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Kristin Denning 07/20/2023

Review of Community-Level Interventions for Suicide and Substance Use Prevention Among North American Indigenous Youth: 2012-2023

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An abstract of
A thesis submitted to the Faculty of the
Rollins School of Public Health of Emory University
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Abstract

Review of Community-Level Interventions for Suicide and Substance Use Prevention Among North American Indigenous Youth: 2012-2023
By Kristin Denning

The purpose of this review is to assess the field of research from January 2012 to February 2023 on community-level suicide and substance use interventions among AI/AN youth to answer the research question: *what is the current landscape in the field of indigenous-focused, community-based interventions for suicide and substance-use prevention in indigenous youth in North America?* It will do this by focusing on three aspects of the literature, including evaluation measures, effectiveness, and strategies addressing cultural, familial, community, and individual needs of AI/AN youth.

A search of five electronic databases for articles related to the research questions (CINAHL, Web of Science, PubMed, Cochrane, and EmBase) was conducted, and published reference lists of other reviews were manually searched to identify articles published between 2012 and 2023 that related to the research questions for this review. A manual search of websites of organizations involved in indigenous health research was also utilized. Abstracts were manually assessed for inclusion and exclusion criteria.

Twenty-three interventions related to suicide and/or substance use prevention for AI/AN youth in the US and Canada with published material between 2012 and 2023 were identified. Outcomes varied in significance and generalizability, with two interventions producing significant results and nine producing mixed effectiveness. Interventions showed a high attention to cultural appropriateness and engagement with community members.

Progress in this field of research is ongoing; short-term recommendations for the field include further evaluation of promising interventions for effectiveness, adaptation of effective interventions to other communities, and piloting of culturally based interventions for urban-dwelling AI/AN youth.

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Finally, because of the subject matter of this thesis, it is important that I acknowledge the indigenous communities of North America, specifically, the Muscogee (Creek) people, on whose land Emory University is built. Also, Navajo artist Eugene Tapahe and his daughters, Dion and Erin, whose work with the Jingle Dress Project as an expression of hope and healing through art inspired me to focus my thesis research on indigenous mental health.

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ABBREVIATIONS

ABES - Adolescent Behaviors and Experiences Survey

ABG - Arrowhead Business Group

ACEs - Adverse Childhood Experiences

ADAI - Alcohol and Drug Abuse Institute

AI/AN - American Indian or Alaskan Native

AIDS - Acquired Immunodeficiency Syndrome

BZDDD - Bii-Zin-Da-De-Dah/Listening to One Another

CAB - Community Advisory Board

CBPR - Community-based participatory research methods

CDC - Centers for Disease Control

CMHWs – Community Mental Health Workers

CPS - Child Protective Services

CTC - Cherokee Talking Circle

FHC - Family Health Coaches

HEY - Healthy & Empowered Youth

HIV - Human Immunodeficiency Virus

HOC Healing of the Canoe Project

HTT - Historical Trauma Theory

ICWA - Indian Child Welfare Act

IHB - Indian Health Board

IHS - Indian Health Service

L2W - Living in 2 Worlds

LCH - Lakota Circles of Hope

LROP - Lumbee Rite of Passage

MBA - Mind and Body Awareness

MICUNAY - Motivational interviewing and culture for urban Native American youth

NTCI - Native Talking Circle Intervention

OMH - Office of Minority Health

PGST - Port Gamble S'Klallam Tribe

PTSD - Post-Traumatic Stress Disorder

RCL - Respecting the Circle of Life

RCT - Randomized Controlled Trial

SAMHSA - Substance Abuse and Mental Health Services Administration

SCC - Suquamish Cultural Co-operative

SMART - Sequential Multiple Assignment Randomized Trial

TG - Thiwahe Gluwas'akapi

WHO - World Health Organization

WMAT - White Mountain Apache Tribe

YLP - Youth Leaders Program

YRBS - Youth Risk Behavior Survey

1. Introduction

1.1 Rationale

In 2019, Dr. Vikram Patel of Harvard Medical School published his commentary *Mental Health: in the spotlight but a long way to go* in which he summarized the increasing attention towards mental health and its effects on a global scale. Dr. Patel cited mental disorders and substance use disorders' position as some of the leading causes of the global burden of disease as he called for us "to recognize and celebrate mental health as a fundamental, universal human quality, an indivisible part of health, important to all people in all countries **and especially relevant to young people"** (Patel, 2019, p. 325). Just a few months later, the Centers for Disease Control and Prevention (CDC) published data putting the youth mental health crisis in the US in focus (CDC, 2020).

CDC has been monitoring the alarming trend of increasing suicidal ideation and suicide attempts among US middle and high school students through school-based surveillance since 1991. Their Youth Risk Behavior Survey (YRBS) Data Summary & Trends Report 2009 – 2019 revealed that, in 2009, 26.1% of high school students in the US experienced persistent feelings of sadness or hopelessness and 13.8% experienced suicidal ideation. By comparison, 36.7% of high school students in the US experienced persistent feelings of sadness or hopelessness in 2019, and even more importantly, 18.8% had seriously considered suicide. These data indicated a worsening situation for youth mental health in the US (CDC, 2020).

At the same time, the YRBS also highlighted severe racial and ethnic disparities in youth mental health. The data further revealed that indigenous youth in the US were significantly more likely to experience poor mental health and suicidal ideation than other races, with American Indian and Alaskan Native (AI/AN) respondents having an attempted suicide rate of 25.5%,

three times the rate of White respondents, in 2019 ((CDC, 2020)*See Table 1.0*). A meta-analysis of suicide rates among ethnic minorities conducted in 2022 confirmed this, showing that studies conducted among indigenous North American communities consistently showed a higher risk for suicide and poor mental health including among youth (Troya et al., 2022). In 2017, the Substance Abuse and Mental Health Services Administration (SAMHSA) reported that AI/AN youth living in rural, isolated communities in the US are at an even higher risk for suicide and poor mental health than urban AI/AN youth (Substance Abuse and Mental Health Services Administration, 2017), though it is important to note that 60% of the AI/AN population in the US live in urban areas (OMH, 2023a).These trends hold among Native youth in Canada, with Inuit youth experiencing some of the highest suicide rates in the world, rates 11 times higher than those of non-indigenous Canadians (Centre for Suicide Prevention, 2021).

Substance use and substance-use disorders are individual risk factors for suicide (CDC, 2022b). Among high school students in the US, AI/AN youth have some of the highest rates of illicit drug use. In 2017, 26.6% of AI/AN youth had ever used select illicit drugs, such as cocaine or heroin, compared to 13.4% of White youth. AI/AN youth have also continued to have consistently high rates of alcohol use. Since 2015, the rate of current alcohol use has remained above 30% for indigenous youth; in addition, AI/AN had the highest rate of alcohol use in 2021 compared to other races (*See Table 1.0*). Canada has also seen a higher prevalence of substance-use among indigenous teens, as indigenous youth are more likely than non-indigenous youth to self-report poly-substance use (Zuckermann et al., 2019). Polysubstance use is defined as the use of more than one drug and includes when two or more drugs are taken together or in close proximity (CDC, 2022a).

Table 1.0 CDC YRBS Data for Alcohol, Suicidal Ideation, and Illicit Drug Use				
% adolescents reporting drinking alcohol within the past 30 days prior to survey				
Year	**2015**	**2017**	**2019**	**2021**
AI/AN	46.0%	31.8%	32.6%	32%
White	35.2%	32.4%	34.2%	26%
Black	23.8%	20.8%	16.8%	13%
Hispanic	34.4%	31.3%	28.4%	23%
Asian	13.1%	12.2%	13.9%	11%
NH/PI	N/A	N/A	N/A	22%
% adolescents reporting having seriously considered attempting suicide				
Year	**2015**	**2017**	**2019**	**2021**
AI/AN	20.9%	19%	34.7%	27%
White	17.2%	17.3%	19.1%	23%
Black	14.5%	14.7%	16.9%	22%
Hispanic	18.8%	16.4%	17.2%	22%
Asian	17.7%	17.4%	19.7%	18%
NH/PI	N/A	18.4%	N/A	21%
% adolescents reporting having ever used select illicit drugs				
Year	**2015**	**2017**	**2019**	**2021**
AI/AN	18%	26.6%	N/A	20%
White	13.8%	13.4%	14.3%	14%
Black	14.5%	11.1%	14.6%	9%
Hispanic	19.2%	16.2%	15.5%	14%
Asian	8.5%	7.3%	7.7%	7%
NH/PI	N/A	N/A	N/A	N/A

***The category "Drank alcohol within the past 30 days prior to survey" uses a definition of at least 1 drink on at least 1 day during the 30 days before the survey.**
****The category "Seriously considered attempting suicide" includes a timeframe of within the 12 months prior to the survey.**
*****The category "Ever used select illicit drugs" refers to the student having ever used one of the following substances in their life: cocaine, inhalants, heroin, methamphetamines, hallucinogens, or ecstasy.**
******AI/AN refers to American Indian or Alaskan Native youth whereas NH/PI refers to Native Hawaiian or Pacific Islander youth**
*******Data is marked N/A when there were not enough responses from that population that year to extrapolate**

With the onset of the COVID-19 global pandemic in 2020, mental health was once again in the spotlight with the World Health Organization (WHO) Department of Mental Health and

Substance Use publishing their *Mental health and psychosocial considerations during the COVID-19 outbreak* in March 2020*,* stating that "this time of crisis is generating stress throughout the population" (WHO, 2020, p. 1). Academics warned that while acute increases in mental health problems during the early stages of the pandemic were a mounting concern, for children and youth the true consequences of pandemic stress would manifest as "sleeper effects" after a longer period of development and that we needed to be prepared for long-term ramifications on youth mental health (Wade et al., 2020). In January 2021, CDC began to conduct The Adolescent Behaviors and Experiences Survey (ABES) to better understand the effect of the COVID-19 pandemic on adolescent mental health in the US. The data indicated that 31.4% of high school students had increased their use of drugs during the pandemic, 19.9% had seriously considered suicide, and 9% had attempted suicide. Racial and ethnic disparities were noted once again, with 15.1% of AI/AN youth reporting ever having used select illicit drugs and 13% having ever misused prescription opioids, compared to White youth at 10.4% and 4.3% for the same behaviors respectively (Brener et al., 2022). AI/AN youth also reported the highest rate of attempted suicides at 20.1%, significantly higher than non-Hispanic White, non-Hispanic Black, Asian, and Hispanic respondents (Jones et al., 2022)(*See Table 1.2*).

Table 1.2 CDC ABES (2021) data for Alcohol, Suicidal Ideation, and Illicit drug use

% of adolescents reporting:	AI/AN	White	Black	Hispanic	Asian	NH/PI
Seriously considered attempting suicide	23.3%	21%	16.2%	19.7%	15.9%	12.4%
Actually attempted suicide	20.1%	8.9%	10%	8.4%	7.4%	N/A
Currently drank alcohol	20.5%	23.5%	11%	16.5%	14.9%	N/A
Ever used select illicit drugs	15.1%	10.4%	6.6%	7.4%	7.4%	N/A

Ever took prescription pain medicine without a doctor's prescription or differently than how a doctor told them to use it	13%	4.3%	8.7%	11.3%	5.8%	N/A

Ahead of CDC releasing data for the 2021 YRBS in Spring 2023, CDC made the trends report for the 2011-2021 surveys available online. The data from 2021 continues to show an alarming trend in poor mental health and suicidality and AI/AN youth continue to have the highest percentage of youth reporting drinking alcohol in the past 30 days (32%) and the highest percentage reporting having seriously considered suicide (27%) (*See Table 1.0*). Whether these differences are statistically significant has not been established but it is important to note that mental health and suicidality saw an increase across all races and ethnicities since the start of the COVID-19 pandemic (CDC, 2023b).

All this data calls for us to consider the experiences of indigenous youth in North America and how those might both contribute to these disparities in mental health as well as how they might be addressed.

1. 2 Background

Several studies (Myhra, 2011; Shea et al., 2019) and literature reviews (Joo-Castro & Emerson, 2021; Kohn et al., 2018; Kral, 2012, 2016; Matheson et al., 2022; McLachlan et al., 2015) have explored the impact of historical trauma on social determinants of health for AI/AN communities, and the health inequities that they continue to experience. They cite the following impacts on the experiences of indigenous Americans and mental health inequities:

1. Culture loss stemming from the historical impact of forced assimilation policies, including removal of indigenous children to residential schools which prevented

children from learning their language and culture from tribal elders (Matheson et al., 2022).

2. Community violence and social disconnect which some researchers link to violence and abuse experienced in residential schools (Matheson et al., 2022).
3. Family disruption, poor parenting skills, and strained intergenerational relationships, are also connected to a century of forced child removal and other policies that impacted the native family. In an article on suicide among Inuit tribes in Canada from 2012, Michael Kral states, "A large number of these parents were in the residential school as children and claim that they did not learn parenting skills. Many youth avoid their parents, and many parents avoid their children" (Kral, 2012).
4. Higher poverty rates associated with historical experiences with land dispossession and relocation (Empey et al., 2021; Matheson et al., 2022).

For the purposes of this review, focusing on youth mental health and substance use interventions at the community-level, the focus will be on the first three of these impacts.

1.2.1 Health inequities

As highlighted Section 1.1, youth AI/AN populations are disproportionally affected by mental health, suicidality, and substance use compared to other youth populations. Mental health disparities are not limited to minors. Results from an analysis of the 2001-2002 National Epidemiologic Survey on Alcohol and Other Related Conditions conducted in 2016 showed that, among respondents, "70% of the American Indian/Alaska Native men and 63% of the women met criteria for at least one Diagnostic and Statistical Manual-IV lifetime disorder, compared to 62 and 53% of non-Hispanic white men and women" (Brave Heart et al., 2016, p. 1033). The

Indian Health Service (IHS) attributes the disparities in life expectancy and burden of disease among indigenous Americans to "inadequate education, disproportionate poverty, discrimination in the delivery of health services, and cultural differences" (IHS, 2019, pp. Disparities section, paragraph 2).

When considering discrimination in health services delivery as a factor in the prevalence of mental health and substance use among AI/AN populations, it is important to consider the representation of AI/AN physicians, nurses, and other personnel in the healthcare workforce. AI/AN individuals are significantly underrepresented in the mental health workforce, with data showing only 0.13% of active psychologists in 2021 identifying as AI/AN. By comparison, 3.28% identified as Asian, 5.08% as Black, 7.95% as Hispanic, and an overwhelming majority (80.85%) of psychologists identified as White (American Psychological Association, 2022). While these percentages show that the mental health workforce is lacking in diversity in general, it is especially so for indigenous communities, with the only population less represented than AI/AN being Native Hawaiian/Pacific Islanders at 0.03%. This lack of possibility for cultural concordance between patients and mental health professionals has been shown to contribute to the 70% greater odds of poor patient-provider communication that AI/AN healthcare consumers report. This results in increased barriers to treatment, as research has indicated that community members may lack confidence in non-indigenous providers and prefer to seek treatment from AI/AN professionals (O'Keefe et al., 2021). Literature has recommended considering community mental health workers (CMHWs) as a mean to bridge this gap (Kruse et al., 2022; O'Keefe et al., 2021)

1.2.2 Adverse Childhood Experiences

Adverse childhood experiences (ACEs) are defined by CDC as experiences that are potentially traumatizing that occur between birth and 17 years. Situations or events that impact a child's sense of stability and safety may also exacerbate the effects of ACEs, impairing the child's resilience and placing them at higher risk for experiencing negative effects later on (CDC, 2023a). Types of experiences identified as being potentially traumatizing in early childhood include all types of abuse (emotional, physical, sexual, and neglect), an unstable family dynamic such as parental separation or divorce, or family members being incarcerated, intimate partner violence, and living in a household with an adult who has a mental or substance use disorder. There are also other family- and community-level risk factors that can increase the likelihood of a child experiencing one of these ACEs. Family risk factors include having caregivers who experienced childhood abuse or neglect, families with high levels of parenting or economic stress, low-income families, or families with adults who have a lower level of education. Community risk factors include high rates of poverty and crime, unstable housing, easy access to alcohol and drugs, and frequent food insecurity. These are of particular relevance when considering AI/AN communities, as they experience disproportionately high levels of these risk factors. The Office of Minority Health (OMH) states that 84.4% of AI/AN adults have at least a high school diploma compared to 93.3% of non-Hispanic Whites and 87.3% of Black Americans, and 20.3% of the AI/AN population are living in poverty compared to 9% of non-Hispanic Whites (OMH, 2023a, 2023b). This puts AI/AN children and youth at higher risk for toxic stress, impacting development and increasing the risk that they will develop future health issues (CDC, 2023a).

ACEs have been identified as being a significant factor for the development of a wide range of health issues later in life, including mental health issues such as depression, anxiety, suicide, and post-traumatic stress disorder (PTSD), as well as risk-taking behaviors such as alcohol and drug abuse (Brockie et al., 2015; CDC, 2023a). AI/AN youth have been shown to have a significantly higher ACE score than White, Black, and Hispanic youth, meaning that, on average, they are more likely to have experienced more ACEs in life than any other race. The mean ACE score of AI/AN youth is 2.32, compared the scores of the other three groups, all below 1.70 *(See Table 1.3*) (Giano et al., 2021). Table 1.3 shows the prevalence of each of the eight main types of adverse childhood experiences and the mean number of ACEs for AI/AN, non-Hispanic White, Black, and Hispanic populations.

Table 1.3 Comparison of AI/AN ACE Prevalence to other races in the U.S., 2009–2017 (N=3,894) from Giano et al., 2021

	AI/AN, % (SD)	**White, % (SD)**	**Black, % (SD)**	**Hispanic, % (SD)**
Emotional Abuse	43.1 (42.1, 44.4)	33.4 (33.3, 33.6)	28.8 (28.5, 29.2)	33.7 (33.4, 34.0)
Physical Abuse	27.2 (26.3, 28.0)	15.8 (15.7, 15.9)	12.1 (11.8, 12.3)	23.8 (23.6, 24.0)
Sexual Abuse	17.6 (16.8, 18.4)	11.0 (10.9, 11.1)	11.8 (11.5, 12.0)	11.2 (11.0, 11.4)
Intimate Partner Violence	28.5 (27.6, 29.5)	15.5 (15.4, 15.6)	21.0 (20.8, 21.2)	22.5 (22.2, 22.7)
Household Substance Abuse	40.9 (40.0, 41.8)	26.8 (26.7, 26.9)	25.4 (25.1, 25.7)	26.6 (26.3, 26.8)
Household Mental Illness	22.7 (21.8, 23.5)	17.9 (17.8, 18.0)	11.1 (10.9, 11.3)	11.0 (10.9, 11.2)
Parental Separation or Divorce	41.6 (40.7, 42.6)	25.3 (25.1, 25.3)	44.0 (43.7, 44.3)	28.5 (28.2, 28.7)
Family incarceration	17.5 (16.7, 18.2)	6.3 (6.2, 6.4)	14.1 (13.8, 14.3)	9.2 (9.1, 9.4)
Mean ACE score	**2.32 (2.28, 2.37)**	**1.53 (1.52, 1.54)**	**1.66 (1.65, 1.67)**	**1.63 (1.62, 1.64)**

AI/AN have the highest rate of ACEs related to emotional, physical, and sexual adverse childhood experiences, as well as instability related to poverty, substance use among household members, household mental illness, and intimate partner violence (Giano et al., 2021) One article by Freeman and Ammerman (2021) states that "Native American women are also severely affected by the adverse outcomes associated with ACEs. They have the highest rates of emotional abuse and sexual abuse when compared to any other race/ethnicity (Freeman & Ammerman, 2021, p. 409)" and that "research shows how the cycle of violence disproportionately affects Native American women, and this cycle of violence begins at a young age for Native children (Freeman & Ammerman, 2021, p. 410)." As noted earlier, there is repeated evidence that the unique risk factors that contribute to these disparities are rooted in colonization and historical trauma (Goodkind et al., 2012; Heart, 2003; Matheson et al., 2022). Any attempt to address these risk factors and their impacts on mental health and substance use must consider their history.

1.2.3 Colonization and Historical Trauma Theory

Colonization in North America and its lasting impact on North American indigenous peoples' cultures, communities, and families has been discussed in the context of historical trauma for the past few decades. The importance of culturally based trauma theory has been addressed frequently in the literature surrounding race and historical trauma (N. V. Mohatt et al., 2014; Visser, 2011, 2015). M.Y.H. Brave Heart explored the relationship between substance abuse and historical trauma theory from a Lakota perspective in 2003, stating, "a consideration of Native history and the continuing transfer of trauma across generations are critical in developing prevention and intervention strategies that will be effective for Native Peoples (Heart, 2003, p. 8)." In 2006, M. Sotero discussed historical trauma theory (HTT) as a

conceptual model for understanding how and why certain populations have higher burden of disease, stating that HTT can provide a broader framework for examining how the disparities within a population exposed to collective trauma at a particular point in time compares with that of populations that have not experienced collective trauma. Sotero further states that a key component of understanding historical trauma is that mental and emotional consequences of the collective trauma are transmitted to following generations through "physiological, environmental and social pathways resulting in an intergenerational cycle of trauma response" (Sotero, 2006, p. 95). In essence, children growing up with parents who have experienced long-term trauma are at higher risk for experiencing violence, instability, and lack of social and emotional connection, perpetuating a cycle of trauma within the community. This connects to the higher rates of ACEs among Native populations and the historical disruption of Native families and communities.

1.2.4 Historical Trauma and Adverse Childhood Experiences

Specific topics related to the historical trauma enacted upon North American indigenous populations include violent conflict and sexual violence (Smith, 2005), forcible removal of Native children from families (Jacobs, 2005), and the less considered indirect impacts of colonization "poverty, food scarcity, forced migration, loss of homes and land, loss of cultural values and overall impacts on health and well-being (Matheson et al., 2022, p. 2)." Removal of Native children from their families to be placed in residential boarding schools did not end until the late 1960s in the US and continued until the 1990s in Canada. The removal of AI/AN people from native lands and separation of Native children from families produced generations of trauma which has contributed to indigenous communities' dependence on and continued oppression by the government systems even after the supposed end of discriminatory government policies (Kruse et al., 2022). There are still many elders alive today that experienced

abuse and forced assimilation in residential schools, and the recent challenging of the Indian Child Welfare Act (ICWA) has brought under renewed scrutiny the removal of children from native families in favor of placement with and adoption by non-indigenous families (Native American Rights Fund, 2023). The negative impact of such adverse experiences on native self-identity and cultural and familial connections continues to be an important contributing to the barriers to the health and wellbeing of native youth. Looking at this through the lens of ACEs and their risk factors, the connection between historical trauma and colonization and the current disproportionately high rates of ACEs among the AI/AN population compared to other populations is evident.

1.2.5 Link between Historical Trauma, ACEs, and Mental Health

A 2011 exploratory ethnographic study (Myhra, 2011) looking at the relationship between intergenerational trauma and sobriety maintenance among urban-dwelling AI/AN interviewed adult urban-dwelling indigenous Americans. This study revealed themes of struggles with developing a cultural self, racism, fear of continuing the cycle, and passing on trauma themselves. Experiences with Child Protective Services (CPS) and being raised in white foster homes were discussed, as well as the effects of being raised by those who had been forcibly removed from their families and sent to residential schools. The separation of native children from their communities had a lasting effect on their sense of self. This concept was touched on again in Kral's 2012 article on suicide in Inuit communities in Northern Canada. This qualitative research focused on the changes the traditional Inuit collectivist society underwent during colonization and how those changes relate to the significantly high rates of suicide Inuit communities are experiencing today. The identified triggers for suicide among Inuit youth, including romantic problems, family problems, and intergenerational segregation, can be

summed up with Kral's statement that "many Inuit youth have a sense of not belonging, of social disconnection" (Kral, 2012, p. 318). He connects this to colonization by referencing the residential schools and the abuse the current generation of Inuit parents and grandparents experienced in those institutions as well as the changes in living environments by families moving into government housing designed for smaller, nuclear families. Kral labels this as "a disordering of Inuit kinship and social structure" leaving Inuit communities searching for ways to reclaim their collective identity and connect with the younger generations (Kral, 2012, p. 319). This necessitates that development and adaptation of interventions involve communities and families as stakeholders and active participants.

1.2.6 Implications for interventions

Considering the intergenerational experiences of colonization, trauma, and racism, it is clear that there is a need for interventions that take into consideration the historical impact of social injustice and health inequities on today's youth. In 2010, Lavallee and Poole stated that the "band-aid solutions" of treating symptoms of addiction and mental ill health do not address the root causes of colonization and identity disruption, and that it is crucial to recognize the direct impact of colonial assimilation policies on the cultural identities of native communities as a significant factor. "Healing activities need to include rebuilding the individual and collective identity of Indigenous peoples (Lavallee & Poole, 2010, p. 275)." As we seek to address the mental health crisis in North America, there is a need to identify effective interventions that address the socio-emotional needs of indigenous youth in the context of historical and cultural trauma and prevent the perpetuation of those aspects of poor mental health on future generations.

1.2.7 Related Systematic Reviews

This review seeks to understand the scope of interventions that address the family- and community-level risk factors associated with poor mental health and substance use among AI/AN youth. As a result, the focus is on preventive interventions delivered through the community and schools. Other reviews have looked at mental health and substance use interventions for indigenous youth, most recently in 2022 (Pham et al., 2022) and one published in February of 2023 (Asher Blackdeer & Patterson Silver Wolf, 2020). These reviews included countries beyond Canada and the US, such as Australia and New Zealand (Clifford et al., 2013; Snijder et al., 2020; Venugopal et al., 2021), or in some cases, only focused on one country, usually either Australia or Canada (Okpalauwaekwe et al., 2022b) . Some focused on mental health broadly, including interventions aimed at reducing anxiety, depression, post-traumatic stress disorder (PTSD), and mood disorders (Okpalauwaekwe et al., 2022a; Richardson et al., 2022). These reviews also tended to include hospital-based interventions, as well as mobile and telehealth interventions (Povey et al., 2016; Povey et al., 2021). While the goal of these reviews did not align with those of the current study, they do provide a starting point for understanding the field and have also underscored the importance of themes such as the need for colonization, native identity, racism, and trauma to be addressed when developing interventions and programs for indigenous youth. Findings of these reviews point to a need for more impact and efficacy evaluations to advance the understanding of best practices (Asher Blackdeer & Patterson Silver Wolf, 2020; Jongen et al., 2023; Pham et al., 2022), as well as continued exploration of ways to culturally adapt evidence-based interventions, and development of indigenous theory to ground community-developed interventions to address the needs of Native youth (Asher Blackdeer & Patterson Silver Wolf, 2020; Jongen et al., 2023).

1.3 Problem Statement

As indigenous youth continue to be impacted by health inequity and the legacy of colonial injustice, resulting in disproportionately high rates of substance use and suicide, it is important that interventions, funding, resources, and policy to address this community's needs be informed by evidence-based practice. Understanding the components of community-level interventions that reduce suicide and substance use for indigenous youth is key to implementing strategies that result in sustainable, lasting change as we address public health inequity. To this end we must ask what programs are being implemented, how they are evaluated, how effective they are, and what level of impact can be seen. Knowing the lack of indigenous mental health professionals available, we need to consider how these interventions are being delivered, who is delivering them, and how important indigenous facilitators are to the success of the interventions. In viewing the interconnection of family and community risk factors on ACEs and youth mental health, as well as the impact of historical trauma and racism, we must also consider how interventions address these risk factors. It is then that we can direct funding, resources, and policy towards scaling up those projects that are working and developing new programs founded on those same key principles that have proven to be the most effective in AI/AN communities.

1.4 Purpose Statement

This study will review the field of research from January 2012 to February 2023 on community-level suicide and substance use interventions among AN/AI youth to answer the research question: *what is the current landscape in the field of indigenous-focused, community-based interventions for suicide and substance-use prevention in indigenous youth in North America?* It will do this by focusing on three aspects of the literature:

1. How do interventions used in indigenous North American communities address the specific needs of indigenous youth with regards to suicide and substance-use prevention
    a. How are these interventions being evaluated?
    b. How effective or efficacious are these interventions?
2. Have the gaps identified in previous reviews been addressed in new research?
3. Are these interventions addressing the cultural, familial, and community needs of indigenous youth in the US as defined by previous studies?

1.5 Significance

Findings from this review will point to recommendations for further development of interventions and programs for the prevention of suicide and substance-use among indigenous youth. This review will identify interventions that show promise for reducing suicide and substance use in indigenous communities and could be scaled up or adapted to other indigenous communities. Such interventions, when more broadly implemented, will contribute to improving access to culturally appropriate interventions and contribute to the reduction of suicide and substance use prevalence among AI/AN youth.

2. Methods

2.1 Data Sources

The purpose of this review is to describe the current research on indigenous-focused, community-based interventions for suicide and substance use prevention among indigenous youth. Utilizing Emory University's library system, five electronic databases were used to search for articles related to the research questions (CINAHL, Web of Science, PubMed, Cochrane, and EmBase), and published reference lists of other reviews were manually searched to identify articles published between 2012 and 2023 that related to the research questions for this review. Emory University reference librarian Mia White assisted in designing a search strategy using MESH terms and key words (*See Table 2.0 Search Strategies*). The titles and abstracts of results were reviewed for accuracy and adherence to inclusion and exclusion criteria.

A manual search of the Indian Health Board (IHB) and Canadian indigenous health websites (National Indian Health Board, n.d.; The National Collaborating Centre for Indigenous Health, 2023), websites of universities with a department focus on indigenous health studies (Centers for American Indian & Alaska Native Health, 2023; Johns Hopkins Center for Indigenous Health, n.d.), and community-level indigenous organization websites (Alaska Native Tribal Health Consortium, 2023; We R Native, 2023) was also conducted to find any information regarding unpublished interventions or programs.

Table 2.0 Search Strategies

Category	Terms
Population	*Indigenous people, Native American, American Indian, Indigenous North American, American Indian, Alaska Native, Inuit, First Nations, Native Canadian, Cherokee, Plains Indians, Navajo, Ojibwe, Lumbee, Iroquois, Muscogee, Siksikaitsitapi, Apache, Sioux, Arapahoe, Lakota, Chippewa, or Choctaw*
Age	*Child, adolescent, youth, adolescent health, child health*

Topic	*Substance-Related Disorders, substance-use disorders, drug abuse, substance abuse, mental health prevention mental health, mental hygiene, suicide prevention, programs, intervention, school health, and school health services, community health*

2.2 Study selection

Titles and abstracts of articles obtained through search engines and websites were reviewed for content pertaining to the research questions. The following inclusion criteria were identified and used to guide searches and review articles chosen (*See Table 2.1 Inclusion and exclusion criteria*). First, only English language articles published between January 2012 and February 2023 were included. Other reviews have been conducted previously, one in 2020 focusing on evidence-based interventions for indigenous youth that did not include a specific publication time frame (Asher Blackdeer & Patterson Silver Wolf, 2020), and one from 2022 exclusively looked at Canadian settings and included telehealth and mobile interventions as well as defined youth as 10-24 years (Okpalauwaekwe et al., 2022b). Another from 2022 and one published in February 2023 focused on Australia, Canada, USA, Norway, and New Zealand with a publication time frame of 1990 to 2021 (Jongen et al., 2023). After considering the timeframes of these other reviews, a publication time span from 2012-2023 was chosen to identify most recent changes in the field, if gaps identified by prior reviews have been addressed, and to determine what further evidence-based practices might have been published since 2021.

The population for the inclusion criteria included a focus on children and youth aged 1-18. Adults over 18 were excluded unless the intervention or program was delivered to a population that included ages 19-24 (such as a substance-use intervention for youth aged 10-24), or if parents and family were included as part of a family-level intervention for youth. If the study focused on early childhood interventions including infants and children up to 10 years as

the focus age range, infants under 1 year were still considered within the target age range for this review. Articles focusing on non-indigenous populations were not included, unless the intervention was primarily aimed at AI/AN youth but conducted in a community that also contained non-indigenous members. The key criterion for indigenous population was that the intervention be focused on substance use and suicide prevention in AI/AN youth. Further exclusion criteria included articles focusing on a chronic illness, such as diabetes, or articles that included a focus on sexual health such as articles focused on HIV/AIDS related interventions, unless the study clearly outlined an evaluation of effects of the intervention on mental health or substance use behaviors. Projects from Australia, New Zealand, or Central and South America, review articles, and commentaries were also excluded.

Interventions delivered in hospital emergency rooms or inpatient settings were excluded as this review is focused on community-level interventions. Community-level interventions for this review are defined as interventions delivered through school media such as classroom settings or after-school programs, through support groups, community center programs, as well as in-home and community health worker-delivered programs.

Table 2.1 Inclusion and exclusion criteria

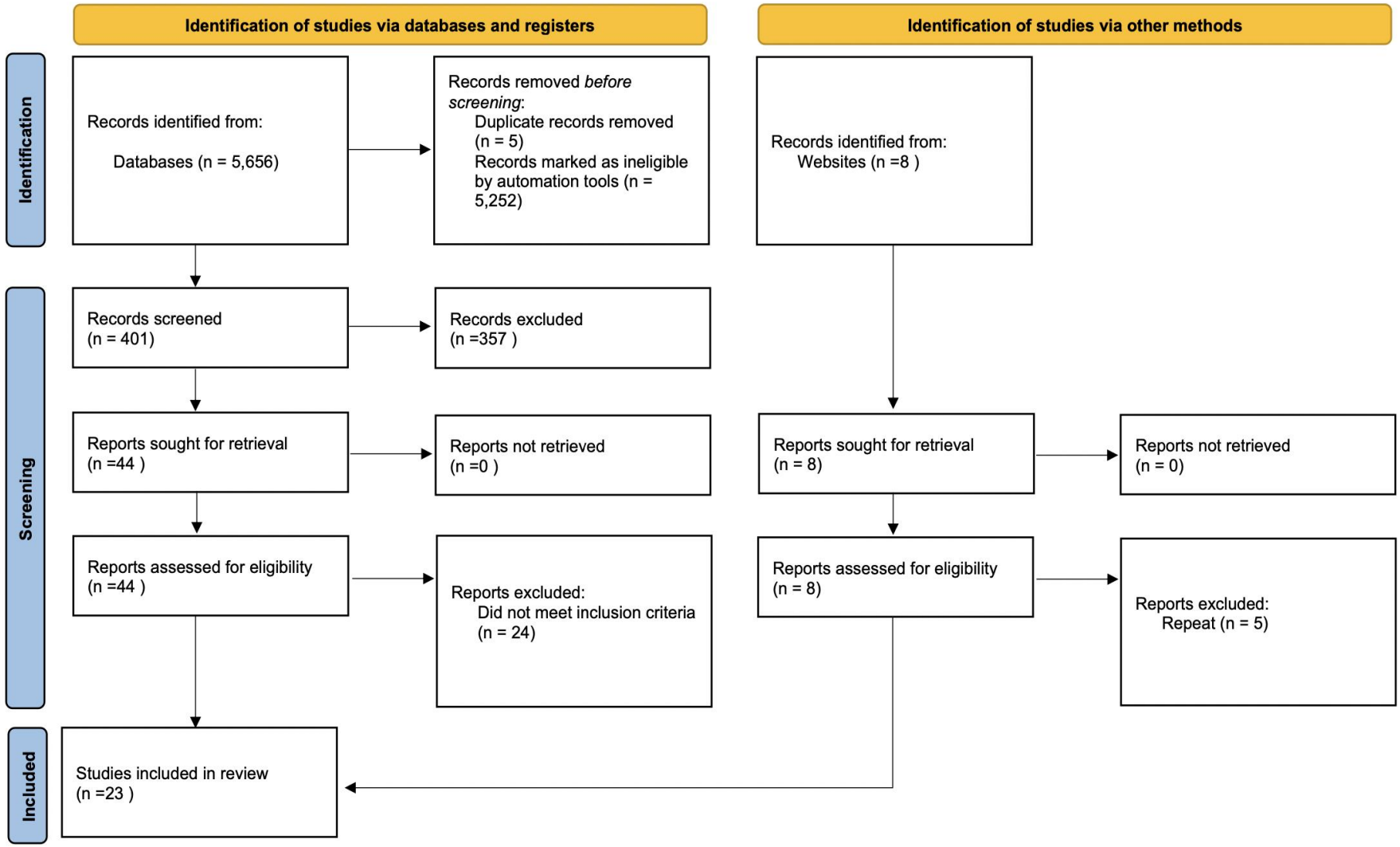
Inclusion	Exclusion
English Language	Non-English language
Publication date 2012-2023	Publication date before 2012
Native American, American Indian, Inuit, First Nation, Alaskan Natives	Non-native or general population focus
Child and Adolescent age 1-18	Adults over 18 or infants under 1 year focus
Community-based or school-based interventions	

	Hospital or clinic-based interventions, policy level interventions and mobile interventions
Mental health, suicide prevention, depression, anxiety, substance use, alcohol use, drug use, or opioid use	Chronic illnesses such as diabetes
Geographic location in North America (Canada or US)	Geographic location outside of North America

The search yielded 5,656 articles from databases and registers, and another 8 from websites and organizations. The high number of articles from databases were reduced to 401 using keyword automation tools. Another 357 articles were removed after a combination electronic filtering tools and a manual search of titles and abstracts as they met exclusion criteria. Another manual search of titles and abstracts removed 24 articles due to either meeting exclusion criteria or being repeat articles. This resulted in a total of 20 articles from databases. The 8 articles chosen from websites were manually reviewed, and 5 were excluded as repeat articles. In total, 23 articles were chosen for review. Analysis of from 23 articles is presented here, although an additional 5 articles excluded as repeats of the same 3 interventions in the analysis were kept aside as they provided further information on components of the interventions (Dickerson et al., 2016; G. Mohatt et al., 2014; Patten et al., 2013; Patten et al., 2014; Rasmus et al., 2014). Although these articles are not detailed in the Results section of this review, they were also coded and reviewed for context, and some will be referenced in the Discussion. *(See **Figure 1: PRISMA flow diagram** below for further information.)*

Figure 1: PRISMA flow diagram

***Figure 1*: PRISMA flow diagram**



From: Page MJ, McKenzie JE, Bossuyt PM, Boutron I, Hoffmann TC, Mulrow CD, et al. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. BMJ 2021;372:n71. doi: 10.1136/bmj.n71. For more information, visit: http://www.prisma-statement.org/

2.3 Data coding and analysis

MaxQDA was used to screen titles and abstracts of articles found and to manage article texts. EndNote was used to record data and to manage articles chosen for the review in full-text analysis. A combination of thematic and content analysis was used to identify patterns in interventions as well as quantify subjects and delivery methods used in articles. Table 2.2 shows the variables and parent codes used to analyze articles under review. Articles were categorized by variables first then coded to identify characteristics of interventions and studies conducted.

Table 2.2 Variables and Codes

Variables	Parent Codes
❖ Population ➢ Youth ➢ Youth and Caregiver ➢ Youth and Child ❖ Delivery ➢ School ➢ Community ❖ Location/Country ➢ USA ➢ Canada ➢ Both ❖ Study Design ❖ Evaluation ❖ Focus ➢ Substance Use ➢ Suicide ➢ Both	❖ Generalizability/Replicability ❖ Evaluation Focus ❖ Appropriateness of Design ❖ Limitations ❖ Results ❖ Community Engagement ❖ Community Delivery Type ❖ School Delivery Type ❖ Age Bracket ❖ Gender ❖ Study Type ❖ Indigenous Community ❖ Intervention Type

A combination coding approach was used with articles being assigned to variables first, then each article coded by parent code (deductive coding approach) before utilizing subcodes to breakdown characteristics of each parent code (inductive coding). Once coding was complete, results were analyzed for themes and frequency using MAXQDA 2022 software tools to visualize data.

3. Results

In this section, we will describe the key findings of the review analysis, beginning with summarizing quantifiable aspects of the interventions before taking a closer look at the key themes noted in terms of intervention design, program components, outcomes and evaluation, and limitations and challenges experienced. Twenty-three articles were pulled for analysis and each article represents a single intervention. Table 3.1 in the next section contains the full list of interventions, their abbreviations, evaluation results, and corresponding articles.

3.1 Evaluation of Interventions

Table 3.1 lists the interventions being reviewed here. Evaluation was discussed in 78% (n=18) of these interventions, with impact, pre-test/post-test, outcome, and pilot evaluations generally represented in equal numbers (two to four each). Most evaluations (n=7) looked at long-term effects, defined as three months or more post intervention, with only two focusing on short-term effects.

Impact and outcome data showed most interventions showing both statistically significant and non-significant results. Effective evaluations included nine interventions with mixed results and two with significant results (Cherokee Talking Circle (CTC), Mind and Body Awareness (MBA)). Three interventions are undergoing evaluation and results are not yet published (Elders' Resilience Curriculum (ERC) adaptation, Bii-Zin-Da-De-Dah/Listening to One Another (BZDDD), and Thiwahe Gluwas'akapi (TG)). There were three interventions with no significant outcomes for suicide or substance use related outcomes (Motivational interviewing and culture for urban Native American youth (MICUNAY), Healthy & Empowered Youth (HEY), Lumbee Rite of Passage (LROP)), three with no evaluation (PAX Dream Makers, Elders' Resilience

Curriculum (ERC) original design, Building on Strengths in Naujaat), and two which were inconclusive (Asdzaan Be'eena , Project Hope.) This data is discussed in the below table 3.1.

Table 3.1 Results

Intervention	Author/Year	Substance Use	Suicide
Arrowhead Business Group (ABG) ♦ Community Delivery ♦ Suicide and Substance Use Prevention ♦ White Mountain Apache Tribe, Fort Apache Reservation (Arizona and New Mexico) ♦ Long-term evaluation, 24-months follow up.	(Tingey et al., 2020)	Significant increase in alcohol use and binge drinking in both groups. No significant increase in marijuana use in intervention group, significant increases for control.	Significant decrease in suicidal ideation within the intervention group. No significant between group differences
Respecting the Circle of Life (RCL) ♦ Community Delivery ♦ Substance Use Prevention as part of intervention for Sexual and Reproductive health ♦ Rural AI/AN Youth, Southwestern US	(Tingey et al., 2021)	Significant impact showing decrease in future substance use intention. However, when broken down into subgroups there was no significant impact on future substance use intention for male participants.	N/A

♦ Long-term evaluation, 12-month follow up			
Qungasvik ♦ Community Delivery ♦ Suicide and Substance Use Prevention ♦ Yup'ik communities in Alaska ♦ Long-term evaluation, 12-months	(Allen et al., 2018)	No significant protection for alcohol use for either group.	Evaluation compared community with higher number of sessions to community with lower number of intervention sessions. Assessed impact over one year. Significant findings for suicide prevention. Noted increase in suicide protection with higher number of intervention sessions.
Culture Camps in Alaska ♦ Community Delivery ♦ Suicide prevention ♦ Alaskan Native youth in Alaska ♦ Short term, pre/post	(Barnett et al., 2020)	N/A	Evaluated the immediate effects of the intervention on specific identified risk factors for suicide. Results showed significant improvement in mood, as well as significant increase in belongingness and coping skills. No long-term evaluation of impact.

New Hope ♦ Community Delivery ♦ Suicide Prevention ♦ White Mountain Apache Tribe, Fort Apache Reservation (Arizona and New Mexico) ♦ Long-term, 3 months follow up	(Cwik et al., 2016)	N/A	Pilot impact evaluation showing significant improvement in suicide related risk factors, including decreased depressive symptoms and negative thought, and suicide-related outcomes such as increased knowledge of risk reduction strategies and scoring below the clinical cutoff for suicide ideation.
Elder's Resilience Curriculum (ERC), also called "Nohwi nalze dayúwéh bee goldoh dolee" ♦ School Delivery ♦ Suicide Prevention ♦ White Mountain Apache Tribe, Fort Apache Reservation (Arizona and New Mexico)	(Cwik et al., 2019)	N/A	Not evaluated. Next phase of research will include development of culturally adapted assessment tools and a pilot evaluation of the conceptual model and measures. (Johns Hopkins Center for Indigenous Health)
Elder's Resilience (Adaptation) ♦ Community Delivery ♦ Suicide Prevention ♦ White Mountain Apache Tribe, Fort Apache	(O'Keefe et al., 2019)	N/A	This adaptation is for an ongoing study ClinicalTrials.gov Identifier: (NCT03543865), and evaluation results are not available yet. Study end date is estimated to be May

Reservation (Arizona and New Mexico)			of 2024. (National Library of Medicine, 2023)
Asdzaan Be'eena ♦ Community Delivery ♦ Substance use and Sexual and Reproductive Health intervention. ♦ Navajo girls and female caregivers, rural US. ♦ Long-term, 3-month follow up	(Chambers et al., 2021)	The outcome evaluation for this intervention did not include a control group, leading to inconclusive results regarding impact on substance use outcomes (initiating use).	N/A
MICUNAY ♦ Community Delivery ♦ Substance use prevention. ♦ Urban AI/AN youth living in California. ♦ Long-term, 6-month follow up	(D'Amico et al., 2020)	Results of the impact evaluation did not show any significant results for impact on intention of alcohol and other drug use and resistance/self-efficacy outcomes.	N/A
Project Hope ♦ School Delivery ♦ Suicide prevention ♦ Omaha tribe, rural Nebraska ♦ Short-term, pre/post	(Doll & Brady, 2013)	N/A	Inconclusive as study shows intervention potential for impact on suicide related issues, such as stress management and positive feelings, but requires further in-depth analysis to prove linkage with suicide risk reduction

			and significant impact.
Cherokee Talking Circle (CTC) ♦ School Delivery ♦ Substance use prevention. ♦ Keetoowah Cherokee, Oklahoma US. ♦ Grounded in Cherokee Self Reliance Theory	(Lowe et al., 2012)	Results of the study comparing CTC to a non-culturally based intervention showed CTC to be significantly more effective in reducing substance use and related risks long-term, with the largest significant differences taking place 3-months post intervention.	N/A
Native Talking Circle Intervention (NTCI) (Adaptation) ♦ School Delivery ♦ Substance use prevention. ♦ Rural Plains tribes, Oklahoma, US. ♦ Short-term, pre/post	(Patchell et al., 2015)	A pre/posttest evaluation showed significant immediate impact with increased self-reliance and decreased substance use, but no evidence for long-term effects due to design.	N/A
Lakota Circles of Hope (LCH) ♦ School Delivery ♦ Substance use prevention. ♦ Rural Lakota tribes, US. ♦ Short-term pre/post evaluations for each school year	(Usera & Usera, 2017)	Efficacy evaluation of the intervention showed non-significant decrease in substance use risk behaviors, such as use intention, but significant increases in protective factors such as parental communication and Lakota identity	N/A

Bii-Zin-Da-De-Dah (Listening to One Another) (BZDDD) ♦ Both Community and School Delivery ♦ Substance use prevention. ♦ Anishinabe (Ojibwe) communities in US and Canada	(Ivanich et al., 2020)	While this intervention has been proven to be adaptable across tribal communities, the results of the effectiveness trial completed in November 2020 have not been published as yet. (ClinicalTrials.gov Identifier: NCT02700035) (National Library of Medicine, 2023)	N/A
Thiwahe Gluwas'akapi (TG) ♦ Community Delivery ♦ Substance use prevention. ♦ Northern Plain community in US	(Whitesell et al., 2019)	The randomized trial evaluating this intervention is ongoing. The study began in February of 2020 and is estimated to end in August of 2025. (ClinicalTrials.gov ID NCT04222556) (National Library of Medicine, 2023)	N/A
Youth Leaders Program (YLP) ♦ School Delivery ♦ Suicide prevention. ♦ Rural Alaskan Native youth, US. ♦ Long-term, one year follow up	(Wexler et al., 2017)	N/A	The intention of the intervention is to impact the school environment and improve social connection and peer relationships through a peer leadership program, with the aim of reducing suicide risk. Significant results include a

			significant improvement in school attendance for the peer leaders. The evaluation indicates a generally positive outcome for improving school environment, but the actual impact on suicide risk is not defined.
Living in 2 Worlds (L2W) ♦ School Delivery ♦ Substance use prevention. ♦ Urban-dwelling AI/AN youth, US. ♦ Short-term, pre/post	(Kulis et al., 2017)	Comparing this culturally adapted program to the non-adapted *Keeping it Real*, there were significant changes, not always in the positive direction, as marijuana use increased. KIR group participants had a higher use of REAL resistance strategies, but this seemed to be culturally connected as L2W participants had a higher use of avoidance strategies that were more culturally acceptable than refusal strategies.	N/A
Mind Body Awareness Project (MBA) ♦ School Delivery ♦ Suicide prevention ♦ Multiple Tribes on Flathead	(Le & Gobert, 2015)	N/A	Significant results for decrease in suicidal ideation.

Reservation in rural Montana, US. ♦ Short-term, pre/post			
The Healthy & Empowered Youth Project (HEY Project) ♦ School Delivery ♦ Substance use with other risky behaviors ♦ Northwest Tribe in Oregon, US. ♦ Short-term evaluation, pre/post	(Rushing et al., 2017)	Pre/posttest design. No statistically significant post-test results. The highest differences were noted in regard to sexual risk behaviors.	N/A
Building on Strengths in Naujaat ♦ Community Delivery ♦ Suicide prevention ♦ Inuit community, Canada ♦ Formative qualitative research engaging Inuit youth in idea development.	(Anang et al., 2019)	N/A	Not evaluated. Formative research using qualitative methods for youth engagement in suicide prevention.
PAX Dream Makers ♦ School Delivery ♦ Suicide prevention	(Chartier et al., 2022)	N/A	Qualitative case-study evaluation of strengths and weaknesses, no

♦ Multiple tribes, Canada			evaluation of impact or effectiveness.
Healing of the Canoe Project (HOC) ♦ Both School and Community Delivery ♦ Substance use prevention. ♦ Suquamish and Port Gamble S'Klallem Tribes in Northwest US. ♦ Long-term evaluation looking at effects immediate and 4-months post intervention.	(Donovan et al., 2015)	Results for the school-delivery method showed significant reduction in actual substance use post intervention, but the results at 4-months were no longer significant. Actual substance use in the community delivery was 38% lower for youth who received the intervention but was not statistically significant (p=0.193 post intervention and 0.439 at 4-months). Significant results for the community delivery included significantly higher cultural identity, hope, and self-efficacy among intervention participants.	N/A
Lumbee Rite of Passage (LROP) ♦ Community Delivery ♦ Suicide Prevention. ♦ Lumbee Tribe, North Carolina US. ♦ Short-term results	(Langdon et al., 2016)	N/A	Regular attendees for the intervention showed a decrease in suicidal ideation and increased protective factors, though these results were not statistically significant. Cited small sample size and no control group.

(immediate post intervention)			

The evidence base shown in the table is varied. Of the two interventions (Qungasvik (Allen et al., 2018) and ABG (Tingey et al., 2020)) that seek to address both substance use and suicide, both show significant results impacting suicide risk over long-term follow up, but did not have significant impact in reducing alcohol and substance use. In fact, ABG showed a significant increase in alcohol and binge drinking behaviors. Of the 11 interventions focusing on substance use, two are still undergoing impact evaluations with results not yet published (Ivanich et al., 2020; Whitesell et al., 2019), and most interventions did not show significant results or did not have significant long term impact, as in the Healing of the Canoe (HOC) project (Donovan et al., 2015) which showed an initial significant decrease in substance use, but results were no longer significant at follow up 4-months post intervention. The Cherokee Talking Circle (CTC), which is an intervention grounded in indigenous theory (Cherokee Self Reliance Theory (CSRT)) showed the most promise for long-term impact as the significant difference in impact on decreasing substance use and increasing self-reliance continued to increase post-intervention with highest differences seen at 3-month follow up (Lowe et al., 2012).

Interventions focused on suicide that underwent evaluation of impact showed either inconclusive or short-term significance as the long-term impacts of these programs are under researched. The Elders' Resilience Curriculum (ERC) and it's adaption are still being evaluated for effectiveness (Cwik et al., 2019; O'Keefe et al., 2019).

Uncertainty around the generalizability of the interventions was mentioned for four interventions (Chambers et al., 2021; Cwik et al., 2019; Lowe et al., 2012; O'Keefe et al., 2019) whereas 13% (n=3) of interventions showed some success with generalizability/replicability of at

least part of the intervention. In the New Hope intervention, the researchers and community chose a gold-standard emergency department-based intervention and culturally adapted it to meet the community's cultural and logistical needs. The adaptation process produced a community-delivered intervention "that was flexible in implementation, but had replicable goals and content to achieve desired outcomes (Cwik et al., 2016, p. 118)." The HOC project (Donovan et al., 2015) displayed generalizability through an organic process of development, in that the second phase of the study involved extending the research partnership to the Port Gamble S'Klallam Tribe (PGST) while the development process for the intervention was still ongoing with the Suquamish tribe. This led to a great deal of flexibility being built into the intervention during development, allowing for identification of core components that remain the same across tribal communities, ensuring that each adaptation maintains the intervention's evidence-base. Similarly, Bii-Zin-Da-De-Dah (Listening to One Another), a family-centered substance use intervention program, has undergone multiple adaptations over the course of the past two decades. Beginning as a cultural adaptation of the Iowa Strengthening Families Program, it was adapted for Anishinabe (Ojibwe) communities and has since been adapted for use in eight different First Nations cultures and recently completed a 5-year randomized controlled trial in November 2020, the results of which have not yet been published (Ivanich et al., 2020).

One of the interventions previously assessed as having uncertain potential for generalizability has since been adapted and trialed in a different community (see, (Lowe et al., 2012; Patten et al., 2014) and the three other interventions are currently being adapted and trialed in other communities (Ivanich et al., 2020; O'Keefe et al., 2019; Whitesell et al., 2019), so further research is being undertaken to assess their generalizability.

3.2 Location and Population

3.2.1 Location

Eighty seven percent (n=20) of the 23 articles pulled for analysis describe interventions conducted in indigenous communities in the continental United States. There are three articles detailing interventions conducted in Canada (Anang et al., 2019; Chartier et al., 2022) and one listing an intervention conducted in indigenous communities in both the US and Canada (Ivanich et al., 2020).

Of the 20 articles featuring intervention studies based in the USA only, 16 (80%) focus on youth between the ages of 10 and 24. Two interventions include caregivers as well as youth (Chambers et al., 2021; Whitesell et al., 2019), two include youth and children under 10 (Doll & Brady, 2013; Usera, 2017). The BZDDD intervention, focused on addressing substance use in youth and children aged 10-14 among Anishinaabe tribes in the US and Canada, included families as part of the intervention activities (Ivanich et al., 2020). For studies conducted solely in Canada, one intervention focuses on youth (Anang et al., 2019) while the other includes youth and caregivers (Chartier et al., 2022).

3.2.2 Population

The gender distribution of participants in these intervention studies varies. While 35% (n=8) report similar numbers of male and female participants, 27% percent (n=6) of interventions report a higher proportion of female participants than male, and one intervention is designed specifically for girls and women, therefore only includes female-identifying youth and caregivers in the intervention (Chambers et al., 2021). In addition, one intervention study reports a higher sample of male-identifying participants with 5 of the 8 participants (63%) identifying as

male (Donovan et al., 2015). Finally, 30% (n=7) of studies do not mention the gender distribution of the participant sample at all.

The indigenous communities these interventions are most commonly trialed in include reservations or communities with more than one tribe represented (18%, n=4), the White Mountain Apache tribe (WMAT) (18%, n=4), Northern Plains (14%, n=3), Alaskan Native and Yup'ik (14%, n=3), and urban-dwelling AI/AN youth (9%, n=2). These communities are often engaged in long-term partnerships with researchers, and such partnerships are discussed in 39% of these interventions (n=9). These long-term partnerships and their importance to development of interventions are discussed further in Section 3.4. The most common form of community engagement is the community advisory board (CAB), used in 11 of the interventions (48%) and often consulted on questions of cultural appropriateness of study design and interventions. CABs are discussed in more detail in Sections 3.3 – 3.6.

Urban-dwelling AI/AN youth are the target population for two interventions, MICUNAY (D'Amico et al., 2020) and *Living in 2 Worlds (L2W) (*Kulis et al., 2017*)*, both of which are culturally adapted versions of evidence-based interventions used for substance use prevention in general population (Motivational Interviewing (Barnett et al., 2012) and *keepin' it REAL (*CEBC, 2019*)*). MICUNAY assessed outcomes for intention of alcohol and drug use as well as self-efficacy and resilience, but did not have any significant results (D'Amico et al., 2020) and L2W had some significant impact on increasing avoidance strategies for reducing alcohol and drug use, but no other significant differences from the control group receiving the non-culturally adapted version that indicate any difference in impact. See Section 4.4.1 for further discussion.

3.3 Sampling and recruitment strategies

Of the intervention studies pulled for analysis, 96% (n=22) mention sampling or recruitment. Sampling is most commonly purposive with 52% of interventions (n=12) that mention sampling using eligibility criteria to screen participants before inviting them to join the study. These criteria are often related to specific age ranges, Native identity, enrollment in the type of organization where the intervention is being implemented, such as attending youth culture camps, or qualifying for participation based on having a background of substance use or suicidal ideation as in the New Hope intervention which uses the WMAT suicide surveillance system to identify potential participants. Convenience sampling, defined as "any process for selecting a sample of individuals or cases that is neither random nor systematic but rather is governed by chance or ready availability" (American Psychological Association, 2023), was used for enrollment in 4 of the interventions. In 3 of 4 cases, this is due to the design of the intervention, such as in the Healing of the Canoe intervention where the intervention is delivered as a voluntary elective course to high school students (Donovan et al., 2015) or as seen in the Cherokee Talking Circle (CTC) intervention which uses school referrals to substance use counseling to recruit potential participants (Patchell et al., 2015).

Sample size is most commonly small, with 43% (n=10) of interventions having fewer than 100 participants. Of the other 13 interventions, five engaged a sample in the range of 100 to 200 participants, three from 300 to 400 and one had more than 500 participants. This last intervention is being tested in a randomized controlled trial (RCT) conducted over a 5-year period delivering the RCL intervention during a yearly summer camp with a follow-up lesson with the participants' parent or trusted adult (Tingey et al., 2021). This intervention targets teen pregnancy and includes a substance use component, measured in the outcomes. Other interventions do not have a clear number of participants listed, such as the ERC, for which the

article discusses an estimated range of students receiving the intervention monthly for each school with which the WMAT elders partner (Cwik et al., 2019).

Engaging community gatekeepers as part of the recruitment process is discussed in 39% (n=9) of the interventions. Often, gatekeepers are CAB members, elders, teachers, or parents; in one case of snowball sampling, other participants act as gatekeepers. Snowball sampling was used in this intervention (Building on Strengths in Naujaat) as it was a formative research process using community research methods to engage youth in community activity for suicide prevention (Anang et al., 2019). Community-delivered interventions tend to engage CAB members, elders, or other community leaders such as community mental health workers to reach potential participants, whereas parents and teachers are contacted for school-delivered interventions. Other methods of recruitment include school assembly announcements, parent-teacher nights, community gatherings, flyers, and social media.

Four interventions used randomization to allocate participants to control and intervention groups, further discussed in Section 3.6.

3.4 Delivery Mechanisms

3.4.1 Summary

Intervention delivery mechanisms are categorized as school-based or community-based. School-based delivery mechanisms include after-school programs, integration into the standard curriculum, or the intervention being offered as an elective that students sign up for voluntarily. Community-based delivery methods include youth camps, community support groups, workshops delivered through local community centers, and interventions delivered in outpatient or home settings by community mental health workers.

School and community-based delivery methods are almost evenly split among the interventions, with 52% (n=12) utilizing community-based delivery methods and 48% (n=10) using school-based methods. For both the USA and Canada articles the split was even, with 50% of interventions discussed utilizing community-based delivery methods. The intervention conducted in both countries used a community-based method of delivery.

3.4.2 Community-delivered interventions

Interventions delivered at the community level most often use youth camps, such as summer or weekend-away camps to deliver the intervention. Alternatively, they engage community mental health workers (CMHWs) and other community health service professionals to deliver the intervention. These delivery methods each account for 13% of interventions (n=3 each). The youth culture camps in Alaska utilize cultural activities including storytelling, sauna, and talking circles alongside team building and sports as suicide prevention (Barnett et al., 2020). Youth camps in the Southwestern US utilize a more structured curriculum approach, providing lesson modules on substance-use and suicide prevention as part of a standard summer camp format (Tingey et al., 2021; Tingey et al., 2020).

Other forms of community delivery include community workshops (n=2), family-delivered interventions (n=1), and community support groups (n=2). One intervention, Qungasvik developed by the Yup'ik community in Alaska, also utilizes three levels of community delivery with individual and family modules, as well as community workshops (Allen et al., 2018). This involves individual-level interventions that are informed by Western theory of change while utilizing strong cultural traditions and engaging community members with mental health professionals there in supervisory roles rather than as participants or facilitators. An important acknowledgment is the elders' identification of the differences in youth

experiences today compared to their own experience of growing up and the ways in which cultural traditions may not meet all of the needs of modern Yup'ik youth. Specifically, elders note that, within cultural tradition, there is "a broader cultural norm to avoid talk about angry, hurtful, or unwanted things (Rasmus et al., 2014, p. 149)." Elders note that this norm is related to traditional beliefs about the power of words and that these beliefs may contribute to young people not being able to reach out for help when experiencing overpowering negative emotions. In response, the elders developed an individual-level module of the intervention aimed at providing a setting for expression of feelings and discussion of negative topics using the traditional *qasgig* meeting style, defined as the use of a communal style meeting house and sacred space where young people were taught values and given tools needed to live the cultural way of life (Rasmus et al., 2014). Similarly, family- and community-level interventions include an elder-created parenting curriculum and a revitalization of community traditional gathering spaces that involve traditional practices with modern contexts.

3.4.3 School-delivered

For interventions delivered via schools, 50% are implemented in high schools and 33% in middle schools. Wexler et al.'s Youth Leaders Program (YLP) (Wexler et al., 2017), is conducted across a school district in rural Alaska, encompassing 11 different schools and includes grades 3 and above, engaging children and youth across elementary, middle, and high school (Wexler et al., 2017). Another intervention that includes grades across elementary, middle, and high schools, is the Project Hope intervention for suicide prevention (Doll & Brady, 2013). This intervention is delivered in two reservation-based schools and encompasses grades 1-12. There are 2 studies that utilize elementary school delivery, one of which conducted the intervention in 10 different elementary schools across multiple school districts and four

reservations in South Dakota (Usera & Usera, 2017). The other intervention, the ERC with the White Mountain Apache tribe, initially used middle school delivery but scaled up to provide the intervention in two elementary schools and another middle school (Cwik et al., 2019). The HOC project intervention in Washington State, developed through the partnership between the University of Washington's Alcohol and Drug Abuse Institute (ADAI) and the Suquamish tribe, initially used both the local school's after-school program and summer sessions before transitioning to the current format of a high school classroom setting and community-based delivery methods. The after-school program and a summer tribal session were used as part of an unpublished pilot test which included the 11-session curriculum being administered to middle and junior high school-aged youth through summer community workshops and as after-school program activities (Donovan et al., 2015).

3.4.4 Community Mental Health Workers and Paraprofessionals

CMHWs are engaged in meeting community mental health needs in two of the interventions discussed in this review. The interventions, Asdzáán Be'eená (Chambers et al., 2021) and New Hope (Cwik et al., 2016), are both products of the partnership between the Johns Hopkins Bloomberg School of Public Health and their respective indigenous communities. Asdzáán Be'eená is an intervention developed with the Navajo Nation addressing sexual and reproductive health and substance use with adolescent Navajo girls and their female caregivers. It utilizes female community paraprofessionals as family health coaches (FHCs) to deliver the intervention. While the evaluation assesses appropriateness and acceptability of the intervention by its intended recipients, it does not address the effectiveness of delivery by indigenous FHCs compared to other forms of facilitation. In the New Hope intervention, a brief intervention for suicide usually delivered in the emergency room or inpatient setting was adapted to meet

community and cultural needs. The adaptation was then delivered in the community setting via CMHWs. These facilitators received extensive training, and mastery of intervention delivery was assessed in the evaluation. Cwik et al specifically note that, “the evaluation demonstrated that local paraprofessional CMHWs can be successful in delivering a brief intervention and providing follow up to adolescents with a recent suicide attempt, as evidenced by high intervention exam scores, quality assurance ratings, participant satisfaction ratings, and improved outcomes” (Cwik et al., 2016, p. 118).

While the elders who developed and facilitated the ERC (Cwik et al., 2019) were not trained as CHWs, they participated in the qualitative, community engaged design and implementation of their culturally based intervention for suicide prevention. The program is still being evaluated and there is currently no information on the effectiveness of elder facilitation. This program has also been adapted to be delivered in the community setting similarly to the New Hope intervention, with plans for a clinical trial to assess and compare the adapted intervention with the New Hope intervention (O'Keefe et al., 2019). This trial is currently in the recruitment phase.

3.5 Intervention focus

3.5.1 Summary

Interventions focusing solely on substance use account for 39% of studies found (n=9) while 44% (n=10) focus solely on suicide prevention. There were two interventions that targeted both substance use and suicide prevention (Allen et al., 2018; Tingey et al., 2020). In addition, two interventions focused on sexual health but had either a secondary focus on substance use, in the case of the Asdzáán Be’eená intervention (Chambers et al., 2021) or, in that of the RCL

intervention, a perceived potential for impact on substance use. This was assessed in a secondary analysis as part of the program's impact evaluation (Tingey et al., 2021).

3.5.2 Community Involvement

Community involvement in determining the focus of the intervention is mentioned in 4 of the interventions and in all instances, the indigenous community and the research team are engaged in a long-standing partnership. For example, the 2019 article by Cwik et al details the Elder's Curriculum intervention developed through the ongoing partnership between the White Mountain Apache tribe (WMAT) and Johns Hopkins researchers. The article describes how WMAT elders brought up their desire to develop an intervention for suicide prevention in focus group discussions with the research team (Cwik et al., 2019). The researchers and elders then engaged in brainstorming activities to determine what they could do to help prevent suicide and help young people at risk in the community. After settling on a protective factors approach (see Section 3.5.3), engaging youth in Apache language and culture workshops, the elders developed their own intervention and selected the setting (schools) and target population (middle school students). Another instance of this includes the Suquamish Tribe in the Pacific Northwest who initiated their partnership with the University of Washington's ADAI. The director contacted the ADAI to discuss the tribe's concerns about substance use among tribal youth, (Donovan et al., 2015) which led to the development of the partnership including regular meetings with staff from ADAI and the wellness program, tribal leaders and elders, and the Suquamish Cultural Co-operative (SCC), a body formed by the tribal council to ensure the cultural appropriateness of any programs introduced to the community. Another long term partnership is the University of Nebraska's partnership with Johns Hopkins and the Anishinaabe (Ojibwe) tribes, as they have

spent several decades adapting BZDD in multiple tribal communities in the US and Canada (Ivanich et al., 2020).

3.5.3 Approaches

Sixty-five percent of the interventions (n=15) use an increasing protective factors approach, focusing on evidence-based factors for increasing protection and healthy behaviors such as cultural revitalization and connectedness, social networks and peer support, and resilience. The other most common framework mentioned is risk reduction at 27% (n=5), in all cases used in tandem with an increasing protective factors approach. Evidence-based strategies used for reducing risk factors include skills building and increasing self-efficacy.

Most interventions focusing solely on substance use work to increase protective factors, in fact 55% of substance use interventions (n=5) use this framework. Majority of interventions focusing on suicide prevention also use the increasing protective factors model (60%, n=6). Two interventions, Qungasvik and the Arrowhead Business Group intervention (ABG), address both substance use and suicide prevention; however, they take different approaches to those topics. While Qungasvik (described in Section 3.4) focuses on increasing protective factors for both substance use and suicide prevention, (Allen et al., 2018). The ABG curriculum combines risk reduction (by providing skills-building lessons) and increasing protective factors through cultural engagement. The ABG intervention is an entrepreneurship intervention conducted by the WMAT and Johns Hopkins researchers. The idea to provide entrepreneurship classes facilitated by WMAT tribal facilitators and local business owners emerged from a community roundtable discussion. The intervention is delivered as 16 lessons; the first 10 are provided over the course of a 10-day summer camp and the last six as monthly workshops in a local conference room (Tingey et al., 2020).

Interventions increasing protective factors often use strategies such as cultural engagement (n=12), like in the ABG and ERC interventions, (Cwik et al., 2019) improving social environment and peer support (n=3), and increasing resilience (n=2). Risk reduction is also mentioned in 22% (n=5) of interventions and always overlaps with increasing protective factors, being used in conjunction as in the ABG intervention. Development of life skills is the strategy most often referenced for reducing risk (n=4). There is also one intervention that explores mindfulness training for suicide prevention in a pilot study among 10–20-year-old AI/AN in a 55-minute morning class (Le & Gobert, 2015) and the MICUNAY intervention which uses motivational interviewing of urban-dwelling AI/AN youth in a talking circle format to address substance use (D'Amico et al., 2020).

3.5.4 Family, Culture, and Community connection

In some cases, interventions engaged either the family or the larger community as well as the youth themselves. Family risk factors are addressed in Thiwáhe Gluwáš'akapi (TG), a culturally adapted version of the Iowa Strengthening Families Program for Parents and Youth 10-14. TG utilizes a minor amount of cultural engagement to increase protective factors, engaging youth in learning native language terms, but has a larger portion of the intervention dedicated to parents and caregivers. Outcomes for parents and caregivers include parenting practices relating to substance use in the home, parent-child communication, consistent discipline, boundary setting, and parental monitoring behaviors. As noted in Section 3.1, the program is still being evaluated with further information on effectiveness expected soon (Whitesell et al., 2019). Qungasvik, an intervention for suicide and substance use, also involves the family and the community. The intervention engages parents and caregivers in several family-level intervention modules such as *Traditional Yup'ik Parenting in the Twenty-First*

Century which was developed by Yup'ik elders to teach parental discipline and socialization practices. Other modules, like *Arenqiirturyaraq* (translates to *Protectively Caring for Our Youth*), teach strengths-based parenting practice, and the *Staying on Task* module engages parents and teens in a traditional activity to promote connection and communication between parent and child (Allen et al., 2018). The Asdzaan Be'eena intervention also addresses parent-child communication and connection, involving female caregivers along with girls aged 8-11 in a sexual and reproductive health and substance use intervention (Chambers et al., 2021).

Cultural identity, belonging, and connection to the community and Native identity are common themes in these interventions, especially in interventions developed or adapted through CBPR approaches such as Qungasvik, ERC, BZDDD, and TG (Allen et al., 2018; Cwik et al., 2019; Ivanich et al., 2020; Whitesell et al., 2019). As mentioned in Section 3.5.3, cultural engagement is the most common method used in the increasing protective factors approach. Other interventions, including the HOC project (Donovan et al., 2015) and the culture camps in Alaska (Barnett et al., 2020) utilize education in tribal traditional practices to strengthen the connection between youth and the tribe and promote cultural identity.

3.5.5 Cultural Appropriateness

Cultural appropriateness of interventions is most often addressed through cultural adaptation or integration of a previously trialed intervention (57%, n=13). CABs, focus groups, and cultural experts were often used in the adaptation process, such as in TG where the CAB is involved in choosing which program to adapt and participates in focus groups during the cultural adaptation process (Whitesell et al., 2019). The Strengthening Families Program was chosen for adaptation after a yearlong review process involving the CAB and is adapted through a multiphase optimization strategy approach with the CAB and other community stakeholders

involved in all phases. Other strategies for addressing cultural appropriateness included new interventions designed by community members (22%, n=5), and use of indigenous frameworks and theories (13%, n=3). The CSR Theory is used twice as a cultural framework for development of interventions, and several community-designed interventions are the results of long-term ongoing partnerships such as Johns Hopkins University's collaborations with the Yup'ik community in Alaska and the White Mountain Apache Tribe resulting in the Qungasvik intervention and several others.

3.6 Study Designs

Community-based participatory research methods (CBPR) accounted for 30% (n=7) of study designs. CBPR is "a partnership approach to research that equitably involves community members, organizational representatives, and academic researchers in all aspects of the research process" (Oregon Health & Science University, n.d.). CBPR initiatives often use a CAB and focus group discussions to provide qualitative insights into the acceptability and appropriateness of the intervention, and a collaborative research process that, in the case of these interventions for indigenous youth, involves community leaders and elders as facilitators and research partners.

Prospective cohort and RCT were the second most used study designs with four studies each. Types of randomizations used in RCTs to allocate participants to two or more interventions include block randomization, used in the MICUNAY intervention study with urban-dwelling AI/AN, sequential multiple assignment randomized trial (SMART) randomization in a comparison trial of the New Hope intervention and an adaptation of the Elder's Curriculum with optimized case management, 1:1 randomization for the RCL intervention, and a 2:1 randomization for the ABG intervention. Participants were generally randomized into the

intervention and a standard of care arms, or in the case of MICUNAY into the intervention plus community wellness gathering or the wellness gathering by itself (D'Amico et al., 2020). This is often due to the cultural difficulty surrounding control groups, discussed further in Section 3.7.

3.7 Limitations and challenges

Study limitations and challenges faced by research teams were both unique to each intervention and still comparable in some cases. Limitations related to study design were a common theme, with a lack of control groups, small sample size, self-reported measures, self-selection of participants, and challenges regarding randomization being mentioned frequently. This seems to be related to indigenous cultural differences from traditional Western research mindsets, as most indigenous communities perceive randomization into control groups as being unfair and going against cultural beliefs that all members of the community should receive the same treatment (D'Amico et al., 2020). Another reason randomization was deemed difficult by certain studies is related to how close-knit communities are, such as in Qungasvik where the two communities were very connected through high school sports and family ties (Allen et al., 2018), leading to a high risk of cross contamination between study arms and resulting in exposure of the control group to the intervention. Qungasvik also had a unique problem associated with treatment intensity of the intervention between the two communities. Community 1 had recently experienced a suicide cluster and had already been involved in the process of developing the intervention with the study team for 2 years, whereas the second community had less prior engagement with the researchers and no immediate history of suicide crisis management (Allen et al., 2018). While both communities had concerns regarding high suicide rates, the authors note that the recent cluster could definitely have impacted, either positively or negatively, the receptiveness and impact of the intervention in the first community (Allen et al., 2018).

4. Discussion

4.1 Summary of results

We identified 23 interventions related to suicide and/or substance use prevention for AI/AN youth in the US and Canada with published material between 2012 and 2023. The outcomes of these interventions varied in significance and generalizability. Overall, the interventions showed a high attention to cultural appropriateness and engagement with community members. Elements of CBPR were a major theme throughout many of the results, indicating high involvement of communities in intervention development and research.

4.1.1 Addressing ACEs

We reviewed interventions aimed at individual, family, and community risk factors to understand how those interventions sought to address both the health outcomes of interest and the factors driving the disparate needs of the indigenous youth populations. ACEs are driven by community and family risk factors and are a significant factor in mental health and substance use issues later in life (CDC, 2023a). Connecting intervention outcomes to increasing protective factors and addressing risks for ACEs is important for reducing disparities in mental health and substance use disorders among Native communities. Risk factors for ACEs include children and youth feeling disconnected from parents/caregivers, lack of social connection or social connections with aggressive behaviors, communities with high food insecurity and violence, families with high conflict and negative communication styles, and families with caregivers who were abused or neglected as children (CDC, 2022b). Protective factors include families that create safe, nourishing relationships between youth and caregivers, families with strong social support networks, communities that provide families with safe and engaging school and community activities, and communities where violence is not tolerated (CDC, 2022b). Culturally

minded, community-driven interventions that address these factors at multiple levels should be encouraged in the field (Brockie et al., 2015).

4.2 Evaluation and Evidence of Intervention Effectiveness

As Jongen et al (2023) stated in their review that limited findings for effectiveness of interventions make it difficult to draw conclusions about what best practice in indigenous populations should be, therefore this move towards establishing a stronger evidence base is incredibly important (Jongen et al., 2023). A push for outcome evaluations to produce more data on the effectiveness of interventions used in Native communities was also presented by Asher Blackdeer and Patterson Silverwolf in their 2020 evidence mapping review of youth mental health interventions in AI/AN communities (Asher Blackdeer & Patterson Silver Wolf, 2020). This gap appears to have been addressed in more recent interventions, as four of the interventions analyzed here are currently waiting on results from long-term, ongoing evaluations of their impacts on suicide and substance use prevention (Cwik et al., 2019; Ivanich et al., 2020; O'Keefe et al., 2019; Whitesell et al., 2019).

However, the majority of the interventions in this review did not show evidence of impact. Among those that did measure impact on behavioral outcomes, there is a trend of some significant and some non-significant results for those outcomes. Interventions that have shown mixed success include Qungasvik (Allen et al., 2018), which showed significant impact of protection against suicide but did not have any significant results for substance use outcomes, the culture camps in Alaska's suicide prevention outcomes which showed significant increase in coping self-efficacy but no significant improvements in self-esteem (Barnett et al., 2020), and the Healing of the Canoe project showing immediate significant results for decrease in actual substance use but no significant difference at four months post intervention (Donovan et al.,

2015). These interventions show that there is potential for improving interventions once the evidence-base for what works and what doesn't is established. This is still an area where the research has room to grow, and more emphasis on evaluating outcomes is needed.

Generalizability being addressed in 7 of the interventions shows that it is a focus for many evaluations. Interventions like BZDDD have proved to be highly adaptable having a replicable adaptation process across at least four different tribal cultures in Canada alone (Ivanich et al., 2020) This is promising for other Native communities looking to adapt evidence-based programs to meet the cultural needs of their youth.

4.3 Intervention Delivery and Indigenous CMHWs

With a limited mental health workforce from their own communities, indigenous communities have turned to community mental health workers (CMHWs) to fill the gap while efforts to expand the professional workforce continue. They are also no longer the only ones working to meet the mental health needs of the community, as several interventions are being delivered by family health coaches, teachers, or tribal elders. These strategies fill the large gap in the mental health workforce (American Psychological Association, 2022; Brave Heart et al., 2016; Jongen et al., 2023). Training of these CMHWs, FHCs, teachers and elders should be a consideration when using them as facilitators, with attention to fidelity and consistency addressed in the outcomes as shown in the New Hope intervention (Cwik et al., 2016). Should other interventions involving such facilitators prove to effect the desired changes, lessons can also be learned from their training and engagement methods to increase access to culturally concordant mental health providers.

4.4 Family, Culture, and Community connection

The majority of the interventions used cultural engagement to address risk and protective factors. However, taking this further and addressing the collective processes of the community in

a holistic manner that provides youth with a feeling of connection and purpose is important for addressing community and family risk factors and building community resilience (Brave Heart et al., 2016; Heart, 2003; Kral, 2012, 2016; Lavallee & Poole, 2010). Looking at Qungasvik as an example we see how a multi-tiered intervention that addresses individual, family, and community needs builds connection (Rasmus et al., 2014). While the Qungasvik intervention did not see significant results for substance use outcomes, significant results for suicide protection were found (Allen et al., 2018). Interventions like Qungasvik, as well as Thiwahe Gluwas'akapi (TG) (Whitesell et al., 2019) address specific community- and family-level risks associated with ACEs, specifically abuse and neglect, by increasing parental knowledge and positive bonding between family members, elders, and youth.

This connects to Kral's work with Inuit communities in Northern Canada and the identification of belongingness and disconnect between parents and youth as major factors for suicide prevalence (Kral, 2012). In 2016, Kral referenced Qungasvik and the work being done in Yup'ik communities as a potential model for what could be done among Inuit communities in Canada to address suicide (Kral, 2016) and in 2019, it appeared that steps toward implementing a similar model in an Inuit community had begun as Anang et al published their work with Building on Strengths in Naujaat (Anang et al., 2019) wherein they began a CBPR effort to engage Inuit youth in process of generating ideas and developing action for suicide prevention alongside the elder generation. This is formative work which, if continued, could lead to the adaptation or development of more interventions like Qungasvik that address multi-level community needs for suicide prevention.

4.4.1 Urban-dwelling AI/AN Youth

MICUNAY and *Living in 2 Worlds* were the only interventions that targeted urban-dwelling AI/AN youth (D'Amico et al., 2020; Kulis et al., 2017). Although rural AI/AN youth are at higher risk of suicide, and especially suicide clusters (Substance Abuse and Mental Health Services Administration, 2017), 60% of the AI/AN population in the US live in metropolitan areas, making urban-dwelling AI/AN youth a much larger population in need of particular attention (OMH, 2023a). Considering the limited results for both interventions targeting this group, the evidence base for effective interventions for this population is far from established. Questions regarding this population of AI/AN youth that must be answered include whether addressing culture as a protective factor is as effective for this subgroup as it appears to be for rural AI/AN youth.

4.5 Limitations

Limitations for this review include the search strategy and exclusion criteria, as the focus on alcohol and illicit drug use in the terms excluded tobacco use from the results. A larger number of interventions may have been returned if tobacco cessation had been included. Another limitation includes the focus on interventions using community-level delivery methods, as interventions such as hospital-based and system-level tracking programs were excluded. Mobile app interventions were excluded unless, as is the case with PAX Dream Makers, they had a connection to in-school delivery (Chartier et al., 2022), and so the evidence base in this field of interventions is not included.

Finally, the author recognizes their positionality as being a limitation. As this review was conducted by a non-indigenous researcher, these interventions were viewed through a Public Health lens and cultural factors may have been missed.

5. Recommendations and Conclusions

There is a great deal of room for future research into suicide and substance use prevention at the community level in Native communities. As shown in this review, there are many promising interventions that either need to be evaluated, need further evaluation for outcomes, or are in the process of evaluation. Once evaluated for effectiveness or efficacy, many of these interventions can be scaled up or adapted to address substance use and suicide in additional communities. Some interventions, like BZDDD, have already proven that they are generalizable and ready to be adapted in other communities (Ivanich et al., 2020). Urban-dwelling AI/AN youth are often neglected when it comes to culturally appropriate interventions, and there is certainly scope for the development of more interventions targeting this population. Interventions like MICUNAY and *Living in 2 Worlds* have sought to meet the needs of these youth as they relate to substance use with limited results (D'Amico et al., 2020; Kulis et al., 2017).

Promising results in interventions that address the family, parents, and caregivers, as part of the intervention, (e.g. Qungasvik (Allen et al., 2018)), show that a more holistic view of the ecosystem of the young person environment can address systemic risk factors allowing for better outcomes at the individual level. Family and community factors make up a large proportion of risk for suicide and substance use and, while there are several promising interventions that are seeking to address these factors, more engagement of parents in interventions is crucial to fully address this need.

CBPR partnerships between researchers, such as the partnerships between WMAT, Navajo tribes, and Johns Hopkins Center for Indigenous Health (Chambers et al., 2021; Cwik et al., 2019; Cwik et al., 2016) (Chambers et al., 2021; Cwik et al., 2019; Cwik et al., 2016), the partnership between Anishinabe (Ojibwe) and the University of Nebraska, (Ivanich et al., 2020),

and the Yup'ik partnership with the Center for Alaska Native Health Research (Allen et al., 2018; Rasmus et al., 2014), have produced multiple interventions addressing suicide and substance use factors at multiple levels. Further development of such partnerships will ensure that adaptations and development of interventions are grounded in community and improve their potential for long-term sustainability.

Considering these implications, short-term recommendations for the field include:

1. Further evaluation of promising interventions for effectiveness or efficacy.
2. Adaptation of effective interventions to address similar mental health challenges in other communities.
    a. Adapting suicide and substance use interventions that have been evaluated for AI/AN communities to other AI/AN cultures.
    b. Adapting cultural interventions for other health concerns that have potential for addressing substance use and suicide.
3. Piloting of culturally based interventions for urban-dwelling AI/AN youth.
    a. This process should start by answering the following questions to ensure that these interventions are optimally tailored for this population:
        i. What strategies are effective for this community?
        ii. What is the importance of culture for urban-dwelling AI/AN youth?
        iii. Are there other interventions culturally adapted for other urban minorities that can be adapted for this population?

Other reviews have cited the need for continued cultural adaptation of interventions or development of culturally grounded interventions (Jongen et al., 2023; Pham et al., 2022), and the need for further research and evaluation of intervention outcomes for best practice (Asher

Blackdeer & Patterson Silver Wolf, 2020; Jongen et al., 2023; Pham et al., 2022), (Asher Blackdeer & Patterson Silver Wolf, 2020; Jongen et al., 2023) which continue to be paramount to ensure communities have the tools they require to address the needs of AI/NA youth.

The findings of this review acknowledge the continued work being done in the field of AI/AN youth suicide and substance use prevention. The interventions analyzed have common threads in that they seek to provide culturally appropriate interventions with a grounding in evidence-based literature including indigenous theory, such as the Cherokee Self Reliance Theory (Lowe et al., 2012). To continue to grow this field, funding should be directed towards evaluation of existing interventions as well as furtherance of the partnerships that have produced a majority of the community-level interventions found in this review.

The purpose of this review was to answer the questions of *what is the current landscape in the field of indigenous-focused, community-based interventions for suicide and substance-use prevention in indigenous youth in North America?* with special attention to the evaluation and effectiveness of these interventions as well as the focus on family, community, and individual risk factors. We find that progress in this field is ongoing, with many researchers and community members collaborating on this work producing creative strategies for addressing risk factors as a community. Proving evidence-base for these interventions will impact AI/AN youth health at the policy level, providing standards of care and prevention for sustainable long-term impact on AI/AN youth mental health and wellbeing.

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