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PARTICIPATION IN A CULTURALLY GROUNDED PROGRAM STRENGTHENS CULTURAL IDENTITY, SELF-ESTEEM, AND RESILIENCE IN URBAN INDIGENOUS ADOLESCENTS

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Abstract: Culturally grounded after-school programs (ASPs) aim to promote health and well-being among Indigenous youth. Native Spirit is a 10-session ASP that focuses on local cultural values and activities facilitated by local cultural practitioners. This pilot study used a single group, pretest-posttest design (N = 18) with Indigenous adolescents in grades 7-12 and conducted participant interviews (N = 11) to assess the impact of the program on cultural identity, self-esteem, and resilience. There were immediate post-program increases in mean strength in cultural identity (p = 0.002), resilience (p = 0.161), and self-esteem (p = 0.268). Themes related to benefits of program participation included curiosity and commitment to cultural identity, increases in self-esteem, and ability to build resilience. This study provides new insights on the relationship between cultural engagement and adolescent health.

INTRODUCTION

American Indian and Alaska Native (AI/AN) adolescents experience high rates of mental health disparities that put them at increased risk of morbidity and mortality for many life-threatening illnesses. In 2017, AI/AN communities experienced more death by suicide than the general population (Centers for Disease Control and Prevention [CDC], 2019). Among adolescents ages 15-19, AI/ANs had twice as many suicides compared to non-Hispanic White adolescents (CDC, 2019). Similarly, AI/AN adolescents have the highest rates of lifetime major depressive episodes and highest self-reported depression rates than any other ethnic/racial group (Whitesell et al., 2012). Untreated mental health conditions are associated with substance use initiation and continuation at younger ages (Kelley et al., 2018; Lowe et al., 2012; Whitesell et al., 2012). These

data demonstrate the need for early intervention to promote mental health among AI/AN adolescents.

Although there have been many attempts at addressing these disparities through prevention interventions, the problems persist. AI/AN communities have pointed to the need for interventions that reflect the local cultural values and that involve the community (Whitbeck et al., 2012). This call has been answered by public health research in the form of culturally adapted programs that are typically based on Western theories of behavior change (Whitbeck et al., 2012; Whitesell et al., 2019). Although these culturally adapted interventions have experienced success, there has been a new wave of innovative research approaches that are grounded in local AI/AN cultural values (Okamoto, Helm, et al., 2014; Whitbeck et al., 2012). Research approaches based on local cultural values, collectively describing holistic wellness, are innovative because they recognize the importance of cultural values in health promotion and prevention. Although the concept of cultural engagement has been used in prevention interventions (Snijder et al., 2020), it has scarcely been described as the conceptual framework driving health promotion.

AI/AN communities have been making strides to address the gaps in mental health status by reconnecting with traditional values and practices including language proliferation and ceremonial practices that were once suppressed by the government of the United States (Boyles, 1990). Culturally engaged after-school programs (ASPs) have proven to be a valuable tool for AI/AN communities to increase adolescent cultural engagement and promote positive mental health and well-being (Lauricella et al., 2016; Liddell & Burnette, 2017). A recent literature review found nine studies published from 2007 to 2017 that documented the evaluation of culturally engaged ASPs for Indigenous youth from the United States and Canada. Out of the nine studies, five were culturally grounded, using local community values and practices to guide their interventions (as opposed to being adapted from Western theory) (Donovan et al., 2015; Hishinuma et al., 2009; Lowe et al., 2016; Moran & Bussey, 2007; Richards & Mousseau, 2012). Indigenous youth who participated in culturally grounded ASPs displayed improved self-esteem and lower levels of substance use and initiation. These results suggest that culturally grounded ASPs can potentially narrow mental health disparities experienced by AI/ANs.

This preliminary study examines the impact of a culturally grounded ASP, referred to as Native Spirit, that was designed to promote mental health and well-being among middle and high school adolescents of the Salt River Pima-Maricopa Indian Community (SRPMIC). Native Spirit was based on a partnership between the Boys & Girls Club of Greater Scottsdale (BGC), the

SRPMIC, and the University of Arizona. This investigation used a mixed methods convergent parallel design with a single group, pretest, posttest, and qualitative interviews to determine if participation in the Native Spirit program increased cultural identity, resilience, and self-esteem at the end of the 10-week period.

METHOD

Study Partnerships

Central to creating a culturally grounded ASP was the engagement and input from the community. To this end, a Community Advisory Board (CAB) was convened and consisted of seven total representatives from the BGC, Cultural Resources Department, Tribal Council, and Youth Services Department. The CAB identified local cultural values and activities that were represented in the Native Spirit program, identified and helped contact community members to serve as leaders for program sessions, and guided the evaluation plan for the Native Spirit program. Some CAB members were leaders for Native Spirit sessions. The University partner organized and facilitated CAB meetings, recorded the development of the Native Spirit curriculum, and developed the Native Spirit curriculum into a handbook. The University partner also coordinated Native Spirit session logistics including contacting session leaders, securing location, and purchasing supplies and food.

The first action of the CAB was to identify cultural values and practices that were important to pass on to the adolescents of the SRPMIC. Cultural values and practices are intertwined with mental well-being for Indigenous communities and fit within Bronfenbrenner's Ecological Systems Model (Bronfenbrenner, 1979; Fish & Syed, 2018). Cultural practices and teachings are passed down through generations and exist at the macrosystem level to impact all aspects of life. Culturally grounded health promotion insists that cultural values (macrosystem) can be taught to individuals and groups of individuals who interact with one another to form healthy communities. The CAB then identified local cultural practices that were associated with each cultural value. Cultural values included developing community-specific knowledge of language, creation stories, history, and traditions. Cultural values also included more general values of responsibility, respect, teamwork, patience, growth, service, and recognition. Additional cultural values included pride in cultural identity and community.

Each cultural practice can be associated with multiple values; however, each program session focuses on one cultural value and one associated practice for the sake of organization and reproducibility in an after-school format. CAB members then identified local cultural practitioners that would be comfortable leading each of the Native Spirit sessions. Finally, CAB members decided on the appropriate order of each session depending on the time of year and specific cultural practice. The development of the Native Spirit curriculum was an iterative process that took place over 6 months during monthly meetings with detailed feedback from CAB members and additional input from session leaders, community members, and tribal council members. Table 1 demonstrates the Native Spirit program components.

Tribal and University Review

The SRPMIC Tribal Council first approved the development and the subsequent implementation and evaluation of the Native Spirit program followed by the University of Arizona's Human Subjects Protection Program and Institutional Review Board. The development, implementation, and evaluation of the Native Spirit program was monitored regularly by a subset of two Tribal Council members and the CAB. In keeping with tribal sovereignty, all data dissemination produced by this study was approved by appropriate SRPMIC officials.

Participants

Participants for the preliminary evaluation study were recruited from two BGCs located in the Metropolitan Phoenix area. An informative recruitment flyer was distributed to BGC members near pick-up and drop-off locations visible to parents. The study PI also set up a recruitment table at the local high school and distributed flyers during the lunch hour for two days. Eligibility criteria included English-speaking, self-identifying as AI/AN, in grades 7-12, a member of the two participating BGC locations, and having transportation to the BGC locations. Youth in grades 7-12 were the focus of this study because it was more feasible to work within this age group for the BGC community partners. Parental consent was obtained via a signed consent form or verbally over the phone; youth assent was obtained via a signed assent form after verbal confirmation that the youth understood the purpose and requirements of the study. Participants who were present for at least 5 of the 10 sessions and completed both pretests and posttests received a $50 Visa gift card upon completion of the study.

Intervention

The Native Spirit curriculum consisted of 10-sessions, each lasting 1.5 hours (Table 1). Each session was facilitated by 1-2 members of the SRPMIC who are considered cultural knowledge holders in the Community. Session leader training consisted of a 30-60 minute individual meeting with the PI of the study to discuss the overall program goals and the specific session objectives and details. Each session leader was given a description of the cultural value and associated practice along with a set of 2-3 objectives for the session. Session leaders had freedom to lead their session but received a set of predetermined learning objectives that were developed by the CAB. This is in line with the idea that some level of session leader flexibility and adaptability is necessary to meet local and individual needs (Breitenstein et al., 2010). A detailed description of the partnership, curriculum, and evaluation development process can be found elsewhere (Hunter et al., 2022).

Procedure

The program was implemented from September to December 2019. Participants traveled by school bus to attend weekly Native Spirit sessions. Participants ate dinner and then participated in the Native Spirit session. Each participant completed printed pretests before Session 1 and posttests at the end of Session 10. The PI administered the quantitative surveys that took an average of 25 minutes to complete. Participants were recruited for qualitative individual interviews if they attended at least 70% of the Native Spirit sessions. Eleven participants were invited by oral invitation to participate, and all agreed to be interviewed. The PI conducted in-person qualitative interviews at the BGC building. Interviews were audiotaped and transcribed. The interviews took about 10 minutes (range: 6-19 minutes). This study used a convergent parallel mixed methods design giving equal weight to quantitative and qualitative findings. The use of mixed methods was necessary for this pilot study that seeks to test quantitative measures and to seek initial impact information directly from participants. Qualitative and quantitative data were collected at separate times. After separate data collection and analyses were completed, data were triangulated, searching for areas of convergence and divergence to form conclusions on the impact of the Native Spirit program. All study data were maintained and stored securely by the PI, and all data were deidentified.

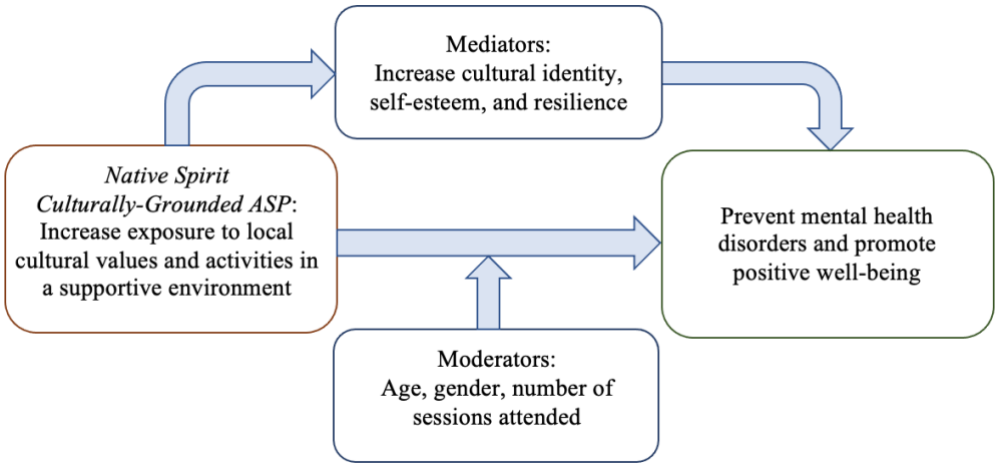
Table 1
Native Spirit curriculum outline

Cultural Value	Activity	Participants will be able to:
Language	Introduce Yourself	Introduce themselves using their Indigenous language and recognize their Indigenous ancestry
Creation Stories	Storytelling	Describe community creation stories and relate lessons from creation stories to cultural identity
History	Visit Historical Site	Recognize the importance of a site that is culturally significant to the community
Responsibility	Planting Seeds	Describe the importance of personal responsibility and how it relates to being a community leader
Respect	Harvesting and Gathering	Articulate the importance of having respect for environment, community, and self
Community	Traditional Songs and Dance	Describe the importance of community and the role it plays in our lives and in community traditions
Teamwork	Traditional Outdoor Games	Relate traditional games and physical activity with the value of teamwork and interrelatedness
Patience	Traditional and Modern Art	Demonstrate how being patient can allow us to create beautiful and meaningful things in life
Traditions	Cooking a Meal	Relate cultural traditions of cooking with contemporary family traditions
Growth	Coming of Age	Articulate roles and responsibilities of Indigenous adolescents and describe coming of age ceremonies
Service	Service for Community	Recognize the importance of service to the community and recognize the different ways to provide service
Cultural Identity	Life Away from Home	Discuss strategies on maintaining cultural identity on and off the reservation
Recognition	Ceremony of Recognition	Reflect on the cultural values and activities experienced during the Native Spirit program

Measures

The primary outcomes were self-reported cultural identity, resilience, and self-esteem. These outcomes were measured using quantitative surveys and qualitative interviews. Primary outcomes were evaluated qualitatively and quantitatively and were chosen based on literature suggesting cultural engagement has a protective effect on AI/AN adolescent well-being, including cultural identity, resilience, and self-esteem (Okamoto et al., 2019; Brown et al., 2019; Snowshoe et al., 2017). However, causal pathways defining the relationship between cultural engagement and health outcomes are not well-established (Kagawa-Singer et al., 2016). Figure 1 depicts a conceptual model for the Native Spirit program that is in the beginning stages of being developed and measured. This model suggests that increasing engagement in cultural activities that are based

Figure 1. Native Spirit conceptual model



on local cultural values will have the immediate impact of strengthening cultural identity, self-esteem, and resilience. Strengthening these outcomes will have a larger impact of preventing mental health disorders while promoting well-being. The following instruments were approved by the CAB and were chosen based on their history of use with AI/AN adolescents and for their ease of use (number of items, readability, and understandability).

Pre- and Posttests

Baseline Demographics. Baseline demographics included age, grade, race/ethnicity, and tribal affiliation (if applicable).

Cultural Identity. Cultural identity was measured using the revised version of Phinney's Multigroup Ethnic Identity Measure (MEIM-R) (Phinney, 1992; Phinney & Ong, 2007). The MEIM-R is a 6-item questionnaire with four response categories from strongly disagree to strongly agree. The MEIM-R provides a concise measure of the core aspects of group identity (commitment and exploration) that determine the strength and security of ethnic identity (α=.73 to .79). The MEIM-R has been used with AI adolescents in studies that focus on developmental processes and the movement from unexplored states to commitment to an identity as a member of a particular ethnic group (Kulis et al., 2017; Moran & Bussey, 2007).

Self-esteem. Self-esteem was measured using the 10-item Rosenberg Self-Esteem Scale. It measures global self-worth based on positive and negative feelings about the self (α=.66 to .71) (Rosenberg, 1965). The four response categories go from strongly disagree to strongly agree. The scale has also been used in studies involving AI adolescents (Goodkind et al., 2012; Whitesell et al., 2009).

Resilience. Resilience was measured using the 12-item Child and Youth Resilience Measure (CYRM-12) (Liebenberg et al., 2013). The CYRM-12 was selected given the open access to the public and brief format, 12 questions with a 3-answer Likert scale (α=0.840). The questions on the CYRM-12 are adaptable because the format allows the project team to work with the community to insert up to five additional community-specific questions.

Qualitative Interviews

Interviews were conducted with 11 participants. Participants were asked eight semi-structured questions about their overall experience and perceived changes in knowledge, attitude, and opinion regarding their cultural identity. The questions include:

1. Which session was your favorite?
    a. Why was this session your favorite? How did it make you feel?
2. Which session was your least favorite?
    a. Why was this session your least favorite? How can we make it better?
3. Do you identify as Native American?
    a. If yes, which communities do you identify with?
    b. If no, what do you identify as?
4. Can you tell me about how you have engaged in cultural activities before participating in Native Spirit? This could be on your own, with family, friends, through school, or after-school programs.
5. In the past 10 weeks, what have you learned about the O'odham and Piipaash cultural values and practices? What new information have you learned about this community or its history?
6. How has your attitude or opinion towards your Native American identity changed since you have been participating in Native Spirit?
7. Would you like to learn more about your Native American identity?
    a. If yes, what are you most curious about?
8. If you could tell a stranger one thing about the Salt River community, what would you tell them?

Data Analysis

Quantitative Analysis

Data analysis was conducted using Stata software (Release 11.0), Mplus (Version 8), and SAS 9.4 (Stata Corporation, 2009; Muthén & Muthén, 2017; SAS Institute Inc, 2013). T-tests were used to compare changes from pretest to posttest on cultural identity, self-esteem, and resilience. Pearson's correlation matrix was used to identify relationships that exist between cultural identity, self-esteem, and resilience before and after participation in Native Spirit. Cronbach's alpha was used to analyze reliability of the measures with this population.

Quantitative Analysis

The PI transcribed audio recordings and merged with handwritten notes. Qualitative analysis occurred in two phases. In phase one, the PI created a codebook with the major themes, cultural identity, self-esteem, and resilience. The PI also conducted a one-hour training for the reviewers on qualitative analysis with specific instruction for this research study. In phase two, a three-person team of AI scholars, including a CAB member who was from the SRPMIC, used deductive thematic analysis to code the transcribed interviews. Data from each reviewer (quotes associated with each code) were compiled using Microsoft Excel. Through consensus, the team compared and discussed their individual data and identified and agreed on major patterns encountered within each question and by overall thematic category. The team then used an Indigenous framework for understanding the impact of the Native Spirit program on cultural identity, resilience, and self-esteem. Specifically, this analysis involved an AI analysis team with lived experience in the cultural values, practices, and holistic worldview that contribute to well-being specific to the SRPMIC. Conducting the analysis with an AI analysis team allowed for an emic view of data relating to the impacts of cultural engagement, rather than an etic view from non-AI investigators who have not experienced the impacts of AI cultural engagement. Additionally, the Native Spirit program was developed based on local cultural values and practices and the analysis mirrors that with the involvement of an AI analysis team. These aspects of the evaluation fit within the Indigenous Evaluation Framework as defined by LaFrance and Nichols that calls for community engagement and capacity building, while employing core cultural values (cultural engagement) as a form of prevention (LaFrance & Nichols, 2010). Several themes were identified inductively, but only those that are tied to the research questions are presented in this article.

RESULTS

Demographic Data

Participants' mean age was 14.17 years (±1.54), and there were slightly more males than females. All participants identified themselves as AI/AN. See Table 2.

Table 2
Demographic data

	Quantitative Surveys (*N* = 18)	Qualitative Interviews (*N* = 11)
Mean Age (SD)	14.17 (1.54)	14.5 (1.63)
	n	***n***
Female	8	6
Male	10	5
AI/AN	18	11
alone	4	2
and Hispanic	14	5
and Black	1	0
and White	4	3
Grade (by Gender)		
7th	4 (1F, 3M)	2 (2M)
8th	3 (2F, 1M)	1 (1F)
9th	4 (1F, 3M)	2 (1F, 1M)
10th	5 (4F, 1M)	5 (4F, 1M)
11th	1 (1M)	0
12th	1 (1M)	1 (1M)

Quantitative Results

Table 3 presents means, standard deviations, and changes in means from pretest to posttest for cultural identity, self-esteem, and resilience ($N = 18$). Changes in mean cultural identity scores reached statistical significance ($p = 0.002$).

Table 4 shows Pearson's correlation findings. There was a significant positive correlation between pretest and posttest cultural identity scores ($p = 0.013$). Additionally, there was a significant positive correlation between posttest cultural identity scores and self-esteem ($p = 0.035$) and resilience posttest scores ($p = 0.048$). Finally, there was a significant positive correlation between self-esteem pretest scores and resilience pretest scores ($p = 0.008$). Cronbach's α is ranged from 0.56-0.71.

Table 3
Pretest to posttest changes in outcomes

	Pretest		Posttest		Difference	
	M	*SD*	*M*	*SD*	Post-Pre	*t* test
Cultural identity	2.88	0.35	3.22	0.50	0.34	3.30*
Self-esteem	2.76	0.64	2.89	0.45	0.12	0.57
Resilience	2.56	0.24	2.60	0.25	0.04	0.55

* $p \leq .01$

Table 4
Correlation matrix of pretest and posttest constructs and Cronbach's alpha

	CI Pre	CI Post	SE Pre	SE Post	R Pre	R Post	Cronbach's α
CI Pre	1.00						0.65
CI Post	0.64*	1.00					0.56
SE Pre	-0.06	-0.02	1.00				0.71
SE Post	0.13	0.51*	-0.06	1.00			0.70
R Pre	0.39	0.26	0.65**	-0.28	1.00		0.63
R Post	0.23	0.49*	0.21	0.40	0.38	1.00	0.59

Calculated with Pearson's correlation coefficient, * $p < 0.05$, ** $p < 0.01$
CI = Cultural Identity, SE = Self-esteem, R = Resilience

Qualitative Results

The results of the participant interviews are organized into the outcomes: changes in cultural identity, self-esteem, and resilience. Changes in cultural identity referred to the thoughts, feelings, and changes regarding adolescents' self-identification as AI/AN. Changes in self-esteem referred to the adolescents' examined changes in attitudes and opinions of themselves while participating in the Native Spirit program. Changes in resilience referred to adolescent-identified instances of growth in the face of challenges.

Cultural Identity

The participants described a general feeling of curiosity about cultural knowledge and furthering their understanding of AI/AN culture. Although the participants described different levels of cultural engagement before participating in the Native Spirit program, all of them expressed interest in learning more about their cultural identity. One participant stated:

> I just, kind of want to learn more about me and basically, everyone…But then they ask more questions [about my identity] and I, I can't. I don't know much. It's embarrassing to say I don't know much about my culture, but it's true. I don't.

There were some differences between the responses from the adolescents who reported more cultural engagement prior to participating in the Native Spirit program and those who reported less. The adolescents who reported more cultural engagement readily described what they know regarding cultural activities and values and reported sharing this information with their peers. Additionally, they described their desire to continue learning about their history, songs, and language. For example, one participant stated, "I always like learning about my culture because it's who I am and, yeah, it's just who I am. So I'm always interested in learning more about my culture and expressing it with others, too."

Self-esteem

Participants reported changes in self-esteem and confidence after completing the program. One teen reported changes in his ability to "fit in" in the community after participation in Native Spirit. One participant stated:

> I feel like I can fit in with everyone else now, even though I'm not the same color, color tone, because that's mainly the problem. People think I don't fit in because my color. Yeah. Even [other participant] and I are usually criticized by kids by that.

Participants also reported feeling more confident in their ability to describe and discuss their cultural knowledge. Several participants reported not knowing the history of their community or of their family background before participation in the program. One participant stated that she used to be embarrassed because she did not know anything about her AI culture. Even participants who reported higher levels of cultural engagement voiced a deeper understanding of common cultural activities. One participant stated, "I understand more things now and I get why we do stuff."

Resilience

The Native Spirit participants also recognized resilience throughout AI/AN history, and specifically for the SRPMIC. Several participants expressed interest in learning more about the SRPMIC's capacity to adapt to hardships through time. One participant stated:

> I'm most curious about after all the stuff that they went through throughout history because I learn about American history and usually Natives are there and they're always being abused and tortured and treated misfairly [*sic*]. And I just wonder, how did they, how were they able to pull through? How are they able to like stay strong when it came to that and fight through and they're here today.

Additionally, participants identified cultural aspects, particularly through songs, that allow them to relieve stress and obtain a sense of peace. One participant stated:

> I like to listen to traditional songs. They kind of like, soothes me down…I would probably just tell them about the songs. You know, like, when they do, like, the social dances. It's more like peaceful than being out anywhere else.

The recurring theme of resilience was also prevalent in the adolescents' desire to keep learning their language. Several participants stated they had difficulty during the language session because it was hard or because they were shy, and it required them to speak out loud. However, during the interviews the same participants expressed interest in continuing to learn the language even if it was challenging for them.

DISCUSSION

This study used a mixed methods convergent parallel design to evaluate the Native Spirit program on AI/AN adolescents' cultural identity, self-esteem, and resilience. Quantitative and qualitative results will be converged throughout the discussion to review areas of convergence or divergence. Overall, participants reported increases in mean cultural identity, self-esteem, and resilience. There was a statistically significant increase in cultural identity score, which is revealing given the participant number and suggests a large effect. Increases in outcomes were also documented by the qualitative interviews. Adolescents reported interest in exploring their cultural identity and commitment to cultural identity. Exploration and commitment are important during adolescent years and together they help individuals establish a secure sense of cultural identity that is less subject to change with new challenging experiences (Phinney & Ong, 2007). Native Spirit's impact on cultural identity may have a promising upstream relationship to mental health and well-being in AI/AN adolescents.

The qualitative interviews also revealed positive short-term effects on self-esteem and resilience. Some participants described how cultural activities, particularly listening to traditional songs, helped relieve stress. Additionally, they were inspired upon learning of their ancestors' resilience and ability to thrive despite challenges over time. Participants described instances of increased self-esteem and confidence with their ability to identify as a member of the SRPMIC. The Native Spirit program helped adolescents feel they could fit in with the community, particularly for multiracial participants. Instead of focusing on things that set them apart, like skin color, they focused on similarities like shared cultural history, language, and participation in local cultural activities.

Cronbach's alphas were reported for each of the construct scales to assess lower bounds of reliability of the evaluation measures. The Cronbach's alpha results for scales used in this study were lower than similar studies that used the same measures but are still acceptable for exploratory studies (Kelley et al., 2018; Moran & Bussey, 2007; Nunnally & Bernstein, 1994). Comparatively low alphas in this study can possibly be explained by the small sample size. Given this is a pilot study, it is possible that a larger intervention with more intervention sites and participants might result in higher alpha levels for reliability that more closely resemble those of similar studies. Additionally, the study team will continue to work with the CAB to find measures that are statistically rigorous with strong internal consistency and reliability.

The current study had many strengths. One strength was the use of partnerships and a CAB from the beginning to the end of the study. Members of the SRPMIC were involved in the development, implementation, and evaluation of the Native Spirit study, and the program continues to run with little assistance from University partners. This study describes the second successful evaluated iteration of the Native Spirit program. It has now been implemented with 30 adolescents in two tribal communities including a rural reservation and an urban-based reservation. Another strength of this study was the use of an Indigenous framework. The values, beliefs, and practices were incorporated in the design, methods, and analysis of this study. Promoting the use of cultural values and practices (basic structure of the Native Spirit program) as a theoretical basis that leads health promotion and disease prevention is an innovative and equitable way to engage in research with AI/AN communities (Allen et al., 2018; Cwik et al., 2019; Okamoto & Kulis et al., 2014). This research study contributes to the development of an Indigenous prevention science that uses local cultural values as the impetus for prevention.

Limitations

This study had some limitations. First, the current study had a relatively small sample size, a methodological challenge that has been documented in previous studies with BGCs in Indian Country (Kaufman et al., 2018). However, the emphasis of the study was to establish formative information that can be used to find an appropriate effect size and guide larger studies in the future. The number of participants in this study was realistic for the community partners and represents the number of adolescents who participate in after-school programming on a regular basis. In addition, the MEIM-R scale that measures cultural identity has been used with AI/AN adolescents; however, recent research has shown weak evidence of measurement invariance, meaning the items of the scale may be measuring something different than intended among this population (Lin et al., 2019). This study also did not measure the impact of Native Spirit on mental health and substance use among AI/AN youth. Recent literature has connected the development of positive AI/AN identity with better mental health, less delinquency, higher spirituality/happiness, and lower depressive symptoms (Brown et al., 2019; Smokowski et al., 2014). Future evaluation should examine the potential of ASPs to reduce mental health disparities among AI/AN communities.

Directions for Future Research

Future research of culturally grounded ASPs should include longer-term follow-up because the impact of cultural engagement on self-esteem, resilience, and cultural identity may take time to manifest for AI/AN adolescents, while also shifting and developing over the life course (Brown et al., 2019). Additionally, future research should investigate the causal pathways that extend from cultural engagement to improved mental and behavioral health outcomes. Leveraging community partnerships between BGCs and AI/AN communities provides the benefit of combined resources, support, and effort, while also strengthening community connectedness in youth programming. The Native Spirit program, in partnership with the BGC provides a relevant and accessible form of cultural engagement for AI/AN youth that can be further developed. The BGCs of America operates over 200 sites that directly serve AI/AN youth. The Native Spirit program has the potential to impact over 200 AI/AN BGCs in the state and country, reaching over 120,000 AI/AN youth. The findings in this pilot study should be replicated using similar partnerships with more rigorous studies including randomized clinical trials with long-term follow-up of cultural, developmental, and health outcomes.

CONCLUSION

The current evaluation of the Native Spirit program provided preliminary evidence of the impact of participation in the Native Spirit program on cultural identity, self-esteem, and resilience among AI/AN adolescents. This study examined the protective nature of culture for AI/AN youth and effectively used ASPs as a tool to strengthen developmental assets for AI youth. The inclusion of cultural engagement as a form of health promotion represents a unique blend of AI/AN values passed down through generations to impart holistic health through popular vehicles for prevention programs (e.g., ASPs). The continued excitement and community involvement in the Native Spirit program speaks to the value of culturally grounded programs and their potential to be adapted and implemented in tribal communities and urban areas across the country.

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CONFLICT OF INTEREST

The authors declare that they have no conflict of interests.

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PERCEIVED RACIAL/ETHNIC DISCRIMINATION AND DEPRESSIVE SYMPTOMS AMONG ADOLESCENTS LIVING IN THE CHEROKEE NATION

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Abstract: The objective of this study was to examine the longitudinal relationship between perceived racial/ethnic discrimination and depressive symptoms among adolescents living in the Cherokee Nation, as well as the potential moderating roles of race and social support. Self-reported survey data were analyzed from a sample of high school students (n = 1,622) who identified as American Indian only, American Indian and White, and White only. Compared to students who reported no discrimination on the basis of race, those who reported ever having experienced discrimination scored, on average, 1.62 units higher on the depressive symptoms scale six months later (p < .0001, 95% CI: 0.90, 2.33), while adjusting for age, race, gender, baseline depressive symptoms, enrollment in a free/reduced-price lunch program, and social support. Discrimination intensity did not significantly predict depressive symptoms among those reporting some frequency of discrimination. Race and social support did not modify either effect. These findings may inform development of interventions to promote mental health among American Indian adolescents.

INTRODUCTION

American Indian adolescents are at higher risk for mental health problems than other racial/ethnic groups in the United States (Leavitt et al., 2018). Over the past two decades, the suicide rate among American Indian and Alaska Native (AI/AN) youth and young adults increased significantly, from 20 to 34 per 100,000 among males and from 5 to 11 among females (Curtin & Hedegaard, 2019). The suicide rate among AI/AN youth is 1.56 times higher than the national average of same-aged youth; in contrast to national trends where suicide rates gradually increase and level off with age, suicide rates peak among AI/AN during adolescence and young adulthood (Centers for Disease Control and Prevention, 2021). These differences in the onset of peak suicide

rates across groups may be attributable to an array of risk factors including social determinants of health such as rurality, poverty, historical trauma, and substance use, among others (Garcia, 2020; Leavitt et al., 2018; National Indian Council on Aging, 2019; Sarche & Spicer, 2008; Suicide Prevention Resource Center, 2020). A growing body of literature on adverse childhood experiences and major life events shows that exposure to adversity throughout the life course increases the risk of mental health problems among AI/AN populations (Brockie et al., 2015; Munnelly & Hishinuma, 2020; Roh et al., 2015). More research is being done to understand how racism, including discrimination, stigma, and historical trauma, can be better addressed to inform culturally relevant prevention and intervention strategies for indigenous youth (Maguire-Jack et al., 2020; Munnelly & Hishinuma, 2020).

Racial/ethnic discrimination can be broadly conceptualized as unfair treatment on the basis of one's race or ethnicity (Vines et al., 2017). Racial/ethnic discrimination has increasingly been studied as a social determinant of health and mental health specifically (Cave et al., 2020; Priest et al., 2013; Vines et al., 2017). A systematic review of adolescent health found significant positive associations in 76% of included studies between reported discrimination and adverse mental health outcomes such as depression and anxiety (Priest et al., 2013). However, most studies were cross-sectional and reported primarily on adolescents who identified as African American, Asian, or Latino/a/x (Priest et al., 2013). More recently, a systematic review of longitudinal studies revealed the predictive strength of racial discrimination on later mental health outcomes among adolescents (Cave et al., 2020). The need to understand this exposure-outcome relationship is particularly pressing for understudied, underserved groups such as AI/AN youth who experience the brunt end of disparities in mental health, substance use, and exposure to the criminal justice system in the United States. These disparities in health and well-being may be partially attributable to racial/ethnic discrimination rooted in historical trauma and colonization (Garcia, 2020; Skewes & Blume, 2019; Komro, 2018; Suicide Prevention Resource Center, 2020; Swaim & Stanley, 2018).

To scaffold emerging evidence on discrimination and mental health with theory, Vines and colleagues developed a Framework of Discrimination Stress, Coping and Mental Health (2017). According to the framework, perceived racial/ethnic discrimination is conceptualized as a chronic stressor whose persistence and unpredictability depletes an individual's protective psychological resources over time (Vines et al., 2017). In turn, risky behaviors (e.g., substance use and externalizing problems) in conjunction with diminished emotional control are more likely, thereby increasing the likelihood of poor mental health (Vines et al., 2017). Since poor mental health can

presuppose and exacerbate risky behaviors, adverse cyclical patterns may result. Other contextual factors, such as social support or race/ethnicity, may affect an individual's perception of discrimination severity and ultimately the impact of discrimination on mental health (Vines et al., 2017).

Much remains unknown about AI adolescent mental health, longitudinal relationships between adversity exposures and well-being outcomes, and the role of discrimination (Cave et al., 2020). A significant body of previous research on racial/ethnic discrimination and depression has focused on other racial/ethnic and sociodemographic groups using cross-sectional study designs. Prior work has examined depressive symptoms and substance use among Cherokee adolescents, but this work did not look at the role played by discrimination exposure (Komro et al., 2016; Garrett et al., 2017). Further, social support has been shown to protect against depressive symptoms in a sample of older AI adults (Roh et al., 2015), which suggests a potential buffering effect of social relationships. Empirical support for the Framework of Discrimination Stress, Coping and Mental Health (2017) among AI adolescents may explain the relationship between exposure and outcome to better inform the prevention and treatment of mental health among AI youth (Montag et al., 2015).

The present study aims to address gaps in empirical support for the Vines et al. framework (2017) for AI youth by studying the longitudinal association between perceived racial/ethnic discrimination and depressive symptoms among adolescents in the Cherokee Nation. Given the longitudinal timing of exposure and outcome, we hypothesized that higher reported discrimination frequency and intensity would positively predict depressive symptoms among high school students. In an effort to identify potential intervention targets to better support adolescents, we also examined moderation by racial/ethnic group and social support.

METHODS

Data Source and Participants

Data come from a cluster randomized trial to prevent alcohol and substance use among adolescents living within the Cherokee Nation tribal jurisdiction of northeastern Oklahoma, which currently comprises 14 counties. The trial design and data collection methods are described in detail elsewhere (Komro et al., 2015), but the multi-level intervention that was tested in the trial consisted of 1) one-on-one coaching of students via a program called Connect, in conjunction with

2) a community-wide initiative to reduce substance use access among adolescents. Sample characteristics come from the baseline, pre-intervention period during which waves of self-reported data were collected from students (n = 1,622) via survey in four high schools located in rural communities within the Cherokee Nation. Included in the present analyses are data collected at two of these pre-intervention timepoints: T1 (November – December of 2011) and T2 (April – May of 2012). Eighty-eight percent of the sample was between the ages of 15-18 years old. Students self-identified as American Indian only (26%), American Indian and White (21%), and White only (53%). The sample was approximately 50% female and 45% low-income as indicated by self-reported enrollment in a free or reduced-price lunch program at school. Enrollment in a free or reduced-price lunch program at school was used as an indicator of low income instead of asking students to report on their household income without sufficient knowledge. Other racial/ethnic groups were not included in analyses due to small cell counts.

Measures

Perceived Racial/Ethnic Discrimination

Perceived racial/ethnic discrimination was self-reported in terms of frequency and intensity using two items from the National Youth Risk Behavior Survey (Centers for Disease Control and Prevention, 2010). Discrimination frequency was assessed with the question, "How often have you experienced any kind of discrimination due to your race/ethnicity?" Students selected from the following response options: "never," "hardly ever," "a few times a year," "monthly," and "daily." Due to small cell counts at higher frequencies of discrimination, categories were collapsed for regression analyses to yield a binary discrimination frequency variable for "ever" versus "never" having experienced discrimination. Discrimination intensity was assessed with the question, "How would you describe the discrimination you have experienced?" and response options were reported on a 4-point Likert-type scale where 1 = "very disturbing," 2 = "somewhat disturbing," 3 = "not very disturbing," and 4 = "I have not experienced any kind of discrimination due to my race/ethnicity." For regressions, the analytic subsample included those who reported ever having experienced discrimination (i.e., excluded those who responded, "I have never experienced any kind of discrimination due to my race/ethnicity"). Due to small cell counts at higher intensities of discrimination, categories were collapsed for regression analyses to yield a binary discrimination intensity variable for "more intense" ("very disturbing" combined with "somewhat disturbing") versus "less intense" ("not very disturbing").

Depressive Symptoms

Depressive symptoms were assessed using a 6-item scale validated in a clinical sample of adolescents (Kandel & Davies, 1982). Each item asked respondents to report how often in the past 30 days they were bothered or troubled by "feeling too tired to do things"; "going to sleep or staying asleep"; "feeling unhappy, sad, or depressed"; "feeling hopeless about the future"; and "feeling nervous or tense." Response options were on a 3-point scale where 1 = "not at all," 2 = "somewhat," and 3 = "very often." Consistent with scoring rules for this scale, item scores were summed, divided by 6, and multiplied by 10 to yield a range of possible scores on the depression scale from 10 to 30 (Kandel & Davies, 1982). Clinical cutoffs for depression risk categories were: < 18 is low risk, 18-23 is moderate risk, and ≥ 23 is high risk (Kandel & Davies, 1982). Cronbach's alpha for the depression scale among this sample was 0.84 at T1 and 0.89 at T2.

Social Support

Social support was assessed using a 6-item scale that asked about the people in a person's life (Oklahoma Department of Mental Health and Substance Abuse Services, 2010). Respondents used a 4-point Likert-type scale to indicate the extent to which they agreed with statements about availability of social support from various sources. Example items include, "There is an adult in my life, such as a parent, relative, teacher or neighbor, who I can ask for help if I have a personal problem" and "There are people in my town who encourage me to do my best." Respondents rated items as 1 = "definitely not true," 2 = "mostly not true," 3 = "mostly true," or 4 = "definitely true." Item scores were summed to yield a range of possible scores on the social support scale from 6 to 24. Cronbach's alpha for the social support scale among this sample was 0.82.

Sociodemographic Characteristics

Age, race, gender, and a proxy for socioeconomic status were also collected. On race, participants reported whether they identified as American Indian (yes/no) and White (yes/no). The race variable includes the resulting three categories for those who identified as American Indian (AI) only, American Indian and White (AI/White), and White only. Gender was assessed with a binary response option (female/male). Socioeconomic status was represented by the student's enrollment in a free or reduced-price lunch program.

Analyses

Univariate analyses were performed using SAS 9.4 on data available for participants at both T1 and T2. Stratified by race (AI only, AI/White, White only), frequencies and percentages

are reported for categorical demographic variables (age, gender, enrollment in a free or reduced-price lunch program). Mean scores with standard deviations are reported for continuous predictors (perceived racial/ethnic discrimination, social support, depressive symptoms at T1) and the outcome of interest (depressive symptoms at T2). Bivariate analyses were performed using unadjusted linear regressions to predict depressive symptoms (T2) based on discrimination frequency and intensity separately. Adjusted linear regression models were performed to predict depressive symptoms while adjusting for age, race, gender, enrollment in a free or reduced-price lunch program, depressive symptoms (T1), and social support. Additional models were assessed for moderation of the main relationships between discrimination and depressive symptoms by race and social support. To handle missingness, complete case analysis was used. As a sensitivity analysis, multiple imputations (m = 20) were performed to address missingness across time points using PROC MI in SAS 9.4. Linear regressions were performed for each imputed data set then pooled to estimate standard errors using parameter estimates and covariance matrices for each imputation (IDRE Statistical Consulting Group, 2021).

RESULTS

Results of the univariate analyses are presented for the overall sample as well as stratified by race in Table 1. Twenty percent of students who responded to the discrimination frequency item (n = 316/1573) reported ever having experienced discrimination. By race, the frequencies of adolescents reporting ever having experienced discrimination were 23.15% (AI), 22.39% (AI/White), and 17.72% (White). Of those who experienced discrimination, 44.03% (n = 177/402) described the discrimination experiences as somewhat or very disturbing. By race, among those who experienced discrimination, the frequencies of adolescents reporting somewhat or very disturbing discrimination experiences were 53.13% (AI), 43.59% (AI/White), and 38.27% (White).

Unadjusted linear regressions were performed to observe the effects of discrimination frequency and intensity on depressive symptoms without covariates. Compared to students who reported never having experienced discrimination, those who reported ever having experienced discrimination scored, on average, 2.62 units higher on the depressive symptoms scale six months later (95% CI: 1.82-3.43, p<.0001). This relationship was statistically significant for each racial/ethnic group (AI, p = 0.005; AI/White, p < .0001; White, p < .0001). Among the subsample of individuals who reported experiencing discrimination, there were no statistically significant differences in depressive symptoms based on discrimination intensity, overall or by racial/ethnic

group ($p > .05$ for overall and for each racial/ethnic group). Adjusted linear regressions determined that neither race (AI/White, $p = 0.772$; White, $p = 0.346$) nor social support ($p = 0.519$) moderated the relationship between discrimination frequency and depressive symptoms.

Table 1

Sample characteristics of high school students for demographic, exposure, and outcome variables

	Overall (*n* = 1,622)		AI (*n* = 422)		AI/White (*n* = 338)		White (*n* = 862)	
	n or M	% or SD	n or M	% or SD	n or M	% or SD	n or M	% or SD
Age								
≥19	14	0.86	5	1.19	1	0.30	8	0.93
18	195	12.03	57	13.54	35	10.36	103	11.95
17	392	24.18	107	25.42	83	24.56	202	23.43
16	414	25.54	103	24.47	87	25.74	224	25.99
15	430	26.53	118	28.03	94	27.81	218	25.29
≤14	176	10.86	31	7.36	38	11.24	107	12.41
Gender								
Male	816	50.31	207	49.05	175	51.78	434	50.35
Female	806	49.69	215	50.95	163	48.22	428	49.65
Free or reduced-price lunch								
Yes	642	44.71	183	49.73	130	44.52	329	42.40
No	794	55.29	185	50.27	162	55.48	447	57.60
Discrimination frequency								
None	1257	79.91	312	76.85	253	77.61	692	82.28
Hardly ever	213	13.54	57	14.04	48	14.72	108	12.84
A few times a year	76	4.83	30	7.39	20	6.13	26	3.09
Monthly	14	0.89	3	0.74	2	0.61	9	1.07
Daily	13	0.83	4	0.99	3	0.92	6	0.71
Discrimination intensity								
Not applicable	1149	74.08	270	67.84	246	75.93	633	76.36
Not very disturbing	225	14.51	60	15.08	44	13.58	121	14.60
Somewhat disturbing	115	7.41	40	10.05	28	8.64	47	5.67
Very disturbing	62	4.00	28	7.04	6	1.85	28	3.38
Social support	18.33	3.86	18.36	3.84	18.05	3.61	18.42	3.97
Depressive symptoms	17.38	5.55	17.34	5.72	17.51	5.23	17.36	5.59
Depressive symptoms (T2)	16.56	5.92	16.45	6.10	16.87	5.85	16.49	5.87

n = number of students; M = mean; T2 indicates data collected at the second time point (April – May of 2012). Missing data where overall n ≠ 1622. Percentages were calculated based on available data for each race on each variable listed. Social support was assessed using a 6-item scale that asked about the people in a person's life. Possible scores range from 6 to 24 (Oklahoma Department of Mental Health and Substance Abuse Services, 2010). Depressive symptoms were assessed using a 6-item scale validated in a clinical sample of adolescents. Possible scores range from 10 to 30, where <18 is low risk, 18-23 is moderate risk, and ≥23 is high risk (Kandel & Davies, 1982).

Adjusted regression models were performed on the overall sample. Tables 2a and 2b show results of the adjusted linear regression models predicting depressive symptoms based on discrimination frequency (Model A) and discrimination intensity (Model B), respectively. When adjusting for age, race, gender, enrollment in a free or reduced-price lunch program, T1 depressive symptoms, and social support, discrimination frequency was found to significantly predict depressive symptoms six months later (Model A). Compared to students who reported never having experienced discrimination, those who reported ever having experienced discrimination scored, on average, 1.62 units higher on the depressive symptoms scale six months later (p<.0001, 95% CI: 0.90, 2.33), while accounting for potential confounders. Sensitivity analyses with multiple imputations resulted in a small attenuation of this effect (B = 1.27, p < .0001, 95% CI: 0.64, 1.89). Yet, discrimination intensity did not significantly predict depressive symptoms in adjusted analyses (Model B). These results remained robust in sensitivity analyses (p = .672).

Table 2a

Adjusted linear regression model predicting depressive symptoms (T2) based on discrimination frequency

Model (n)	Variable	B	SE	*p*	95% CI
A (1118)	Discrimination frequency: ever	1.62	0.37	<.0001	0.90-2.33
	Social support	-0.07	0.04	0.056	-0.15-0.00
	Age	0.06	0.12	0.603	-0.17-0.29
	Female	0.69	0.29	0.018	0.12-1.26
	Free/reduced-price lunch	-0.19	0.29	0.492	-0.77-0.37
	Depressive symptoms	0.61	0.03	<.0001	0.56-0.67
	AI/White	0.28	0.42	0.506	-0.55-1.11
	White	0.25	0.34	0.468	-0.42-0.93

T2 indicates depressive symptoms data collected at the second time point (April—May 2012).
All predictor variables were collected at T1 (November—December 2011). n = number of students (less than n reported in Table 1 due to missingness on covariates); B = beta; SE = standard error; CI = confidence interval; AI = American Indian. Model A (full sample) predicted T2 (April—May 2012) depressive symptoms based on discrimination frequency (ever vs. never) while adjusting for covariates. AI is the referent group.

Table 2b
Adjusted linear regression model predicting depressive symptoms (T2) based on discrimination intensity

Model (n)	Variable	B	SE	*p*	95% CI
B (262)	Discrimination intensity: more	0.26	0.66	0.700	-1.03-1.55
	Social support	-0.12	0.09	0.182	-0.29-0.05
	Age	-0.51	0.29	0.075	-1.07-0.05
	Female	1.54	0.69	0.023	0.21-2.86
	Free/reduced-price lunch	0.23	0.67	0.732	-1.09-1.55
	Depressive symptoms	0.58	0.06	<.0001	0.46-0.70
	AI/White	0.84	0.92	0.363	-0.96-2.64
	White	0.57	0.75	0.449	-0.91-2.05

T2 indicates depressive symptoms data collected at the second time point (April—May 2012).
All predictor variables were collected at T1 (November—December 2011). n = number of students (less than n reported in Table 1 due to missingness on covariates); B = beta; SE = standard error; CI = confidence interval; AI = American Indian.
Model B (subsample of individuals who reported ever having experienced discrimination) predicted T2 depressive symptoms based on discrimination intensity (more vs. less) while adjusting for covariates. AI is the referent group for both models.

DISCUSSION

Previous research has revealed associations between discrimination and mental health outcomes in young people, and the Framework of Discrimination Stress, Coping and Mental Health by Vines and colleagues describes the theorized relationship between discrimination exposure and mental health outcomes (Cave et al., 2020; Priest et al., 2013; Vines et al., 2017). As research on discrimination and depressive symptoms among AI adolescents and others living on reservations continues to grow, the mental health of these populations persists as a public health concern (Cave et al., 2020; Curtin & Hedegaard, 2019; Priest et al., 2013). The aim of the current study was to begin to fill this gap by better understanding the longitudinal role of perceived racial/ethnic discrimination among adolescents living within the Cherokee Nation reservation as it pertains to later depressive symptoms.

The significant relationship between discrimination frequency and depressive symptoms observed here aligns with the Framework of Discrimination Stress, Coping and Mental Health (Vines et al., 2017), as hypothesized. Students who reported experiences of discrimination at T1 reported significantly higher levels of depressive symptoms six months later, which lends evidence to the temporality of exposure and outcome. However, contrary to expectations, neither race nor social support moderated this association. Social support has previously been found to buffer the

detrimental effects of adversity on mental health (Roh et al., 2015), so it is possible that the measure used in this study was not capturing the most important facets of social support for adolescents from the target population. Rather than query *who* provides support as the current measure does, it may be worth examining *what types of support* and *with what intensity and reliability* this social support is provided by others and received by adolescents. Future work is necessary to understand moderators (e.g., cultural-ethnic identities and internalizations, including positive private regard) as potential intervention targets to improve mental health and well-being of AI adolescents.

The current study has several strengths. First, the temporality afforded by longitudinal analysis of exposure and outcome contributes greater confidence in the possibility of a causal relationship between discrimination and later depressive symptoms than cross-sectional research. Additionally, the sample size was large, which is especially important given the dearth of literature on discrimination and depressive symptoms among AI adolescents. Finally, the purpose and implementation of the original trial was conceived in collaboration with the Cherokee Nation and is rooted in community-based partnership with practical, need-based questions at the center of our analyses.

Despite these strengths, this study is not without limitations. First, although our discrimination measure captured both frequency and intensity, each was assessed with a single item. Importantly, measures that capture timing or duration of discrimination may be more helpful moving forward as we assess exposure and outcome using a life-course perspective (Cave et al., 2020). Knowledge of when and why discrimination effects change in mental health later on could assist intervention efforts in implementation timing, duration, and content. Use of well-established discrimination measures, including those previously validated among AI samples, would strengthen future research in this area (Blair et al., 2021; Gonzales et al., 2016; Krieger, 2014; Williams et al., 1997). Additionally, small cell counts at higher levels of discrimination necessitated collapsing of categories for the sake of power, which diminished acuity of the discrimination measures. The measure of depressive symptoms similarly may not adequately capture mental suffering of AI youth, since measures of depressive symptoms have been shown to work differently in AI/AN samples relative to non-AI/AN samples (Barbosa-Leiker et al., 2021). Use of self-reported data introduces the possibility of social desirability bias and recall bias of past exposures. Although the study's findings contribute to growing evidence behind the Framework of Discrimination Stress, Coping and Mental Health (Vines et al., 2017), contextual, historical,

and sociological factors are not sufficiently addressed using this theoretical basis alone to effectively center Indigenous perspectives. As noted, as a common weakness in this type of research (Kirkinis et al., 2018), we did not measure or control for non-race-based trauma. Future studies could measure and account for cultural identity (e.g., centrality of ethnic-racial identity, private regard) and collective, intergenerational, and historical traumas that were not explored in this study.

In the face of concerning disparities in mental health outcomes, AI adolescents are not receiving needed attention (Brockie et al., 2015; Leavitt et al., 2018; National Indian Council on Aging, 2019), and these findings add to the evidence base that could inform future prevention and intervention strategies in timing, duration, and tailored content to prevent or buffer discrimination effects on mental health. For instance, as part of the ongoing community trial, Connect was designed as a one-on-one intervention between student and coach to foster mental health and prevent substance use (Komro et al., 2017). Understanding moderators of the relation between discrimination and depressive symptoms would be helpful to tailor Connect and similar programs to meet students' unique needs, using insight into understanding risk and protective factors as intervention targets. Future directions in this area could include testing the pathways of the guiding theoretical framework that include externalizing behavior patterns (e.g., risky behavior such as alcohol or other drug use) as mediators of the relation between discrimination and depressive symptoms, or the role of internalizing psychological responses such as cultural identity. Future work should also consider critical contextual influences (e.g., historical trauma and community factors) as social determinants of mental health among adolescents from understudied, underserved groups relative to Western populations who are typically at the focus of this type of research. Protective factors at the individual level (e.g., self-compassion, mindfulness) and community levels (e.g., cultural strengths, connectedness, engagement in tribal activities) may be powerful buffers on the pathway from discrimination to depressive symptoms and should be explored to inform tailored, culturally relevant strategies for mental health promotion among AI youth (Dolezal et al., 2021; Masotti et al., 2020).

In conclusion, this study adds to the evidence base behind discrimination as predictive of later depressive symptoms among adolescents from the Cherokee Nation by examining the longitudinal relationship between exposure and outcome. Adolescents from the Cherokee Nation comprise a population that may benefit from tailored support and resources to improve health outcomes.

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EVALUATING THE IMPACT OF A CULTURALLY SENSITIVE ART PROGRAM ON THE RESILIENCE, PERCEIVED STRESS, AND MOOD OF URBAN AMERICAN INDIAN YOUTH

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Abstract: American Indian and Alaska Native (AI/AN) youth face a history of adversity and trauma that are linked to academic and health concerns. Culturally grounded art-based interventions hold promise to address challenges faced by AI youth. AI culture and wisdom can evoke a sense of capability in youth that strengthens their resilience. This study sought to evaluate a culturally oriented art therapy curriculum on its impact on resilience, stress, and mood for AI youth (n = 36). A paired-samples t-test was conducted to compare the perceived stress scores of the participants before and after a 12-week art intervention. There was a significant decrease in participant perceived stress between the pre (M = 16.7, SD = 4.7) and post conditions (M = 20.4, SD = 4.6); t (24) =, -3.5 p = 0.002). A paired-samples t-test was conducted to compare the mood of each participant before and after each instance of art activity to see if there was a self-reported change in mood. There was a significant improvement in participant mood in 10 out of 11 of the intervention weeks. Although no statistically significant change was found in participant resilience, participants in this study did report high levels of resilience. This study provides promising evidence that a culturally salient after-school art curriculum program can reduce stress and improve mood for urban AI youth.

BACKGROUND

American Indian and Alaska Native (AI/AN) youth living outside of tribal lands are immersed daily in a world steeped in settler colonialism with intense pressure to negotiate and adapt their traditions and values within non-Native settings (Joseph & Windchief, 2015). Over centuries, Native populations living in the United States have experienced an immense loss of life, forced deculturization, and suppression of their traditions and culture (Brave Heart, 1998;

Garrett et al., 2014). A systematic review of the effects of historical trauma found that Native people with perceived historical loss (e.g., loss of language, culture, spiritual ways, and loss of people) had more significant adverse health outcomes (Gone et al., 2019). Alienation, discrimination, and co-occurring stress result from living in environments that are hostile to Native culture and can present an increased prevalence of negative health and academic outcomes for Native youth such as anxiety, ADHD, school problems, and grade failures (Brockie et al., 2015; Kenney & Singh, 2016). The negative effects of discrimination may be more pronounced in educational settings outside of reservation land where protective factors such as local knowledge, language, and culture are less prevalent (Demmert et al., 2006).

Native youth are represented in relatively small numbers within urban schools and operate daily within settings where Native culture and traditions are not practiced and most interactions are with non-Native people (Moran et al, 1999; Weaver, 2001). In contrast to Native youth living within the socio-cultural boundaries of tribal communities, youth within urban areas often experience varying intensity, frequency, and quality of interactions with Western colonialism, often reducing the access to vital sources of resilience for Native well-being.

The movement of AI/ANs to urban settings can be traced back to a relocation program implemented by the Bureau of Indian Affairs in the 1950s. The program focused on AI/AN assimilation through employment and relocation. By 2010, nearly 70% of AI/ANs lived in urban settings (Burt, 1986). Depending on the level of connections to tribal homelands, access to AI/AN community leaders, and participation in cultural events, urban AI/AN families may express varying degrees of cultural connectedness. Acculturative stress, historical trauma, negative stereotypes, and discrimination are common challenges for Native youth living in urban environments (Brown et al., 2016). According to Dickerson et al. (2016), living in an urban setting impacts self-esteem and increases risk for substance abuse, suicide, and violence for Native youth.

In the literature, both negative and positive outcomes regarding Native well-being are well documented, although negative outcomes tend to be more frequently highlighted by researchers. While it is important to acknowledge the prevalence of risk factors and disparities, there is a need to identify the strengths and resources of the Native population to provide alternative pathways to addressing current disparities in mental health and education. For this reason, this paper will emphasize Native sources of strength as a framework for addressing mental health disparities.

Native Resilience

A critical component of well-being for many Native people living in urban settings is being able to sustain their culture and identity through deep connections with homelands and tribal communities (Clifford, 2007). For many Native communities, cultural resilience is largely associated with their culture, familial support, spirituality/religion, and community connectedness (Henson et al., 2017). Participation in traditional events can provide Native youth with a sense of belonging. Kulis et al.'s (2016) study of urban Native youth suggests that tribal affiliation ties to the reservation are crucial to youth being culturally oriented instead of bicultural.

Historically, resilience has been operationalized as an individual's ability to recover and overcome the obstacles of life (Masten, 2001; Garrett et al., 2014). Most models operationalizing resilience within the literature are based on Western values of individualism, such as the focus on an individual's ability to succeed despite adversity. More recently, models have expanded their definition in a more nuanced and multi-faceted way (Fast & Collin-Vézina, 2020). In newer models, resilience is conceptualized as an individual's capacity for adaption to adversity as a function of several interacting systems that can be biological, cultural, and interpersonal (Garrett, et al., 2014). Strand and Peacock (2003) define cultural resilience for Native people from a strengths-based perspective that all cultures have positive attributes, and the utilization of those practices and ways of thinking provide a means to overcome obstacles. To better understand Strand and Peacock's (2003) interpretation of Native sources of resilience, an exploration of the primary interacting systems Natives operate within is necessary.

Within Native cultural identity, both individual-level factors and community-level factors are found to significantly contribute to positive outcomes for Native communities (Fleming & Ledogar, 2008; Wexler et al., 2009; Kirmayer et al., 2011; Thomas & Mitchell, 2015; Fast & Collin-Vézina, 2020). Despite the great diversity in Native tribal identities, sources of strength across many Native cultures often relate to three categories: culture, spirituality, and social connectedness within family and community (Goodluck, 2002). Current research on cultural resilience, especially for Native populations, demonstrates a strong relationship between resilience and family, community, and cultural systems. Native identity is often considered a protective factor, and traditional values and practices can contribute to healing outcomes (Gfellner & Armstrong, 2012; Tyser et al., 2014; Zapolski et al., 2017). The use of Native language, culture, and practices has been found to evoke a sense of strength and capability in youth that helps strengthen resilience and problem-solving skills (Crooks et al., 2010). This is not unexpected as Native people often view themselves as existing in

unison with the energy, spirit, and history of their people (Lefler, 2009). A study completed by Grandbois and Sanders (2012) found that Native resilience is grounded in the family and community relationships that exist between the people. Community resilience can be defined as a collective process whose resources for surpassing obstacles come from a network of relationships, shared beliefs, and the availability of resources (Kirmayer et al., 2009). For many Native cultures, the arts can be used as a way families and communities can record their past, visualize their future, and pass down traditional cultural knowledge to the next generation (Parezo, 1990). Because of this, art serves as a symbol of distinct ethnic identity for the people and their spirituality (Parezo, 1990).

Culturally Salient Art Interventions

Art practices are considered an essential element of life for many Native cultures (Dufrene, 1994). Archibald & Dewar (2010) described art as part of a larger holistic model of health that connects Native people to their culture, spirituality, and identity. Among the Diné (i.e., Navajo) and the Hopi, art is a part of life, and it is inseparable from their cultural values and philosophical principles. Diné art forms include basketry, pottery, painting, weaving, and jewelry (Schmitt, 2016). Among the Hopi, additional art forms include fabrics, kachina dolls, and other crafts (Schmitt, 2016). Art is often used as a demonstration of origin mythology, prayer, and ritual and can teach youth the histories of their people (Dufrene, 1991).

Given the historical presence of art as a pathway to healing and balance for many Native populations, it presents a natural approach to implementing interventions with Native students in school settings. When art interventions are co-constructed with the community and are culturally relevant, Native communities may benefit from the use of art in therapy (Sherr, 2018). Although art is deeply ingrained within Native culture, art interventions are a relatively new modality within educational or clinical settings. Culturally based art interventions, in particular, have been shown to increase cultural knowledge and social well-being for Native youth (Allain, 2011). These programs can teach children essential skills such as self-observation, socialization, and emotion regulation and are essential to strengthening a child's resilience (Masten & Barnes, 2018). For Native populations, interventions should be formulated to address their cultural resilience as a means of reintroducing important cultural coping mechanisms (Crooks et al., 2010). Ultimately, culturally grounded art interventions can help reconnect children and families to their Native heritage through traditions such as ceremony and art.

Strengthening individual- and community-level resilience in Native youth is an evidence-based means to reduce the harmful effects of centuries of forced colonization and suppression of Native culture within the United States (Oré et al., 2016). Interventions based on traditional fine arts and enculturation experiences can be utilized to teach coping strategies and bring more balance and power to families and children affected by generational trauma (O'Neill et al., 2018). Art-based interventions for youth have been shown to improve general wellness, decrease stress, and improve mood, self-awareness, resilience, and self-esteem (Fanian et al., 2015). Cultural art programs created for at-risk youth correlate with an increase in positive adaptive behaviors (Fanian et al., 2015). Art and art-based activities play a significant role in various Indigenous cultures worldwide, making them a useful tool for intervention with this population. Art interventions typically involve a therapy based on engagement in artistic activities as a means of creative expression and symbolic communication (Granier, 2011). Art therapy theory posits that through the creative process of artmaking, a person is allowed to experience a symbolic transformation in how they think and behave (Granier, 2011). Chapman and colleagues (2001) explain that art can be used as a mechanism of synthesizing visual and verbal narratives to reconstruct traumatic memory into a more coherent autobiographical memory.

Art-based interventions, although seldom studied in the empirical literature, show promising success among Native youth and are gaining popularity in their use to address various challenges faced by Native populations. Examples include raised awareness on health issues, improved confidence, and strengthened connections within cultural communities (Fanian et al., 2015). Art-based interventions provide opportunities for youth to improve metrics of well-being, even if the environment/context they live in is limited in other ways. A study by Sitzer and Stockwell (2015) used a 14-week art therapy program for at-risk youth to improve metrics of wellness, including emotional, behavioral, cognitive, and social functioning, as well as resilience. They found that boys who participated in the 14-week art therapy intervention improved significantly on three out of five factors, with the most significant factors being emotional and social functioning. For girls, the art therapy intervention showed improvement across all of the evaluated wellness domains, with the emotional functioning factor being most significant. Emotional expression and identification were identified as some of the most important and significant achievements of the 14-week art therapy intervention (Sitzer & Stockwell, 2015).

Art interventions that are sensitive to cultural differences have been shown to enhance the connection to tradition and increase cultural knowledge for Native youth (Allain, 2011). Fanian

and colleagues (2015) evaluated a creative arts workshop called *Kots'iihtla*, or "We Light the Fire," and found that engagement in the arts program had the potential to strengthen resilience, form deep connections, and stimulate important discussions for community change amongst Native youth. Although creative arts and art-based therapy have recently been shown to be beneficial to youth, there are very few examples of art-based therapy utilizing quantitative measures to systematically evaluate outcomes. The vast amount of literature available on art-based therapy is qualitative (Stinson, 2009), with many relying on case study reports.

After-school Interventions

Native communities are working to promote a life beyond the past trauma through community organizations and Native youth programs. The aim is to improve the connection to tribal affiliation with the goal of deepening cultural identity and moving away from Western ideologies of personal achievement, financial status, and acquired possessions (Garrett et al., 2013). Given that many AI cultures strongly value community and social connectedness, it becomes clear that after-school programs can be a great source of social support for youth. A substantial body of developmental literature indicates that opportunities where youth can connect with supportive adults and participate with peers in meaningful and challenging activities can help youth develop and apply new social, emotional, and academic skills (Durlak et al., 2010). Involvement in an organized after-school activity that is both supervised and structured is related to improved mental health, decreased risk behaviors, and higher academic achievement (Durlak et al., 2010; Fredricks et al., 2019). In addition, after-school programs provide an accessible entry point for evidence-based interventions because they provide a supervised and structured environment for youth where they gain social, emotional, and academic skills (Fredricks et al., 2019). Native children, who value community connectedness and engagement, have been found to benefit from emotional engagement and higher social bonding and feelings of belonging (Fredricks et al., 2019). Youth engagement in after-school programs has been associated with decreased alcohol use, decreased marijuana and hard drug use, lower rates of school failure, and lower rates of sexual activity and pregnancy (Crooks et al., 2010). Although the mechanisms are not well-defined, youth engagement, as seen in after-school programs, is a non-specific protective factor connected to a wide range of positive outcomes.

After-school program participation is found to be especially beneficial, specifically for academically at-risk students, ethnic minorities, and students who live in a low-resourced context

(Lauer et al., 2006). Strengths-based after-school programming has been shown to reduce adverse outcomes like violence and substance abuse with Native youth (Crooks et al., 2010). Recent literature has shown that strengthening Native youth's sense of resilience through after-school programs that emphasize cultural connection is protective against adverse mental health outcomes and risk-taking behaviors like substance abuse (Thoits, 2010). Although there is some literature regarding the benefits of after-school programs for Native children, there is still a substantial need for more empirically based studies within the field.

Study Purpose

To address the lack of empirical evidence for the use of culturally grounded after-school art programming for Native youth, the current study seeks to systematically evaluate outcomes of a culturally oriented art therapy curriculum. Youth engaged in various culturally relevant art-based activities designed to strengthen emotional skills, resilience, and improve stress and mental health. In addition, this study was formulated in response to a program evaluation completed a year prior by De Heer and colleagues (2020) that identified the need for interventions that connect youth to tribal traditions and culture. Thus, the purpose of this study is to understand the impact of a culturally grounded art-based after-school program on Native youth resilience, perceived stress, and mood.

METHODS

This pilot project was a collaborative, community-based research project through a partnership between a university-based graduate certificate program, a Southwestern University in the United States, and a local Native-serving, after-school program provider.

Study Context

This study took place in the urban area of Flagstaff, Arizona, which is located in Coconino County. Flagstaff is composed of 7.8% Native American, which is 12 times greater than the national average (U.S. Census Bureau, 2019). The federally recognized tribes in the area are Havasupai Tribe, Hualapai Tribe, Hopi Tribe, Navajo Nation, Kaibab Band of Paiute Indians, and San Juan Southern Paiute Tribe. A quarter of Native Americans in Flagstaff live at or below the federal poverty level (Office of Indian Education, 2019; World Population Review, 2021).

Intervention

This project utilized a culturally oriented art therapy curriculum based on the *Start Up! A School-based Arts Curriculum for Native American Youth and All Cultures: Interventions for Development and Learning* (MacCarthy & Chapman, 2017). As a pilot study, the research team modified the original curriculum by shortening it to fit within the time constraints of the after-school program. The original program is designed for students grades K-12. It is divided into four sections: Physical Homeostasis, Emotional Homeostasis, Cognitive Homeostasis, and Creativity. Native cultural elements within the curriculum were designed by cultural advisors to include universal teachings across Native communities. Students were not expected to have knowledge of their culture or ancestry. The curriculum was primarily created as a means of reclaiming Native culture and amplifying cultural diversity among students. Typically, the curriculum is provided twice a week for a total of 36 weeks. Given the time restrictions, the curriculum dosage for this study was twice a week (2 hours each session) for 12 weeks. Aspects of each phase were piloted to assess salience and fit for the population. A single *Start Up!* session included 6 key elements: a) Movement/Sound, b) Breathing/Meditation, c) Bi-lateral Scribble, d) Bi-lateral Drawing, e) Art Activity, and f) Closure/Discussion. Adaptations were made when working with younger children versus older children to meet their developmental needs. Each element incorporated various Native cultural values and practices to engage youth in the community's Native heritage. Cultural values include Native language, spirituality, traditions, and honoring family, ancestry, community, and nature.

For the Movement/Sound section of the session, students were allowed to play outside on the playground. If weather conditions were severe, the students engaged in a game such as “Simon Says” or “Musical Chairs” inside the classroom. For the Breathing/Meditation section, the interventionist guided the students in a meditation where they practiced deep breathing techniques. Guided meditations are culturally grounded and teach students how to relax the body through deep breathing or visualization. For the Bi-lateral Scribble activity, the participants were given coloring devices and engaged in guided scribbling using both their left and right hand. Scribbles became progressively more complex as the art programming progresses. For the Bi-lateral Drawing, participants engaged in drawing culturally relevant images (e.g., nature, agriculture, symbolic animals such as bears, eagles, etc.) using both hands. Again, this activity engaged the participant’s tactile and auditory senses. For the Art Activity, participants engaged within a different culturally grounded art project every week. Art projects were utilized to teach various socio-emotional and

culturally relevant principles and were used as an expressive outlet for the youth. During and after the art projects, the interventionist engaged participants in conversations regarding the session's major lesson or theme. Participants were encouraged to discuss feelings, thoughts, and attitudes they may have regarding the session's project. The program held a level of flexibility to tailor to the unique developmental needs of every participant.

Curriculum

The main focus of this pilot curriculum was to foster problem-solving skills and promote positive social interaction and personal introspection through artwork and Native cultural teachings. Throughout the course of the curriculum, students learned to listen to others, be introspective, and give feedback and encouragement to their peers. An example of the curriculum is given as follows.

Weeks 1-2. The primary theme of the first two weeks was to build trust and establish routine. Students collaboratively created a list of group rules around respect for each other and the artwork produced during the program. Group facilitators explained the importance of respectful discourse surrounding personal stories and artwork created during the program. Activities included creating art about each student's family culture and working in pairs to create Native mandalas, or more specifically art closely resembling Native sand paintings and dream catchers. These activities focused on identity support and future-oriented thinking.

Weeks 3-5. For the next three weeks, the primary theme was to explore family cohesion through guided meditations, discussing the importance of family and ancestors, and art directives such as creating clay animal families and prayer ties. These activities help foster student thinking about self in connection to family and community.

Weeks 6-8. For weeks six through eight, the students focused on strengthening emotion regulation skills. The students engaged in discussion and art directives that facilitated learning how to self soothe and regulate emotions such as making emotion collages, anger boxes, and coping cards. Students were asked to discuss how families and cultures cope with challenges differently. Indigenous ways of healing through prayer, ceremony, and community connection were highlighted.

Weeks 9-10. Students continued to engage in activities to strengthen coping skills. Activities include guided nature meditations, using clay to create power animal necklaces, and drawing a bridge representing their past, present, and future. Discussions engaged student

reflections regarding changes they have noticed within themselves and how this insight may shape future perception of self.

Weeks 11-12. For the last two weeks, the program highlighted the importance of resilience through a cultural lens. Students engaged in activities that highlighted connection and giving back to their family and community. Students engaged in discussions regarding what they have learned and how they may honor their past and future. At the end of the program, students were invited to a family art show to give them the opportunity to showcase their art and progress throughout the program.

Participants

The participants for this pilot study were selected from a purposive convenience sample of students enrolled in an after-school program designed for Native youth living in the American Southwest. All participants, with parental permission and informed consent, were allowed to participate in the research portion of the art project. Fifty Native youth participated in the pilot art therapy program, ranging in age from 5 to 13 years old. After-school programs have varying attendance based on diverse family needs and the time of year. Because of this, 14 participants were not able to complete each stage of the intervention and were omitted from the final analysis, leaving a total of 36 participants. A convenience sample was utilized as this research was done in partnership with a community partner who regularly provides after-school programming for Native youth.

Study Design and Measures

This project was guided by individual and community mental health concerns. The evaluation of the pilot art therapy program was conducted as a single group, pre-post-test, within-subjects design with the participants as their control. The culturally salient arts programming was implemented for 12 weeks. A demographic questionnaire and three measures were used to assess child mood, resilience, and perceived stress. This study utilized two previously validated scales, the Perceived Stress Scale (PSS) and the Child and Youth Resilience Measure-Revised (CYRM-R) to assess child resilience and perceived stress. The PSS and CYRM-R measures were administered to the participants before the start of the arts programming (Week 1) and at the end of the programming (Week 12) as a pre-post measure. A smiley face Likert scale was used to assess participant mood at the start and at the end of each intervention session across 11 weeks to

assess changes in mood. The smiley face scale was not used on week 12 as the post-test was administered that week. The PSS, CYRM-R, and smiley face Likert scale were administered through Qualtrics, a widely used digital survey tool. Because of the level of the language utilized within these scales, for developmentally younger children, the questions were read and explained to them by research assistants.

Perceived Stress Scale

The PSS (Cohen, 1988) is the most widely used psychological instrument for measuring the perception of stress in the previous 30 days. It is a measure of the degree to which situations in one's life are appraised as stressful. Items assess how unpredictable, uncontrollable, and overloaded respondents find their lives. The scale also includes several direct queries about self-reported stress levels of the previous 30 days. Individual scores on the PSS can range from 0 to 40, with higher scores indicating higher perceived stress. Scores ranging from 0-13 are considered low stress, scores ranging from 14-26 are considered moderate stress, and scores ranging from 27-40 are considered high stress. The questions are general and are relatively free of content specific to any subpopulation group. The questions were explained by the research team to the younger participants, when questions arose about meaning.

Child and Youth Resilience Measure-Revised

The CYRM-R (Resilience Research Centre, 2019) is a 17- item instrument designed to measure youth resilience while accounting for differing social contexts and cultures. The CYRM-R has proven validity with Indigenous youth ages 11 to 19 in Canada and Australia, but its validity with AI populations is unknown (Jongen, et al., 2019; Langham et al., 2018). In the CYRM-R, items are rated on a five-point Likert scale (1 = does not describe me at all; 5 = describes me a lot). Higher scores on the CYRM-R indicate higher levels of resilience (Resilience Research Centre, 2019). This project utilized an unmodified 3-point measure (with responses going from 1-3). For overall resilience, the minimum score is 17 and the maximum score is 51. Additionally, two other sub-scores were calculated that examined caregiver/relational resilience and personal resilience. Caregiver/relational resilience relates to characteristics associated with the important relationships shared with either a primary caregiver or a partner or family. Personal resilience includes intrapersonal and interpersonal items. The minimum caregiver subscale score is 7 and the maximum score is 21. The minimum personal resilience subscale score is 10 and the maximum is 30.

Smiley Face Likert Scale

The smiley face Likert scale was utilized as a means of assessing participant mood. Participants were asked to evaluate their mood based on a 5-point emoji scale ranging from very sad to very happy faces. Smiley face Likert scales allow for children to communicate their emotions and express their judgments much better than they may verbally (Hall et al., 2016). This method of evaluating mood has been shown to be effective with younger children, especially when adjusted in analysis with neutral as the low score (Hall et al., 2016).

Procedure

This study was approved by the Institutional Review Board at a Southwestern United States university and was reviewed and approved by the university's Tribal Liaison in accordance with the tribal consultation policy. Before participation, parents or guardians received an informed consent agreement describing the format of the program and the potential benefits and risks for participation. All youth in the after-school program were allowed to participate in the art projects. However, data was only collected from those with informed consent on file. Youth who opted to participate in the study also completed a child assent form.

Statistical Analysis

Prior to analysis, all variables were examined for accuracy of meeting standard parametric assumptions. All statistical analyses were conducted with SPSS version 26.0. Comparisons were regarded as significant at $p < 0.05$ unless indicated otherwise. Reliability analysis of the 10 items in the PSS scale was conducted. Cronbach's alpha levels indicated that the questionnaire reached acceptable reliability (Cortina, 1993), $\alpha = 0.85$.

RESULTS

Demographics

Table 1 provides a full description of the study sample. Study participants (n = 36) ranged in age from 5-12 years (M = 8.25, SD = 1.79). All participants identified as AI and were enrolled in the after-school program.

Table 1
Paired samples t-test (mood pre/post intervention session)

Session Number	Mean	Std. Deviation	95% CI of the Difference Lower	Upper	t	df	Sig. (2-tailed)
Pre/post 1	-0.32	0.69	-0.605	-0.035	-2.317	24	0.029*
Pre/post 2	-0.172	0.889	-0.511	0.166	-1.044	28	0.305
Pre/post 3	-0.417	0.654	-0.693	-0.141	-3.122	23	0.005*
Pre/post 4	-0.417	0.881	-0.788	-0.045	-2.318	23	0.03*
Pre/post 5	-0.44	0.651	-0.709	-0.171	-3.381	24	0.002*
Pre/post 6	-0.357	0.731	-0.641	-0.074	-2.585	27	0.015*
Pre/post 7	-0.455	0.739	-0.782	-0.127	-2.887	21	0.009*
Pre/post 8	-0.818	0.958	-1.243	-0.393	-4.006	21	0.001*
Pre/post 9	-0.5	0.673	-0.798	-0.202	-3.487	21	0.002*
Pre/post 10	-0.583	0.776	-0.911	-0.256	-3.685	23	0.001*
Pre/post 11	-0.435	0.728	-0.749	-0.12	-2.865	22	0.009*

Note: Statistical significance is marked by an asterisk.

Perceived Stress

The majority of participants reported moderate stress (n = 32), followed by low stress (n =3), and high stress (n = 1). A paired-samples t-test was conducted to compare PSS stress scores by participant before and after the art intervention. There was a significant difference in the scores in the pre (M = 20.1, SD = 4.6) and post conditions (M = 16.8, SD = 4.6) $t(24)$= -3.5 p = 0.002).

Resilience

To understand the range of scores within our sample, the pre-test sample scores were ranked to contrast the top half of scorers against the lower half of scorers. For this sample, scores ranged from 29-48. Lower resilience scores for our sample fell between 29-38, with higher resilience scores falling between 39-48. Sixteen percent of scores fell within the lower resiliency range, while the majority (83%) fell within the higher half of the resilience range for this sample. A post-test score of resilience was measured, but the change in scores was not significant.

Mood

Smiley face choices were converted to a Likert scale (1 = very sad; 5 = very happy) to allow for statistical analysis. A paired-samples t-test was conducted to compare the mood of each participant before and after each intervention session to see if there was a self-reported change in mood. Due to missing data, only 11 intervention weeks were analyzed. There was a significant

difference in the scores in 10 out of 11 of the intervention weeks as seen in Table 1 below. The significant difference in scores indicates an improvement in mood from pre- to post-art activity. In order to understand the change from pre to post in this sample, a difference score was calculated to aid in analysis and provide a more complete picture of the differences between pre and post scores.

DISCUSSION

The purpose of this study was to determine the impact of a culturally sensitive art-based after-school program on resilience, perceived stress, and mood for Native youth. Although this project was a small pilot study, the findings suggest the expansion of this culturally grounded art intervention would be beneficial for Native youth.

Before the art intervention began, stress levels were assessed, revealing that the majority of youth in the study were moderately stressed. This finding was congruent with a large body of literature indicating that minority populations, and Native populations specifically, experience high levels of stress. Stress was assessed at the end of the 12-week art intervention, and stress scores were shown to be significantly lower than the pre-intervention scores. Although we can't directly attribute this decrease in stress to the art intervention, it may be likely that art has a promising ability to reduce participant stress levels.

In addition to collecting stress scores before the intervention, we also collected a youth resilience measure. There was no significant difference in resilience found before and after the art intervention. Unlike stress scores, resilience is not considered an acute measure, so little change over a short period of time was not surprising. In addition, given that resilience for Native youth is primarily rooted within cultural and Native heritage, it may be better measured through qualitative means rather than quantitative means. Because of the nature of resilience measures, we decided to use cut-offs that were determined by our participant sample. While a few students fell within the lower half of resilience scores, the majority of participants fell within the higher half of resilience scores. So, while the participants were moderately to highly stressed, they were also highly resilient. Our findings concerning resilience were congruent with the existing body of literature, indicating that Southwestern Native populations have a high level of resilience (Oré et al., 2016; Wexler et al., 2009).

In addition to stress and resilience, participant mood was assessed before and after each intervention session to determine if the interventions had an effect on participant mood. In the

literature, mood is shown to be a proxy measure for stress, with lower mood being associated with higher levels of stress (Martyn-Nemeth et al., 2009). When examined statistically, participant mood was shown to improve in 10 out of the 11 instances of the art activities. This is an important finding, as it shows that culturally based art interventions may be able to improve the daily mood of Native youth. This finding also helps strengthen the connection that interventions may be able to lower the perception of stress.

This 12-week pilot intervention shows promising findings regarding improving levels of stress and mood for a historically marginalized and at-risk population. It is critical for culturally grounded after-school programs like this to be evaluated for their effectiveness in order to promote their use in Native communities. The mechanisms of the improvement seen in specific student populations are essential but underexplored in the existing literature. Future research should address this gap by exploring how individual and program attributes moderate or mediate the relationship between participation in after-school activities and improved outcomes for specific populations of youth. Currently, longitudinal examinations of after-school interventions are minimal. They do not typically follow up with participants after the intervention has ended, making it challenging to explore the effects after-school programs have long-term (Durlak et al., 2010). Much of the previous literature focuses on academic outcomes but neglects other proximal outcomes like social and emotional skills (van Westrhenen & Fritz, 2014). Examining the impact culturally grounded interventions have on the level of cultural connection for Native youth would also be an area for future research. Lastly, given the promising findings of after-school programs, it will be important to examine factors related to implementing after-school programs to demonstrate the benefits of such programs more thoroughly to youth and society at large.

Limitations

This study contains a number of limitations. The overall design of this pilot study was a small sample size pre-test/post-test study without randomization or a control group. The culturally grounded arts program was only evaluated in one after school program with participants of diverse developmental ages. In addition, it is difficult to rule out attrition, testing effects, demand characteristics, or extraneous impacts from other events. For future studies it would be useful to collect data from non-Native students from the same area and attending the same schools to determine where students may start or end the program differentially whether they identify as Native. Given that the curriculum does not specifically reference any particular tribal affiliations,

future studies should consider incorporating targeted cultural elements for specific Native groups to better meet the local community needs. Incorporating Native interventionists and community shareholders may help with this goal. Existing literature suggests that having trained and culturally congruent personnel can be important for youth when connecting to their Native community (Whitesell et al., 2018). Given the intervention facilitators were non-Native, collaboration with an AI/AN community shareholder to ensure cultural sensitivity within the research and intervention process was a priority. Although, the positive results may have been amplified if the facilitators had themselves been of Native heritage. Another limitation was attrition of research participation. Of the 50 initial participants, 14 participants did not participate in every intervention or were not able to stay and complete an intervention. Within the methodology, there is some evidence that the smiley face Likert scale to measure mood may not adequately capture the perceived mood and that participants may provide a positive response to meet a perceived social norm (Hall et al., 2016). Although both the PSS and CYRM-R were validated on AI/AN populations, they were not validated on children ages 5-7. Finally, it should be noted that Native groups in the United States each have unique cultural worldviews specific to each Native Nation; this study may not be generalizable to all Native groups of the United States.

Implications

Using culturally based arts as a tool has been shown to improve both immediate outcomes, such as mood, and longer-term outcomes, such as emotional regulation, resilience, self-esteem, and overall wellness. After-school programs provide a unique entry point for interventions that emphasize capacity and skill-building as well as prevention. After-school programs for Native students may be especially useful in providing a sense of community for youth living in areas more disconnected from tribal lands and sources of Native culture. Art-based after-school programs can provide Native students a place where they can express themselves through art and connect with other Native youth. Future research needs to prioritize empirically validating the effectiveness and appropriateness of cultural, art-based Native programming and enabling broader dissemination and implementation of Native evidence-based interventions. Given the diversity in Native culture and traditions, community research initiatives should engage in adapting Native interventions to better suit the unique tribal communities they are meant to serve. Further research on the longitudinal benefits of culturally based after-school programs can determine the long-term benefits of these programs for Native youth.

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CONFLICT OF INTEREST

The authors declare that they have no conflict of interests.

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THE ROLE OF SOCIAL SUPPORT IN THE MANAGEMENT OF TYPE 2 DIABETES MELLITUS AMONG AMERICAN INDIANS: A QUALITATIVE STUDY

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Abstract: The purpose of this study is to gain insights of American Indian (AI) communities on the role of social support in type 2 diabetes (T2D) management. Social support is a means of enhancing social and personal resources that can address underlying stressors that contribute to T2D inequities and represents a potential channel of intervention to improve management of T2D in these communities. This community-based participatory research included AI adults from the Bois Forte and Lac Courte Oreilles Bands of Ojibwe and consisted of focus groups that were conducted with people with T2D, social support persons, and service providers. Overall findings underscore the importance of social support in T2D management, especially in providing emotional support, fulfilling an appraisal function, and enabling positive health behaviors. It is also important for policies and practices to consider the social and cultural contexts, particularly the socio-historical context of life within AI communities that has inevitably shaped certain mindsets that may present barriers to care-seeking and optimal T2D management. These findings can inform interventions related to T2D management, especially in incorporating social support and complementing community strengths in achieving a broader goal of reducing diabetes inequities in AI communities.

INTRODUCTION

The prevalence of type 2 diabetes mellitus (T2D) in American Indian (AI) communities represents a significant health inequity, with AIs and Alaska Natives (ANs) having age-adjusted diabetes prevalence rates more than double those of the general U.S. population (Centers for Disease Control and Prevention, 2018). Diabetes is also a major cause of morbidity and a top cause of death for American Indians and Alaska Natives (AI/ANs; U.S. Department of Health and Human Services, 2014). One of the factors thought to contribute to increased rates of diabetes and

related complications among AI people is the differential exposure to stress (Turner, 2013; Wheaton et al, 2013). Stress process theories directly connect exposure to stressors to worse mental and physical health outcomes (Pearlin et al., 1981; Walters & Simoni, 2002). It has been shown that stressors negatively impact health behaviors and have also been associated with poorer glycemic control, obesity, and insulin resistance for patients with diabetes (Aikens & Mayes, 1997; Jiang et al. 2008).

Such theories suggest that health behavior in disease management can be mediated through two components: firstly, through addressing stressors, and secondly, through capitalizing on social and personal resources (i.e., coping resources and responses; Pearlin et al., 1981; Umberson et al., 2010). Specific to the AI/AN population, relationships between chronic to discrete stressors and mental and behavioral health outcomes have been documented, underscoring the importance of reducing stress exposure and identifying coping resources as a mechanism of improving health outcomes in people with T2D (Walls et al., 2017). One such mechanism is through enhancing social support. While there is no consensus in the literature on the definition of social support, Shumaker and Brownell define social support as "an exchange of resources between two individuals perceived by the provider or the recipient to be intended to enhance the well-being of the recipient" (1984, pp.11). It is a perception that one is valued and provided with help through various types of interactions, both informal (family members, friends, and peers) and formal (health care professionals, organizations; Strom & Egede, 2012). Social support can be positive or negative (Strom & Egede, 2012; Van Dam et al., 2005), although the term "social support" is usually associated with a positive influence (Van Dam et al., 2005), in contrast to "social pressure," which often implies the inhibition of a wanted behavior (Wills & Vaughan, 1989).

Social support can be conceptualized as a component of social ties, which has been associated with health outcomes in many areas (Umberson et al., 2010). While the structural component of social ties comprises measures of social integration and social networks, the content component of social ties is reflected in measures of social support and stress (Umberson et al, 2010) and forms the focus of this study. It has been postulated that social support impacts health outcomes by facilitating self-care behaviors and coping mechanisms, as well as through physiological processes such as a reduction in blood pressure and stress hormones (Umberson et al., 2010). In the management of T2D, social support provided by one's social networks may be a determinant of patient self-management and diabetes outcomes (Van Dam et al., 2005), and in one study, support from family and friends was shown to be positively associated with glucose self-

monitoring and healthy eating (Rosland et al., 2008). In another systematic review, higher levels of social support were also associated with positive psychosocial outcomes and behavioral modifications (Strom & Egede, 2012).

Specific to Indigenous communities, studies suggest that social context influences social support and, in turn, disease experiences (Epple et al., 2003). Social context includes historical and contemporary stressors that contribute to AI health outcomes, disparities, and access to care (Gone et al., 2019; Elm et al., 2019; Walls & Whitbeck, 2012). Central to this is the concept of historical trauma; the resulting effects include unresolved grief and loss, survivor guilt, psychic numbing, fear, anger, and other symptoms (Whitbeck et al., 2004), which combine with direct, contemporary stressors to affect health outcomes (Balestrery, 2016; Gonzales et al., 2018; Kading et al., 2015). Yet, social context also includes culture as a protective factor; for instance, culture can influence social support mechanisms through the construction of different family units and expectations of support among social networks (Epple et al., 2003). Factors such as the close-knit nature of often small, rural AI communities, large extended family kinship networks, and Indigenous cultural notions of belongingness may buffer the impact of stressors on health (Hill, 2006). These stress-mediating effects are also observed in the management of T2D; for example, active support by family members is associated with positive clinical measures of metabolic control for individuals with T2D (Epple et al., 2003).

Despite the importance of social support on diabetes outcomes among non-Native populations, the existing literature provides only a limited understanding of how social support can enhance management of T2D in AI communities where inequities persist. Therefore, the purpose of this study is to investigate the role of social support in the management of T2D among AI adults from two Ojibwe tribal communities. Findings from the study can inform future efforts of enhancing social and personal resources that can buffer underlying stressors contributing to T2D inequities in these communities, thus supporting the objective of exploring social support as a potential channel of intervention to improve management of T2D.

RESEARCH DESIGN

Study Design

This study utilized focus group data from a community-based participatory research project, the Mino Giizhigad (A Good Day) Study, conducted as a collaboration between the Bois

Forte and Lac Courte Oreilles Bands of Ojibwe and university-based investigators. The purpose of the overall study was to identify and describe the impact of mental and behavioral health factors on diabetes treatment and outcomes among Ojibwe adults with T2D. Tribal resolutions from both communities were obtained prior to submission of the application for funding. The project began with community feasts and forums to discuss the study goals, obtain community feedback, and establish Community Research Councils (CRC). CRC and university team members were active participants in the entire research process, from methodological planning to final data collection and analysis. The University of Minnesota and Indian Health Service National Institutional Review Boards reviewed and approved the methodology included in this study.

Focus Group Methodology

Focus groups were chosen for qualitative inquiry to generate data from a broad range of community members resulting from interactions between participants (Krueger, 2014). Focus groups questions were developed in partnership with the CRCs, and groups were led by two CRC members who were trained as focus group moderators. These moderators followed a questioning route on perceptions of T2D and T2D management, the impact of non-physical health factors on diabetes care, and coping strategies, including the role of social support person(s). Examples of questions used in the focus group questioning route are described in the Appendix (Table A1). All focus groups were audio-recorded and transcribed verbatim. Focus group discussions ranged in length from 53-84 minutes and 25-73 minutes for the Lac Courte Oreilles and Bois Forte groups, respectively.

Recruitment/Participants

Purposive sampling was used to recruit participants for six separate focus groups: 1) two groups consisting of individuals living with T2D, 2) two groups of "informal" service providers, which includes family members and other supportive community members who care for someone living with T2D, and 3) two groups consisting of formal service providers, including medical doctors, dentists, nurses, drug/alcohol counselors, mental health practitioners, and other community-based service providers. Focus group moderators trained in human subjects research ethics worked in collaboration with local clinics and CRC teams to identify community members who matched the criteria for inclusion in each of the three groups. They used study brochures and recruitment scripts to approach potential participants by phone, email, or in-person to share

information about the study, its goals, and invite them to participate in focus groups. Moderators read informed consent documents aloud and secured signed consent forms from all participants immediately prior to facilitating group discussions. The recruitment goal was 8-10 individuals per group. Overall, there were $N = 34$ participants (23 females, 11 males) from Bois Forte, and $N = 61$ (39 females, 22 males) from Lac Courte Oreilles (total $N = 95$ across both sites and all groups). The number of participants by focus groups is summarized in Table A2 in the Appendix.

Data Analysis

In conducting a data analysis of the focus group transcripts, we used a general inductive approach guided by a set of research questions (Thomas, 2006). This seeks to allow research findings to emerge from recurring and pertinent themes in the data, specifically through three aims – summarizing data into a condensed format, drawing connections between research objectives and summary findings, and developing a framework for themes (Thomas, 2006). Central to the analysis are two research questions: 1) how does social support impact the management of T2D in AI communities, and 2) how can social support interventions address the underlying stressors that contribute to T2D inequities in AI communities? These are expanded into sub-questions or objectives to further guide the analysis process. The research questions and objectives are summarized in Table A3 in the Appendix.

Transcripts were uploaded to NVivo 12 for data management and analysis and analyzed by a single coder. An initial reading was first conducted to document repeated ideas and important quotes, which were organized into a list of categories. This was followed by a first round of coding to identify specific categories that were relevant to research objectives, guided by the initial codebook. Subsequently, a second round of coding was conducted to streamline the categories into a framework. Several strategies were employed to enhance trustworthiness of the analysis. Firstly, discussion with co-authors with respect to the coding, organization of categories, and identification of emerging themes was conducted to check for the representativeness of the data as a whole (Shenton, 2004; Elo et al., 2014). This involved the co-authors carefully following up on the analysis process and categorization of themes, following the initial analysis by the lead author. Secondly, methods of reflexivity were employed to increase rigor of research (Engward & Davis, 2015). These include considering reflexivity in the analysis of data (Engward & Davis, 2015) and employing methodological reflexivity through having regular dialogue with the research team during the developing stage of analysis to reduce potential bias and check for re-interpretation by

the researcher (Walsh, 2003). This was supplemented by discussions with the CRC members at the later stage of analysis, to seek their inputs and verify the representativeness of the findings. Memos were also used to document coder's observations and interpretation of the data throughout the analysis process.

The analysis generated a total of 520 initial codes, which were grouped into 93 broad categories guided by the research questions. Through continuing revision of categories to reduce overlap and redundancy among categories (Thomas, 2006), these broad categories were further distilled into four summary themes, with corresponding sub-themes.

RESULTS

Overall, the four themes that emerged from analysis of the transcripts are as follows: 1) perception of social support, 2) functions of social support, 3) social and cultural contexts of Indigenous communities, and 4) considerations in implementing social support components in T2D management. A summary of the four themes and sub-themes is included in Table A4 in the Appendix.

Perception of Social Support

The first theme that forms a baseline to the understanding of the role of social support in T2D management is the participants' perception of social support, particularly in reference to the importance of social support in T2D management, the attitudes towards social support, as well as the sources of social support provision. Participants deemed ***social support as important in the management of a chronic disease like T2D***; this was a common theme among individuals with T2D, social support persons, and service providers. It was also perceived as important especially in times of crisis, such as during a hypoglycemic episode.

In terms of the ***attitudes towards social support***, participants from both the social support and service provider groups also exhibited a keenness to offer social support, even if they were not currently caregivers for someone with T2D. A male participant in the social support group shared,

> In a way, it make me feel good, you know, that will help people just in general, you know, and I think it makes a person who is diabetic, you know, grateful for the help that you are doing for them, you know, so they, so they don't have to, how would you say that, lift all the weight by themselves, where say, you know, they can sort

> of rely on people to get stuff done for them, you know, and that makes both parties happy, I guess.

Another sub-theme concerned the ***uptake of social support***. Despite the role that social support persons played in increasing understanding of T2D, individuals with T2D cited the importance of having basic knowledge of T2D. Uptake of social support was also influenced by the reaction of a person with T2D towards the provision of social support, as what a caregiver commented,

> He kind of got mad at me at first. I said, 'you wouldn't do this,' I said, 'because you're not paying attention to your diabetes,' I said. 'You're not taking care of yourself.' I said, and you can get mad at me if you want, I said, this is what I'm going to do for you, I told him.

As for the ***sources of social support provision***, participants cited a variety of sources, namely family members, health care providers, and spirituality, with several participants in the T2D group describing a spiritual affinity that provide support in the absence of physical loved ones, and how they turned to clergy for support. For many participants, ***family*** was cited as a primary source of social support. Besides family, the wider ***community*** also formed a key resource of social support, especially in the form of social connectedness. Participants highlighted several ways in which community is integral in supporting T2D management; this included having diabetes support groups and engaging with other community members in common facilities and community gatherings.

Functions of Social Support

Social support was understood to fulfill several functions, such as in providing ***emotional support***. Social support persons also played an integral role in providing ***instrumental support,*** specifically by helping the patient with different components of T2D. These included components such as meal planning, cooking, reminding to take medications, and attending appointments. Some described a more generic form of help, such as by providing administrative and logistical support or assisting with everyday tasks. A female participant with T2D shared how support from her husband was important in such a time,

> But you do need to share with them, because what if you, well I don't know where you are on your diabetes, but what if you went into a low sugar, like I did when we were coming up the freeway, and they wouldn't have a clue what to do for you. My husband knew that I needed sugar and that's all he knew.

Besides the functions of providing emotional and instrumental support, some patients cited the importance of social support person(s) acting as role models and providing ***positive reinforcement***. An example of this was given by a male participant in the T2D group,

> I don't know, I think the positive influence like, like somebody telling you like if you go to the doctor, like for a checkup, and they tell you, well you're doing a good job that your, your A1C hasn't gone up, or you're really working hard at doing, just keep doing what you're doing. Some positive reinforcement to keep you motivated to keep going, keep trying to control your disease.

There was also a notion of social support persons playing an ***enabling role***, such as in helping individuals with T2D take greater ownership of their health and be more open to seeking help. A caregiver spoke of her experiences with her mother, who has T2D,

> She still doesn't ask for all the help that she could actually use and need, but instead I am there to ask for her for that help, so I am kind of like, I don't know, enabling. But I always tell her, "Mother, you need to do this, you know, don't be afraid.

As for the ***approaches in providing social support***, there was a conflict expressed by social support persons in between taking a soft approach and being strict with the family members they are supporting. Often, the former is equated with an expression of love, but some realized that the latter approach might be more beneficial to patients. This was more pronounced among family members, as illustrated by a female participant in the social support group, who said,

> I said, 'Love you to death son, but I'm not coming here anymore.' You know, you can, you can stop this from happening just by taking your medication and eating the right foods, and I will not follow you to the hospital anymore. I love you but I can't do it, and he started doing it again, so, that's, I think that's tough.

Social and Cultural Contexts of Indigenous Communities

The third theme that arose from the discussions related to the social and cultural contexts that are unique to Indigenous communities; these are framed into two main dimensions: 1) ***barriers to optimal T2D management*** and 2) ***strengths relating to the unique social and cultural contexts*** that can enhance T2D management.

Firstly, several mindsets were observed in the participants' words that inhibited social support and T2D self-management. These mindsets reflect underlying ***illness beliefs*** regarding the disease. Among the most prevalent of these illness beliefs was that of ***denial***. Denial was observed at various stages of the disease, such as at the time of diagnosis, and was commonly cited by participants as one of the barriers to care seeking and optimal T2D management. This was sometimes associated with the challenge of sharing the diagnosis with family members. Denial was manifested in a lack of seriousness towards T2D management, often until a crisis occurs. On the other hand, having acceptance as opposed to being in denial resulted in positive outcomes, and service providers cited improvement in clinical indicators when patients are able to accept their diagnosis. Participants also recognized that acceptance is a key precursor to behavior change and a greater sense of perceived control. A female social support person described the value of acceptance in this way,

> I think once they, once they learn to accept the fact that they've got it and it's never going to be cured, I think their attitude changes towards, you know, they start accepting the fact, that I got to eat different, and I've got to start exercising, and I've got to check my blood sugar on a regular basis, and that kind of thing.

Another recurring theme found was the ***belief of not wanting to be a burden***. Participants in the T2D group frequently described that they found it challenging to ask for help, even from family members, and even at times of crises. This raises the question of the complexity of social support. At a broader level, this belief can impede care-seeking behavior, such as attending medical appointments regularly.

Other illness beliefs that were found included shame or embarrassment with a T2D diagnosis, and fear and hopelessness or perceived lack of control over the condition. On the extreme end of the spectrum, there were some patients who expressed a fatalistic mindset and how it resulted in a reluctance to take a more proactive role in T2D management. Such beliefs may be

attributed to the behaviors shaped by the socio-historical context of AI communities that shape coping behaviors in response to challenging life events such managing T2D.

It is also important to consider the unique social and cultural contexts of AI communities that interact with social support mechanisms to influence health behavior. Central to this theme is the concept of ***cultural identity***, often mentioned as a strength in addressing T2D. Participants identified benefits of an Indigenous lifestyle, perceiving that traditional diets are healthier than modern alternatives. A participant from the T2D group shared, for example, how herbal teas could be beneficial in T2D management,

> And I think about that, you know, some of the old ways used to be, you know, I don't know how prevalent diabetes was before we started living in houses and driving cars and that sort of thing, but part of it is that, but I, but like I started doing the birch leaf tea. I know a few other things that you can do, you can do too that used to be done all the time. Always, 'cause they were always out there, and they would take those teas, and they would drink those teas. Nobody hardly drinks those teas anymore. You drink black tea or green tea. I mean, you know, how many people these days drink wintergreen tea?

There was also a notion that AI communities tend to be more physically active, due to the preference for walking, as well as their direct involvement in farming or growing produce that had a two-fold effect of increasing physical activity and connecting them to their cultural identity. Expounding on the benefits of the Indigenous lifestyle, a service provider also made reference to hunting and gathering, suggesting that the rise of T2D could be attributed to a decline in such traditional activities,

> Look at the major population, has been in and amongst all that, not hunting and gathering for thousands of years. They've been farming stuff. What does that do to us? So diet and exercise. I mean, you know, we no longer have to run our meals down. Or run over and steal it from somebody else and then run from them.

Furthermore, participants expressed optimism for the ability that Indigenous culture had to overcome the challenges associated with T2D management. This was echoed, for instance, in the remarks of a service provider,

> As far as cultural community, I don't think there are any barriers, as far as helping getting diabetes under control. I think as a native people, we're more or less active for, as far as our culture, culture goes, every part of the year we have a certain season for, you know, things that we're always doing something.

Alongside cultural identity, ***family*** was another key factor related to the sociocultural context of AI communities that play a role in social support. Participants in this study highlighted specific functions that family had in T2D management. Many expressed a desire for family members to be actively involved in T2D management and expected family members to have knowledge on T2D. Family members, both immediate and extended, were described as a great ***motivation*** to manage T2D. Family was also cited as the first factor that came to mind upon knowledge of diagnosis; this contributed to its role as a motivation in T2D management. It was also deemed crucial at times of crisis, such as during a hypoglycemic episode. A female participant with T2D poignantly expressed the centrality of family as a motivating factor,

> I just want to say, ah, the hell with it sometimes. Then I get up and the first thing I see is my grandkids' pictures on the wall (names them). Then I think about them and what they would think. Look at how devastated they were when they lost their papa. They were all just devastated by it even though they knew he was dying from cancer. They still had a hard time. And I think about that and if I should just give up, they'll go through the same thing again. Then I tried to bring myself up and think of good times and think of my grandkids and I still need to teach them more things.

Moreover, a pertinent role that family played as a mechanism of social support was that of ***providing care***. This was depicted in various types of relationships, such as that between parents and children. T2D was said to influence care provision when the disease prevented patients from taking care of their family members, such as in managing day-to-day affairs. Disappointment was sometimes expressed when having T2D limited this ability. At times, fulfilling this role took priority over taking care of oneself. A male participant with T2D described the conflict that he experiences when his familial obligations impeded his ability to care for himself,

> You know, so for me, that's the, that's the main thing for me is just the, try and get into a routine where you have to take care of yourself. You know, sometimes you

> have to put other things aside and take care of yourself when you need to, and you know, I've always used that as excuse, that oh my, no my kids come first and I need to take care of my kids first, and stuff like this, but no, no I really can't use that an excuse anymore, because my kids are all grown up now. So, now then, it all falls back onto me, now, having to take care of myself.

Provision of care was also apparent in the relationships between grandparents and grandchildren, sometimes alluding to a parenting role adopted by grandparents. This was suggestive of the influence that inter-generational factors can have on familial social support. A female participant in the T2D group shared,

> Because then, I'm trying to raise 5 grandchildren besides and take care of them and take care of myself and then I always think, ooh, if I get worse, what's gonna happen to my grandchildren?

As such, provision of care was a key consideration of the familial dimension of social support. While previous examples demonstrated how family, as a mechanism of social support, support positive behaviors in T2D management, the later examples suggest that it can also be inhibitive, when familial expectations of care provision supersede one's ability to prioritize self-management of T2D.

Expectations of providing social support within families also varied by gender, with women perceived as having a greater role in care provision. Although this was an accepted norm, some expressed a need for greater male involvement. A participant from the service provider group cited his observation,

> I mean, she addresses that somewhat, culturally, you know, generally speaking, they're, the female takes care of the family, okay… Alright, when we diagnose a man with diabetes, we try very hard to get, to get the female in there to help take, to help him take care of him. You know, we diagnose a woman with diabetes, very seldom do we get that man in there…

Other service providers echoed such observations, by commenting on how, for instance, women speak for their husbands and demonstrate greater attention during medical appointments, while such was not observed when women are the patients. These experiences highlighted a

concern that women may be receiving lesser support than men in the management of T2D. Another service provider expressed his thoughts on how men can have a greater involvement in the care of themselves, as well as for their loved ones,

> And you know, I think that culturally speaking, that if we can make that impact on the males when they're younger, like this program that we're trying to get going now, okay. That it's, that these are things that they need to be responsible for… And so, culturally speaking, we need to make the males more aware that, you know, that it's okay to take care of yourself. And number two, it's okay to take care of someone else.

These comments suggest that there is a role for greater gender role flexibility in ensuring that women receive greater support in the management of T2D. A greater level of male involvement in their own care can also reduce the pressure of care provision that women may have.

Considerations in Implementing Social Support Components in T2D Management

Participants also conveyed several considerations in implementing social support components in T2D management. Stress constituted a substantial part of the discussion and alluded to the ***importance of addressing various components of stress*** in developing social support interventions. Participants in all three groups described various components of T2D management as stressful; these included having to keep up with medications, as well as having to manage other co-existing chronic conditions. Stress was also described in care provision, such as from a social support person who spoke regarding his family member who has T2D,

> His stress level, his stress level hasn't been all that much lately. He, the only way, the only way he gets like really stressed is when he's got to pick up his little kids from grandma, or his kids, now if his kids need help or something, and he can't do it, then he gets kind of, a little bit stressed out about it, but, he's been doing, he's been hanging in there pretty good with it.

Various stressors in T2D management were also described, such as family, finances, home environment, and unemployment. A pertinent stressor that was repeatedly discussed was having multiple responsibilities, compounded by financial difficulties. Stress was attributed to not having

enough finances to manage day-to-day aspects, such as groceries. A female participant in the T2D group described her daily worries,

> I think it's just the worry about, about doing day to day things like, sometimes you're running kind of low on money, and you're always thinking, well now where am I going to get my groceries, where am I going to get my gas. You know, just daily little things that you worry about, like what's going to happen to me today, what am I going to be doing today, where am I going to be going?

In view of these stressors, participants in the service provider groups related the importance of coping strategies to manage stress and improve T2D management. Participants with T2D cited several coping strategies, such as exercise, creative expression, and staying busy. Additionally, the presence of a support system was paramount in addressing various stressors. This was echoed by the comment of a female service provider,

> And, you can't eliminate stress, but you need to help people and help yourself deal with it in a different way. Or, find a good and a bad somehow, and make change there, but that's really hard to see in the moment of this black cloud that surrounds you as you're walking around, you know. A support system would come in very handy there.

In addition to addressing these stressors, having an understanding of how participants perceived the integration of social support in T2D management is essential in developing interventions. Participants raised the need to consider the emotional toll on social support persons, namely ***caregiver stress***. Social support persons alluded to a negative impact on themselves when they observed their loved ones with T2D lacking personal responsibility toward managing T2D, such as not adhering to treatment components despite their advice. Moreover, providing social support was also perceived to be more challenging or stressful if patients had multiple comorbidities. At the same time, participants also recognized the positive impact on social support persons. This included having a greater awareness of T2D, which can be a motivation to adopt healthier behaviors in preventing T2D.

Participants also described the idea of ***balance*** in T2D management and how it was an important consideration in the provision of social support. Balance was described in several ways, such as the balance between physical and mental or emotional health or as the balance between

taking a serious and light-hearted approach in encouraging patients to adopt healthier behaviors. A service provider summarized this point by sharing her perspective on providing balanced advice,

> I think it's important to not take anything away from someone, especially in the beginning. And to be the accepting, in other words to say, you know, if you drink your body will work with it this way while when you have diabetes, so I don't want to sanction and say, you know, go out there and drink because it's just fine, but I don't want to say take away your whole social activity, but rather, ok, if you have a drink, your body is going to interpret it as sugar. This interpretation is going to be wrong and you could get into trouble with low sugar, so always eat if you're going to drink. Something simple I could say.

Timing was also a consideration in the provision of social support. The time of diagnosis was frequently cited as the most stressful due to the multiple routine checks involved, information overload, and a perceived lack of control. This suggests the role that social support can play at this time, and how this can translate into early care-seeking behavior.

Finally, while participants described the strengths of an Indigenous lifestyle in supporting social connectedness and T2D management, considering the ***challenges associated with these social and cultural aspects*** is also important for a holistic understanding of an Indigenous lifestyle. Central to the concept of social connectedness was the role of food, which is often associated with social activity. Some participants described the challenges of balancing social expectations to enjoin community activities where food played a key role and the need to adhere to dietary guidelines to promote diabetes control. This was compounded by the limited healthy food options available at such events, as described by a participant who faced such challenges,

> The other phenomenon, as far as going to potlucks and not being able to find your perfect food is going to potlucks and have people looking at you and saying, 'I am sorry, we don't have anything for you to eat.' I have had that happen and it's like, I think I can eat. Just because I got diabetes doesn't mean that I haven't got food.

Overall, participants describe the importance of addressing various stressors in T2D management, considering caregiver stress, achieving balance, considering appropriate timing, and looking into the challenges associated with social and cultural components of an Indigenous lifestyle – so as to support T2D management in the community.

DISCUSSION

This study explores the perspectives of AI communities on the role of social support in T2D management and presents ideas on how social support can address underlying stressors that contribute to T2D inequities, as well as provides a potential channel of intervention to improve T2D management in these communities. The findings encompass ideas relating to four dimensions of social support, namely 1) perception of social support, 2) functions of social support, 3) context of social support, and 4) implementation of social support interventions. These reinforce previous works on the dimensions of social support, while introducing several new ideas.

The first step to understanding how social support can be explored as a means of intervention in improving health outcomes is to understand the perceptions on the sources of social support and the type of social support being provided (House et al., 1988). These dimensions are depicted in the participants' understanding of the meaning of social support. The sources of social support can range from those in one's informal network (for example, family, friends, coworkers, supervisors) and in more formal networks (for example, health care professionals, human service workers; Heaney & Israel, 2008). In this present study, participants highlighted the preponderance of informal networks as a source of social support, particularly family and community members. This reinforces Kaplan's work on social support and health that describes how relationships are key sources of support (Kaplan et al., 1977). Another key factor to consider is the content of social support; this is related to the perceptions of support recipients, rather than the objective behaviors (Wethington & Kessler, 1986). Participants' description of social support as important in T2D management, as well as their keenness to offer social support, suggest the potential that interventions comprising of social support components can have in enhancing T2D management for individuals with T2D.

Although the exact mechanisms of how social support affects health outcomes are not known, research suggests that some potential mechanisms include stress-buffering effects, changing affective states, increasing self-efficacy, and influencing change in negative health behaviors (DiMatteo, 2004). House et al. (1988) characterize these potential mechanisms of social support into four main components: 1) emotional support, 2) instrumental support, 3) informational support, and 4) appraisal support. The functions of social support described by participants affirm these mechanisms, especially the emotional and appraisal function of social support. In addition, participants describe mechanisms such as positive reinforcement and an enabling role that social support can play. Understanding these mechanisms of social support is

important in developing interventions and building on the social support functions that are already present in the community.

Another aspect to consider is the social and cultural contexts unique to Indigenous communities and how this can influence social support. Alongside the key dimensions of support discussed previously (meaning and function), it is also important to consider the range of contextual factors that may affect its form and occurrence (Shumaker & Brownell, 1984). These contextual factors include the characteristics of participants and environmental characteristics (Shumaker & Brownell, 1984). Participants' perspectives on the social and cultural contexts can be understood in two dimensions, firstly, contextual factors that represent barriers to optimal T2D management, and secondly, strengths relating to the unique social and cultural contexts that can enhance T2D management.

Barriers to optimal T2D management can be linked to specific socio-historical factors that influence illness beliefs among AI individuals, therefore influencing health outcomes. Studies of disease "explanatory models (EM)," which refer to how patients conceptualize illnesses and seek treatment, find that these EMs are impacted by cultural factors – factors that can either support or inhibit positive health behavior (Henderson & Henderson, 2002). Specific to AI communities, historical trauma experienced by AIs have been shown to influence the construction of illness narratives. Traumatic experiences, alongside the influence of neocolonialism and oppression, have been associated with the onset of T2D, with AI individuals describing how experiences such as domestic violence and substance abuse issues result in feelings of powerlessness and guilt (Ferreira, 2006). Hill (2006) describes the importance of the balance between an individual and the environment, and how lived experiences can influence coping behavior. These can result in survival skills such as learned helplessness, denial, and passive-aggressive behaviors (Tafoya & Del Vecchio, 2005) – themes that were conveyed directly and indirectly in this study. These shape mindsets of denial and a reluctance to ask from help, thus influencing EMs of T2D that can manifest in delayed care seeking (Henderson, 2010). It is crucial to consider these mindsets, especially where they can pose a challenge to the provision of social support. For example, reluctance to ask for help may impede the uptake of social support even when widely available. The understanding of the socio-historical context is thus important in identifying risk and protective factors specific to the AI community so as to develop culturally tailored interventions (Whitbeck, 2006), address gaps in social support provision, and leverage on the strengths of the community in the efforts to improve T2D management.

At the same time, the unique social and cultural contexts of AI communities also present several strengths that can be considered in incorporating social support components in T2D management. A salient point is the importance of a sense of belonging in AI communities; this is influenced by cultural identity, traditional practices, and the value of community. Hill (2006) describes the AI worldview and the central role of relatedness and connectedness in health outcomes, relating to having a sense of belonging that stems from understanding the individual and community's place within the tribe. Factors that impact the relatedness/belonging and health outcomes include cultural identity, traditional practices, community, and family values and beliefs (Hill, 2006) – themes that were also found in the participants' responses. Thus, engagement with cultural identity, traditional practices, and community has great implications in the management of T2D and should be considered as a scaffold for social support interventions.

Another sociocultural context pertinent to the role of social support in T2D self-management in AI communities is the context of family. Participants in this present study relate the fact that family constituted a large aspect of social support provision, with family having specific functions in the management of T2D. The family is widely recognized as an important social context for health behavior change, due to its fundamental role in shaping child and adolescent behaviors and the intensity and longevity of interactions with family members that have the potential to effect change across the life course (Okechukwu et al., 2014). As such, it presents a unique channel of intervention in T2D management. Specific to AI communities, previous literature has shown a preference for family support in help seeking (Aronson et al., 2016; Walls et al., 2006), and in the context of T2D, engaging family members has also been shown to be feasible, acceptable, and impactful (Chambers et al., 2015). Family constitutes a central aspect of Indigenous lifestyle and identity and plays an important role in T2D management. This includes being a motivation for improving self-management. Conversely, the absence of familial support has been cited as a source of stress for individuals with T2D (Elm et al., 2019). This stems from family members lacking understanding about the disease, resulting in disappointment and frustration among individuals with T2D (Elm et al., 2019). It is thus unsurprising that participants convey a desire for family members to have knowledge on T2D, both as a means of providing support and a preventive measure for the family members themselves.

Related to family are the roles that family members play in the provision of care. Familial obligations and interdependence are core values in tribal communities (Goins et al., 2011), and providing care for the family, especially dependent members, is deemed important (Baldridge,

2001). Moreover, the extended family holds particular significance for AIs and is seen as a protective buffer that provides social, emotional, spiritual, and material support to each other (Martin & Yurkovich, 2014). Such family values can be viewed as an avenue of social support when the provision of care includes supporting family members in T2D management. Yet, they can potentially also pose a challenge when patients with T2D prioritize looking after their family members over their own needs of managing T2D. The differing expectations of care provision between genders are also a consideration in familial social support; these underscore traditional gender roles in AI communities, where women play a significant part in raising families and are viewed as caretakers of children and relatives (Martin & Yurkovich, 2014). These roles extend to their old age, where playing the parts of grandmothers is an important obligation (LaFromboise et al., 1990; Bahr, 1994). While women in AI communities hold these roles in high esteem, findings from the present study suggest that a certain level of gender role flexibility can promote greater balance of social support, especially in favor of women who feel like they may not be receiving as much support as men. As such, social support interventions should consider the various dimensions of family roles, perhaps by generating discussion on how to balance these roles with one's own self-care, as well as to facilitate greater male involvement.

Lastly, perspectives shared by participants highlight several considerations in developing social support interventions. Understanding the stressors in the management of chronic diseases such as T2D is fundamental in exploring the potential of social support interventions in mediating these stressors. While these stressors are experienced as chronic strains precipitated by discrete events, they are often developed in the contexts of prior unresolved loss and grief and can often be linked to fundamental causes such as poverty, genocide, and colonization (Elm et al., 2019). This represents multigenerational layers of trauma that predispose Indigenous people to illness through greater exposure to stress (Link & Phelan, 1995). Given the substantial evidence that stress is associated with T2D etiology and outcomes (Fisher et al., 2008; Hamer et al., 2010; Roberts et al., 2015), it is therefore crucial to understand how people with T2D perceive stress and how social support can seek to buffer these stress experiences.

Participants in the present study echo perspectives of other AI communities in earlier studies, specifically, that stressors in the context of T2D relate to chronic stressors such as financial stressors, health management, social roles, and job features (Walls et al., 2017; Elm et al., 2019). A dominant theme among these chronic stressors related to social roles, with many participants in this study sharing how having multiple responsibilities, particularly in caretaking

activities, resulted in additional stress compounded by the stress of managing a chronic disease. This augments the earlier discussion on the dimensions of family roles and how interventions should seek to address role-related stressors in order to facilitate greater self-care and enhance T2D management. In particular, interventions can consider the stress-reducing functions that social support can have (Shumaker & Brownell, 1984). This includes the specificity model of support, where social support can provide the patient with T2D with the specific resources needed related to the stressor, hence functioning as a direct coping strategy (Shumaker & Brownell, 1984). This can be relevant in addressing chronic stressors such as financial stressors and employment. As for role-related stressors, social support can function as a means of cognitive appraisal and adaptation, where social support persons promote clearer understanding of the stressor, provide coping resources, and enhance self-esteem in coping with the situation (Shumaker & Brownell, 1984). Studies in other populations have documented positive effects of social support on psychosocial outcomes, such as depression and quality of life (Bond et al., 2010; Sacco & Yanover, 2006), with one study reporting that individuals who reported having greater proximal and distal sources of social support were associated with having less depressive symptomology and better diabetes self-management (Fortmann et al., 2010). These augment the notion that social support interventions have potential in buffering such stressors, thus improving T2D self-management.

Moreover, participants highlight other considerations in the implementation of social support interventions, such as the importance of considering the potential stress on social support persons in developing social support interventions. While caregiving and family can be protective, it can also impact physical and mental health (Coser et al., 2018). At the same time, caregiving offers a platform to draw upon the benefits of increased education and awareness of T2D for family members who do not have T2D. Timing is also key, and involving social support persons at earlier stages of the condition may also have multi-fold effects of preventing caregiver stress, while encouraging earlier care seeking for the patients. Finally, while the social and cultural contexts of Indigenous communities provide many avenues of promoting social connectedness and T2D management, it is also important to consider the challenges associated with these aspects, such as current gaps in integrating aspects of healthy eating into community events. This can be addressed by offering healthier eating options at community gatherings, as well as increasing education and awareness on T2D, especially through platforms that are interwoven with stories of community members – solutions that are voiced out by participants themselves in this study.

Limitations and Future Work

We acknowledge several limitations to this study. We developed the questions for focus group interviews in collaboration with CRCs; their feedback, input from the broader community, and extant prevalence data led us to focus on T2D as a significant problem. As such, many of our questions aimed to elucidate nuanced understanding of the stressors and struggles associated with T2D. A limitation to this approach is that our questions may have biased participants to focus solely on problematic aspects of T2D for the community and individuals living with the disease.

As we took a predominantly inductive approach to the data analysis, we identified a broad landscape of themes that provides an initial understanding of the role of social support in T2D management, guided by theoretical frameworks of social support constructs. We recognize that the data in this present study is extremely rich and detailed, and further analysis can reveal deeper nuances that can augment the understanding of social support, especially relating to AI communities. Given the preponderance of stress in T2D management, and the presence of historical and contemporary stressors relating to the social context of AI communities, further investigation of dimensions of stress pertaining to social support is important in future research. This includes other categories of stressors such as microaggressions and lateral oppression, which are widespread in the community (Elm et al., 2019). As such, these additional stressors should be given further inquiry especially where they may influence the provision of social support by health care providers and community members.

While social support forms the content component of social ties, future research can also seek to examine the structural component, which is the role of social integration and social networks. Such will complement the findings from this study and present a more holistic understanding of the nature of social relationships in health outcomes.

It is envisioned that the insights gained from this study can inform future social support interventions in supporting T2D management. An existing framework that social support interventions can be incorporated into is the community health worker (CHW) model, often referred to as community health representatives (CHR) in AI communities, where CHRs serve as community members who can mediate between health care systems and communities to improve the health of the population (Satterfield et al., 2002). CHW models have shown to be effective in improving T2D self-management in other underserved populations, such as by improving HbA1c levels and other clinical outcomes, as well as by increasing patient satisfaction and knowledge (DePue et al., 2013; Gary et al., 2009; Norris et al., 2006; Gary et al, 2003). In AI communities,

individuals with diabetes who were enrolled in a multi-level intervention involving CHRs have been shown to have improvements in glycosylated hemoglobin and low-density lipoprotein (Trevisi et al., 2019). While these interventions involve social support components such as patient accompaniment and home visits, future CHR interventions can expand on the social support components and investigate the effectiveness of these in improving T2D outcomes. Such interventions can incorporate the structures of social support highlighted in this study, as well as to address the barriers to care seeking and optimal T2D management. Cultural identity and strong social ties are also strengths that can be leveraged in developing interventions. These can complement the community members' suggestions on T2D management interventions, such as the inclusion of personal narratives, social network interventions, and community-driven services.

CONCLUSION

All in all, social support has been shown to be beneficial in improving T2D management and overall outcomes. Findings from this study elucidate some of the mechanisms of social support specific to AI communities, as well as important social, cultural, and historical factors influencing social support. It is envisioned that the findings of this study can inform social support interventions related to T2D management, in seeking to achieve a broader goal of reducing diabetes inequities in AI communities.

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CONFLICT OF INTEREST

The authors declare that they have no conflict of interests.

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APPENDIX

Table A1
Examples of questions for focus groups

1. Community members living with T2D

- When did you first discover you had diabetes?
- How has your outlook on life changed, if at all, since you were diagnosed with diabetes?
- What were hardest things to change in your life?
- How do you feel about living with diabetes on a day-to-day basis?
- How, if at all, does stress impact the way you manage your diabetes?
- If you were interested in getting more information on topics such as diabetes care, mental health, and coping with stress, where would you go for help?
- Are there any barriers that would stop you from asking for help about these or other health topics?
- Overall, how do you cope with your diabetes? How do you cope with the stressors and emotional challenges in your life?
- Who, if anyone, are the significant people you rely on during challenging times?
- What types of programs or initiatives are needed to effectively address diabetes in your community?
- What role did/does the community play in your diabetes diagnosis and management?
- What are the strengths and weaknesses of your community in addressing diabetes?

2. Social support persons

- Think of the people who are close to you that are living with T2D. What are some of the challenges you see that are related to living with diabetes?
- Do these friends or family members sometimes need support managing their disease? If so, how do you support them?
- Do you think stress plays a role in how people manage their diabetes? If so, how?
- What mental health or emotional challenges have you noticed in people who have been coping long-term with diabetes?
- How has being around someone close to you with diabetes impacted your life?
- What is the best way to address diabetes in the community?
- What role can social support services (friends, family, elders) play in addressing diabetes?
- Do you think that having social support systems are an important part of diabetes treatment?

3. Service providers

- How big of a problem is T2D in this community?
- What role do you see lifestyle (for example, diet and exercise) playing in diabetes diagnosis and management?
- What, if any, mental health issues do you commonly see as a service provider in the community?
- Our project is interested in understanding diabetes management and treatment in your community. We are especially interested in knowing about ways in which non-physical health (for example, distress, depression, anxiety, substance use) and stress might impact diabetes care. How are mental health issues dealt with? How are they perceived by the broader community?

continued on next page

Table A1 Continued
Examples of questions for focus groups

3. Service providers
• When discussing diabetes in a clinic setting, how is mental health talked about, if at all? • Do people bring these kinds of issues up? Do you as a service provider talk about them? • For diabetic patients who might also have a mental health problem or substance use problem, how are multiple issues addressed? • Do you think stress plays a role in how people manage their diabetes? How so? • Are there any challenges in treating/preventing diabetes in your community, such as cultural or community barriers? • Are there any culturally specific considerations that need to be taken into account when treating patients with diabetes? • How thoroughly (if at all) do the different service systems in your community coordinate care? How thorough is follow-up care? • What can service providers do to better serve those currently living with diabetes or prevent those at-risk of developing diabetes?

Table A2
Number of participants by focus groups

	Bois Forte (*n*)	**Lac Courte Oreilles (*n*)**
Individuals with T2D, group 1	5	9
Individuals with T2D, group 2	8	9
Social support persons, group 1	6	9
Social support persons, group 2	5	12
Service providers, group 1	6	10
Service providers, group 2	4	12
Total	34	61

Table A3
Summary of research questions and guiding objectives

	Research question	Guiding objectives
1	How does social support impact the management of T2D in AI communities?	• What is the understanding of the role of social support in T2D in AI communities? • How do the social contexts of Indigenous communities influence social support mechanisms? • What are the mechanisms through which social support impacts components of T2D management? • What roles are pertinent in these dimensions of social support; are these influenced by constructs such as gender and inter-generational factors? • How can family, as a context of social support, be beneficial in T2D management? • In which stages of T2D management is social support most optimal?
2	How can social support interventions address the underlying stressors that contribute to T2D inequities in AI communities?	• What barriers in T2D can social support help to overcome? • What are some considerations in implementing social support components in T2D management? • What social support interventions can be incorporated into the community?

Table A4
Theme categories and sub-themes

Themes	Sub-themes
Perception of social support	• Importance of social support in T2D management • Attitudes towards social support • Uptake of social support • Sources of social support provision – family, and community
Functions of social support	• Emotional support • Instrumental support • Positive reinforcement • Enabling role • Approaches in providing social support
Social and cultural contexts of social support	• Barriers to optimal T2D management – illness beliefs, especially denial, and the belief of not wanting to be a burden • Strengths relating to the unique social and cultural contexts, namely 1) cultural identity, and 2) family, which has specific functions in social support such being a source of motivation, and care provision
Considerations in implementing social support components in T2D management	• Addressing stressors in T2D management • Caregiver stress • Balance • Timing • Challenges associated with the social and cultural aspects of Indigenous communities

TWENTY YEARS OF RESEARCH INTO THE HEALTH IMPACTS OF NATIVE-THEMED MASCOTS: A SCOPING REVIEW

Sierra Watt, MA, Ian Record, PhD, and Yvette Roubideaux, MD, MPH

Abstract: Despite their recent high-profile removal by a handful of professional sports teams, Native-themed mascots continue to be a mainstay of professional, college, and youth athletics. To determine the extent of the literature on the health impacts on American Indians and Alaska Natives (AI/ANs) as a result of Native-themed mascots, we conducted a scoping review of primary research articles, utilizing the National Institute on Minority Health and Health Disparities (NIMHD) research framework as a guide to define health impacts broadly to include impacts on determinants of health and health disparities. Three databases were utilized, MEDLINE/PubMed, PsycINFO, and JSTOR, to identify the peer-reviewed literature for a twenty-year period that studied the health impacts of Native-themed mascots. We found 26 articles and books in the peer-reviewed literature and additional gray literature during the time period of 1999-2019. To better identify the relationship between Native-themed mascots and health impacts, we reviewed the articles by their focus on three groups: AI/ANs generally, AI/AN youth, and those that studied all races/ethnicities. The majority of research included in this review illustrates overall negative impacts of Native-themed mascots on health and its determinants that influence health and health disparities. Public health efforts should include review and replacement of harmful Native-themed mascots in professional and academic sports to avoid negative health impacts on AI/AN adults and youth.

INTRODUCTION

Native-themed mascots, including team names, images and logos, and related fan and game-day rituals, continue to be a controversial mainstay of professional, college, and youth athletics. Prominent examples include Kansas City Chiefs and the former Washington R-dskins in the National Football League (NFL); Atlanta Braves and the former the Cleveland Indians in Major League Baseball (MLB); the Chicago Blackhawks in the National Hockey League (NHL);

the University of Illinois Fighting Illini and the Florida State University Seminoles at the collegiate level; and numerous elementary and secondary school mascots across the country (National Congress of American Indians, 2022; Munguia, 2014; MascotDB.com, n.d.). However, the impact of these mascots on health disparities of American Indians and Alaska Natives (AI/ANs), as well as to the broader public, has not been subject to the type of review in this paper, despite increased media attention to the issue.

Terminology on race/ethnicity varies significantly within the existing literature, but the majority of work on this topic uses the term "Native American." However, the federal government utilizes the term "American Indian/Alaska Native," and that term is preferred in policy discussions. In this review, we will primarily use AI/AN, unless citing a specific use of the term "Native American" by authors, to best reflect their intent, for instance, when using the term "Native American" to refer to self-identified polling or study respondents. When referencing an article author(s)' use of the term "Native American," we have placed the term in quotations marks to indicate that we are reflecting the choice of the article author(s). When using the term "Native American," we are referring to AI/ANs within the United States, unless otherwise stated. In addition, due to the definition of the word "r-dskin" as an offensive slur we will refer to its usage as a team name as r-dskin, unless directly quoting an article author(s)' usage (Merriam-Webster, n.d.). This usage will be identified with quotation marks, as well.

Background

Recent years have brought significant—and long thought improbable—changes to the landscape of Native-themed mascots. Two of the most prominent professional teams to make use of Native-themed mascots have chosen to retire them: the Washington NFL team and the Cleveland MLB team (Morris, 2021). After the death of George Floyd and subsequent racial justice protests across the country, the Washington NFL team faced pressure from team sponsors and shareholders to change their name and logo (Carpenter, 2020). In July 2020, the team stated they would go by the Washington Football Team and the next year, on July 12, 2021, announced that the new name and logo will have no "linkage to Native American imagery or iconography" (Giorgis, 2020; Whitt, 2021; KickingWoman, 2021). The team announced their new name, the "Commanders," on February 2, 2022 (Shook, 2022). Cleveland had previously discontinued use of their Native-themed mascot and logo, "Chief Wahoo," a caricature of an American Indian chief with a red face and stereotypical features in 2018, amid growing pressure from advocacy groups (Hoynes, 2018). After

Washington's discontinuation of their team name and increased visibility around the issue of Native-themed mascots, Cleveland announced their decision to retire their own Native-themed team name in 2020, and announced their new team name, the "Guardians," on July 23, 2021 (Lewis, 2020; Lewis, 2021; Pruitt-Young, 2021). These moves highlight a shift in predominant public discourse and opinion around the issue of Native-themed mascots.

The question of public support for these mascots has continued throughout the years in a volley of polling conducted by both supporters and opponents. Most prominently, the *Washington Post* conducted polling in 2016 showing limited numbers found the Washington R-dskins name to be "Offensive," (9%), while 90% of self-reported "Native Americans" stated that the name "Does not bother" them; they also found that 73% answered "Not disrespectful" to the question "In general, do you feel the word 'Redskin' is disrespectful of Native Americans, or not?" (Woodrow Cox et al., 2016). In 2019, the research firm Wolvereye also conducted polling with 500 self-identified "Native Americans" asking the question, "When thinking about the team name Redskins, do you feel…?" and providing a list of positive, negative, and neutral emotions to select; the top selected emotion was "Proud" (Vargas, 2019). In addition, they found that 68% stated they were "not offended" by the name (Vargas, 2019; Baum, n.d.). Similarly, in 2004, the National Annenberg Election Survey found of the 768 self-identified "Native Americans" that 90% stated the team name "does not bother" them, while 9% found the name "offensive" (Annenberg Public Policy Center, 2004; Annenberg Public Policy Center, 2013).

These polls build on a longstanding legacy of sports teams and sports-centric entities conducting opinion polling on the issue. In 2002, *Sports Illustrated* released the results of a poll conducted by the Peter Harris Group including 351 self-identified "Native Americans" who reported both living on and off reservations (Woo, 2002; Price, 2002). The poll had been the subject of significant discourse over the decision to not release detailed methodology information, but summaries of the results have been produced in multiple publications since the poll's release (King et al., 2002). When asked if "professional teams should stop using Indian nicknames, mascots or symbols," 83% of the self-identified "Native Americans" in the poll said no, while 72% of self-identified "Native Americans" who reported living off of a reservation and 57% of those who reported living on a reservation stated that they "do not object" to the Washington R-dskins team name (Woo, 2002). In addition, the poll also asked, "should high school and college teams stop using Indian nicknames," and 81% of self-identified "Native Americans" said no (Price, 2002). Finally, when asked if the Washington R-dskins should change their name, only 29% of self-identified

"Native Americans" and 40% of self-identified "Native Americans" who reported living on reservations agreed (Price, 2002). These results and the additional polls that followed over the years were used by the media to paint a picture of the debate over Native-themed mascots as one largely fought by a small handful of opponents who are detached from the broader AI/AN populace.

Other public opinion polling has identified the ways in which these polls failed to capture a holistic picture of AI/ANs throughout the country. Mascot opponents and advocacy organizations have noted respondents to these polls are self-identified "Native Americans" and have used this information to question the validity of the responses. For instance, in the 2016 *Washington Post* polling, only 44% of respondents were able to identify a tribal enrollment or affiliation (Clement & Guskin, 2016; Keeler, 2016). Others have noted that in areas of the country with higher concentrations of AI/ANs, it would not be unlikely for non-AI/AN respondents to state their race as AI/AN to shift survey results (King et al., 2002; Black & Billings, 2019). Surveys have largely been conducted online and/or by phone, and AI/ANs, particularly those living on reservations, having limited access to broadband and telephone (Herrick et al., 2019).

Researchers have noted the challenges to surveying AI/ANs, and mascot opponents have sought to address these concerns through their own series of public opinion polls and surveys. These surveys often find starkly different results when utilizing survey methods developed specifically to include AI/AN respondents. After recruiting AI/AN respondents who identified as having a tribal affiliation at community cultural events, such as powwows, Fenelon found that 67.3% considered the Washington NFL team name to be "racist," while 20.4% said it was "not racist;" in contrast, 32.8% of White respondents considered the name "racist" while 41.4% did not (Fenelon, 2016). These results were comparable to his earlier 1995 survey on the Cleveland MLB team name (Fenelon, 1997). Similarly, the news media outlet with a large AI/AN readership, *Indian Country Today*, conducted a poll that found 81% responded "Offensive," while 10% answered "Honor" when asked "Do Indian mascots predominantly honor or are they predominantly offensive to Natives." When the poll asked, "Do you believe the use of Indian mascots at non-Indian schools, colleges and universities should be in violation of anti-discrimination laws," 75% responded "Yes" and 20% responded "No" (*Indian Country Today,* 2001). The survey also asked, "Do Indian mascots create a 'hostile educational environment' for Native students," and 73% responded "Yes," while 17% responded "No" (*Indian Country Today,* 2001). However, for the *Indian Country Today* survey, the racial/ethnic background of respondents was not reported.

Most recently, Fryberg et al. (2020) surveyed 1,021 self-identified "Native Americans" and, while noting that variance among the participants occurred, found that 49% of respondents found the R-dskins mascot offensive across a series of questions such as "I find the term 'Redskins' offensive" and "It bothers me when fans of the rival team for the Redskins use insults about Native American culture." In addition, 46% were offended by Native-themed mascots in general using a series of questions, such as "I think using Native American mascots is harmful to Native Americans," and "I find it offensive when sports fans wear chief headdresses at sport events." Also, 65% reported that they found the "tomahawk chop" fan and game-day ritual to be offensive (Recker, 2020).

Legally, Native-themed mascots for professional teams exist without constraint at the state and local level. Likewise, collegiate, secondary, and elementary schools operate freely with a few exceptions (Young, 2021). Initially, activists in opposition to the mascots put forward legal challenges to their trademarking, culminating in *Blackhorse v. Pro-Football, Inc.* and the cancellation of the trademark of the Washington R-dskins NFL team name due to its "disparaging" nature in both 1999 and 2014 (Silversmith, 2019). Ultimately, the appeal of the decision moved through the court system, with the U.S. Supreme Court ruling on the issue through a related case, *Matal v. Tam*; the case was withdrawn, and the trademark reinstated in 2018 (Silversmith, 2019). States and municipalities have begun to take action individually to mandate elementary and secondary schools to discontinue the use of "race-based" mascots, including in California, Colorado, Connecticut, Maine, Nevada, Oregon, and Washington, either as outright bans or as discouragement through tying such names to school funding (Young, 2021; Wilson, 2021; Ryan, 2020; Murphy, 2012; NCAI, 2021b). However, many states are leaving the issue for local decision makers and school boards.

Beyond opinions and legality, medical practitioners and academic researchers have also weighed in on the issue. The American Psychological Association (APA) recommends discontinuing the use of Native-themed mascots (2005) due to negative impacts on AI/AN youth, as have the American Sociological Association (2007), American Counseling Association (2001), and Society of Indian Psychologists (1999 & 2015). The National Education Association and the National Indian Education Association have also opposed Native-themed mascots. The research findings on the impacts from these mascots have been more mixed, but scholarship into the issue continues to grow across a variety of disciplines. At present, there has not been a formal synthesis of peer-reviewed research on the impact of Native-themed mascots on AI/AN health and its determinants, though both

the National Congress of American Indians "Proud to Be" source list (NCAI, 2021a) and Freidman's report (2013) offer collections of key research.

AIMS AND METHODS

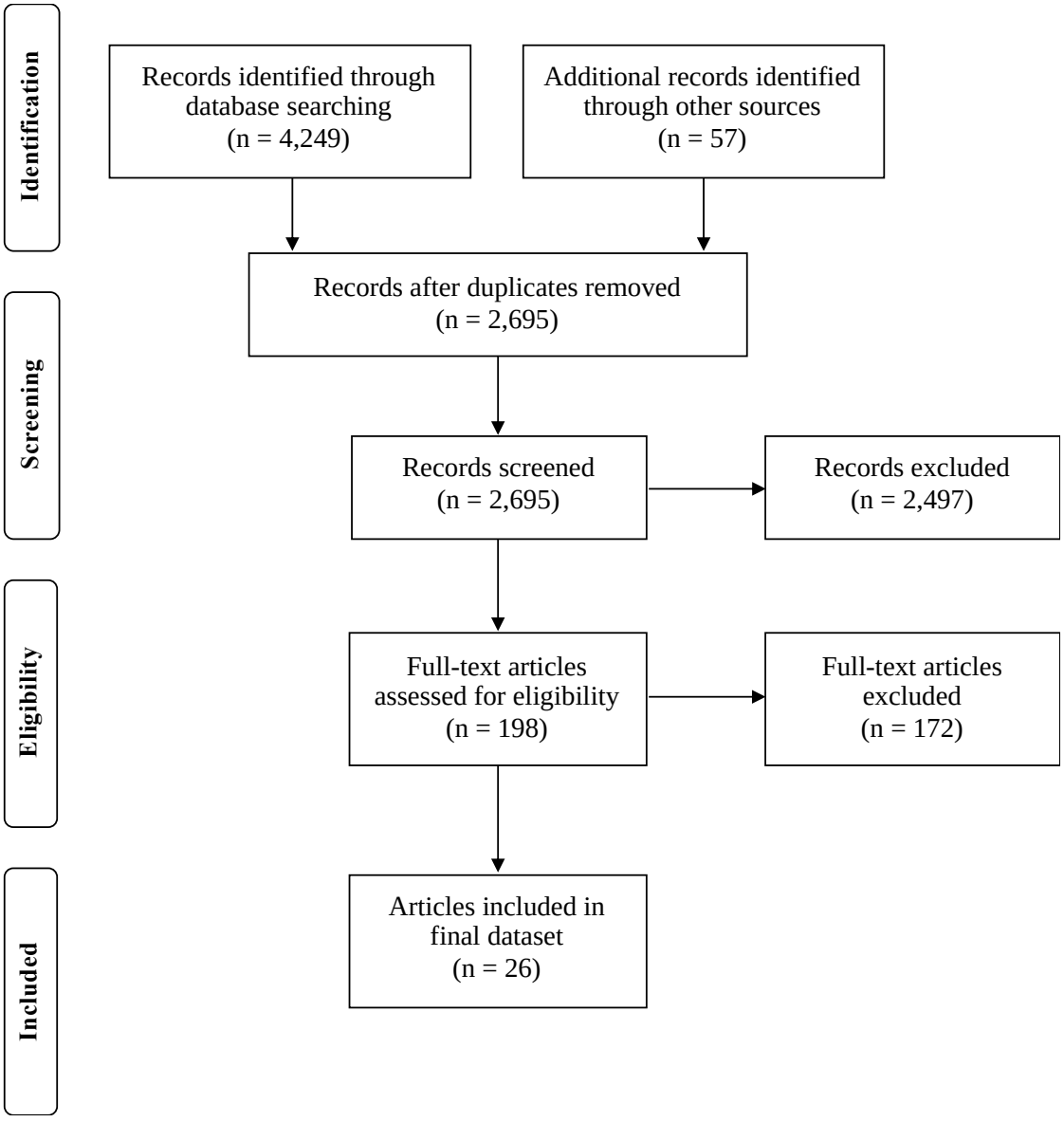
The aims of this scoping review are as follows: (1) determine the extent of the literature on the health impacts stemming from Native-themed mascot usage, including team names, images, and logos, and fan and game-day rituals on AI/ANs in general, the general population, and on AI/AN youth; (2) trace the body of literature on the issue across multiple, disparate fields, including but not limited to health, psychology, sociology, communications, sports studies, and American Indian studies; (3) track the research methods utilized; (4) identify if the research is peer-reviewed or not; (5) note which racial/ethnic groups and age groups have been examined and any differences in health and its determinants by race/ethnicity and age; and (6) identify gaps in existing literature for future study.

These criteria serve to map the current body of literature for future expansion. Supporters of Native-themed mascots state that only a loud but small minority actively reject mascots and write frequently on the topic; this review evaluates that claim. The broad range of fields, extent of peer-reviewed status, participant demographics, and research outcomes in this scoping review aim to provide a more holistic picture of the state of the literature on the impacts on health and health determinants stemming from Native-themed mascots and highlight existing gaps. Opponents to Native-themed mascots frequently cite the impacts to AI/AN people and AI/AN youth; this review aims to better assess that assertion in a systematic manner, by focusing specifically on AI/AN populations, in particular youth, as well as the public health impact on non-AI/ANs. This review is also important because at present, the state of the peer-reviewed research literature on the topic has not been evaluated through this type of review on health and its determinants.

Following the Arksey and O'Malley (2005) guidelines, while both scoping and systematic reviews share many aspects, this scoping review aims to identify a broad range of literature, rather than to conclusively answer a single question as with systematic reviews. Both scoping and systematic reviews follow transparent, rigorous, and reproducible search methods; scoping reviews seek to further clarify definitions and literature typologies, whereas systematic reviews are more narrowly focused (Arksey & O'Malley, 2005). Scoping reviews are frequently used to identify various research methodologies. For this topic, research into health and its determinants widely varies and necessitates further organization to provide clear direction for future research.

Finally, this scoping review does not speak to the quality of the research included in the final dataset beyond peer-reviewed status and, instead, identifies areas for expansion. The article collection process was informed by the PRISMA (Figure 1) guidelines for review reporting, which offers guidance to reviewing literature in a systematic manner (Moher et al., 2009).

Figure 1. Preferred reporting items for systematic reviews and meta-analyses (PRIMSA) flow diagram summarizing search process to identify and screen articles on Native-themed mascots from 1999 to 2019



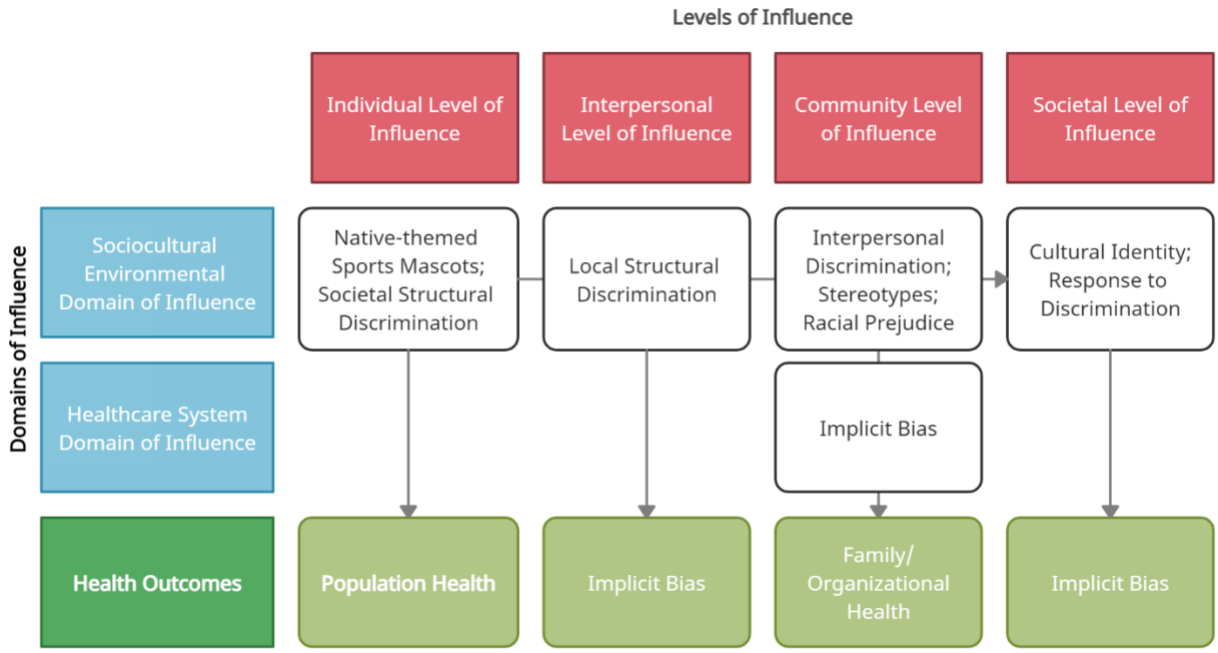
Theoretical Frame

This review utilizes the National Institute on Minority Health and Health Disparities (NIMHD) research framework and, in particular, the framework as adapted by Spero M. Manson

for AI/AN Nations (NIMHD, 2017; Manson, n.d.). Derived from the socioecological model, the framework highlights the interactions between domains of influence and levels of influence that result in health determinants and health impacts (disparities) at the individual, family/organizational, community, and population levels. The determinants of health stemming from these domains and levels contribute to minority health disparities across localized and population-level scales. We utilize this framework due to its ability to highlight the ways in which intersectionality impacts minority groups, in this context AI/ANs, in a variety of ways across life course and population size. Specifically, Native-themed mascots, identified by Manson as a societal level of influence, can contribute to the overall sociocultural environment of AI/ANs across levels of influence, potentially leading to a variety of health impacts through health determinants, including but not limited to: prejudice and stereotypes (*sociocultural environmental domain/interpersonal level*), various forms of discrimination (*sociocultural environmental domain/community, interpersonal, and societal levels)*, implicit bias (*health care system domain/interpersonal level*), and impacts on one's cultural identity (*sociocultural environmental domain/individual level*). These and others can all impact the health of AI/ANs individually and communally. We aim to look not only at population-level health and its determinants, but also the ways in which violence can be perpetuated at individual, familial, and community levels. While Manson identifies Native-themed mascots as falling within the *sociocultural environmental domain* at the *societal level*, minority health disparities are co-constituted and an iterative process, reflected in the ways in which one determinant (Native-themed mascots) can inform separate determinants (i.e., implicit bias, racial prejudice, stereotyping, etc.).

We argue that the co-constituted relationship between cells within the framework contribute to health disparities through determinants across levels. We posit that Native-themed mascots contribute to other health determinant factors across domains and levels within the framework (Figure 2). In this way, Native-themed mascots contribute to other determinants of health, including stereotyping, racism, prejudice, and bias, all of which contribute to minority health disparities within AI/ANs at multiple health outcome levels. When we mention the health impacts of Native-themed mascots in this paper, we define health impacts broadly to include impacts related to health and its determinants as defined by the NIMHD framework and modification by Dr. Spero Manson.

Figure 2. Conceptual framework of Native-themed mascots as a health determinant and their impact on other health determinants across domains and levels of influence, adapted from Manson's Adaptation of the NIMHD Research Framework for American Indians and Alaska Native Nations



Study Selection Criteria

English-language articles were drawn from a 20-year period ranging from 1999 to 2019. Eligible articles focused on primary, rather than secondary, research, and had to outline specific health impacts or health determinants. The selected articles focused specifically on the issue of Native-themed mascots, including team names, images and logos, and related fan and game-day rituals, rather than mascots generally. Legal, pedagogical, and non-empirical articles were excluded from the final dataset, as were case studies. This scoping review is not concerned with legal arguments surrounding the debate over Native-themed mascots, but rather tangible health outcomes from the decision to utilize these mascots in professional and academic sports settings. Likewise, pedagogical decisions surrounding the mascot debate are not of interest in this review; instead, gathering the health determinants, particularly on AI/AN youth, is the goal of this review, to better evaluate the claim that Native-themed mascots negatively impact AI/ANs and the development of AI/AN youth. While pedagogical, education, and communication theorizing is useful to practitioners, for the purpose of this scoping review, they were not included. A book that covered original research, specifically a content analysis and survey of 1,073 respondents on Native-themed

mascot names, logos, and fan and game-day rituals, was also included. In addition, some works included individual studies that focused on Native-themed mascots, as well as work that focused on non-Native-themed mascots. For instance, some articles focused on other race-based mascots, as well as mascots beyond those race-based (such as animal-based mascots). If an article did not specifically focus on or include Native-themed mascots, it was determined to be not relevant to our aims and was excluded. While better understanding the way in which mascots broadly impact the public is of tangential interest, this review is specifically limited to Native-themed mascots.

Data Sources

Articles were drawn from MEDLINE/PubMed, PsycINFO, and JSTOR academic databases. In addition, a search of Google Scholar was conducted to identify critical gray literature and additional research studies. Both the NCAI "Proud to Be" source list (2021a) and the Freidman report (2013) were combed for additional gray literature not already identified.

The search terms "American Indian mascot(s)" and "Native American mascot(s)" were used for a total of four individual queries to identify relevant articles. The articles were initially screened for applicability; after which, the full text of 198 articles was analyzed to form the final 26 articles that comprise this dataset.

Data Collection and Synthesis

From the final dataset, the following criteria were extracted from the full text of the articles:

- Author(s), year of publication, name of publication, journal, or outlet;
- Field of research and peer-reviewed status;
- Type of research methods conducted and number of participants;
- Race/ethnicity and age of participants;
- Research outcomes related to health determinants as defined by the NIMHD research framework of Native-themed mascots;
- Health impacts and differences in health determinants by race/ethnicity and age;
- Native-themed mascot image/logo and whether the mascot is more a realistic depiction or caricature, and/or Native-themed mascot name, and/or Native-themed mascot fan and game-day ritual, if listed.

Due to much of the research taking place primarily on college campuses, many with small numbers of research participants, tracking the size of the study group was important to identify the

generalizability of results and the areas for research to be expanded and replicated in the future. The data from the compiled dataset did not include studies which had been previously published to prevent duplication. The most recent publication or the publication with peer-reviewed status was chosen to represent the study. As an example, some research studies were conducted as part of a thesis or dissertation, and if the results were subsequently published in a scholarly journal, the journal article was chosen for inclusion.

To best address the argument by mascot opponents that Native-themed mascots impact real-world AI/AN individuals, the general public, and most critically, AI/AN youth, the results of the scoping review are divided into three typologies: studies on AI/AN children, studies on AI/AN adults only, and studies on adults of multiple racial/ethnic backgrounds. No studies were eligible for inclusion that examined the impact on non-AI/AN children. The results draw commonalities within the typologies, while acknowledging outlier publications.

RESULTS

This review screened a total of 4,306 citations initially, with a total of 2,695 after duplicates were removed. Of those, 2,497 were removed due to a lack of specific research on health outcomes, direct focus on Native-themed mascots, and/or content that was legal, pedagogical, historical, or theoretical in nature. The full text of the remaining 198 articles was analyzed to determine applicability. Another 172 were removed, leaving 26 articles, texts, and research within a book publication to comprise the dataset for the scoping review (Figure 1). Within the 26 articles, 41 individual tests or studies were conducted within those articles that focused on Native-themed mascots (Appendix: Table A1). Studies that did not specifically focus on Native-themed mascots were excluded from the analysis; specifically, Burke (2006), which included one study out of two conducted in the work that looked at implicit bias *not* specific to Native-themed mascots, was excluded due to lack of applicability. These studies were divided among three typologies due to variance of groups tested throughout multiple tests contained within a single article and our aim to identify health determinants specific to AI/ANs and AI/AN youth specifically in order to address the claim that Native-themed mascots have a detrimental impact on these groups.

American Indian Children and Native-themed Mascots

While numerous authors have written on their concern about the impact of Native-themed mascots on the health and well-being of children (O'Keefe & Greenfield, 2019; Hofmann, 2006;

Delacruz, 2003), and in particular AI/AN children, only one article to date has tested that premise. Fryberg et al. (2008) conducted three tests (Table 1) on American Indian children attending schools on reservation lands in the southwestern United States and the impacts of Native-themed mascots on their mental health (Fryberg, 2002). These studies focused specifically on Native-themed mascots as images. For the first study, researchers found that among 48 American Indian high school students, both the Chief Wahoo mascot and Pocahontas elicited positive associations. This result notes that not all mascots are necessarily seen as negative. However, the authors wanted to know if even positively associated mascots would still have related negative impacts on self-esteem, so they undertook additional studies.

For the second study and third study, groups of 71 and 150 American Indian high school students at two different reservations were primed in the same manner as the first study, with images of Chief Wahoo and Pocahontas and a list of stereotypically negative outcomes related to American Indians, or with a control, and then asked to evaluate questions about themselves or their communities. The results show that while the mascot and Pocahontas again resulted in positive word associations, they also resulted in lower reported self-esteem, even more so than the negative outcomes prime. This article's three studies highlight the need for both additional research specific to AI/AN children, but also to the need to test non-AI/AN children as it relates to health determinants stemming from Native-themed mascots. The impacts to self-esteem and belief in one's community link to the health determinant of cultural identity (*sociocultural environmental domain/individual level*), which is particularly concerning when impacting minority youth, including AI/AN youth.

American Indian/Alaska Native Adults and Native-themed Mascots

For research that focuses solely on AI/AN adults, five authors have conducted work specific to the health determinants stemming from Native-themed mascots on AI/AN people, as well as a Canadian First Nations community. Among these works, the fields vary, spanning education, psychology, sociology, and American Indian studies. However, the methods primarily involved interviews, and the sizes of the studies were small, with only a single study, Fryberg et al. (2008), including over 100 participants. This likely stems from the challenge of finding and recruiting AI/AN participants. A common concern with public opinion polling is the reliability of self-identification and the challenge to recruiting AI/AN participants, who make up a smaller percentage of the population and often live in remote areas with limited connectivity; these factors challenge the validity of telephone and online polling and surveys (Herrick et al, 2019). As a result,

some authors have directly attempted to recruit from events and areas where AI/ANs are more likely to be located, including cultural events such as powwows (Jacobs, 2014). Three of the five studies were conducted with undergraduate students, while the other two studies focused on adults recruited from community events. The articles included focus on mascots as team names, images and logos, and as fan and game-day rituals (Table 1). As exhibited in Table 1, studies within the articles on AI/AN respondents included numerous Native-themed mascot names and images, as well as rituals, within their study methods.

Findings focused on discrimination and stereotypes stemming from Native-themed mascots, primarily constituting findings centered on *sociocultural environmental domain*, across all levels of influence within the NIMHD research framework. Among the studies that took place on college campuses, respondents noted that Native-themed mascots hampered their ability to learn and grow (Castagno & Lee, 2007), lowered their belief in their ability to achieve future success (Fryberg et al., 2008), and activated stereotypes thought to dehumanize and contribute to disproportionate rates of youth suicide in the "Native" population (Robertson, 2015). Those studies drawing from community events reported findings that contradict the findings from college campuses. Among some respondents from a First Nations community in Canada, Robidoux found Native-themed mascots were considered to be useful as "any representation" when the media generally failed to depict any representations of AI/AN or Canadian First Nations peoples (2006). Even these stereotypical images were appreciated by respondents. Other work, which recruited participants from community events in the Cleveland area who lived or had lived on or near their respective reservation, found that participants were more likely to actively participate in mascot removal activism, as well as express their disapproval for Native-themed mascots (Jacobs, 2014). Jacobs also found that participants shared "draining" physical and mental health impacts from mascot opposition, including being subjected to physical abuse and verbal aggression, such as spitting and profanity directed at them. Participants noted that opponents of Native-themed mascots who were themselves AI/AN were often the focus of aggression, rather than non-AI/AN protestors, including being the target of AI/AN stereotypes around poverty and joblessness. The majority of the works utilized interview methods, with respondents highlighting mascot rituals, including "redface," specifically the wearing of headdresses and face paint, on the part of fans (Jacobs, 2014; Robertson, 2015); Native-themed war chants (Jacobs, 2014); Native-themed pantomime, as in a performer playing "Indian" by dancing or riding a horse in Native-themed costume (Jacobs, 2014; Castagno & Lee, 2007); and Native-themed fan songs (Jacobs, 2014). These works show the variety of views but support the general consensus

that Native-themed mascots contribute to stereotyping and discrimination of AI/ANs and contribute to negative health determinants building on those stereotypes, undermining AI/ANs general health and well-being (Jacobs, 2014; Castagno & Lee, 2007).

Table 1

Characteristics of studies within articles that examine American Indian/Alaska Native respondents and Native-themed mascots: 1999-2019

Characteristic	Category	No.	(%)
Total Studies		8	(100)*
Participant Age	Children	3	(37.5)
	Adults	5	(62.5)
Publication Date	1999-2004	0	(0)
	2005-2009	6	(75)
	2010-2014	1	(12.5)
	2015-2019	1	(12.5)
Field of Research	Psychology	4	(50)
	American Indian Studies	1	(12.5)
	Education	1	(12.5)
	Sociology	2	(25)
Peer-Reviewed Status	Peer-Reviewed	8	(100)
	Not Peer-Reviewed	0	(0)
Research Methods	Experiment	4	(50)
	Interview	4	(50)
Number of Participants	Fewer Than 10	1	(12.5)
	10-50	4	(50)
	51-100	1	(12.5)
	101-500	2	(25)
Mascot Names and Image Examined	Blackhawks	1	(12.5)
	Chief Illiniwek	2	(25)
	Chief Wahoo	6	(75)
	Haskell Mascot	1	(12.5)
	R-dskins	1	(12.5)
	Unspecified	1	(12.5)
Fan and Game-Day Rituals	Redface	2	(25)
	War Chant	1	(12.5)
	Tomahawk Chop	0	(0)
	Native-themed Pantomime	2	(25)
	Native-themed Songs	1	(12.5)

* Some publications had more than one study within them, and the number of studies in some categories in the table may be greater than the total number of publications, for instance, with multiple studies covering multiple mascots, the percentages will not sum to 100%.

All Races/Ethnicities and Native-themed Mascots

In 33 additional studies, participants were drawn from various racial/ethnic groups (Table 2). Of those, 26 studies were undertaken in the field of psychology. Likewise, 22 of the studies were experimental in nature. The next highest method was survey, with a total of five. All but one study had a primarily White group of participants, but the majority of studies included other races/ethnicities as well, including some self-identified "Native Americans." Once again, the majority of studies were undertaken on college campuses and utilized students for recruitment purposes. In addition, most of the studies had over 100 participants, when participant number was included/applicable. Table 2 shows an overview of the study size, field of research, as well as topics covered. Within a single study, at times multiple fields, names, images, and rituals were covered, as well as multiple racial/ethnic groups included.

Table 2
Characteristics of studies within articles that examine all races/ethnicities and Native-themed mascots: 1999-2019

Characteristic	Category	No.	(%)
Total Studies		33	(100)*
Publication Date	1999-2004	0	(0)
	2005-2009	6	(18.2)
	2010-2014	12	(36.4)
	2015-2019	15	(45.5)
Field of Research	Psychology	26	(78.8)
	American Indian Studies	2	(6.1)
	Communications	2	(6.1)
	Sports Studies	3	(9.1)
	Sociology	2	(6.1)
Peer-Reviewed Status	Peer-Reviewed	23	(69.7)
	Not Peer-Reviewed	10	(30.3)
Research Methods	Experiment	22	(66.7)
	Survey	5	(15.2)
	Content Analysis	3	(9.1)
	Interview	1	(3.0)
	Participant Observation	2	(6.1)
Number of Participants	Fewer Than 10	0	(0)
	10-50	6	(18.2)
	51-100	6	(18.2)

continued on next page

Table 2 Continued
Characteristics of studies within articles that examine all races/ethnicities and Native-themed mascots: 1999-2019

Characteristic	Category	No.	(%)
Number of Participants (cont.)	101-500	16	(48.5)
	501-1,000	1	(3.0)
	Over 1,000	3	(9.1)
	N/A	1	(3.0)
Mascot Names and Images Examined	Braves	6	(18.2)
	Chiefs	5	(15.2)
	Chief Illiniwek	5	(15.2)
	Chief Wahoo	5	(15.2)
	Fighting Sioux	10	(30.3)
	Indians	7	(21.2)
	R-dskins	10	(30.3)
	Warriors	5	(15.2)
	Various	6	(18.2)
	Unspecified	6	(18.2)
Fan and Game-Day Rituals	Redface	1	(3.0)
	War Chant	3	(9.1)
	Tomahawk Chop	3	(9.1)
	Native-themed Pantomime	2	(6.1)
	Native-themed Songs	1	(3.0)
Racial/Ethnic Groups of Participants	White	22	(66.7)
	Black	14	(42.4)
	Hispanic/Latino	13	(39.4)
	Asian-American	12	(36.4)
	AI/AN or "Native American"	10	(30.3)
	Other	7	(21.2)
	Multiracial	7	(21.2)
	Middle Eastern	2	(6.1)
	Race Unknown/Unidentified	2	(6.1)
	Pacific Islander	1	(3.0)
	Minority	1	(3.0)
	Non-Native	2	(6.1)
	N/A	10	(30.3)

* Some publications had more than one study within them, and the number of studies in some categories in the table may be greater than the total number of publications, for instance, with multiple studies covering multiple mascots, the percentages will not sum to 100%.

The works focused on Native-themed mascots as team names, images and logos, and as fan and game-day rituals. Ten of the studies utilized both realistic- and caricature-type mascots. Existing research suggests that there may be a difference in impacts of Native-themed mascots based on the extent to which the depiction is more stylized and stereotypical (Fryberg et al., 2008). The majority of articles included the Fighting Sioux and R-dskins monikers, both with ten. However, among the other studies, many included numerous mascot examples within a single study, while others did not specify a specific mascot image that was studied. In terms of rituals, one study included instances of fan redface (Lyne, 2019), three included the use of Native-themed war chants and the swiping hand gesture (i.e., the "tomahawk chop," used to refer to violent action) (Billings & Black, 2018; Lyne, 2019; Steinfeldt et al., 2012), two included Native-themed pantomime (Billings & Black, 2018; Lyne, 2019), and one included Native-themed song singing (Billings & Black, 2018). While for this category studies included a wide range of races/ethnicities, ten of the studies from eight of the articles had self-identified "Native American" participants (Bresnahan & Flowers, 2008; LaRocque et al., 2011; Steinfeldt et al., 2012; Cross, 2018; Burkley at al., 2017; Williams, 2007; Sanchez, 2013; Kraus et al., 2019).

The substantive results primarily highlight concerns about the relationship between Native-themed mascots and subsequent stereotyping of AI/AN people (*sociocultural environmental domain/interpersonal level)*. Angle et al. (2017) found mascots activated implicit stereotypes that American Indians are "warlike," while in the second study found that positive stereotyping required additional priming to elicit. Burkley et al. (2017) found that when primed with a Native-themed mascot, participants with more prejudiced views (*sociocultural environmental domain/interpersonal level*) were more likely to stereotype a "Native American" target as aggressive. In addition, some authors found that Native-themed mascots were tied to implicit bias (*health care system domain/interpersonal level*) directed toward actual "Native American" people (Burke, 2006). These examples illustrate the challenge for disentangling these Native-themed mascots from AI/AN people, as well as the ways in which health determinants at different levels of influence across the sociocultural environmental domain can be influenced by exposure to Native-themed mascots (Burkley et al., 2017; Chaney et al., 2011).

Some studies found that these stereotypes had additional real-world outcomes. Implicit negative stereotypes (*sociocultural environmental domain/interpersonal level*) caused participants to hold more stereotypical expectations for what tasks a hypothetical American Indian would enjoy (Chaney et al., 2011), while other participants when primed with a "Native American" student in

opposition to a mascot, evaluated their candidacy for a scholarship or job with more discrimination (Gonzalez, 2005). This follows findings from Jacobs' American Indian interviews and broader participant observation that mascot opponents targeted for backlash from fans were more likely AI/ANs, rather than non-AI/AN opponents (2014). Steinfeldt et al. (2010) even found that some expressed a desire to "punish" American Indians in response to mascot removal through the ending of state and federal programs that assist AI/AN people or through boycotting their businesses (*sociocultural environmental domain/societal level*). Once again, Native-themed mascot opposition is found to be mentally tied to AI/AN people broadly, in addition to mascot opponents. Interestingly, one author found that non-AI/AN minority respondents ranked Native-themed mascots less positively than White respondents, though not as negatively as "Native American" participants (Williams, 2007). Generally, the findings report that Native-themed mascots elicit stereotypes in respondents with possible connection to the well-being of AI/AN people from these stereotypes. Another unique finding was that the stereotyping caused by priming with a mascot was not limited to American Indians, but that stereotypes were heightened toward Asian Americans as well (Kim-Prieto et al., 2010); however, this result was not found to be true of gender stereotypes (Sanchez, 2013).

Interestingly, being a sports fan can have a dampening effect on the extent to which participants were concerned about Native-themed mascots and their possible harm to AI/AN people per authors Bresnahan and Flowers (2008), Billings and Black (2018), Gonzalez (2005), and Williams (2007). This presents a challenge to those in favor of changing existing mascots if team supporters are potentially less likely to be moved by arguments on negative health determinants stemming from these Native-themed mascots. Likewise, not all authors found that mascots were negative. Similar to the findings from the First Nations group (Robidoux, 2006), Lyne (2019) reported that some online participants felt that without Native-themed mascots, there would be no representation in the media at all for AI/ANs, and for them, that made the Native-themed mascots positive representations due to their mere presence alone. Finally, others noted that the reason for lack of concern about mascots was due to desensitization from their mainstream use (Hart, 2011) as many participants felt that something so common and widespread could not possibly be harmful (Billings & Black, 2018). This finding in particular underscores Manson's (n.d.) argument that Native-themed mascots are a health determinant within the sociocultural environmental domain at the societal level, with implications for population health disparities and outcomes.

As with the literature on AI/AN adults, impacts to the general public were not limited to implicit bias and stereotyping. Steinfeldt et al. (2012) found that mascot opponent activists reported that Native-themed mascots contribute to ongoing dehumanization that American Indians faced in their area, including refusal of service (*sociocultural environmental domain/community level*). In addition, advocates reported physical violence as a result of their stance against mascots, including refusal of service and assault, general violent targeting of AI/AN children independent of support or opposition to Native-themed mascots, and being targeted for a school physical fight based on a Native-themed mascot beginning with the word "Fighting" (Steinfeldt et al., 2012). While respondents note that they were targeted for their opposition to Native-themed mascots, AI/ANs more generally were also targeted in relation to Native-themed mascots.

Research has linked the relationship between an individual's existing implicit bias and their support for Native-themed mascots. For example, Kraus et al. (2019) found university students surveyed to be low in "modern racism" also exhibited little support for a retired Native-themed mascot, while Burke (2009) found that White undergraduate students expressed implicit bias in response to Native-themed mascots. Freng and Willis-Esqueda (2011) found that these mascots activated negative stereotypes rather than positive responses. Predominantly, the literature finds that Native-themed mascots impact health determinants that negatively contribute to health disparities to AI/ANs, including a general detachment of non-AI/AN participants to this issue and non-AI/AN susceptibility to Native-themed mascots that strengthens existing negative AI/AN stereotypes, bias, and discrimination.

DISCUSSION

Despite decades of pressure from AI/AN organizations, activists, and community members, Native-themed mascots persist among professional, collegiate, and youth teams (LaRocque et al., 2011). The general consensus among social science research is that non-AI/AN individuals, in particular White research participants, continue to express overall support for these mascots. On the issue of sports team mascots, fans and supporters tend to hold extreme beliefs and deeply personal stances in relation to their respective teams. Outside of psychological research studies, surveys and media reports have shown strong polarization on this issue. Indeed, fans frequently express strong ties to teams as part of their personal identity and to these Native-themed mascot rituals—even positing their own identities as fans of a particular Native-themed mascot as too personal and too large a part of their "culture" for the name to undergo change and

discontinuation (Engle, 2020; Spencer, 2020; Lang, 2020). This scoping review found study results concurrent with these impressions, including among students pursuing a career in sports (Rickabaugh & Rickabaugh, 2015), but also found that training interventions on Native-themed mascots can shift attitudes (Steinfeldt & Wong, 2010).

Broadly, the majority of works included in this review provide evidence that Native-themed mascots contribute to negative health determinants for AI/ANs, primarily (but not limited to) the sociocultural environmental domain, across individual, familial, community, and population levels. This includes violence and aggression, especially towards AI/AN youth (Jacobs, 2014; Steinfeldt et al., 2012), implicit bias in respondents (Burke, 2009), experiments showing that stereotyping can lead to lower performance evaluations (Gonzalez, 2005), and a dampening of personal beliefs in one's self and one's community among American Indian youth (Fryberg et al., 2008). Though research is limited by primarily identifying discrimination, bias, and stereotyping (Burke, 2006), these health determinants have the potential to harm AI/ANs outside of these studies, across their life course (Appendix: Table A1).

This review finds little to support the argument from mascot proponents that objections to mascots come from only a vocal minority of researchers. While some authors (six; 11.1% of the total) authored or co-authored multiple works on the topic, the majority (48; 88.9% of the total) have only authored or co-authored a single relevant article in the dataset. The breadth of authorship in this review undercuts the belief that only a handful of researcher-activists create the majority of scholarship on Native-themed mascots. While the subject has a limited body of work, it has been written by an array of researchers over many years.

After this review of articles through 2019 was completed, a new review was published by Davis-Delano et al. (2020) on the psychosocial effects of Native-themed mascots. They explain their motivations for the review as helping to inform educational policy with research. They review 19 articles and master's theses. The authors situate their findings on the negative impacts of these mascots within the broader understanding of prevalent "Native American" stereotypes. They conclude that research is clear and that educational administrators should rely on research to discontinue the use of these mascots to better support the success of "Native American" students. Due to the limited nature of this subfield, there is overlap among the articles included in both our scoping review on health determinants stemming from Native-themed mascots organized conceptually by the NIMHD research framework and their psychosocial

review, along with different research goals and review methodologies. Both reviews add to the literature on the harmful impacts of Native-themed mascots in different ways.

Limitations and Strengths

This study was conducted to better inform future research on the health impacts and health determinants stemming from Native-themed mascots. Our review suggests that research on this topic can be expanded into four primary areas to improve research results in the future: (1) expand the types of determinants investigated; (2) expand the types of respondents recruited, (3) explore more aspects of Native-themed mascots and their impacts, and (4) continue to expand the fields of research for this work across disciplines.

Our review found that the majority of work focuses on bias and stereotyping. In the future, additional work needs to investigate the relationship between Native-themed mascots and other aspects of AI/AN health disparities and health determinants. A handful of works looked at discrimination and prejudice that led to physical and verbal aggression against AI/ANs (in particular, children) and mascot opponents. Expanding this area of research is critical to disentangling the impact of Native-themed mascots to AI/ANs from the impact of Native-themed mascots to mascot opponents. In addition, while our work utilized a framework predominantly exploring the relationship between health determinants within the sociocultural environmental domain across levels of influence, we believe that Native-themed mascots likely impact and contribute to additional health determinants within other domains of influence. For example, Fryberg et al.'s (2008) finding on negative impacts to AI/AN youth beliefs in their community after being primed with Native-themed mascot images directly relates to the determinant of community functioning (*behavioral domain/community level*). Such relationships justify additional study.

Second, there remains a deep need to study children, both AI/ANs and non-AI/ANs, in relation to the health impacts of Native-themed mascots. As Fryberg (2002) noted in her dissertation, White respondents expressed improved self-esteem in response to mascot priming, while Steinfeldt et al. (2012) noted that Native-themed mascots instill misinformation about AI/ANs to non-AI/AN children in their "formative years" to their detriment; future studies should further assess the effects of Native-themed mascots on non-AI/AN youth.

Beyond age groups, there remains a need to expand the sample size of studies that evaluate the health impacts on AI/AN adults. At present, studies generally only included a handful of AI/AN

participants when recruiting from multiple racial/ethnic groups. Larger sample sizes will be necessary to draw broader, generalizable results. Likewise, there remains a need to expand this research to better represent the impacts to Alaska Natives specifically. While recruiting a large sample of AI/ANs is more challenging than reaching other racial/ethnic groups, research resulting from smaller sample sizes will continue to be dismissed by mascot supporters, necessitating larger studies moving forward. Robidoux's (2006) work on a Canadian First Nation tribe noted that respondents did not feel negatively toward Native-themed mascots in part because of the disconnect between the stereotypes employed by the mascots, generally loosely based on Plains tribes, and their own tribal identities. Future work should see if this is true of Alaska Natives.

More recruitment away from college campuses and not among students remains an important goal for studies of both AI/AN and non-AI/AN adults. Naturally, the accessibility of college students remains a reason for the tendency to draw participants from that group, but to expand the applicability of this research, a broader group of adults needs to be integrated into Native-themed mascot research. In addition, this scoping review revealed that results from college samples are nearing a level of saturation. Hearing from respondents from a range of broader age groups could also potentially be used to show the health impacts from these mascots across respondents' lifetimes.

Third, in terms of the field of research, the vast majority of studies were conducted within the field of psychology, and while additional non-health related writings on Native-themed mascots have been published in the fields of communication, legal studies, history, and anthropology, among others, the field of psychology remains the dominant field for work on the question of these Native-themed mascots. Future work can help to expand health disparity and health determinant related research on Native-themed mascots to other fields. However, the findings on self-esteem and stereotypes do have the potential to contribute to existing health disparities among AI/AN individuals and the population as a whole, as well as other health-related comorbidities. These psychological impacts to the well-being of AI/ANs have the potential to cause further medical impacts, including stress and depression, which can compound the prevalence of other conditions such as, diabetes, obesity, and heart disease (Thayer et al., 2018). Future research can move beyond establishing the presence of stereotyping to its impacts more broadly in terms of overall health and wellness.

Finally, the definitions of Native-themed mascots ought to be expanded in future research. At present, the vast majority of work focuses on mascots as names and images. However, in light

of recent changes to the landscape of professional teams using and formerly using Native-themed mascot names and logos, there has been a shift in the media to begin to include fan and game-day rituals in their evaluations of Native-themed mascots. Similarly, many teams that maintain Native-themed mascot names and logos have made efforts toward change at the ritual level. The discourse will likely continue to move in this direction, with a growing focus on the Native-themed mascot rituals. Future research needs to explore the relationship between such rituals, including fan redface, the use of "war chants" and the "tomahawk chop," the employment of Native-themed pantomime by half-time performers, and Native-themed fan songs.

Public Health Implications and the Future of Native-themed Mascots

While the focus of this scoping review has largely been on the negative health determinants for AI/ANs stemming from Native-themed mascots, results are not limited only to AI/ANs. Rather, Native-themed mascots impact the public at large. As evidenced by the ongoing public discourse over both pervasive structural and localized racism within American society, the public has begun to better acknowledge the ways in which racism, discrimination, bias, and stereotyping contribute to minority health disparities and societal inequality. Changing and retiring these Native-themed mascots is necessary for the overall betterment of AI/ANs of all ages and broad societal progress for all, as evidenced by the majority of the existing literature. This scoping review reaffirms that Native-themed mascots likely contribute to AI/AN health disparities and their determinants, and of greatest concern, health disparities and their determinants among AI/AN youth. This review is also important to frame and build on the body of knowledge on this issue to help support efforts to retire harmful Native-themed mascots still in use by schools and professional sports.

While significant changes to the landscape of Native-themed mascots have occurred since 2019, overall changes to the landscape of Native-themed mascots have been happening gradually on the ground for decades. Native-themed mascot progress is not—and has not—been limited to only high-profile examples, specifically the Washington NFL team and the Cleveland MLB team, though these changes are noteworthy for the teams' once strong stance against any change to their previous Native-themed mascots and the teams' high profiles. In fact, Washington's owner Dan Snyder previously stated intentions to "NEVER" change the name (Willingham, 2018). Change historically has been more common at the collegiate level, with many universities retiring Native-themed mascot names and logos over the years since the 1960s and 1970s, including Syracuse University, Marquette University, University of Oklahoma, Miami University, Dartmouth

College, and St. Mary's College (Rickabaugh & Rickabaugh, 2015; American Indian Sports Team Mascots, n.d.). Change at the professional level has been slower prior to 2019, primarily with changes to mascot logos and rituals rather than outright names, with prominent examples including the Golden State Warriors NBA team stopping use of Native-themed imagery while retaining their name, the Kansas City Chiefs NFL team retiring their Native-themed mascot logo of a man in Native clothing in exchange for their current arrowhead-shaped logo, and the Atlanta Braves discontinuing the Native-themed pantomime halftime dance by a man dressed in a Native-themed costume (Gordon & Connolly, 2013; American Indian Sports Team Mascots, n.d.).

At present, current movement on the issue has shifted to focusing on these types of changes primarily to fan and game-day rituals. For instance, the Kansas City Chiefs NFL team, under increased scrutiny in recent years, has steadily instituted a number of game-day changes, including the renaming of one of its game-day rituals, the "tomahawk chop," now called simply "the chop" and performed with a closed rather than open fist; the retirement of a horse, "Warpaint," ridden by one of the team's cheerleaders (the horse was originally ridden by a man in Native-themed costume and retired for the first time in 1989 before returning in its new form in 2009); as well as disallowing the wearing of redface by fans, specifically face paint and headdresses, within the stadium on game days (Kennard, 2021; Honeycutt 2021; Levenson, 2020; McDowell, 2021). However, the team retains its Native-themed mascot name, as well as other game-day rituals, including the beating of a decorated drum by VIP game-day guests. Similarly, the Chicago Blackhawks NHL team has also disallowed fan wearing of Native-themed costume headdresses into events and home games (Thompson, 2020). At present, professional teams appear to be seeking a balance between change that will satisfy public outcry without significantly altering the status quo.

At lower levels, many elementary and secondary schools continue to grapple with the decision to remove or retain their Native-themed mascots. In light of the recent decisions by the Washington and Cleveland teams, as well as the overall shifting in public rhetoric toward retiring Native-themed mascots, a growing number of schools and school districts are deliberating retiring and voting to retire their mascots, which will potentially lead to a continued reduction in these numbers. According to a national school mascot tracking database maintained by NCAI (2022), as of January 24, 2022, there were a total of 1,927 elementary, secondary, and high schools representing 984 school districts across the country that utilize Native-themed sports mascots. Without overarching state or federal regulation, this often becomes a battle between school board

candidates and local mascot opposition, as well as a platform on which to run for election to a school board seat (Farzan, 2020). However, that is not always the case: in a handful of instances, retired mascots have made a return based on backlash over the decision to remove them, for example Killingly, Connecticut and Cambridge, New York have both resurrected their Native-themed mascots this past year (Farzan, 2020; Moore, 2021). In other areas, state regulation has only been followed by the letter of the law, rather than the spirit, with schools removing a Native-themed mascot name while retaining Native-themed mascot imagery, including Chowchilla and Calaveras High Schools in California, as examples (Calix, 2016; Taylor, 2016; Haddock, 2021). These instances show the ongoing tug-of-war between proponents and opponents, mixed opinion among the general public (Knoester & Rockhill, 2021; Sharrow et al., 2021), and the ways in which nationalized debates can become localized, with the well-being of youth at the center. As evidenced by the literature, Native-themed mascots constitute a negative health determinant contributing to AI/AN and AI/AN youth health disparities, and this continued battle over Native-themed mascots in schools perpetuates these negative impacts.

We hope that evidence of harm caused by and retirement of Native-themed mascots across the country prompts other professional and school sports teams to assess and retire their Native-themed mascots, names, images and logos, and associated fan and game-day rituals that contribute to the negative health disparities of AI/AN people, youth, and communities. With the continued, wide-spread use of harmful Native-themed mascots by professional and academic sports teams, more research on the health impacts of these mascots is still urgently needed.

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APPENDIX

Table A1

Mascot health impacts publication dataset and select study variables: 1999-2019

Article (*N*=26)	Individual Studies in Article (40)	Race/Ethnicity of Participants in Article	Participant Age Group	Peer-Review Status	Methods	Health-Related Determinants Stemming from Native-themed Mascots
Fryberg et al., (2008)	4	American Indian	Children; Adults	Yes	Experiment	Activation of Lower Reported Self-Esteem, Community Success, and Future Expectations of Achievement, Even Positively Associated Mascots
Castagno & Lee, (2007)	1	AI/AN	Adults	Yes	Interview	Decreased Ability to Learn in the University Classroom for AI/ANs
Robertson (2015)	1	"Native American"	Adults	Yes	Interview	Activation of Racial Bias, Negative Stereotypes, and Legitimized Racism against "Native Americans"
Robidoux (2006)	1	Canadian First Nations	Adults	Yes	Interview	Positive Representation and Health Promotion for First Nations Community
Jacobs (2014)	2	American Indian; N/A	Adults	Yes	Interview; Participant Observation	Physical and Verbal Aggression toward AI/AN Native-themed Mascot Opponents; Taunting of AI/AN Children Due to Native-themed Mascots
Angle et al. (2017)	3	N/A	Adults	Yes	Experiment	Implicit Stereotype Activation among Liberal Participants against American Indians
Burkley et al. (2017)	1	White; Black; "Native American"; Asian; Latino; Unidentified	Adults	Yes	Experiment	Among Prejudiced Participants Aggressive Stereotype Activation Against a "Native American" Individual
Burke (2006)	1	White	Adults	No	Experiment	Implicit Bias by Participants Against Native-themed Mascots

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Mascot health impacts publication dataset and select study variables: 1999-2019

Article (*N*=26)	Individual Studies in Article (40)	Race/Ethnicity of Participants in Article	Participant Age Group	Peer-Review Status	Methods	Health-Related Determinants Stemming from Native-themed Mascots
Chaney et al. (2011)	2	White	Adults	Yes	Experiment	Implicit Bias by Participants toward Native-themed Mascots and American Indians; Stereotypical Expectations of American Indians Task Preferences
Gonzalez (2005)	1	White	Adults	No	Experiment	Discriminatory Evaluation by Participants toward "Native American" Individual and Native-themed Mascot Opponent
Steinfeldt et al. (2010)	1	N/A	Adults	Yes	Content Analysis	Negative Stereotypes and Racism; Desire to "Punish" through Program Discontinuance
Williams (2007)	1	White; "Native American"; combined category of "Non-Native" including Black, Asian, Pacific Islander, Hispanic/Latino, and Other	Adults	Yes	Survey	Positive Stereotypes; Disregard for "Native American" Opposition to Mascots
Kim-Prieto et al. (2010)	2	White; Black; Asian; Latino	Adults	Yes	Experiment	Activation of Negative Stereotypes toward Asians
Sanchez (2013)	1	White; Black; American Indian; Asian; Latino; Multi-ethnic; Other	Adults	No	Experiment	No Negative Stereotype Activation toward Women

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Mascot health impacts publication dataset and select study variables: 1999-2019

Article (*N*=26)	Individual Studies in Article (40)	Race/Ethnicity of Participants in Article	Participant Age Group	Peer-Review Status	Methods	Health-Related Determinants Stemming from Native-themed Mascots
Bresnahan & Flowers (2008)	1	White; Black; "Native American"; Asian; Latino; Multi-racial	Adults	Yes	Experiment	Sports Fans Expressed Greater Approval for Mascots; Author Argued This Uncritical Support Causes Harm
Billings & Black (2018)	2	N/A	Adults	Yes	Survey; Content Analysis	Respondents Expressed that Native American Tribes Should Determine Acceptability of Mascot Use; Sports Fans Expressed Greater Support for Mascots; Sports Fans Showed Greater Support for Native-themed Mascot Rituals Even When Not Specifically a Fan of the Team in Question; Fan and Game-day Rituals Marginalize Contemporary AI/ANs, in Particular, Fan Redface
Lyne (2019)	1	N/A	Adults	No	Content Analysis	Mixed Results; Positive Representations; Instances of Disregard by Supporters for Negative Impacts to "Native Americans" and Verbal Abuse
Hart (2011)	1	N/A	Adults	No	Survey	Respondents Were Desensitized to Native-themed Mascots Due to Prevalence
LaRocque et al. (2011)	1	"Non-Native"; "Native American"	Adults	Yes	Experiment	Negative Affect in Native But Not Non-Native Participants
Steinfeldt et al. (2012)	1	White; American Indian	Adults	Yes	Interview	Perpetuate Racist Stereotypes, Physical and Verbal Aggression, and Refusal of Services Against American Indians and Opponents

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Mascot health impacts publication dataset and select study variables: 1999-2019

Article (*N*=26)	Individual Studies in Article (40)	Race/Ethnicity of Participants in Article	Participant Age Group	Peer-Review Status	Methods	Health-Related Determinants Stemming from Native-themed Mascots
Cross (2018)	3	White; Black; "Native American"; Asian; Latino; Middle Eastern (two studies); Other	Adults	No	Experiment	Activation of Negative Stereotypes in More Prejudiced Participants and Mascot Supporters
Kraus et al. (2019)	4	White; Black (three studies); "Native American" (one study); Asian (one study); Latino (three studies); "Minority"; Mixed Race (three studies); Other (three studies)	Adults	Yes	Participant Observation; Survey; Experiment (two studies)	Lower Modern Racism Scores Correlated to Negative Mascot Attitudes; "Native American" Stereotypes Related to Higher University Donations Among More Prejudiced Participants
Burke (2009)	2	White	Adults	No	Experiment	Both Mascots and "Native American" people Elicited Implicit Stereotype Bias in Participants; Implicit Bias Related to Higher Expectations of a "Native American" Person to Enjoy Non-Academic Tasks
Freng & Willis-Esqueda (2011)	1	White; Black; Asian; Latino; Multiple Ethnicities; Unknown	Adults	Yes	Experiment	Activated Negative Rather Than Positive Native Stereotypes

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Article (*N*=26)	Individual Studies in Article (40)	Race/Ethnicity of Participants in Article	Participant Age Group	Peer-Review Status	Methods	Health-Related Determinants Stemming from Native-themed Mascots
Rickabaugh & Rickabaugh (2015)	1	N/A	Adults	Yes	Survey	Students Pursuing a Sports Career Found Mascots Minimally Insensitive
Steinfeldt & Wong (2010)	1	White; Black; Asian; Multiracial	Adults	Yes	Experiment	Participants Higher in Color-Blind Racial Attitudes Found Mascots More Acceptable; Mascot Trainings Proved Effective in Reducing Mascot Support