In another example, iPads were purchased by the program with the plan of using them in the community to collect evaluation data rather than using a paper and pen. This approach did not work due to limited internet access and the complexity of the survey software. Communicating these challenges and evaluation changes to program personnel and funding agency leads was important for furthering understanding about context, barriers, and solutions.

Fourth, seek community feedback often using a variety of methods. The dissemination of results from programs and evaluations can be difficult because tribes may not want results shared with others, some tribes do not want information shared via social media or in print form, and some people do not have access to computers or the internet to retrieve information and reports. Asking for community members to help in the dissemination process along with working in communities with their local radio stations, newspapers, message boards, and word-of-mouth helps ensure that program information is shared and that community-feedback is collected.

4.3. Conclusions

Culturally-based substance use prevention programming is effective and the community-based model of prevention presented in this outcome evaluation is the evidence. Continued efforts are needed to fund

prevention programming that originates in tribal settings. Increased efforts to share results in a culturally-responsive manner are needed to promote understanding among scholars, researchers, policy makers, and community about prevention. The main value of this outcome evaluation is that it provides a model for other tribes to follow as they plan, implement, and evaluate culturally-based prevention programs to reduce substance use in American Indian youth.

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