A Scoping Review of School-Based Prevention Programs for Indigenous Students

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Abstract

Indigenous communities demonstrate immense cultural strengths despite being impacted by mental health and academic disparities due to ongoing systemic racism and historical trauma. Given that schools are a context in which indigenous youths' needs have potential to be met through preventive intervention, this scoping review explores and summarizes the cultural relevance of school-based prevention interventions that have been implemented with students from indigenous backgrounds. We included articles published between January 2010 and February 2020 that included descriptive, outcome, and/or program development data on school-based prevention programs used with indigenous students in the United States and Canada. The initial search yielded 2,131 articles for review, and ultimately 35 articles describing 27 interventions were included in the final sample. The majority of the programs ($n = 20$) were focused on substance use prevention or sexual and reproductive health and targeted adolescents in middle and high school; only five programs focused on mental health, social-emotional learning, and academics. All interventions were culturally consonant, but the program development process differed: 11 interventions were culturally grounded (i.e., developed based on values and beliefs of a specific cultural group) with one being community initiated (i.e., grassroots development), and 17 were culturally adapted (i.e., the tailoring of an existing intervention for a specific cultural group). We describe each intervention and its cultural components and provide commentary on how school-based prevention and social-emotional learning interventions can promote academic success for indigenous students in the United States and Canada.

Key words: prevention programming, social and emotional learning, indigenous students, cultural adaptations

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Beyond just supporting students' academic development, schools are important sites for promoting and preventing positive health outcomes. Prevention programs that support students' overall development may be particularly salient for students from American Indian/Alaskan Native (AI/AN) or other indigenous backgrounds who are disproportionately impacted by issues such as substance use, suicide, and historical trauma due to the ongoing impacts of colonialization, structural racism, and discrimination. Suicide is the second leading cause of death for AI/AN young people, ages 5 to 24 (IHS, 2014). In addition, reservation-based AI/AN youth in eighth, 10th, and 12th grades reported greater use of substances than other youth in the United States (U.S.; Swaim & Stanley, 2018). Native American youth are also at higher risk of dropping out of school (Faircloth & Tippeconnic, 2010) and for negative long-term health and mental health outcomes (Gone & Trimble, 2012). Alternatively, one study found that urban AI/AN youth had similar rates of alcohol (23%) and drug (28% reported smoking marijuana) use to other youth in the nationally representative Monitoring the Future study (D'amico et al., 2021). Most urban AI/AN youth in this study also reported engaging in traditional cultural practices, which may serve as a protective factor (D'amico et al., 2021). Instead of focusing on the risk factors that often dominate narratives about AI/AN and other indigenous youth, we seek to highlight the traditional values and beliefs of indigenous communities that may represent cultural strengths as we examine the school-based prevention interventions that have been developed or adapted to meet the needs of indigenous youth.

School-based prevention programs are popular, with many schools implementing social and emotional learning (SEL) curricula to support students. Interventions that are culturally

relevant or culturally sensitive have been found to be effective (Griner & Smith, 2006; Soto et al., 2018), and those targeted toward a specific population were four times more effective than other interventions targeted toward clients from various racial, ethnic, and cultural backgrounds (Griner & Smith, 2006). Examining the cultural relevance of interventions is important given that over half of students in public schools in the U.S. are from racially diverse backgrounds. Despite ongoing calls to increase cultural responsiveness and the cultural relevance of academic instruction (Gay, 2018; Ladson-Billings, 2021), few studies have examined school-based prevention programs specifically for AI/AN or other indigenous students, making it challenging for schools serving these students to make optimal choices on which prevention programming might best meet the needs of their students. Existing reviews of the literature on culturally-relevant interventions for AI/AN and other indigenous youth have focused on culturally-sensitive interventions both in and outside of schools (Jackson & Hodge, 2010), substance use interventions across settings (Liddell & Burnette, 2017), and substance use in schools (Maina et al., 2020). Given a need to better understand the cultural relevance of existing school-based prevention programming for AI/AN and indigenous youth, we conducted a scoping review to identify the interventions that have been implemented with AI/AN and indigenous youth and the cultural components of such interventions. Throughout the article, we use "AI/AN" to collectively describe groups of individuals in the U.S., and "indigenous" to include individuals in Canada. We also describe different tribes and cultural groups by name or by how they are discussed in the article we are citing.

Prevention Programming for Indigenous Students

School-based prevention programs can potentially support the holistic development of indigenous students. These programs may broadly focus on SEL or specific areas, such as

substance use and sexual and reproductive health (SRH). Prevention programs are tiered, with

Tier 1 interventions designed to be delivered to all students, Tier 2 interventions targeted at

students who have been identified as "at-risk" for a particular concern, and Tier 3 interventions

tailored to address concerns or challenges that students are experiencing. Results examining

effects of other school-based prevention programming (e.g., HIV prevention, substance use

prevention) for Indigenous students have been mixed, with some studies finding that culturally-

specific interventions are most effective (Soto et al., 2018), while other studies have not had

strong positive effects or were only partially effective (Okamoto et al., 2019; Rushing et al.,

2017; Usera et al., 2017).

SEL and other programs that promote mental health and wellness are popular in schools.

The Collaborative for Academic, Social, and Emotional Learning (CASEL) designed an SEL

framework, which has been utilized worldwide in K-12 schools (Aziz et al., 2020; Collie et al.,

2017). This framework is comprised of five interrelated competencies: self-awareness (i.e.,

ability to understand one's emotions, cognitions, values), self-management (i.e., ability to

effectively manage one's emotions, cognitions, and behaviors in a variety of environments),

social awareness (i.e., ability to understand and empathize with others, including with individuals

from multicultural and diverse backgrounds), relationship skills (i.e., establishing and

maintaining healthy relationships through clear communication, active listening, collaborating to

constructively solve conflict, as well as asking for and offering support when needed), and

responsible decision-making (i.e., capacity to execute beneficial and constructive choices that

consider the safety, ethical standards, and consequences of all involved).

SEL programming in schools has enhanced student outcomes, including increased social

and emotional skills, positive attitudes and social behaviors, academic performance, and

decreased conduct problems, emotional distress, and substance use (Taylor et al., 2017).

However, there have been mixed findings on the influence of SEL and school-based SEL

programs on indigenous student outcomes. For example, Chain and colleagues (2017) found that

SEL competence contributed to academic achievement in Native American students. However,

Jones et al. (2020) indicated that SEL was less strongly associated with academic success. They

attributed this weak association to racial inequities in the SEL framework suggesting a need to

affirm students' racial and cultural identities as these factors may play a role in SEL

development for underrepresented youth, including Native American students (Howard, 2019).

Researchers have identified cultural inequities in CASEL's SEL competencies and are

striving to design a culturally-responsive SEL framework, through an equity lens, for

underrepresented youth (Jagers et al., 2019). Their revisions of the core competencies

incorporate expressions of identity, agency, belonging, and engagement. In particular, they

propose that the self-awareness competency should emphasize centrality (one's sense of

race/ethnicity); social-awareness, relationship skills, and responsible decision-making should

underscore ideology (one's regard for their own racial/ethnic group) and establish a common

bond with other oppressed groups. Additionally, they highlight the importance of considering

intersectionality so that there is recognition of and alignment across the several social categories

that can make an individual more susceptible to multiple simultaneous oppressions. Jagers et al.

(2019) also suggest that social-awareness and responsible decision-making competencies should

incorporate students' sense of school belonging and engagement. Specifically, belonging should

not only be reflected through recognition of racial-ethnic minority students but should comprise

a strong commitment to the creation of relationships and institutions that generate a sense of

belonging for marginalized youth. Moreover, student engagement should include individuals'

active engagement in changing institutional and systemic policies that oppress disadvantaged youth. Finally, these investigators indicate that self-management and relationship skills should capture agency through resistance to stereotypes and social and political endeavors, as well as political and collective efficacy to advance systemic transformative SEL.

There is currently a significant focus on substance use in programming for indigenous students. Jackson and Hodge (2010) conducted a systematic review to identify outcome studies of culturally-sensitive interventions across settings for Native American youth. They identified eleven studies that mostly focused on substance use. Five studies demonstrated significant outcomes, and the other six had inconclusive or insignificant results. The authors concluded that there is some evidence to support the implementation of culturally-sensitive interventions, and perhaps more culturally-grounded interventions developed in collaboration with the Native American community are needed to best individualize supports for AI/AN youth. A more recent scoping review of school-based substance use prevention interventions for Indigenous students identified 11 culturally tailored interventions, concluding that centrally incorporating Indigenous values, languages, cultural views, and visuals in the curriculum improved the effectiveness, appropriateness, and sustainability of prevention programs (Maina et al., 2020). Liddell and Burnette (2017) also reviewed culturally-informed substance use interventions, which were utilized inside and outside of schools with indigenous youth. They identified 14 studies that evaluated school, community, and inpatient facility outcomes and found that most interventions failed to result in substantial substance use improvements, underscoring the need to integrate the effective components of different interventions targeted at reducing drug and alcohol use in indigenous youth.

There are also prevention programs focused on physical health, including sexual and reproductive health (SRH), physical activity, and healthy eating. Fleischhacker and colleagues (2015) examined physical activity interventions across settings and identified several school-based interventions for Native American youth. Four of the 20 interventions they identified reported positive changes in knowledge and attitudes. Although a systematic review of SRH prevention programs was not identified, numerous interventions have targeted these concerns with varying levels of success (Kaufman et al., 2010; Kaufman et al., 2014; Rink et al., 2020).

Cultural Relevance

Researchers acknowledge that SEL and prevention programs must be culturally relevant to positively affect student outcomes (Mahfouz, 2020). AI/AN and other indigenous healers, scholars, practitioners, and experts agree that interventions for AI/AN and indigenous youth must be rooted in their own culture and values (Linklater, 2014; SAMHSA, 2016; Unger et al., 2008; Whitbeck, 2006). Interventions that are culturally grounded are developed with AI/AN students and their cultural knowledge and practices in mind, often with Native educators and community members as part of the development team with university-based researchers (Barrera et al., 2013; Walters et al., 2020). Although most culturally-grounded interventions are developed by researchers and practitioners, some culturally-grounded interventions are community-initiated, meaning they are developed by community members and then sometimes evaluated by researchers (Barrera et al., 2013).

Additionally, other interventions include cultural adaptations for indigenous students. Gone and Trimble (2012) specifically called for the development of culturally-grounded interventions that include AI/AN individuals and communities in the development process to ensure tribal self-determination. There is rich literature on models and frameworks for cultural

adaptations, which often includes information gathering from community members and other relevant parties, making adaptations, and then preliminary testing (Bernal & Domenech Rodriguez, 2012). This process may be "top down" in that an original intervention is considered and evaluated or "bottom up" in that the needs and voices of the community are solicited and used to create a preliminary adaptation design (Barrera et al., 2006). The specific adaptations may be surface-level (e.g., incorporating pictures or examples that are familiar to participants) or "deep-structure" in that the adaptations embed culture and values in both content and delivery (e.g., using culturally-relevant teaching strategies to deliver the lesson; Resnicow, 1999). After the information gathering and adaptation phases, the intervention is preliminarily tested and then further adapted based on feedback before a trial to evaluate the effectiveness of the intervention.

Scholars have offered several recommendations to best partner with indigenous communities to develop and implement prevention interventions (Unger et al., 2008; Walters et al., 2020; Whitbeck et al., 2006). Some of those recommendations include using formative and qualitative research methods, using culturally appropriate assessment measures, understanding the diversity that exists within indigenous communities, and involving multiple generations in the intervention (Unger et al., 2008). The "Guiding Assumptions for Prevention Research Partnerships with Native American Communities" speak to the diversity of indigenous groups and how prevention programs should be specific to the different tribes or nations (Whitbeck, 2006). These assumptions also assert that Native Americans have all the knowledge they need to successfully raise their children, that the children want to know their culture, and that cultural ways of operating should be viewed as equal to prevention science methodologies (Whitbeck, 2006). The recommendations provided by Unger and colleagues (2008) and Whitbeck (2006) provide important considerations for developing, implementing, and evaluating school-based

interventions for indigenous students. In summary, there is a need to examine the cultural-relevance of school-based prevention and SEL interventions for AI/AN and indigenous students to inform prevention and intervention efforts targeted at promoting wellbeing and mitigating the development of mental and behavioral health problems for these youth.

The Current Study

Given the importance of supporting indigenous students' academic and SEL needs and providing prevention programming to address challenges often present in their communities, this scoping review examines the literature on prevention programming with indigenous students in the U.S. and Canada. We initially sought to review SEL programming, but given few studies focused on SEL for indigenous students, we expanded our focus to include any school-based prevention programs. Expanding upon Maina's (2020) scoping review of school-based substance use programming for indigenous students (7–13-year-old), we examined prevention programming for K-12 indigenous students. In contrast to the previous reviews (Jackson & Hodge, 2010; Liddell & Burnette, 2017; Maina et al., 2020), we examined studies with and without quantitative outcomes to capture the full landscape of school-based interventions with indigenous students. This is consistent with Unger et al.'s (2008) recommendation, which was to begin with formative and qualitative research to inform intervention development and build trust with indigenous communities and tribes. We reviewed articles from January 2010 to February 2021 focused on school-based prevention programming for students in North America to specifically answer the following questions:

1. What are the existing K-12 school-based prevention and SEL interventions that have been used with indigenous youth?

    a. Are the existing programs culturally grounded or culturally adapted?

2. Are there key differences or similarities between culturally grounded and culturally adapted approaches to intervention design?

   a. Are there common cultural/contextual components of the interventions?

Method

Scoping reviews answer broad research questions and summarize the existing literature base for a specific topic. The Preferred Reporting Items for Systematic Reviews-Extension for Scoping Reviews was used to guide the search strategy and data analysis process (Tricco et al., 2018). Search strategies were developed collaboratively with a librarian (initials redacted) to answer the research questions. The strategies were run in the following databases: Pubmed/MEDLINE, ERIC, PsycINFO, and Web of Science.

Strategies were first executed in Pubmed to ensure an inclusive and comprehensive mix of Medical Subject Headings (MeSH), keywords, and text phrases were identified. These words and phrases were then translated into the thesauri of the other databases, when available. The strategies included terms related to (1) Native or Indigenous students, grades K-12, (2) Mental, emotional, social, or behavioral health, and (3) preventative interventions or programming.

Each article screened had a variation of a keyword, phrase and/or subject heading from each of the following lists:

1) American Indian, Alaskan Native, Native American, Indigenous, Tribal, First Nation(s), Inuit, Hawaiian[1]

2) Adolescent, child, youth, student, teenager, kid

3) School/Education: elementary, middle, high, primary, secondary, junior, K-8, K-12

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[1]Although these descriptors may not represent preferred terminology for some individuals or groups, they reflect how Indigenous people are currently described in the literature.

4) Mental, social, emotional, and/or behavioral health

5) Intervention, program, practice

Study Selection

Literature searches were completed and last ran on February 10, 2021. Searches resulted in 2,810 articles. After removing duplicates, there were 2,131 unique citations. All 2,131 citations were screened using the following inclusion criteria: English-based or English-translated literature, students between grades K-12, citations published after 2010, and papers focused on the implementation of school-based interventions for Native American or indigenous youth. Studies that were not school-based and samples that were not majority Native American or Indigenous were excluded, unless the intervention was specifically designed for Native American or Indigenous youth. When available, database filters were used for publication dates and language limitations. Reviewers double-checked all inclusion/exclusion manually as well.

A two-round screening method was used; abstracts were first reviewed, and if they met inclusion/exclusion criteria, those citations moved to a second round where 49 full-text manuscripts were screened against eligibility criteria. Two authors (initials redacted) reviewed all abstracts (when available), with the third author (initials redacted) settling any conflicts or disputes. Citations without abstracts or articles whose abstracts did not divulge whether they met all eligibility criteria were also included for full-text review. During the full-text review, two authors (initials redacted) reviewed each article and conflicts were again settled by the third author (initials redacted). Following the full-text review, a total of 35 articles representing 27 interventions were identified for inclusion in the review. Article selection and both screening rounds were completed by July 12, 2021.

[Insert Figure 1 here]

Results

The review resulted in the inclusion of 35 articles that described 27 different school-based programs that were being used with indigenous youth. Each of the interventions are described in Table 1. Our search yielded 11 culturally grounded interventions, one of which was community-initiated, and 16 culturally- grounded interventions, and 16 culturally-adapted interventions. The culturally-grounded interventions were developed by researchers and community members who worked together to design, implement, and/or evaluate an intervention to meet specific community needs. Most of the culturally-adapted programs were initially evaluated with other populations (i.e., indigenous or non-indigenous), and then specific modifications were made to make the intervention more applicable to the target indigenous population. In some cases, a culturally-grounded intervention was culturally-adapted for use with another group of indigenous students. Six of the interventions were implemented with indigenous youth in Canada and the remaining interventions were implemented in the U.S., including Alaska ($n = 3$) and Hawaii ($n = 2$). One study included both Native American and Alaska Native youth (Shegog et al., 2017). Although our inclusion criteria stated that studies must be conducted with indigenous populations in North America, our search yielded no interventions that were implemented or evaluated in Mexico.

[Insert Table 1 about here]

The majority ($n = 20$) of the 27 interventions identified were Tier 1 universal prevention programs. One intervention (Garret et al., 2019) was Tier 1 and Tier 2 with universal substance use screening and then a Tier 2 motivational interviewing intervention for youth deemed to be at risk. Two-thirds of the interventions focused on substance use ($n = 11$) or healthy relationships and STI prevention ($n = 9$). Other topics addressed included physical health, mental health and/or

SEL, and Positive Behavioral Interventions and Supports (PBIS; $n = 1$). Table 2 identifies the interventions by subject area and target grade level. Except for two online interventions, all interventions were school or classroom-based with an educator, researcher, or older peer facilitating. (Raghupathy & Go Forth, 2012; Shegog et al., 2017).

[Insert Table 2 about here]

Intervention Descriptions

Below, we briefly describe each of the interventions. An additional table is provided in the online supplementary materials that summarizes the intervention design (i.e., community-initiated, culturally-grounded, culturally-adapted), surface-structure and/or deep-structure cultural adaptations, as well as other cultural components in more detail.

Healthy Relationships

Culturally Grounded. Discovery Dating is a 14-session curriculum that promotes healthy relationships in middle school students (Schanen et al., 2017). The program, which was the only community-initiated culturally-grounded intervention identified in the review, was created by a Native American woman based on community needs that surfaced in a women's group. The curriculum is based on traditional cultural values of "respect, self-determination, and a balance of interdependent life" (Hagen et al., 2012, p. 22). Using a pretest-posttest design, students were found to have an increased sense of personal agency after participating in the program. The C-BAC Program used the Discovery Dating curriculum and incorporated other elements, including refusal skills and culturally relevant components (Hagen et al., 2012). As a result, middle school students in the treatment group had fewer pregnancies and greater condom use than students in the control group.

The COL program was created by AI/AN educators with input from other relevant stakeholders and incorporated traditional Native American values and beliefs about adolescence into HIV and sexually transmitted disease (STD) prevention for middle school students (Asdigian et al., 2018; Kaufman et al., 2010; Kaufman et al., 2014; Mitchell et al., 2017). Youth who participated in COL were older during their first sexual encounter, and those who had never had sex had higher levels of refusal and avoidance self-efficacy (Mitchell et al., 2017). COL also increased participants' short-term knowledge about HIV (Kaufman et al., 2014). Additionally, Making Pono Choices focused on pregnancy and STD prevention for Native Hawaiian Youth (Manaseri et al., 2014). A randomized-controlled trial (RCT) of this intervention demonstrated that students had higher levels of knowledge related to program content post-program (Manaseri et al., 2019).

The Uniting Our Nations: Relationship-based programming for First Nations Youth program (Crooks et al., 2010), also referenced as the Fourth R program (Crooks et al., 2015; Crooks et al., 2017), included several interventions related to healthy relationships, youth leadership, and violence prevention. Some aspects of the program included a cultural leadership program, a mentoring program for seventh- and eighth-grade students, peer mentoring for high school students, and eighth grade transition conferences (Crooks et al., 2010; Crooks et al., 2015). A mixed-method evaluation of the peer mentoring component for seventh and eighth graders found that youth participating in the program for two years reported a stronger cultural identity and better mental health than youth who did not participate in the program (Crooks et al., 2017). Further, interview data revealed that participants enjoyed the program and spoke positively about opportunities to connect with peers and learn about their culture.

Culturally Adapted. BeLieving in Native Girls (BLING) was a 24-lesson program designed to address juvenile delinquency and HIV prevention in girls (ages 12-20) who were attending a residential boarding school for AI/AN youth (Scott & Langhorne, 2012). The curriculum was adapted based on a program designed to increase condom use (Jemmot & Jemmot, 1992) and other interventions developed by the National Indian Women's Health Resource Center (2006). Only baseline data were reported, which indicated that youth had several risk factors, including poor critical thinking and coping skills.

The Healthy and Empowered Youth (HEY) program included 27 lessons informed by the Native Students Together Against Negative Decisions (STAND) curriculum (Rushing et al., 2017). HEY was implemented in the middle and high school of the partner tribe, and focused on pregnancy, STD, and substance use prevention. It was adapted to include more engaging activities, such as video making and field trips. The evaluation found a statistically significant increase in the number of high school girls reporting condom use and STD testing. Focus group findings indicated students felt the program was "acceptable, relevant, and valued" and enjoyed the multi-media activities that were incorporated into the curriculum.

A pilot SRH intervention (Rink et al., 2020) for 15-18 year-olds included 18 Native STAND lessons, three Native Voices modules (for parents), and a cultural mentoring component. As part of the cultural mentoring program, elders taught students about traditional values related to healthy relationships and gender roles. On pre- and post-test measures, youth reported increased condom use and self-efficacy, and caregivers reported increased communication with their children about topics related to SRH.

The Native It's Your Game (Shegog et al., 2017) program consisted of 13 online lessons adapted from the It's Your Game-Tech intervention focused on HIV/STI and pregnancy

prevention. Youth who piloted the intervention rated it favorably, reported that it met their needs as AI/AN youth and helped them make better decisions. Adults from the community who reviewed the lessons affirmed its cultural relevance and fit for implementation in their community.

Substance Use

Culturally Grounded. High school students who were abusing substances participated in either the 10-week Cherokee Talking Circle intervention or a standard substance use education program. Findings indicated that the culturally-relevant intervention was significantly more effective than the standard intervention (Lowe et al., 2012). The Native Talking Circle Intervention is an adaptation of the Cherokee Talking Circle that was adapted for use with Native American Northern Plains youth (Patchell et al., 2015). Study participants included a convenience sample of high school students who were at risk for substance use. Although there was no control group, participants demonstrated significant increases in self-reliance and significant decreases in substance use after completing the program.

Ho'ouna Pono was designed for Native Hawaiian and Pacific Islander middle school youth (Okamoto et al., 2016; Okamoto et al., 2019). The curriculum included nine classroom lessons with video vignettes of indigenous youth, and other cultural activities focused on increasing refusal skills. Although the program had no effect on alcohol use between groups, there was a significant effect on cigarette use, such that participating youth were less likely to use cigarettes or e-cigarettes (Okamoto et al., 2019).

HAWK[2] is a computer-based intervention delivered to elementary-aged students (grades 4 and 5) in schools (Raghupathy & Go Forth, 2012). HAWK[2] builds off a statewide Indian Drug Prevention Program, which includes seven lessons with games and quizzes. Pilot data and youth

feedback from a feasibility study were used to adjust the video lengths, amount of time spent on games, and narration speed.

Culturally Grounded. CONNECT is a screening and brief intervention (SBI) focused on reducing alcohol use through increasing positive behaviors for youth living in the Cherokee Nation (Garrett et al., 2019). CONNECT includes SBI with motivational interviewing and a media campaign. The SBI component of the intervention was based on the National Institute on Alcohol Abuse and Alcoholism's Alcohol Screening and Brief Intervention for Youth: A Practitioner's Guide, with motivational interviewing (MI) incorporated into the intervention (Gilder et al., 2011). The sample included AI/AN and White students in three participating high schools and three control high schools. Given the focus on decreasing substance use in the Cherokee Nation, we still included this intervention in our study even though half the sample was White. Each semester, all ninth- and 10th-grade students in the participating schools were screened for alcohol use and MI techniques were used with at-risk students. In addition, the media campaign included postcards mailed to students' homes and posters around the schools to promote healthy decision-making.

Self-Awareness Creates Responsible Empowered Decisions (SACRED) Connections is another SBI that uses motivational interviewing methods to decrease substance use (Morris et al., 2021). Although specific details about the adaption of the intervention were not included, the intervention was based on the Native Reliance Model that focused on seeking truth and making connections in all aspects of life through being responsible, disciplined, and confident (Morris et al., 2021, p. 152). Findings from post-program surveys showed that students in the experimental group reported less use of marijuana in the past three months.

Stanley and colleagues (2018) described the Be Under Your Own Influence intervention, adapted for AI middle and high school youth (Stanley et al., 2018). They used focus groups and a photovoice with youth to guide the adaptation process. Middle school youth who participated in focus groups reported some of the challenges in their community, as well as personal autonomy and high personal aspirations. When reviewing program materials, youth demonstrated a preference for text that referenced "we" instead of "I" and reflected positive aspects of life on a reservation. High school youth, who served as role models to the middle schoolers, participated in the photovoice activity. Youth took various pictures, including images of hobbies, loved ones, and cultural artifacts. Findings from the study led to surface-structure adaptations, such as familiar youth activities, images of people in the new program, and deep structure adaptations.

Members of the Alexis Lakota Sioux partnered with researchers from the University of Alberta to adapt the Life Skills Training Program, which focuses on alcohol and drug use prevention, for use in their community (Baydala et al., 2014). The adapted curriculum was piloted with a group of third-grade students, and then additional adaptations were made before implementing the intervention with elementary and middle school youth. Focus group data were collected from adults involved in developing and implementing the intervention. These data guided the adaptations, provided evidence of implementation fidelity, and demonstrated positive perceptions about youths' increased knowledge and cultural behaviors. Middle school students in the experimental condition reported heightened awareness about alcohol and drugs but fewer substance use behaviors.

Living in 2 Worlds (L2W) is an adaptation of the *keepin' it REAL (kiR)* substance use prevention program (Kulis et al., 2013; Kulis et al., 2017). Using community-based participatory research (CBPR) methods, the L2W incorporated culturally-specific drug refusal strategies as

well as language, content, and activities culturally relevant to indigenous youth. Pre-post results

for the 57 students in a pilot intervention found a significant increase in the use of refusal skills

(Kulis et al., 2013). The program was then delivered by AI/AN teachers to seventh- and eighth-

grade students in two schools in an urban area; students in a comparison school received the *kiR*

intervention. Students in the intervention demonstrated several positive outcomes, including less

of an increase in cigarette use and greater retention of cultural traditions and spirituality (Kulis et

al., 2017).

The Lakota Circles of Hope is a substance use prevention program for second- through

fifth-grade students (Usera, 2017). The 10-lesson curriculum was developed based on several

other interventions and use traditional Lakota values and cultural teachings to promote healthy

decision-making skills. The study used mixed-methods to assess outcomes for fourth- and fifth-

grade students. Educators rated the program favorably, and students in the intervention group

reported an increase in their Lakota identity and respect for others, a decrease in their risk

behaviors, and improved communication with parents.

A culturally-sensitive smoking prevention program was implemented in one of two

fourth-grade classrooms with Aboriginal students (McKennit & Curry, 2012). The second

classroom was provided with a standard smoking prevention program for comparison. Both

programs were 60 minutes and included statistics about tobacco use, its harmful effects, and

refusal strategies; however, the culturally sensitive program incorporated a traditional smudging

ceremony and education on the differences between traditional and recreational tobacco use.

After completing this intervention, students in the small intervention group ($n = 18$) reported

significantly fewer intentions to use tobacco.

Physical Health

Culturally Grounded. The Neqa Elicarvigmun (Fish-to-School Program) was the only culturally-grounded intervention that emphasized the health benefits of engaging in a traditional diet. The program included classroom, cafeteria, and community-based activities to improve students' diets and promote the intake of traditional foods for all middle and high school students in an Alaska Native community. Youth in the intervention group had a greater increase in fish consumption and in eating other traditional foods compared to the control group.

Culturally Adapted. Action Schools! BC (AS! BC) is a school-wide intervention targeted at improving physical health by increasing physical activity (Naylor et al., 2010). AS! BC was previously found to be effective in urban schools in Canada, and the authors of this study conducted a feasibility study in three rural and remote Aboriginal communities. All teachers received training and ongoing consultation as they created individualized classroom action plans to provide at least 15 minutes of physical activity in the classroom daily and at least one health education lesson a month. Community members found the program feasible to implement, though teachers expressed an interest in making it more culturally relevant. Most implementers spoke positively about the intervention, but some had concerns about not having the necessary equipment or enough time to complete the activities.

Mental Health, SEL, and Positive Behavior Supports

Culturally Adapted. The Adolescent Coping with Depression program was renamed the Skills Development Class and adapted for middle school youth on a Northern Plains reservation (Listug-Lunde et al., 2013). The adapted curriculum consisted of 13 classes taught by two mental health professionals over the course of seven weeks. To increase the cultural relevance of the Skills Development Class, the examples, materials, and discussions were changed to reflect AI youth experiences. The intervention group received the Skills Development Class, and the

control group was offered services in the community. Students in both groups reported a

decrease in depressive symptoms from pre- to post-intervention, and the improvements were

maintained at three months post-intervention. There were no significant differences in anxiety

symptoms.

The Youth Leaders Program was designed to reduce the number of youth suicides by

addressing several risks, including substance use and bullying, through peer leaders (Wexler et

al., 2017). The program was adapted from the Comprehensive Health Education Foundation's

Natural Helper Curriculum, which used social networks to promote positive outcomes.

Implementation in each school varied, but the most common activities included recreational

activities, support with behavioral challenges, and classroom presentations. The outcome

evaluation primarily focused on Youth Leader outcomes, although school-wide surveys

demonstrated that about half (53%) of students viewed their Youth Leaders favorably, and over

half (68%) felt that they had a positive impact on the school community. Youth Leaders reported

positive experiences with the program and positive self-evaluations. Students in ninth, 10th, and

11th grade had improved attendance, and students in eight, ninth, and 10th grade had improved

GPAs. Despite the focus on the program, the impact of the intervention on suicide was not

evaluated.

The Cognitive Behavioral Intervention for Trauma in Schools (CBITS) was adapted and

used with elementary and middle-school-aged children on three reservations in the northwest

region of the U.S. (Morsette et al., 2012). Youth in fifth through eighth grade were screened, and

those with clinically-significant trauma symptoms and violence exposure were invited to

participate in the program. Of the 302 students screened, 43 students across six schools

participated in the intervention. Participants demonstrated a reduction in trauma symptoms pre-
and post-intervention, and adults in the school rated the program favorably.

One article described plans for adapting the PAX Good Behavior Game (PAX GBG) for
use in First Nations Schools in Canada (Fortier et al., 2017). The PAX GBG is a school-wide
intervention that promotes a healthy school climate and positive student outcomes. The authors
reported conducting qualitative data collection with adult members of the Swampy Cree Tribal
Communities, where the intervention was implemented. The authors were intending to speak
with students about their experiences in the intervention, and to conduct an RCT with over 200
schools (38 of those schools located in First Nations communities).

McIntosh and colleagues (2014) discussed the cultural relevance of positive behavioral
interventions and supports (PBIS) for indigenous students and included a case study. They
identified indigenous approaches to supporting student behavior, including the importance of
elders, community engagement, inclusive education, and teaching social responsibility through
cultural values. The authors also highlighted existing components of schoolwide PBIS
approaches consistent with an indigenous worldview, such as teaching desired behaviors,
identifying the underlying causes of concerning behaviors, and reinforcing positive behaviors.
However, they cautioned school leaders to ensure rules and expectations are culturally informed
and not dictated by the standard Western values that are often pervasive in schools.

Comparing Interventions

For our second research question, we aimed to identify key differences and similarities
between culturally-grounded and culturally-adapted approaches to intervention design. However,
we mostly found similarities across culturally-grounded and -adapted interventions, such that
most of them included community members in the development or adaptation process through

CBPR methods. Although only the Discovery Dating curriculum was a community-initiated culturally grounded intervention, most of the interventions were designed in partnership with community members, elders, educators, healthcare organizations, mental health experts, researchers, and other relevant individuals. It was common for elders to take an active role in developing, reviewing, and delivering content. Additionally, most interventions were delivered by school staff (i.e., classroom teachers and school counselors), and a smaller portion of them were implemented by members of the research team, trained staff, or youth leaders. There were no consistent patterns in program implementation, with about a third of the interventions being delivered by community members or teachers who were indigenous. Elders were involved in delivering aspects of some culturally adapted interventions, such as providing cultural mentoring and knowledge to students participating in the culturally-sensitive and reproductive health intervention (Rink et al., 2020) and leading ceremonies (CBITS; Morsette et al., 2012).

We also identified common cultural/contextual components of interventions. Table 3 highlights various elements of the interventions related to cultural adaptations and implementation. Most studies included a brief description of the intervention development or adaptation process. All the culturally grounded interventions incorporated Native or indigenous values, beliefs, and content into their design. Indigenous theoretical frameworks, such as the Medicine Wheel (e.g., Circle of Life, Fourth R) and the Native Self-Reliance Model (e.g., Cherokee Talking Circle, Native American Talking Circle, SACRED Connections), formed the bases of several interventions. However, social learning theories were more commonly used to guide intervention development.

The majority of the culturally adapted interventions included both surface and deep adaptations incorporating Native values and beliefs. Common surface adaptations included

making pictures, examples, and even the voices for recorded content familiar to indigenous

youth (e.g., Listug-Lund et al., 2013; Shegog et al., 2017; Stanley et al., 2018). Some

interventions included broad indigenous values or beliefs through incorporation of traditional

concepts (e.g., Medicine Wheel) and others had culturally specific values, such as the focus on

Inupiaq culture in the Youth Leaders Program (Wexler et al., 2017), First Nations cultural values

in PBIS (McIntosh et al., 2014), and Yup'ik worldviews in Neqa Elicarvigmun (Fish-to-School

Program; Bersamin et al., 2019). Culture was also considered in the content and delivery of the

culturally-grounded and -adapted interventions. Beyond solely including pictures and examples

that would be familiar to indigenous students, developers often considered the most appropriate

methods for content delivery, such as increasing opportunities for discussion within a traditional

lesson format (Listug-Lund et al., 2013; McKennit & Currie, 2012), talking circles (Lowe et al.,

2012; Patchell et al., 2015), and storytelling (Fortier et al., 2018; Kulis et al., 2017).

Overall, the development and implementation of the culturally-grounded and culturally-

adapted interventions seemed similar. Both types of interventions were mainly developed using

CBPR principles and included indigenous values and beliefs in content and content delivery to

varying extents.

[Insert Table 3 about here]

Discussion

Culturally responsive interventions have been found to result in more positive outcomes

for individuals from diverse racial and ethnic groups (Griner & Smith, 2006; Soto et al., 2018),

and tailoring interventions towards a particular cultural group may be most effective (Soto et al.,

2018). We were interested in better understanding the school-based prevention programs that had

been used with AI/AN and indigenous students, given the ongoing educational and mental health

disparities they experience. We were also particularly interested in how culture and values were incorporated into the interventions. Our search resulted in 35 manuscripts describing 27 different school-based interventions that had been implemented with AI/AN or indigenous students in the U.S. and Canada. The interventions included in this study were largely discussed from a prevention science tradition, informed by the literature on culturally-sensitive interventions and cultural adaptations. For lessons delivered in a classroom or small group, developers also considered teaching and learning principles, such as how to make lessons engaging, developmentally appropriate, and culturally relevant.

It was encouraging to see that most of the interventions used with indigenous students were either developed or adapted using CBPR principles and incorporated a variety of individuals into the process. This was in contrast to Jackson and Hodge's (2010) finding that AI/AN individuals were not often included in the program development process for culturally-sensitive interventions. Only one intervention was community-initiated, and all of the interventions identified in our study were either culturally grounded or had been adapted to incorporate the values and beliefs of the target population. The majority of culturally adapted interventions included both surface-structure and deep-structure adaptations indicating changes were made beyond just superficially changing images and materials to match the target cultural group (e.g., Rink et al., 2020; Scott & Langhorne, 2020; Wexler et al., 2017). Some manuscripts did not describe the adaptations. For example, Naylor and colleagues (2010) explained that teachers made adaptations to increase cultural relevance, such as adding a drum activity and providing healthier foods at cultural events; however, there were no specific adaptations described as being implemented by all teachers.

Surprisingly, 20 of the 27 interventions we reviewed were targeted towards healthy relationships/SRH and substance use, likely due to high rates of HIV and substance use in indigenous communities. The remaining seven interventions focused on mental health/SEL, healthy eating, and PBIS. Although Tier 1 interventions that promote healthy relationships and prevent substance use are important for addressing existing disparities for AI/AN individuals, implementing effective Tier 1 interventions that target SEL and mental and behavioral health may provide indigenous youth with a broad set of skills to promote overall wellbeing and healthy behaviors. That being said, AI/AN students have rarely been included in studies of SEL interventions (Garner et al., 2014), making it important to examine the differential impacts SEL programs may have on AI/AN students (Rowe & Trickett, 2018). Further, transformative approaches to SEL that consider youth in the context of oppressive systems and structures may be more relevant and beneficial (Jagers et al., 2019).

The 27 different interventions targeted several different indigenous groups in Canada, the mainland of the U.S., Alaska, and Hawaii, illustrating the diversity of indigenous groups in North America. Most of these interventions were based on different cultural values. Although we aimed to understand the landscape of prevention programming for indigenous youth, we also want to iterate the importance of considering the cultural relevance of each indigenous population when selecting a school-based program or a sample population for a research study. This is imperative given that prevention efforts vary across indigenous nations.

We were also interested in culturally-grounded interventions that were community-initiated, but we were only able to identify one in the literature (Schanen et al., 2017). There are likely successful community-initiated interventions that have been developed, implemented, and evaluated by communities with no need for outside influence. We found it interesting that some

culturally grounded and culturally adapted interventions were also adapted for use with other

tribes, such the Cherokee Talking Circle intervention being adapted for Native American

Northern Plains youth in the Native Talking Circle intervention (Patchell et al., 2015). Having

culturally-grounded and/or -adapted interventions to serve as a basis for further program

adaptations and development may further increase cultural relevance and potentially improve

student outcomes.

   Despite our interest in the cultural components of different school-based interventions, as

acknowledged by Raghupathy and Go Forth (2012), many indigenous students operate with a

bicultural competence as they navigate their indigenous cultural demands and those of the U.S.

or Canada. As such, the saliency of culture may not be the same for all youth. Some youth may

feel strongly connected to their Native American culture, while others may feel disconnected.

This disconnect from culture is not uncommon and is often considered a residual impact of the

brutal boarding school era, which systemically removed indigenous children from their families

in an effort to erase their culture (Garrett et al., 2014). However, Whitbeck (2006, p. 185) asserts

that there is a "hunger among Native American adults and adolescents for their cultural

knowledge." Regardless of how much individual youth identify with indigenous culture, Native

stakeholders continue to agree that their traditional knowledge and ways of being are integral to

health and wellbeing (Johns Hopkins Center for American Indian Health, n.d.; Linklater, 2014).

Whitbeck et al. (2006, p. 185) also argued that "cultural ways and knowledge must be viewed as

equal to social science prevention knowledge" and that successful partnerships between

communities and researchers will be bicultural in nature, reflecting cultural values and

prevention science principles. Schools must also consider these cultural ways of operating and

students' biculturalism as they implement PBIS and other multi-tiered systems of support

(McIntosh et al., 2014). This may mean increasing competence in and valuing students'

communication styles or incorporating indigenous language into educational practices. Educators

must also examine discipline practices to ensure equitable and anti-racist treatment of indigenous

students to address disparities in exclusionary discipline and special education referrals that exist

for Native American students (Bal et al., 2019).

Practice Recommendations

The findings of this scoping review point to recommendations relevant to researchers

developing and implementing interventions for indigenous students. Consideration of these

recommendations should be tempered by the parameters of our scoping review, which was not

designed to evaluate intervention effectiveness, but will be assessed in a future systematic

review.

- Whether developing a culturally-grounded or culturally-adapted intervention, indigenous
  scholars, community members, elders, and/or youth should be involved in the process
  (e.g., Okamoto et al., 2016; Stanley et al., 2018).

- Although social learning theories are the most common frameworks for prevention
  interventions with indigenous youth, developers might consider using culturally-
  grounded frameworks such as the Medicine (e.g., Asdigian et al., 2018, Crooks et al.,
  2017) or self-reliance models (e.g., Lowe et al., 2012; Morris et al., 2020) to guide their
  interventions.

- Lesson-based interventions should be culturally relevant and include indigenous teaching
  methods (e.g., group work, storytelling; Fortier et al., 2018; Kulis et al., 2017).

- There were no clear patterns in associations between implementers and outcomes; however, having indigenous facilitators/co-facilitators or guest speakers may increase cultural relevance (e.g., Hagen et al., 2012; Scott & Langhorne, 2012).

- There is a need for more SEL interventions focused on overall wellbeing and not just substance use and SRH. We only identified one intervention (Fortier et al., 2018) that broadly focused on SEL, and it was still in development.

- A more rigorous assessment of outcomes is needed to determine which interventions are most effective and for whom. Researchers should consider the principles of indigenous research methods (e.g., taking a community-based approach, measuring culturally appropriate constructs, culturally relevant assessment, sharing findings with the community) when evaluating interventions (e.g., Gone & Alcantara, 2007; Jackson & Hodge, 2012).

- Developers are encouraged to consider the heterogeneity between tribes when developing interventions. It may be difficult or even unethical to implement an intervention "at scale" specific to a school or community. Even if adapted, some interventions may not meet the needs of an indigenous community; instead, a culturally grounded intervention may be warranted.

Researchers and teams developing interventions for indigenous students may benefit from these recommendations in addition to building trusting and collaborative partnerships with indigenous community members and organizations.

Limitations

The purpose of our study was to identify various prevention interventions that have been used with AI/AN and indigenous students since 2010. Given that we wanted to include all

interventions identified in the peer-reviewed literature, we did not limit the studies included to RCTs or quasi-experimental studies that examined the outcomes of interventions. Since our goal was to identify and describe interventions that have been used with indigenous students, consistent with the parameters of a scoping review, we did not assess the rigor of each study or make conclusions about effectiveness. Although we did summarize the outcome data when available, there is an ongoing need to evaluate the effectiveness of these interventions. As recommended by Jackson and Hodge (2010), effective outcome evaluations will assess how the cultural components of interventions are implemented as well as implementer training and fidelity. A systematic review and/or meta-analysis is a future direction that will closely examine outcomes and study design to assess standards of evidence and intervention efficacy or effectiveness.

We also want to acknowledge that culturally-informed school-based interventions are most applicable to school settings where there are many AI/AN or indigenous students enrolled. In communities with small numbers of AI/AN or indigenous youth, culturally-specific universal Tier 1 prevention programming may be best delivered through community organizations instead of in schools or classrooms with few indigenous students. Schools can still support these students by selecting culturally relevant Tier 2 and Tier 3 interventions and considering the cultural responsiveness of their SEL and prevention programming, even if they are not using culturally-grounded or -adapted programs.

Conclusion

There is a growing consensus that culturally responsive practices in schools are important for the academic and social-emotional development of students from culturally and linguistically diverse backgrounds. However, little research has examined the cultural relevance of school-

based prevention and SEL programs for AI/AN and indigenous students. Our findings show that there are culturally grounded and culturally adapted interventions addressing several concerns being used with AI/AN and indigenous students in the U.S. and Canada. Further, there have been improvements in the field since Jackson and Hodge's (2010) review in that CBPR approaches include community members in the process and developing/adapting and implementing interventions has increased. It is evident that most researchers are partnering with those who are highly knowledgeable of this field, AI/AN and indigenous stakeholders, and working to incorporate important cultural values and beliefs into interventions.

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Table 1. Intervention Overviews

Intervention Name	Indigenous Population	Study Objective	Study Sample	Intervention Description	Dosage	PT*	Age or Grade Level
Healthy Relationships							
1. BeLieving In Native Girls (BLING) (Scott & Langhorne, 2012)	AI/AN adolescent girls	Outcome evaluation aimed at identifying risk and protective factors on a variety of topics, including academic engagement, neighborhood safety, and self-esteem	$n = 115$	Culturally adapted HIV and juvenile delinquency prevention curriculum that includes lessons delivered to girls at a boarding school.	24 90-minute sessions	2	12-20 years old
2. Community Based Abstinence Culture (C-BAC) Program (Hagen et al., 2012)	Native American	Outcome evaluation to compare the number of pregnancies and self-reported sexual behavior between Native American students who received the intervention and those who did not	$n = 157$, Comparison $n = 133$	Culturally grounded classroom lessons using the Discovery Dating (Schanen et al., 2017) curriculum and incorporating other culturally relevant content related to abstinence and refusal skills.	2 hours 2x/week during the school year; total of 72 hours	1	12-14 years old
3. Circle of Life (Asdigian et al., 2018; Kaufman et al., 2010; Kaufman et al., 2014; Mitchell et al., 2017)	Northern Plains	Study 1: Described the intervention and provided baseline results (Kaufman et al., 2010). Study 2: Assessed intervention effectiveness (Kaufman et al.,	Wave 1 $n = 67$, Wave 2 $n = 68$ (Kaufman et al., 2010); Intervention $j = 6$ school, $n = 134$; Control $j = 7$, $n = 321$	Culturally grounded HIV and STD-prevention program that includes classroom lessons focused on building skills through role playing activities.	30 hours	1	6th & 7th Grade

Intervention Name	Indigenous Population	Study Objective	Study Sample	Intervention Description	Dosage	PT*	Age or Grade Level
		2014). Study 3: assessed intervention effectiveness in improving HIV outcomes (Mitchell et al., 2018). Study 4: Assessed effects on marijuana use (Asdigian, 2018)	(Asdigian et al., 2018; Kaufman et al., 2014; Mitchell et al., 2017)				
4. Discovery Dating (Schanen et al., 2017)	Western United States tribal community	Outcome evaluation assessing the Discovery Dating curricu'um's impact on adolescent resilience, self-efficacy, and personal agency	Intervention n = 81; Control n = 83	Culturally grounded healthy relationships curriculum that focuses on concepts such as how to make good decisions and identify and develop positive relationships.	14 sessions	1	7th & 8th grades
5. Fourth R: Uniting Our Nations programs for Aboriginal Youth (Crooks et al., 2010; Crooks et al., 2015; Crooks et al., 2017)	First Nations (Canada)	The papers described the intervention (Crooks et al., 2010), provided outcome data on the program's impact on mental well-being and cultural identity (Crooks et al., 2017), and offered a formal evaluation of the program's impact on promoting healthy relationships	n = 105 surveys; n = 28 interviews (Crooks et al., 2017); n = 82 (Crooks et al., 2015)	Culturally grounded, culturally relevant, relationship-focused programs including mentoring, school transition conferences, a cultural leadership camp, a cultural leadership course, and a student advisory board.	Varies	1	Elementary and secondary

Intervention Name	Indigenous Population	Study Objective	Study Sample	Intervention Description	Dosage	PT[*]	Age or Grade Level
		and cultural correctedness (Crooks et al., 2015)					
6. The Healthy and Empowered Youth Project (Rushing et al., 2017)	AI/AN in the Northwest United States	Descriptive study aimed at evaluating a school- and community-based positive youth development program for AI/AN high school students	N =117 intervention; n = 129 focus group participants; n = 2 teacher interviews; n = 7 key informant interviews	Culturally grounded classroom-based lessons focused on promoting healthy relationships as well as STI and substance use prevention.	27 90-minute sessions	1	Middle and High School students
7. Making Pono Choices (Manaseri et al., 2014)	Native Hawaiian	Assess the extent to which the intervention improved students' self-reported perceptions of their knowledge, attitude, skills, intentions and behaviors about various sexual health topics	Not specified	Culturally grounded classroom-based lessons using Hawaiian cultural values and activities and locally-produced videos to promote positive sexual and reproductive health behaviors.	9 sessions	1	Middle school
8. Native It's Your Game (Shegog et al., 2017)	Multiple indigenous populations in the United States	Descriptive study reporting on the intervention's cultural adaptation process	Pre-adaptation n = 80 youth; n = 38 adult stakeholders; post-adaptation n = 45 youth; n = 27 adult stakeholders	Culturally adapted web-based sexual-health curriculum focused on HIV and STI prevention.	13 35-minute sessions	1	9-16 years old

Intervention Name	Indigenous Population	Study Objective	Study Sample	Intervention Description	Dosage	PT[*]	Age or Grade Level
9. Pilot sexual and reproductive health intervention (Rink et al., 2020)	Northern Plains (United States)	Outcome evaluation using surveys and focus groups to assess impact of the intervention of participants' ratio of condom use to sexual intercourse over past 30 days	$n = 17$ youth; $n = 12$ parents	Culturally adapted classroom-based lessons incorporating the Native Voices and Native Stand curricula with a mentoring component.	2 lessons/week for 9 weeks	1	15-18 years old
Mental Health/SEL							
10. Skills Development Class (Listug-Lunde et al., 2013)	Northern Plains (United States)	Outcome evaluation to assess effectiveness of the intervention in reducing symptoms of depression and anxiety	$n = 8$ intervention, $n = 8$ treatment as usual	Culturally adapted classroom-based lessons based on Cognitive Behavioral Therapy skills that was delivered to a small group.	13 35- to 40-minute sessions, 2x/week for 7 weeks and and 2 booster sessions within 1 month of completing the program	3	Middle school
11. Youth Leaders Program (Wexler et al., 2017)	Alaska Natives	Descriptive study aimed at documenting the program's impact on youth leaders and their fellow students.	$n = 764$	Culturally adapted primary prevention program using natural helpers to reduce rates of youth suicide and associated risk factors.	Youth Leaders meet weekly and facilitate schoolwide projects as determined by each group of leaders.	1	Elementary, Middle & High School
12. Cognitive Behavioral Intervention for Trauma	Reservation communities of the	Outcome evaluation assessing the effects of CBITS on stude'ts' violence	$n = 43$	Culturally adapted manualized group treatment based on the	10 sessions	2	5th grade and middle school

Intervention Name	Indigenous Population	Study Objective	Study Sample	Intervention Description	Dosage	PT[*]	Age or Grade Level
in Schools (CBITS) (Morsette et al., 2012)	Northwest United States	exposure, trauma and depression symptoms, and permission and attrition rates		principles of Cognitive Behavioral Therapy.			
13. The PAX Good Behavior Game (Fortier et al., 2018)	First Nations (Canada)	Descriptive paper outlining the planned adaptation process	n/a	Culturally adapted mental health promotion intervention delivered by teachers in the classroom.	Varies	1	Elementary School
Physical Health							
14. Action Schools! BC' (AS! BC) (Naylor et al., 2010)	First Nations (Canada)	To explore the feasibility and implementation of AS! BC in 3 remote Aboriginal communities in northern British Columbia	$j = 3$, $n = 19$ teachers	Culturally adapted training and materials for teacher-created individualized action plans to promote healthy eating and physical activity.	At least 15 minutes of physical activity per school day	1	K-10th grades
15. Neqa Elicarvigmun or the Fish-to-School Program (Bersamin et al., 2019)	Alaska Native 'up'ik	To evaluate the preliminary efficacy of the intervention on diet quality, fish intake, and attitudes and beliefs around traditional foods.	$n = 76$	Culturally grounded activities in the cafeteria, classroom, and community promoting culturally relevant, quality diet	1 year long	1	Middle and high school
Positive Behavioral Interventions and Supports							
16. Culturally sensitive positive behavioral	Tłı̨chǫ Nation and the Dene Nation (Canada)	Descriptive manuscript outlining implementation of culturally sensitive	n/a	Culturally adapted intervention aimed at building a safe, positive,	1 school year	1	High School

Intervention Name	Indigenous Population	Study Objective	Study Sample	Intervention Description	Dosage	PT[*]	Age or Grade Level
interventions and support (PBIS) (McIntosh et al., 2014)		positive behavioral interventions and support (PBIS) in a First Nation high school in the Northwest Territories of Canada		and caring school environment			
Substance Use							
17. Be Under Your Own Influence (BUYOI; Stanley et al., 2018)	Northern Plains tribes and a Southwest Reservation in the United States	To inform intervention development, middle school students (target population) and high school students (role models) were asked about their community and substance use in the community.	Focus group n = 15; Photovoice n = 10	Culturally adapted media-based substance use prevention campaigns.	Not specified	1	Middle School
18. Cherokee Talking Circle (Lowe et al., 2012)	Keetoowah Cherokee in the United States (Oklahoma)	Outcome evaluation comparing results of a culture-based substance abuse reduction intervention with a standard substance abuse education intervention	n = 92; Comparison n = 87	Culturally grounded substance abuse reduction group session in "talking circle" format.	10 45-min sessions over a 10-week period	3	13-18 years old

Intervention Name	Indigenous Population	Study Objective	Study Sample	Intervention Description	Dosage	PT[*]	Age or Grade Level
19. CONNECT (Garrett et al., 2019)	Cherokee Nation of the United States.	To describe the development and implementation of CONNECT	Intervention n = 819; Control n = 587	Culturally adapted 1) Screening and Brief Motivational Interviewing (MI) Intervention implemented by CONNECT coach, and 2) media campaign to reinforce positive social interactions (post cards mailed and posters placed in high traffic areas around school; postcards mailed and posters at school focused on alcohol use risk and protective factors).	3 year program; students participate in Screening and Brief Motivational Interviewing Intervention and the follow-up 1 month later if identified at-risk for substance abuse	1	9th & 10th grades
20. Culturally Sensitive Smoking Prevention Program (McKennitt & Currie, 2012)	Western Canada	To determine if a culturally sensitive smoking prevention program would have short-term impacts on smoking intentions among Aboriginal children	n = 11; Comparison n = 7	Culturally adapted one time program that included a cultural ceremony and culturally-specific content on tobacco use and refusal skills.	1 60-minute long session	2	Mean age: 9.6 years old
21. HAWK2 (Honoring Ancient Wisdom and Knowledge2 (Raghupathy & Forth, 2012)	Multiple sites in Northern California	Descriptive manuscript explaining the process by which an existing evidence-based culturally relevant drug prevention intervention was	n = 45	Culturally grounded computer-based drug prevention intervention	7 lessons	1	4th & 5th grades

Intervention Name	Indigenous Population	Study Objective	Study Sample	Intervention Description	Dosage	PT*	Age or Grade Level
		digitized to extend its reach to Native American youth in reservations and rural locations					
	Rural Hawaii	To examine the effectiveness of a culturally grounded school-based drug prevention curriculum for rural Hawaiian youth (Okamoto et al., 2016) and to report on the drug use outcomes in an efficacy trial of a culturally grounded, school-based, substance abuse prevention curriculum in rural Hawaii (Okamoto et al., 2019)	$n = 83$ intervention; $n = 130$ control (Okamoto et al., 2016); $n = 486$ (Okamoto et al., 2019)	Culturally grounded drug resistance skills training program including classroom-based lessons.	9 45-60 minute lessons	1	11-12 years old
22. The Hoʻouna Pono curriculum (Okamoto et al., 2016; Okamoto et al., 2019)							
23. Lakota Circles of Hope (Usera, 2017)	Northern Plains Reservations	Outcome evaluation of a culturally based prevention program	$j = 3$; $n = 139$ students	Culturally adapted classroom-based intervention to reduce early risk behaviors using Lakota values and traditions	10 45-minute lessons	1	4th & 5th grades
24. Nimi Icinohabi (an adaptation of	Alexis Nakota Sioux Nation (Canada)	To describe the adaptation process and evaluate the	$n = 81$ elementary students and n	Culturally adapted classroom-based lessons to using cultural activities	1-hour lessons; between 8 and	1	3rd to 8th grades

Intervention Name	Indigenous Population	Study Objective	Study Sample	Intervention Description	Dosage	PT*	Age or Grade Level
the Life Skills Training Program (Baydala et al., 2014)		impact of the intervention	= 87 middle school students	and culturally appropriate materials to promote substance use prevention.	14 lessons or booster sessions depending on grade		
25. Living in 2 Worlds (Kulis et al., 2013; Kulis et al., 2017)	Urban AI youth in the United States	Outcome evaluation	$n = 57$ (Kulis et al., 20 13); Intervention $n = 85$; control $n = 22$ (Kulis et al., 20 17);	Culturally adapted academic and cultural enrichment program to promote culturally-specific substance use refusal skills.	12 45-minute lessons	1	7th & 8th grades
26. Native American Talking Circle Intervention (Patchell et al., 2015)	Great Plains (United States)	Outcome evaluation	$n = 44$	Culturally grounded classroom-based group sessions using the "talking circle" format and other cultural teachings to address substance use	30-45 minute sessions for 8.5 weeks	2	10th grade
27. SACRED Connections (Morris et al., 2020)	Midwest (United States)	Outcome evaluation	$n = 405$ youth; $n = 15$ health educators; $n = 14$ tribal community elders	Culturally adapted brief evidence-based screening and motivational interviewing intervention for substance use	Varies	1 & 3	9th to 12th grades

Note: PT* stands for Prevention Tier

Table 2. Frequencies of Interventions by Grade Level of Program Focus

	Substance Use	Healthy Relationships	Healthy Eating	Mental Health/SEL	PBIS	**Total**
Elementary	4			1		5
Elementary & Middle	1			1		2
Middle	2	4		1		7
Middle & High	1	3	1			5
High	3	1			1	5
K-12		1	1	1		3
Total	11	9	2	4	1	27

Table 3. Cultural Components of Interventions

	Intervention Design and Adaptations		Embedded Cultural Adaptations and Components	Implementer Details	Underlying Theory or Framework	Other Adaptation Details
	Culturally Grounded	Culturally Adapted				
	Surface Adaptations	Deep Adaptations				
Healthy Relationships						
1. BeLieving In Native Girls (BLING) (Scott & Langhorne, 2012)		X	Teachings based on the Medicine Wheel; lesson delivery included talking circles and other culturally relevant instructional methods.	AI/AN members of the local community	Transtheoretical Stages of Change and Social Learning Theory	Some lessons adapted from *Be Proud! Be Responsible!"*(Jemmot & Jemmot, 1992) and *Circle of Positive Choices* (National Indian Women's Health Resource Center, 2006).
2. Community Based Abstinence Culture (C-BAC) Program (Hagen et al., 2012)	X		Included values related to abstinence, relationships and marriage; incorporated culturally appropriate teaching methods.	Native Community Members	Self-Efficacy & Personal Control; Bronfenbrenner's Ecological Model	Lessons based on the culturally grounded *Discovery Dating* curriculum (Skenadore, 2002); guest speakers delivered some of the content on cultural values related to relationships.
3. Circle of Life (Asdigian et al., 2018; Kaufman et al., 2010; Kaufman et al., 2014;	X		AI/AN beliefs about adolescence; Medicine Wheel; Responsibility to oneself and one's community;	Trained facilitators from the local community	Social Cognitive Theory, Theory of Planned Behavior, Medicine Wheel	Curriculum developed by Native educators and reviewed by youth, parents, and other relevant parties.

	Intervention Design and Adaptations			Embedded Cultural Adaptations and Components	Implementer Details	Underlying Theory or Framework	Other Adaptation Details
	Culturally Grounded	Culturally Adapted					
		Surface Adaptations	Deep Adaptations				
Mitchell et al., 2017)				traditional beliefs about adolescence.			
4. Discovery Dating (Schanen et al., 2017)	X			The program is "rooted in Native values" (Schanen et al., 2017, p. 252)	Native Americans: public health nurse from the community and a health educator from a different community	Based on constructs of resilience, self-efficacy, and personal agency.	Curriculum developed by a Native American mid-wife. Designed to be transferrable to other cultural groups as well.
5. Fourth R: Uniting Our Nations programs for Aboriginal Youth (Crooks et al., 2010; Crooks et al., 2015; Crooks et al., 2017)	X			Medicine Wheel; Cultural connectedness; Cultural leadership	Fourth R project team	Medicine Wheel	Developed by researchers, educators and other community members. Includes: Elementary Mentoring Program, Grade 8 Transition Conferences, Peer Mentoring, Cultural Leadership Course, Cultural Leadership Camp, & Student Advisory Committee.
6. The Healthy and Empowered	X			The curriculum was based on the cultural teachings	2 Tribal School Teachers	Not specified	Adaptations (e.g., multimedia training, guest speakers, and

	Intervention Design and Adaptations			Embedded Cultural Adaptations and Components	Implementer Details	Underlying Theory or Framework	Other Adaptation Details
	Culturally Grounded	Culturally Adapted					
		Surface Adaptations	Deep Adaptations				
Youth Project (Rushing et al., 2017)				of the Native STAND program with additional activities to increase engagement.			other activities) were designed to engage students in cultural activities.
7. Making Pono Choices (Manaseri et al., 2014)	X			Lessons include the introduction of a Hawaiian cultural value, a cultural story and culturally based take-home activities.	Members of the research team with health teacher observing.	Social Learning Theory, Self-Regulation Theory, and the Developmental Assets Model	Lessons were designed by a collaborative of researchers, Planned Parenthood staff, a Native non-profit and other relevant parties.
8. Native It's Your Game (Shegog et al., 2017)		X	X	The name, logo, and program materials were changed to include relevant images. Videos included voices of AI/AN elders and health educators.	Not applicable (internet-based)	Social Cognitive Theory and Social Influence Models	Adapted from *IYG-Tech* using a CBPR approach which included relevant parties from different healthcare organizations.

	Intervention Design and Adaptations			Embedded Cultural Adaptations and Components	Implementer Details	Underlying Theory or Framework	Other Adaptation Details
	Culturally Grounded		Culturally Adapted				
		Surface Adaptations	Deep Adaptations				
9. Pilot sexual and reproductive health intervention (Rink et al., 2020)			X	Included cultural mentoring by elders providing knowledge based on traditional values and beliefs about family, relationships, and gender roles.	Not specified, but presumably a health teacher given that lessons were implemented during health class.	Ecological Systems Theory	Developed by a team of researchers and community members. Adaptations of *Native STAND* and *Native Voices* were used with the added cultural mentoring component.
Mental Health							
10. Skills Development Class (Listug-Lunde et al., 2013)	X		X	Changed activities, examples, and role plays to increase cultural relevance. Different coping skills were discussed in relation to their cultural impact.	One mental health professional employed by the Indian Health Service and a graduate student with a Master's in Clinical Psychology.	Cognitive Behavioral Theories	Adapted by a team of researchers and education and mental health experts.
11. Youth Leaders Program (Wexler et al., 2017)	X		X	Incorporated Inupiaq cultural values such as respect for others, cooperation, hard work,	Each school had 4-18 youth leaders and Youth Leader advisors who were teachers	Theories of Social Support and Social Networks	Adapted from the Comprehensive Health Education Foundation's Natural Helper curriculum (Eng & Parker, 2002)

	Intervention Design and Adaptations			Embedded Cultural Adaptations and Components	Implementer Details	Underlying Theory or Framework	Other Adaptation Details
	Culturally Grounded	Culturally Adapted					
		Surface Adaptations	Deep Adaptations				
12. Cognitive Behavioral Intervention for Trauma in Schools (CBITS) (Morsette et al., 2012)		X	X	responsibility to tribe, and sharing. Native elders and healers attended the first and final sessions to provide traditional cultural activities and teachings	or adults in the village School counselors	Cognitive Behavioral Theories	Researchers encouraged school staff to invite elders to participate.
13. The PAX Good Behavior Game (Fortier et al., 2018)			X	The adaptation process is guided by the "two-eyed seeing" method which incorporates indigenous and Western ways of knowing.	Classroom teachers	Not specified	Community members, researchers, and other community education and health organizations are involved in adapting the intervention.
Physical Health							
14. Action Schools! BC' (AS! BC) (Naylor et al., 2010)		X	X	Teachers made specific adaptations to increase cultural relevance (e.g., a drumming activity).	Teachers received training, implementation materials and ongoing support.	Whole-School Health Model	University-based researchers adapted *AS! BC* for First Nations students.

	Intervention Design and Adaptations			Embedded Cultural Adaptations and Components	Implementer Details	Underlying Theory or Framework	Other Adaptation Details
	Culturally Grounded	Culturally Adapted					
		Surface Adaptations	Deep Adaptations				
15. Neqa Elicarvigmun or the Fish-to-School Program (Bersamin et al., 2019)	X			Activities integrated Yup'ik worldviews with evidence-based strategies. Focused on increasing salmon intake as it is a traditional food that is available commercially.	Not specified	Combined Social Cognitive Theory with traditional indigenous knowledge	Researchers and a community work group developed the intervention.
Positive Behavioral Interventions and Supports							
16. Culturally sensitive positive behavioral interventions and support (PBIS) (McIntosh et al., 2014)		X	X	First Nations' cultural values and locally developed "Golden Rules" were incorporated into the school-wide practices.	All school-staff	PBIS	This manuscript described how PBIS can be implemented in a culturally responsive way. Community members are included in program design and implementation.
Substance Use							
17. Be Under Your Own Influence (BUYOI; Stanley et al., 2018)		X	X	Words and images were changed to increase cultural relevance	High school students served as role models to deliver media campaigns to	Re-framing Theory	Input from community members and youth informed the adaptation.

	Intervention Design and Adaptations			Embedded Cultural Adaptations and Components	Implementer Details	Underlying Theory or Framework	Other Adaptation Details
	Culturally Grounded	Culturally Adapted					
		Surface Adaptations	Deep Adaptations				
18. Cherokee Talking Circle (Lowe et al., 2012)	X			Manual included content in English and Cherokee.	middle school youth Facilitated by a counselor and cultural expert	Cherokee Self-Reliance Model	Used a CBPR with community members and elders to develop the intervention and select assessment measures.
19. CONNECT (Garrett et al., 2019)		X		Motivational interview used due to perceived fit with AI/AN culture. Universal screening to minimize stereotyping. Coaches trained to facilitate cultural conversations.	3 full-time trained BA level school service providers	Focus on increasing positive cognitions, promoting healthy decision-making and responsible social interactions with to reduce alcohol use	The screening and brief intervention component was based on NIAAA's *Alcohol Screening and Brief Intervention for Youth: A Practitioner's Guide*.
20. Culturally Sensitive Smoking Prevention Program (McKennitt & Currie, 2012)			X	Traditional smudge ceremony and instruction on differences between traditional and recreational use of tobacco.	Not specified	Not specified	Researchers and community members collaborated to adapt the intervention from another standard smoking prevention program for youth.

	Intervention Design and Adaptations			Embedded Cultural Adaptations and Components	Implementer Details	Underlying Theory or Framework	Other Adaptation Details
	Culturally Grounded	Culturally Adapted					
		Surface Adaptations	Deep Adaptations				
21. HAWK2 (Honoring Ancient Wisdom and Knowledge2 (Raghupathy & Go Forth, 2012)	X			Culturally relevant information on substance use influences, coping skills, and positive alternatives to substance youth.	Not applicable (internet based)	Bicultural Competence	The program was built on the *State-wide Indian Drug Prevention Program* and community members were involved in development.
22. The Hoʻouna Pono curriculum (Okamoto et al., 2016; Okamoto et al., 2019)	X			Included culturally-specific drug refusal strategies and a "Culture Wall" activity in each lesson that focused on Native Hawaiian cultural concepts.	Classroom teachers received training	Social Influence Model	A series of studies were used to create youth-generated refusal strategies that were incorporated into the intervention.
23. Lakota Circles of Hope (Usera, 2017)			X	Based on the four Lakota values: generosity, fortitude (courage), wisdom, and respect. The curriculum includes Lakota	Originally implemented by trained members of the Lakota tribe with cultural knowledge. Non-Native individuals	Social Cognitive Model	Developed based on number of programs (e.g., *D.A.R.E, Anishinabek Family Values, CLIMATE Schools*, etc.)

	Intervention Design and Adaptations			Embedded Cultural Adaptations and Components	Implementer Details	Underlying Theory or Framework	Other Adaptation Details
	Culturally Grounded	Culturally Adapted					
		Surface Adaptations	Deep Adaptations				
				stories, and activities.	have also been trained to implement the intervention with mentorship by a Lakota person.		
24. Nimi Icinohabi (an adaptation of the Life Skills Training Program) (Baydala et al., 2014)		X	X	Included Isga words, cultural practices, and culturally appropriate images and artwork provided by members of the community	A trained member of the community	Social Learning Theory and Problem Behavior Theory	Used CBPR to make the original program more applicable to students in the Alexis Nakota Sioux Nation.
25. Living in 2 Worlds (Kulis et al., 2013; Kulis et al., 2017)		X	X	Included culturally-relevant and context specific refusal skills, updated language, content, images, and scenarios.	American Indian classroom teachers	Social Learning Theory, drug resistance strategies	Used CBPR to engage youth, parents, and other experts in adapting the *keeping it REAL* curriculum.
26. Native American Talking	X			Substitution of tribal references and traditions	Native American Indian male	Native Self-Reliance Framework	Adapted from the *Cherokee Talking Circle Intervention*

	Intervention Design and Adaptations			Embedded Cultural Adaptations and Components	Implementer Details	Underlying Theory or Framework	Other Adaptation Details
	Culturally Grounded	Culturally Adapted					
		Surface Adaptations	Deep Adaptations				
Circle Intervention (Patchell et al., 2015)				from Cherokee to those of the Plains Indians. Changed the classroom set-up so that students were sat in circles.	who was an enrolled member of the tribe		(Lowe, 2006); Lengthened lessons and delivered them over a shorter period of time
27. SACRED Connections (Self-Awareness Creates Responsible Empowered Decisions) (Morris et al., 2020)			X	The motivational interviewing intervention was adapted and community members gave feedback on materials and intervention delivery but minimal details about the adaptation were included.	Health educators who were members of the tribal and school communities and had some mental health training	Native Reliance Theoretical Framework	CBPR was used to engage researchers and community members in developing the intervention.

Figure 1. PRISMA 2020 Flow Diagram for Screening

Identification of studies via databases

Identification

Records identified from Pubmed, PsycInfo, ERIC, and Web of Science databases (n = 2,810)

Records removed *before screening*:
   Duplicate records removed (n = 679)

Screening

Records screened (n = 2,131)

Records excluded (n = 2,082)

Records sought for retrieval (n = 49)

Records not retrieved (n = 0)

Reports assessed for eligibility (n = 49)

Reports excluded:
   Wrong population (n = 8)
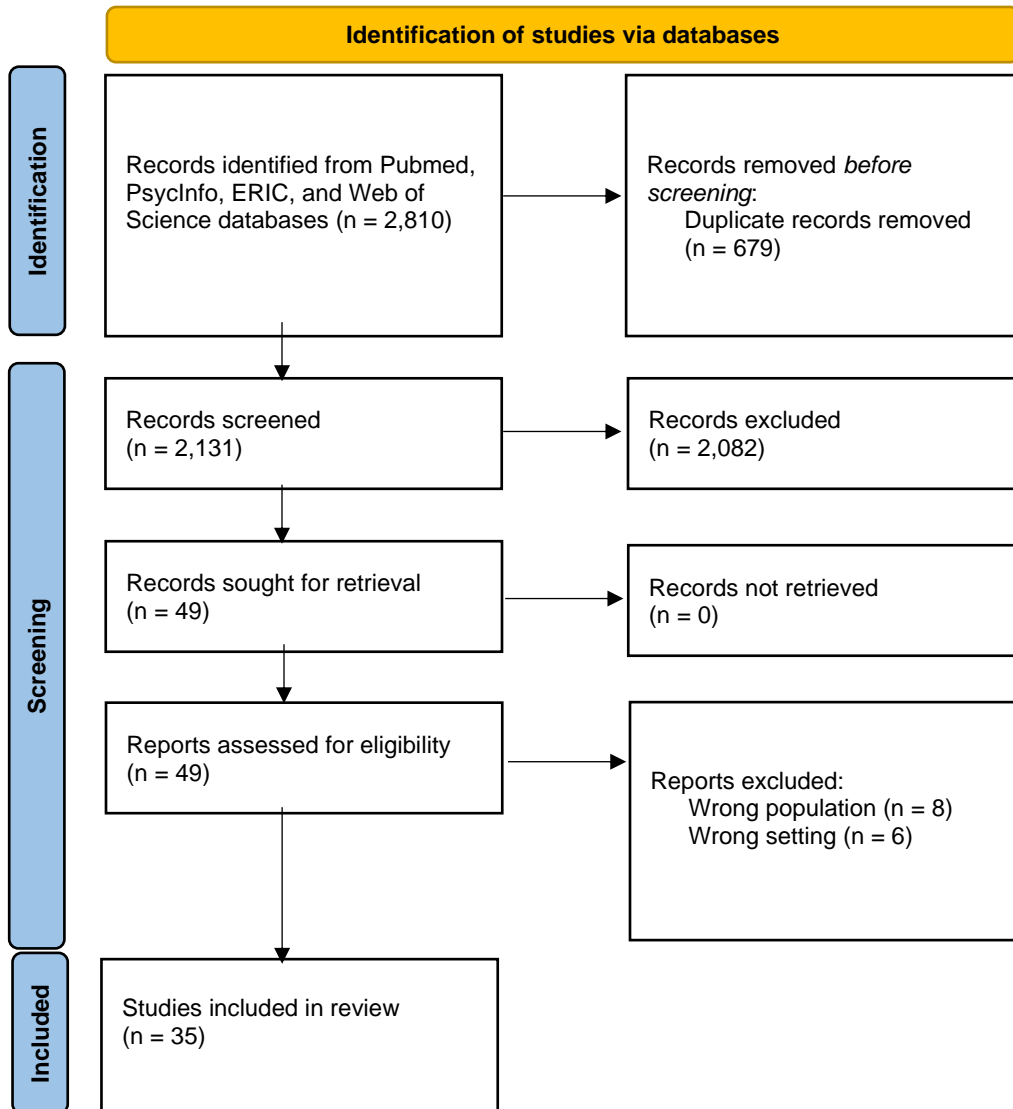   Wrong setting (n = 6)

Included

Studies included in review (n = 35)

Figure template from (Page et al., 2021)