Suicide interventions for American Indian and Alaska Native populations: A systematic review of outcomes

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ABSTRACT

Objective: A 2018 Center for Disease Control and Prevention report estimated that 22.1 per 100,000 American Indian/Alaska Native (AI/AN) individuals died by suicide, much higher than the overall U.S. rate of 14.2. To understand how to remedy this problem, we performed a systematic review in response to the following question: *"What interventions work to prevent AI/AN suicide?"*

Method: We adopted a broad inclusionary stance while searching, screening, and extracting data. Our search strategy yielded 1605 unique citations, and after screening 28 items met the set criteria.

Results: While participants from each study reported an improvement on at least one targeted measure, particularly along community-driven outcome measures, several methodological modifications arose to meet the ideals of both practice- and evidence-based research. For example, only 11 studies featured assessments that measured changes in direct suicide outcomes. Among these 11 studies, only four featured either a randomized or a non-randomized controlled trial. Furthermore, only one intervention produced consistent outcomes across several studies. Nevertheless, the results from our reviewed corpus were methodologically innovative and suggest an overall benefit to AI/AN communities.

Conclusions: The case for these interventions could be augmented through a variety of methodological advancements. Thus, we propose that future studies dismantle their interventions into underlying processes, evaluate these processes using direct, standardized measures of suicidal behavior, and incentivize AI/AN recruitment into research trials outside of Indian Country.

1. Introduction

A 2018 Centers for Disease Control and Prevention (CDC) report estimated that 22.1 per 100,000 American Indian/Alaska Native (AI/AN) individuals die by suicide, much higher than the overall U.S. rate of 14.2. Compared to other causes of death, suicide is the eighth leading cause among AI/AN individuals of all ages, and the second leading cause among AI/AN ages 10–24 years of age. Compared to White males, the rate of suicide does not increase into middle and older age but rather decreases (Centers for Disease Control, 1999–2018). These comparative differences in suicide circumstances beg the question of how effectively this unprecedented health crisis is being addressed. Before addressing this question, it is imperative to first consider the sociocultural roots of suicide within Indian Country.

During a long period of colonial dispossession, it was U.S. policy and practice to forcibly remove AI/AN individuals from their ancestral lands (Mohatt et al., 2014a; Sotero, 2006; Whitbeck et al., 2004). Once it became clear that AI/ANs had improbably survived dispossession and relocation, new policies were adopted to assimilate AI/AN individuals into the lower socioeconomic strata of U.S. society (Czyzewski, 2011;

Sotero, 2006). As a part of this assimilation process, the U.S. prohibited cultural expression, and imposed Western cultural values, priorities, assumptions, and expectations at odds with AI/AN identity, history, and tradition (Wexler, 2009).

This resulted in a negative constellation of psychological and cultural sequalae that has come to be known as "historical trauma" (Brave Heart & DeBruyn, 1998; Hartmann et al., 2019). Furthermore, a complex relationship has emerged between this historical trauma and risk/protective factors for suicide among AI/AN individuals (Wexler & Gone, 2012). For example, suicide risk factors for AI/ANs include alcohol and drug use, feelings of alienation, pressure to acculturate, discrimination, community violence, and exposure to the suicide of others. At the same time, protective factors include community control, cultural identification, spirituality, and family connectedness (Suicide Prevention Resour, 2013).

Despite growing awareness of these risk/protective factors, a severely under-funded mental health care system (Gone & Trimble, 2012) has yet to recommend and deliver interventions that specifically target AI/AN specific risk/protective factors (White & Kral, 2014). As a result, a disconnect between professional mental healthcare and AI/AN values has created disincentives for accessing community and mental health care services (Barlow & Walkup, 1998; Cunningham, 1993; Nelson et al., 1992; Novins et al., 1999), thus further perpetuating cultural conflict, health disparities, unemployment, lack of education, poverty, and geographical isolation (Doll et al., 2009).

In light of alarming rates of suicide, the scarcity of mental healthcare services, and the disconnect between mental healthcare needs and services available, multiple programs have emerged to resolve these issues. These interventions have been inspired by practice-based methodologies (e.g., flexibly constructed from the ground up to match the needs of specific AI/AN populations) and evidence-based interventions (e.g., selectively adopted from existing approaches that were developed and evaluated elsewhere, perhaps with cultural adaptations for new settings). Unfortunately, the methodological complexities to these practice- and evidence-based evaluations have often precluded formal meta-analytic summary and comparison.

Thus, the field of AI/AN suicide interventions requires at least some form of up-to-date analysis. Excluding scoping and narrative reviews, thus far, two studies have systematically reviewed suicide prevention programs for Indigenous peoples across Canada, Australia, New Zealand, and the US (the so-called CANZUS nations), including one among AI/AN youth (Harlow et al., 2014) and another across all age groups (Clifford et al., 2013). As of 2014, both described a heterogeneous corpus with study designs (e.g., non-randomized controlled trials) that did not lend themselves to estimations of causal efficacy.based evaluations have often precluded formal meta-analytic summary and comparison.

Fortunately, given a recent surge in new, arguably more methodologically robust research over the past few years, the time is ripe for an updated systematic review that casts a broader net to inform development and implementation of future interventions and studies. To meet this demand, our systematic review sought to explore how interventions have addressed suicide among AI/AN populations using broad inclusion criteria that do not omit studies based on narrow demographics (e.g., focusing on AI/AN youth only) or methodological criteria such as time period (i.e., studies prior to 1981; Harvey et al., 1976), study design (i.e., case reports; Burt 1993; Gray & Muehlenkamp, 2010), and intervention type (i.e., discussion groups, service integration; Fleming 1994; Nebelkopf & Wright 2011).

2. Method

2.1. Transparency and openness

A multi-disciplinary, multi-institutional group of individuals comprised the research team. The team structured their preparation, execution, and report by following guidance outlined by Siddaway et al. (2019), the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) (Page et al., 2021), and the Cochrane Handbook for Systematic Reviews of Interventions (Cochrane, 2020). First, the team devised *a priori* interests to systematize later choices in definitions, concepts, scope, and overall research design (e.g., the level of inclusionary flexibility). Second, the team composed their overarching research question, "*What interventions work to prevent AI/AN suicide?*" All data and analysis are available upon reasonable request. This systematic review was not pre-registered. Further details regarding search strategy, article screening, and data extraction can be found below.

2.2. Search strategy

In June 2020, a social sciences librarian (AR) designed and deployed a primary search strategy in APA PsycINFO (Ovid). The complete primary search string is in Appendix A. To capture the cross-disciplinary nature of the proposed research question, she then translated the search string for eleven other bibliographic databases: Ovid Medline, EMBASE, CINAHL, ERIC via Ebsco, Bibliography of Native North Americans, Sociological Abstracts, Academic Search Premier, ProQuest Dissertations and Theses, PsyArXiv, SocArXiv, and SSRN. Furthermore, papers that outlined protocols for ongoing or future studies were followed up upon. This yielded one additional study published after the initial search (Tingey et al., 2020). Ultimately, the search strategy returned 1605 unique citations. These 1605 items were then exported into Rayyan, a web-based tool for managing systematic reviews (Ouzzani et al., 2016). Rayyan afforded the systematic review team four immediate benefits. Rayyan could enable the team to (1) facilitate a clear record system, (2) generate a uniform but independent work environment for each collaborator, (3) mask and unmask their decisions within this uniform work environment, and (4) help to ensure methodological rigor.

2.3. Article screening

Screening Criteria. Several inclusion/exclusion criteria guided the screening process through Rayyan. First, studies were included if they featured a sample that was at least 90% AI/AN or reported separate analysis for AI/AN individuals (including between group comparisons) Second, studies were included if they implemented an intervention (i.e., took deliberate action designed to bring about behavioral change) that was *a priori* described as targeting suicide (mention of which would therefore be expected to appear in the early sections of the article). In other words, included interventions need not have resembled familiar suicide prevention efforts (e.g., reducing access to firearms) nor even have measured variables directly related to suicide. Rather, included studies must have introduced the intervention as intended to prevent suicide and measured variables at least *indirectly* related to suicide (e.g., hopelessness). This inclusion criterion allowed us to capture the broadest range of designed suicide interventions and reflects the epistemological design of AI/AN interventions that focus not just on immediate causal factors (e.g., substance use), but upstream prevention (e.g., purpose, belonging). Third, reported findings must result from or in association with the *implementation* of the intervention (i.e., not literature reviews, systematic reviews, commentaries, process descriptions about previous or forthcoming studies, etc.). We did not exclude studies based on methodological rigor or specific sub-populations, interventions, controls, or outcome measures. Fourth, the article must have appeared in published, peer-reviewed journals.

Despite growing acceptance for including grey literature in systematic reviews (Golder, Loke, & Bland, 2010; Hartling et al., 2017; Trespidi, Barbui, & Cipriani, 2011), we focused on peer-reviewed sources to assure baseline quality in study reporting. Beyond this basic criterion, however, published studies were included regardless of underlying methodological rigor, as quantitative comparison was quickly ruled out owing to evident diversity across studies relative to stock indicators such as patient populations, interventions, controls, and outcomes (Fineout-Overholt &

Johnston, 2005; Schardt, Adams, Owens, Keitz, & Fontelo, 2007).

Screening Process. Overall, screening occurred in two phases: (1) title/abstract screening and (2) full-text review for eligibility. Between July and August 2020, authors AW and LFR independently completed title/abstract screening of the 1605 unique items. Title/abstract screening yielded 684 items (k = 0.83). During September 2020, authors , AnonymousTVP, AKF, and LFRAW independently completed full-text reviews for eligibility among these 684 items. Full-text screening yielded 28 items (k = 0.80). All disagreements were ultimately resolved by screener consensus. For example, one borderline case performed epidemiological analyses leading up to an intervention. This case was excluded on the grounds that its analyses were not used to evaluate the intervention.

Once all disagreements were resolved, the final corpus was reviewed to ensure that each included publication reflected the original inclusion and exclusion criteria without over- or under-inclusion. This final corpus was then exported into an open-source citation manager, Zotero. Each step in the searching and screening process was documented using the PRISMA (see Fig. 1).

2.4. Data extraction

To extract data from our final corpus, an extraction template was developed using guidelines by both Siddaway et al. (2019) and the Cochrane Handbook for Systematic Reviews of Interventions (Cochrane, 2020), with each extraction item reflecting a component of the underlying research priorities. The studies were extremely heterogeneous and so we refrained from conventional meta-analysis given the wide diversity in theoretical orientations, constructs, designs, methods, and outcomes (Baumeister & Prinstein, 2013; Siddaway et al., 2019). Moreover, scales or checklists were not utilized to evaluate scientific rigor because few of the studies adopted controlled designs that were necessary for assuring robust causal inference. Thus, formal evaluations of rigor would only have revealed that the vast majority of studies had "very low" or "low" quality of evidence.

3. Results

To structure our review, we highlight key features of the corpus as they related to our research question, "*What interventions work to prevent AI/AN suicide?*" To accomplish this, first, we deliver a broad overview of the corpus. Second, to afford insight into intervention outcomes, we attend to this literature using study design as an organizational framework.

Overall, our systematic review yielded a final corpus of 28 studies comprising 23 unique interventions. To evaluate these 23 interventions, researchers adopted a variety of study designs and outcomes. Eleven studies measured changes in suicide behaviors *directly* (i.e., suicide ideation, behaviors, attempts, deaths; see Table 1 for a complete breakdown of these eleven studies). Three of these 11 studies analyzed their outcomes using either a randomized or a non-randomized controlled trial, seven adopted a single group design (studies in which researchers assessed outcomes over time among a single group of participants who all received the intervention or some variant of the intervention) and one was presented as a case report.

In contrast to measuring changes in direct suicide behaviors, 26 studies measured suicide outcomes *indirectly* using proxy variables (e.g., alcohol abuse), of which nine measured both direct and indirect measures, and 17 measured indirect suicide variables only (see Table 2 for a complete breakdown of these 17 studies). One of these 17 studies analyzed outcomes using a non-randomized controlled trial, 14 adopted single study designs, and two were presented as case reports. Taken
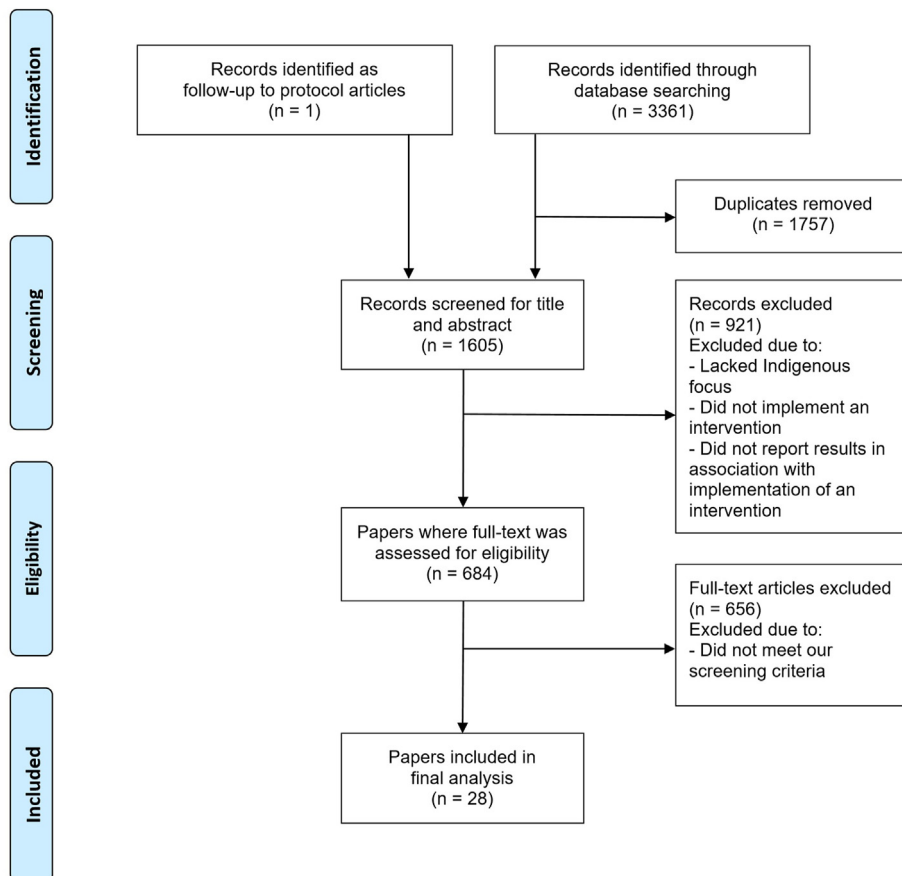

Fig. 1. PRISMA flow diagram.

Table 1
Studies that measured direct changes in suicide factors as organized by study design.

Author (year)	Intervention Characteristics	Outcome(s)[a]
True experiment		
Tingey (2020)	Youth Entrepreneur Program: Teach entrepreneurship, life skills, and self-efficacy through multi-level, hands-on lessons, activities, and discussions	NS ↓ in the YRBS; ↓ in THC (all times), fighting (24mo), school attendance (6mo)
Quasi-experiment		
LaFromboise and Howard-Pitney (1994)	Zuni Life Skills Development: Deliver interactive scenarios that describe problematic life situations typical for American Indian adolescents	↓ in the SPS and its sub-scales of hostility, suicidal ideation, and hopelessness
LaFromboise and Howard-Pitney (1995)	Zuni Life Skills Development: Deliver interactive scenarios that describe problematic life situations typical for American Indian adolescents	NS ↓ in the SPS; ↓ in the BHS, ↑ in suicide intervention skills and problem solving
Single group design		
Cwik et al. (2016a)	Celebrating Life: Provide support and referrals through a suicide surveillance system	NS ↓ in suicidal attempts and deaths relative to national rates
Cwik et al. (2016b)	New Hope: Visit youth following suicidal attempt and offer psychoeducation, skills, assistance with treatment barriers	NS ↓ in the SIQ; ↓ in the CNCES and CES-D
Harvey (1976)	Provide psychiatric consultation and social work services	NS ↓ in suicide attempts
Langdon et al. (2016)	Lumbee Rite of Passage: Address suicide ideation and risk factors through a Lumbee cultural enrichment program	NS ↓ in suicidal ideation among participants with >2/3 attendance
Le and Gobert (2015)	Restoring the Native American Spirit: Deliver a mindfulness-based intervention	NS ↓ in suicidal ideation
May, Serna, Hurt and DeBruyn (2005)	Adolescent Suicide Prevention Project: Identify risk factors and at-risk individuals/ families, deliver prevention activities and services, and enhance knowledge and awareness	NS ↓ in suicide deaths; ↓ in suicide gestures+attempts (11-24yo), NS in >24yo
Nebelkopf and Wright (2011)	Holistic System of Care: Connect students, campuses, and communities to culture and spirituality through a medicine wheel/circle-of-care approach	↑ in negative experiences (e.g., SA), employment, enrollment in school/training, arrests, knowledge, behavioral and emotional strengths
Case report		
Kohrt, Lincoln and Brambila (2017)	Deliver dialectical behavioral therapy that incorporates Navajo worldviews and healing practices	NS ↓ in suicide risk on the SPS

Note. BHS = Beck Hopelessness Scale; CES-D = Center for Epidemiological Studies-Depression Scale; CNCES = Children's Negative Cognitive Errors Scale; ↓ = decrease; ↑ = increase; mo = months; NS = non-statistically significant; SIQ = Suicide Inventory Questionnaire; SPS = Suicide Probability Scale; THC = cannabis abuse; yo = years old; YRBS = Youth Risk Behavior Survey.
[a] Statistically significant unless otherwise specified.

together, all studies reported improvement in at least one of their targeted outcomes (which was perhaps required for publication).

To further investigate these findings, we now review findings as classified by study design, while describing relevant methods and highlighting representative studies. Note that many authors reported non-statistically significant improvements in suicidal outcomes; although such results (by convention) are not considered findings, we include this information throughout our review (when reported by authors) so that it remains clear that these associations were in fact tested and reported.

3.1. Randomized controlled trial (one article)

Between May 2014 and June 2019, Tingey et al. (2020) conducted a RCT to evaluate the impact of a culture and entrepreneurial camp on youth behaviors. Participants randomized to intervention took part in ten lessons and six workshops about Apache culture and entrepreneurship whereas control participants took part in sports activities alone. The study randomized 394 middle and high schoolers (ages 13–16 years old) in a two-to-one ratio to intervention (n = 267) and control (n = 127) groups, respectively. As requested by community partners, they selected a two-to-one ratio to maximize benefit among all participants. The program assessed participants at baseline and over the course of a 24-month follow-up period (i.e., at the 6-, 12-, and 24-month mark) using the Youth Risk Behavior Survey (YRBS), an instrument validated for AI/AN reservation-based populations and widely used in public health research and practice to measure suicide attempts among other behaviors. Tingey and colleagues then evaluated the data using t-test statistics, chi-square statistics, and mixed effects logistic regression. They found that participants who received the intervention reported a non-statistically significant reduction in suicide attempts but a statistically significant improvement in marijuana abuse (at all time points), fighting (specifically at the 24-month time mark), and school attendance (specifically at the six-month time mark).

To date, the study by Tingey and colleagues represents the only study that has implemented a RCT of an AI/AN suicide intervention. Interestingly, five non-RCT studies explained why randomizing to intervention or control was considered unfeasible or ill-advised by community representatives, who expressed discomfort around the impractical and inappropriate nature of randomization. For example, Wexler et al. (2019) noted how "a RCT was not feasible mainly due to [their] community partners' preferences and the preliminary nature of the work" (p. 405). Furthermore, Allen et al. (2018) noted "that with-holding a program was inconsistent with Yup'ik cultural values of inclusion; from a community perspective, if an intervention is thought beneficial, why would you randomly withhold it from some?" (p. 183). Similarly, Bartgis and Albright (2016) reported on how participants expressed reluctance to volunteer for a study that randomly assigned them to an experimental or control group.

3.2. Quasi-experiments (three articles)

Given the community hesitation surrounding randomization to treatment, other researchers proposed quasi-experimental designs as an alternative to gathering evidence about causal efficacy. Specifically, two research teams evaluated their interventions using a quasi-experimental design (see Tables 1 and 2). Of the two, LaFromboise and Howard-Pitney (LaFromboise & Howard-Pitney, 1994, 1995) assessed the impact of their intervention by measuring changes in direct suicide factors.

LaFromboise and Howard-Pitney developed and evaluated the Zuni Life Skills Development (ZLSD) program, an intervention that engaged AI adolescents with a curriculum that included 28 lesson plans sectioned into six major units: information about suicide; suicide intervention skills; communication skills; coping with oppression, anger and stress management; and personal and community goal setting. To allow for student participation, the researchers invited students to practice their newfound skills by engaging them with written scenarios relevant to Zuni youth (e.g., dating, rejection, parental divorce, separation, unemployment, and problems with health and the law).

Table 2
Studies that only measured changes in indirect suicide factors as organized by study design.

Author (year)	Intervention Characteristics	Outcomes
Quasi-experiment		
Allen et al. (2018)	Qungasvik Toolbox: Promote community ownership and individual, family, cultural protective factors through SUI prevention activities	Small effect ↑ in "reasons for life" in a dose response relationship to attendance
Single group designs		
Allen, Mohatt, Fok, Henry, and People Awakening Team (2009)	Qungasvik Toolbox: Promote community ownership and individual, family, cultural protective factors through suicide prevention activities	↑ in youth reports of support and opportunities in their community in a dose response relationship to activity attendance
Barnett, Schmidt, Trainor and Wexler (2020)	Camp Pigaaq: Connects youth to culture/mentors/Elders through activity and skill building camp	Men scored higher than women in perceived emotional negativity, interpersonal-, and self-worth
Bartgis and Albright (2016)	Kognito Gatekeeper Training: Train gatekeepers on identifying signs and symptoms of suicide through emotionally responsive online avatars	↑ in gatekeeper preparedness, likelihood, and self-efficacy
Cwik et al. (2014)	Celebrating Life: Provide support and referrals through a suicide surveillance system	–
Cwik et al. (2016c)	ASIST: Teach suicide first-aid skills through lectures, discussions, group simulations, and role-plays	↑ in knowledge and skill-based self-efficacy
Cwik et al. (2019)	Elders' Resilience: Visit classrooms and help youth connect with their heritage, traditions, and culture through elder taught lessons	–
Doll and Brady (2013)	Sensory Tool: Sensory-based curriculum and activities that promote stress management for the purpose of suicide prevention	–
Fleming (1994)	MH Indian Studies Group: Discuss various MH issues through group discussions, culture/community activities, and formal presentations	–
	Qungasvik Toolbox: Promote community ownership and individual, family, cultural protective factors through SUI prevention activities	5 patterns identified across 12 protective factors ("Internal Orientation" to self-efficacy and awareness of interconnection; "External Orientation" to giving, affection, praise, and family; "Limits" on alcohol abuse; "Community/family" and giving, affection, and praise; "Low Protection" from lack of exposure to all protective factors") with variations based on community/age
Kerr et al. (2020)	Viewer Care Plan: Prepare adults for concerning social media; teach 3-step planning/response tool	↑ across several training efficacy measures (e.g., contacting youth, starting conversations, intervening, referring)
Mohatt et al. (2014a)	Qungasvik Toolbox: Promote community ownership and individual, family, cultural protective factors through SUI prevention activities	*YA* community: small effect ↑ in peer protective factors and "reasons for life" in a dose response relationship to attendance *ET* community: medium effect ↑ in individual and family factors, and "reflective processes" in a dose response relationship to attendance
Muehlenkamp, Marrone, Gray, and Brown (2009)	Spiritual Advisory Committee: Connect students to tribal ceremonies based on their preference	↑ in total knowledge scores
Wexler et al. (2017)	Youth Leaders Program: Teach a curriculum that addresses overall school climate	–
Wexler et al. (2019)	PC CARES: Facilitate learning circles that discuss the local/relevance/application of research	small effect ↑ in perceived knowledge, skills, and "community of practice" in a dose response relationship to attendance
Case report		
Burt (1993)	Integrate self-perception, social context, and feminine experience through cultural art therapy	–
Gray and Muehlenkamp (2010)	Connect students with culture & spirituality; reduce risk factors through support, gate keeper training, & suicide prevention team	–

*Statistically significant unless otherwise specified.
Note. AI = American Indian; *ET = Elluam Tungiinun;* ↑ = increase; *MS* = mental health; *SA* = suicide attempt; *YA = Yupiucimta Asvairtuumallerkaa.*

Between January to May 1990, LaFromboise and Howard-Pitney (LaFromboise & Howard-Pitney, 1994, 1995) recruited 106 participants for their 1994 study and 128 participants for their 1995 study. They evaluated the impact of the ZLSD program on several self-report measures (with some variation between studies): the Suicide Probability Scale (SPS), the Indian Adolescent Health Survey, the Beck Hopelessness Scale (BHS), the Symptom Check List-90-R, an adapted version of the Social Readjustment Rating Scale, and other custom scales designed to measure skill proficiencies as assessed by self-report or by judge/classmate report. Results were mixed across the two studies, particularly for overall suicide risk.

Per the 1994 study, LaFromboise and colleagues (LaFromboise & Howard-Pitney, 1994) did not collect pre-test measures from their control arm "due to teacher concerns regarding limited class time and the fears that discussion of suicide without instruction in the control classes would be harmful to students" (p. 113). Nevertheless, *t*-test analyses found that participants who received the intervention demonstrated a

statistically significant pre-post improvement on the SPS and its sub-scale measures of suicidal ideation (SI), hopelessness, and hostility. Furthermore, a 2 (intervention, control) x 2 (pre-test, post-test) analysis of covariance on a modified version of the SI subscale found that, after controlling for pre-test differences, the intervention group had a statistically significant improvement when compared to the control arm. In contrast to the 1994 study, *t*-test analyses from the 1995 study (LaFromboise & Howard-Pitney, 1995) found a *non*-statistically significant improvement on the SPS but a significant improvement on the BHS and measures related to suicide intervention skills and problem solving, particularly during mild rather than serious suicide role play scenarios.

Allen et al. (2018) evaluated the impact of a Yup'ik cultural engagement program that, between 2006 and 2008, promoted community ownership and individual, family, cultural protective factors through suicide prevention activities. Allen and colleagues developed this intervention in concert with the community. As a result of their collaboration, they elected to provide the intervention to all youth involved in the

research. To compensate for the lack of a control arm, Allen and colleagues instead developed a variation of a stepped-wedge design, the dynamic wait-listed design (DWLD), and compared outcomes between two communities by staggering their relative progress (i.e., dose level) throughout the intervention.

They enrolled 128 participants into the intervention and, instead of measuring for changes in direct suicide outcomes, they elected to measure variables that fit a previously tested multi-level theory of change model. These variables included (1) individual characteristics, (2) family characteristics, (3) community characteristics, (4) peer influences, (5) reflective processes, and (6) reasons for life (Allen et al., 2014). The researchers separated individuals across latent trait levels and performed hierarchical cluster analysis (mixed effects regression). Per these analyses, Allen et al. (2018) fitted a regression model that found upstream intervention effects on intermediate protective factors (i.e., individual, family, community, and peer influence factors) that led to down-stream protective factors (i.e., a statistically significant change in reasons for life but not reflective processes).

3.3. Single group studies (21 articles)

Owing to the many challenges that can present when working with rural, small, and culturally distinct populations, a majority of the reviewed studies adopted a single group design. For example, some researchers could not implement controlled or randomized study designs around the small, remote populations of circumpolar Alaska who base their day to day lives around seasonal changes and practices (Mohatt et al., 2014a). Other studies described financial barriers to undertaking experimental comparisons. For example, Barnett et al. (2020) noted how "a lack of funding and programmatic design challenges" prevented them from implementing an adequate control group to compare and account for other possible influences (p. 369). Ultimately, 21 studies spanning just over five decades (1967–2019) adhered to a single group design (see Tables 1 and 2).

3.3.1. Studies that measured changes in direct suicide factors

Six of these 21 studies included measurements of changes in direct suicide factors (see Tables 1 and 2). May et al. (2005) implemented *Adolescent Suicide Prevention Project*, a public health-oriented suicidal-behavior prevention team for youth (ages 10–24 years old), and assessed its impact between 1988 and 1992. This team was comprised of professional mental health staff and trained community lay providers. In light of access barriers and stigma related to mental health treatment, the team approached community members within more naturalistic community settings (e.g., outdoors, inside cars). Once connected, the team would provide psychoeducation, offer counseling, teach youth coping and adult parenting skills, advocate for the individual and relevant care services, and refer the individual to professional mental health services. While the number of recruited youth was unspecified, May and colleagues found that participants reported a 73 percent statistically significant drop in suicidal gestures and attempts, particularly among the younger age groups. In reflecting on the success of their program implementation, May and colleagues emphasized the importance of adequate staff development, vigilance, resource development, community relations, and robust administration.

Cwik et al. (2016a) recently published their outcomes from *Celebrating Life*, a community suicide surveillance system that referred at-risk individuals to professional health services and provided psychosocial support. Between 2007 and 2012, they recruited 2640 participants for the *Celebrating Life* program. Per their analyses, participants reported a *non*-statistically significant decrease in suicidal attempts and deaths relative to national rates. Furthermore, notable reflections arose following the completion of their study. First, their results suggested that building healthy relationships may prove more effective than restricting means to self-harm. Second, while dismantling different program effects proved challenging, Cwik et al. (2016a) emphasized the need for longitudinal outcomes and

well-timed interventions.

Cwik et al. (2016b) also implemented *New Hope*, an intervention that followed up youth who presented to the emergency room because of a recent suicidal attempt. During follow-up, the *New Hope* team offered psychoeducation, skills, and assistance with treatment barriers. To evaluate *New Hope*, Cwik et al. (2016b) recruited 11 participants between 2009 and 2011. Their analyses found that participants reported a *non*-significant decrease on the Suicidal Ideation Questionnaire, but a statistically significant decrease on the Children's Negative Cognitive Errors Scale and the Center for Epidemiological Studies-Depression Scale.

Harvey et al. (1976) evaluated a psychiatric consultation and social work services program at Mt. Edgecumbe School. Between 1968 and 1973 they surveyed 200 students who received the service and found that these students reported a *non*-statistically significant decrease in suicide attempts and a statistically significant decrease in expulsion and drop-out rates. Langdon et al. (2016) evaluated the *Lumbee Rite of Passage* (LROP) program, an intervention that sought to address SI and risk factors through a Lumbee cultural enrichment program. They recruited at least 38 participants who reported a *non*-significant decrease in SI among participants with at least two thirds attendance. In another study, Le and Gobert (2015) evaluated *Restoring the Native American Spirit*, an intervention that sought to deliver a mindfulness-based intervention. They recruited eight participants who reported a *non*-statistically significant decrease in SI, but a statistically significant increase in mindfulness, perceived skill acquisition, and social connections.

3.3.2. Studies that measured changes in indirect suicide factors

Nineteen single-group studies included measurements of changes in indirect suicide factors, with 15 of these 19 studies focused exclusively on indirect variables only (i.e., they did not also measure changes in direct suicidal behaviors, as reviewed in the earlier section). Specifically, 15 studies explored factors related to at-risk individuals, and four explored factors related to gatekeepers for at-risk youth (see Tables 1 and 2). Because these studies (with respect to their designs) are so limited in their ability to address efficacy questions, we illustrate each category with one study each.

A brief example of a study that focused on at-risk individuals includes an intervention developed for Alaska Native youth. Barnett et al. (2020) sought to enhance protective factors through *Camp Pigaaq*, a 5-day culture camp in which youth received teaching and traditional storytelling from Elders, wellness practitioners, and guest presenters. These youth also participated in team-building and cultural group activities. While Barnett and colleagues did not measure for changes in direct suicide outcomes, they did assess the impact of *Camp Pigaaq* through a multivariate analysis of variance using the following pre-/post-intervention on various scales. They found significant improvements on measures related to affect, "belongingness," and mastery of coping skills. Furthermore, they found that males had significantly higher scores than females on measures related to affect, self-perceived importance to others, and self-esteem.

A brief example of a study that focused on youth gatekeepers includes an assessment of gatekeeper training. Bartgis and Albright (2016) evaluated the impact of the *Kognito Gatekeeper Training Simulation Program*, a suicide prevention program that sought to train gatekeepers on how to recognize and intervene in potential suicidal behavior. Between 2011 and 2013, they recruited 86 match-paired participants (19 students, 41 faculty/staff, 10 high school educators, and 16 middle school educators) for their study. While they did not measure changes in direct suicide outcomes, they did collect pre-, immediately post-, and 3-month-post-intervention Gatekeeper Behavior Scale scores. Comparing 3-month-post to immediately post-intervention scores, gatekeepers reported a statistically significant increase in their perceived self-efficacy and likelihood to intervene but not in their preparedness. Comparing immediately post-to pre-intervention scores, however, revealed a significant increase in preparedness.

3.4. Case reports (three articles)

Three studies were case reports, each featuring girls seeking treatment at a health center (see Tables 1 and 2). Although case reports are thoroughly confounded with respect to causal inference, all three reported improvements in protective factors and overall suicidal risk. One case report by Kohrt et al. (2017) evaluated the impact of culturally adapted dialectical behavior therapy (DBT) on a 14-year-old Navajo girl hospitalized following a suicide attempt. At the end of her hospitalization, *t*-test analyses demonstrated significantly higher scores on the Reasons for Living Inventory for Adolescents. The treatment team then discharged the patient once her SPS scores decreased from a severe to moderate risk.

4. Discussion

We performed a systematic review of AI/AN suicide interventions to answer our research question, *"What interventions work to prevent AI/AN suicide?"* In light of previous systematic reviews that highlighted a lack of homogenous and methodologically rigorous data, we adopted a broad inclusionary stance while searching, screening, and extracting. To emphasize the most methodologically rigorous studies, we organized our results by study design (and reported all outcomes, including non-significant outcomes from assessments of direct suicide measures). This flexible approach yielded a total of 28 studies spanning from 1968 to 2019.

Taken together, each study reported improvement on at least one of their targeted outcomes (likely necessary for publication), however only 11 studies included assessments for changes in *direct* suicide outcomes (with two measuring direct variables only). Among these 11 studies, only three ascertained their outcomes using either a controlled trial (one randomized and two non-randomized). One of these controlled trials reported statistically significant improvement on the SPS (LaFromboise & Howard-Pitney, 1994), another reported a non-statistically significant improvement on the SPS (LaFromboise & Howard-Pitney, 1995), and the third reported a non-statistically significant improvement on attempted suicides as measured by the YRBS (Tingey et al., 2020). All other studies either used non-controlled study designs or measured *indirect* variables only. Specifically, eight studies ascertained direct outcomes using either a single group or a case report study design, and 17 studies measured indirect variables only.

The reviewed studies suggest that researchers have crafted culturally sensitive, community-informed suicide interventions that have aimed to produce benefit for AI/AN populations. Although promising, methodological limitations rendered any general determination of which interventions actually "worked" elusive. Confidence in causal attributions between interventions and outcomes demands accurate estimates of treatment effects through RCTs, and if not RCTs then quasi-experiments that control for confounding factors. In this corpus, only four studies featured either a randomized or non-randomized controlled trial. Moreover, confidence in efficacy also depends on replication of findings across multiple studies that collectively demonstrate meaningful effect sizes. This process of replication is conventionally structured around a homogenous set of populations, interventions, controls, and outcome measures (i.e., the PICO framework).

In this corpus, only two interventions were featured in more than one outcome study: the ZLSD was evaluated in two articles and the *Qungsavik* program was evaluated in four articles (see Tables 1 and 2). Of these two programs, only the *Qungsavik* program produced consistent statistically significant outcomes, albeit for changes in indirect suicide outcomes in line with a multi-level theory of change model (i.e., related to reasons for life and social support). In view of these limitations, additional replications of rigorous, controlled outcome studies that demonstrate direct effects on AI/AN suicide would be required to definitively answer our research question. Despite pressing suicide statistics and multiple calls for action to ameliorate AI/AN suicide, alongside two prior systematic

reviews and our current review of (now) 28 intervention studies from five decades of investigation, what could account for the continued absence of rigorous and replicated findings that could guide effective suicide prevention for these populations? The answer is multifold.

4.1. Challenges of AI/AN community outcomes research

AI/ANs have been small in number, dispersed around the nation, and deeply underrepresented in clinical research. Additionally, even for AI/AN populations, suicide is a low base rate phenomenon. Together, these realities harbor crucial methodological ramifications. First, many studies have focused their evaluation on short term outcomes and small sample sizes. This has led to widened confidence intervals, potential "treatment diffusion" across small communities (Dumville et al., 2006; Peckham et al., 2015), and an inability to capture an intervention's long-term sustainability and impact. Second, the RCT, a study design that requires robust structuring in well-controlled research settings, is challenging to implement, particularly in small, remote, and resource-strapped communities. Recall that Allen et al. (2014) observed that rigid design elements were unsuited for remote circumpolar regions of Alaska where small populations were more fluidly responsive to seasonal changes. Finally, RCTs are limited in their ability to assess intervention efficacy outside of such strictly controlled conditions.

Beyond these ecological challenges, AI/AN communities can be understandably suspicious of researchers and research, whether because of a history of mistreatment by the greater health sector or because of prior research engagements that were irrelevant, disrespectful, or even exploitative (Glover et al., 2015; Gone et al., in press). In response, AI/AN communities have increasingly exercised their powers of sovereignty as Tribal Nations to regulate research. This has made AI/AN research more participatory and community driven than ever.

For example, within our reviewed corpus, 20 of the 28 reviewed studies featured some form of community input during development/implementation with six explicitly invoking community based participatory research (Israel et al., 2013).

While community-driven development and implementation promotes community empowerment and accountable research, some scholars have described authorities, gatekeepers, and advocates in Indian Country who have expressed reluctance to support so-called "gold standard" research approaches and designs (Allen et al., 2018; Bartgis & Albright, 2016; LaFromboise & Howard-Pitney, 1994; Mohatt et al., 2014a; Wexler et al., 2019). Instead, community input has occasioned the use of community specific measures and designs that are tailored to the AI/AN populations. These include adoption of various risk/protection models related to "transactional-ecological" approaches, family connections, community-mindedness, and a collectivist self-orientation (see the 17 included studies that measured intervention outcomes based on models such as work/school attendance/performance, social engagement, family functioning) (Allen et al., 2014; Beeker et al., 1998; Doll & Brady, 2013; Erickson et al., 1988; Goodkind et al., 2010; Hawe et al., 1997; Hodge et al., 2009; Merzel & D'Afflitti, 2003). Sometimes, this involved steering researchers away from RCTs to more equitably increase access to interventions by community members. Adoption of these alternative designs led to measurement of variables that largely did not overlap across different studies, making establishing meaningful comparison among them challenging. At the same time, these variables better aligned with the values and practices of the communities they aimed to benefit. More importantly, these variables, many of which measure functional impairment, offer scientific value *because* of their relative scarcity in the literature. Furthermore, multiple studies have weaved them into experimental designs that are both scientifically and culturally credible.

In the case of the culture and entrepreneurial camp by Tingey et al. (2020), for example, the community voiced apprehension at randomizing participants to a control. Thus, Tingey and colleagues alleviated the community's concerns by flexibly introducing a two-to-one

randomization strategy that maximized participant exposure to positive benefit. Alternatively, other researchers chose to solve randomization concerns by conducting non-randomized controlled trials. Beyond controlled trials, other studies evaluated their outcomes using single group designs and case reports while still comparing the differential impact of their intervention across different communities. For employment of a dynamic wait-list design to compare two communities at different stages of the intervention, see Mohatt et al. (2014b). For exceptions outside of suicide prevention, see McDonell et al. (2021) or Venner et al. (2020).

4.1.1. Recommendations for AI/AN community outcomes research

Under these conditions, we propose the following recommendations to continue the evaluation of AI/AN suicide interventions. First, researchers should consider measuring suicidal behaviors directly. On the one hand, suicidal behaviors are by their nature rare events and tribal communities may object to their measurement. On the other hand, demonstrations of intervention impact on direct suicide variables can strengthen confidence in the causal relationship between an intervention's activities and a reduction in suicide behavior. If researchers are concerned about the ethics of exploring suicidal outcomes, certain methodological designs may help to mitigate this concern. For example, upcoming work by O'Keefe et al. (2019) will accommodate community misgivings by centering their RCT around the Sequential, Multiple Assignment, Randomized Trial (SMART) design, an approach that uses multiple time points to randomize and expose all participants to intervention, and that adjusts assignments and study variables on the fly (Lei et al., 2012).

Second, researchers should consider adopting stock measures of suicide, even if indirect, so that some findings are comparable across different studies. For example, several well-known measures that have been validated for AI/AN communities include the Suicidal Ideation Questionnaire, the Hopelessness Depression Symptom Questionnaire, The Patient Health Questionnaire, and the Suicidal Behaviors Questionnaire.

Third, from the perspective of research as a whole, investigators outside of Indian Country should be incentivized to recruit AI/AN participants into research trials more generally. For example, zero AI/AN individuals were represented across 342 RCTs for depression as reviewed by Polo et al. (2019). Similarly, in a comprehensive review of research on evidence-based mental health interventions for minoritized ethnoracial populations in the U.S., Miranda et al. (2005) could find no studies that included AI/ANs as study participants. Thus, concerns about applicability of RCT-studied interventions for AI/AN communities cannot be allayed without researchers' careful evaluation of efficacy amongst the people who will later be served.

Finally, researchers should consider standardizing intervention development in terms of process and function rather than in terms of forms and mechanisms (Gone and Calf Looking, 2015). For example, the *Qungsavik* intervention affords a toolkit of interventions that are codified by their basic functions so that these can be adopted piecemeal to promote comparison across separate studies.

Subsequent review articles can then highlight these studies while improving on the methodological limitations inherent within this systematic review. For example, we adopted a broad and flexible approach to capture studies relevant to our research question. As our review yielded a heterogeneous body of studies, and we could not apply quality rating measures for a comparison of quality, or meta-analysis for comparisons of efficacy across similar studies. At the same time, we opted to focus on peer-reviewed research only and did not systematically search the grey literature. Furthermore, our approach to screening likely neglected studies that targeted a wide array of relevant (upstream) risk and protective factors for suicide because the authors did not explicitly link these to suicide. Lastly, we did not have space in this article to review

the precise characteristics of each intervention (although this work is in preparation).

5. Conclusion

Death by suicide is remarkably high among AI/AN individuals within the U.S. Given this, the current systematic review hoped to understand, "*What interventions work to prevent Ai/AN suicide?*" Results from the 28 articles revealed 23 distinct interventions with each study reporting an improvement on at least one targeted outcome. Nevertheless, questions about actual intervention efficacy remain open because of several methodological modifications. For example, only 11 studies included assessments for changes in direct suicide outcomes, and among these 11 studies, only three included outcomes derived from either a randomized or a non-randomized controlled trial. Furthermore, among the 23 reviewed interventions, only one produced consistent outcomes, albeit through the use of indirect measures of suicide. Many of these methodological modifications stemmed from the realities of collaborative research partnerships undertaken in AI/AN communities. Future outcomes research on suicide interventions in Indian Country will need to further identify innovative ways to develop study designs that both infer causality and resonate with community values and preferences.

Appendix A

Search Terms.
APA PsycINFO (Ovid).

1. Exp Self-Destructive Behavior/
2. Suicidal Ideation/
3. (suicide or suicides or suicidal or suicidality or "murder-suicide" or "homicide-suicide").tw.
4. ("self-injur*" OR "self-harm*" OR automutilat* OR "self-destructive").tw
5. ((self OR oneself OR myself OR themsel* OR himself OR herself) adj2 (kill* OR harm* OR injur* OR hurt* OR mutilat*)).tw
6. OR/1-5
7. exp American Indians/
8. ("native american*" OR "american indian*" OR "alaska native*" OR inuit*).tw.
9. alaska natives/ or inuit/
10. 7 OR 8 OR 9
11. 6 AND 10

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American Indian and Alaska Native Mental Health: Diverse Perspectives on Enduring Disparities

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Abstract

As descendants of the indigenous peoples of the United States, American Indians and Alaska Natives (AI/ANs) have experienced a resurgence in population and prospects since the beginning of the twentieth century. Today, tribally affiliated individuals number over two million, distributed across 565 federally recognized tribal communities and countless metropolitan and nonreservation rural areas. Although relatively little evidence is available, the existing data suggest that AI/AN adults and youth suffer a disproportionate burden of mental health problems compared with other Americans. Specifically, clear disparities have emerged for AI/AN substance abuse, posttraumatic stress, violence, and suicide. The rapid expansion of mental health services to AI/AN communities has, however, frequently preceded careful consideration of a variety of questions about critical components of such care, such as the service delivery structure itself, clinical treatment processes, and preventive and rehabilitative program evaluation. As a consequence, the mental health needs of these communities have easily outpaced and overwhelmed the federally funded agency designed to serve these populations, with the Indian Health Service remaining chronically understaffed and underfunded such that elimination of AI/AN mental health disparities is only a distant dream. Although research published during the past decade has substantially improved knowledge about AI/AN mental health problems, far fewer investigations have explored treatment efficacy and outcomes among these culturally diverse peoples. In addition to routine calls for greater clinical and research resources, however, AI/AN community members themselves are increasingly advocating for culturally alternative approaches and opportunities to address their mental health needs on their own terms.

Contents

American Indians and Alaska Natives (AI/ANs): individuals who trace their ancestry from the indigenous peoples of North America and who maintain ongoing affiliation with enduring tribal communities in the United States

Indian Country: lands and territories designated as under the legal jurisdiction of federally recognized tribal Nations

INTRODUCTION

In two short months a number of years ago, nine young Native American men between the ages of fifteen and 25 committed suicide, with another 88 verifiable suicide attempts occurring on the [Wind River Indian] reservation within that time frame. Mr. Chairman, the Wind River Indian community mobilized to address this crisis, creating a team that included the Bureau of Indian Affairs, the Indian Health Service personnel, as well as the traditional and tribal leaders. Mr. Chairman . . . since that time, the number of youth suicides has been decreasing on the reservation. So I am particularly pleased that the Northern Arapaho [tribal] suicide prevention team works well with the Fremont County Suicide Prevention Task Force and [we] know that there are solutions and we can find them. Working together, we can improve our efforts even more. (U.S. Senate Comm. Indian Affairs. 2009)

Excerpted from a February 2009 hearing of the U.S. Senate Committee on Indian Affairs, the preceding statement by the Honorable John Barrasso, then vice chairman of the committee, exposes the alarming mental health needs of American Indian and Alaska Native (AI/AN)[1] communities. Indeed, Senator Barrasso's reference to nine suicides and 88 suicide attempts among Wind River tribal youth—a truly astonishing prevalence for a total reservation population then numbering around 6,000 people—underscores the epidemic nature of overwhelming distress among AI/ANs. Moreover, the various agencies mentioned by Barrasso as "working together" to mitigate the problem are all governmental—whether federal, county, or tribal—and reflect the striking degree to which AI/AN community mental health crises depend on public agencies and public monies for remedy. Furthermore, the fact that Congressional hearings are routinely convened about the mental health problems of AI/ANs—several have addressed AI/AN suicide before and since 2009—testifies to the enduring toll that such crises take in Indian Country. Unfortunately, despite Barrasso's optimism about solutions to such crises, harrowing tragedy is rarely kept at bay for long in too many AI/AN communities. If not a rash of youth suicides, then other forms of debilitating distress and dysfunction stemming from substance abuse, violence, and trauma are far too common among AI/ANs and warrant urgent attention and attenuation.

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[1]Throughout this review, we refer to the indigenous peoples of the United States as American Indian, Alaska Native, Native, Indian, and indigenous. Although each of these terms has historical and sociopolitical value, in fact the indigenous peoples of the Americas generally prefer to be referred to by the names of their tribes or by their village affiliations. To make the best use of our limited space, we have adopted the abbreviation AI/AN.

Despite such evident mental health needs, what will quickly become clear from this review is that the knowledge base for treating AI/AN distress—especially in the historical context of Euro-American colonization—is utterly inadequate to the task of reducing or eliminating alarming disparities in mental health status. In this review of the mental health issues and concerns of AI/ANs, we investigate four relevant domains. First, we consider the challenge of identifying and defining AI/ANs. Given the vagaries of AI/AN self-identification, we emphasize tribal citizenship above and beyond ethnoracial ancestry.[2] Second, we summarize the disparities in mental health status that afflict AI/ANs. On the basis of recent publications in the epidemiological literature, there is no question that many AI/AN communities suffer from disproportionately high rates of certain mental disorders and suicide. Third, we examine the psychosocial interventions available to AI/ANs for redressing these problems. As we make clear, mental health services specifically tailored for AI/ANs constitute a distinctive service ecology that is predominantly community based and federally funded. Unfortunately, the efficacy of these services for actually achieving AI/AN client improvement remains in question. Finally, we explore competing alternatives for how best to remedy the mental health problems of AI/ANs. These include tailoring or augmenting existing mental health treatments and services on the one hand versus reimagining such approaches in terms of local

AI/AN cultural reclamation and community self-determination on the other hand.

WHO ARE AI/ANS?

Native North America was exceedingly diverse prior to the European incursion into the New World, which was composed of more than seven million inhabitants north of Mexico (Thornton 1987) who represented hundreds of ethnicities, spoke more than 300 languages, and practiced scores of spiritual traditions. Despite some higher-order commonalities among these peoples—e.g., widespread devotion to sacred nonhuman persons for long and prosperous lives, profound orientation to space and place within regional ecologies, robust relationality as a primary mode of engagement in the world, and comprehensive regard for the personal autonomy of all living beings (Deloria 2003)—it was the colonial encounter with Europeans and (later) Euro-Americans that ultimately brought the "American Indian" into existence: That is, the policies and practices of colonial subjugation such as land appropriation, resource extraction, population control, and coercive assimilation served to forge commonalities in experience, expectation, and outlook among formerly disparate indigenous peoples. For the purposes of appreciating the mental health concerns and perspectives of this small but diverse population, the first challenge is the formidable task of defining AI/ANs (note that the Aboriginal peoples of Canada identify themselves as First Nations, Inuit, and Métis peoples, but they are not the subject of this review).

AI/ANs are contemporary descendants of the indigenous peoples of North America. Because AI/ANs have intermarried extensively with non-Natives for more than five centuries, it is not uncommon for many Americans to lay honest claim to (usually limited and remote) indigenous ancestry. Interestingly, during recent decades, increasing numbers of Americans have chosen to identify as AI/AN on the U.S. Census (and presumably for other reporting purposes as well). More specifically, given the striking degree of the AI/AN population

Ethnoracial: pertaining to group-based distinctions arising from historically embedded social attributions about shared phenotype or descent

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[2]We adopt the term ethnoracial throughout this review with admitted concern about reifying so-called racial categories that have no innate scientific validity. Nevertheless, racial ideology has so structured American discourses about group differences that we are also reluctant to pretend that race no longer exists in American life in the sense of how people—and institutions—categorize, label, and interact on the basis of socially salient phenotypical group traits. Moreover, the ever-evolving system of U.S. racial classification produces contradictions, such that Latino status (for example) is sometimes regarded as an ethnicity (e.g., in the U.S. Census) and other times is regarded as a racial group (e.g., in affirmative action policies for underrepresented minorities). In the end, we adopt this term in recognition that AI/ANs as a category of group membership would not exist absent the history of racial ideology in the United States.

increases reported across decennial censuses, the only explanation is that Americans who formerly endorsed some other race have recently assumed AI/AN identities (Eschbach et al. 1998). In an anthropological study of such racial shifting, Sturm (2010) charted the relatively recent emergence of more than 250 professedly Cherokee tribes composed primarily of formerly white, Southern, working-class Americans who have fled the emptiness of whiteness for what they view as more attractive and compelling identities. In the context of awakened societal interest in all things Indian (especially Native spirituality; see Jenkins 2004), such racial shifters are widely seen by established tribal communities as a threat to both cultural integrity and tribal sovereignty in an exceedingly complex national racial discourse.

Such examples point to the dilemma of self-identification: On one hand, American society acknowledges the autonomy of individuals to designate their own ethnoracial status; on the other hand, the meaningfulness of ethnoracial status depends on demonstrated or presumed commonalities of experience that may not be shared merely on the basis of limited and remote indigenous ancestry. The results of the 2010 U.S. Census indicate that 5.2 million Americans identified themselves as AI/AN (Humes et al. 2011). Owing to documented practices of racial shifting, this clearly sets the upper bound of the population estimate for almost any meaningful purpose. Within this number, 2.9 million individuals (56%) chose to identify as AI/AN alone, while another 2.3 million chose to identify as AI/AN in combination with some other race. Within both the AI/AN "alone" or "in combination" categories, more than 20% reported Hispanic or Latino status, which reflects a surge in AI/AN identification among immigrants whose ancestries originate south of the U.S. border. Clearly, self-identification has become so fluid and negotiable that for AI/AN status to be at all meaningful (whether for mental health or other purposes), adoption of some criterion beyond mere self-designation would appear to be necessary.

From Ethnoracial Ancestry to Tribal Community

As a result, for the purposes of this review we define AI/ANs to be those individuals who both proclaim indigenous identities and who maintain affiliation with enduring tribal communities in the United States. In other words, meaningful AI/AN status is not just about which tribe an individual claims, but also about which tribe claims a given individual (Gonzales 2001). Although far less fluid than individual self-identification, an authoritative designation of AI/AN communities that might recognize individual identity claims is not without its controversies as well. A starting point is usually to reference the 565 tribal nations and Alaska Native village corporations that are formally eligible to receive services from the U.S. Bureau of Indian Affairs (BIA). These federally recognized tribal communities retain documented evidence of enduring interactions with the United States (and earlier European powers). Each maintains an official roster of tribal members based on criteria that usually include some minimum degree of tribal ancestry (or blood quantum) traceable back to an historic list (or roll) of original members. A small minority of tribes simply requires lineal descent for designating membership with no minimum degree of documented ancestry; still other tribes have adopted criteria beyond minimum blood quantum such as maternal tribal descent or reservation residency.

Although there is no comprehensive tally of the exact population of enrolled members from all 565 federally recognized tribes, the BIA has estimated its service population at 1.9 million AI/ANs (U.S. Bur. Indian Aff. 2011). Similarly, the federal Indian Health Service (IHS)—a branch of the U.S. Public Health Service charged with addressing the health-care needs of AI/AN tribal members—has estimated its service population at two million (Indian Health Serv. 2011b). These estimates of roughly two million AI/ANs are best considered a lower bound for the total population. We hasten to acknowledge, however, that defining AI/ANs as the members of federally

recognized tribes is both inherently conservative and inescapably arbitrary. For example, some self-identifying AI/ANs whose ancestors are members of federally recognized tribes may have extensive but diverse Native ancestry such that they qualify for no single tribe's minimum blood quantum requirements. A small number of federally recognized tribes were arbitrarily "terminated" by the U.S. government during the 1950s, thereby disenfranchising former tribal members. Beyond these and other similar anomalies, there are also dozens of state-recognized tribes that do not qualify for federal recognition for a host of reasons, and yet many of their members both identify as AI/ANs and are recognized as such by their communities.

Nevertheless, despite the evident limitations of adopting membership in a federally recognized tribe as the ultimate criterion for AI/AN status, there are reasonable justifications for doing so in the context of this review. First, privileging membership in a federally recognized tribe is no more arbitrary than is privileging other criteria that are routinely proposed (e.g., self-identification, linguistic competence, cultural participation, physical appearance). Second, endorsing membership in these tribes affords a ready (and readily understandable) means for circumscribing a population of interest that overcomes the formidable problems of mere self-identification (and, indeed, it remains simple enough to inquire about tribal enrollment for a host of recording purposes). Third, accepting the criterion of tribal membership anchors mental health inquiry to the needs and interests of tribal communities. This is significant because meaningful knowledge concerning the mental health status of AI/ANs, who comprise less than 1% of the national U.S. population, is necessarily obtained in the context of identifiable AI/AN community settings. Finally, and most importantly, promoting the criterion of tribal membership reinforces the exercise of AI/AN political sovereignty and accords with a specific mental health service ecology that results from the distinctive political status of federally recognized tribes.

From AI/AN Identity to Tribal Citizenship

Meaningful reviews of AI/AN mental health cannot ignore tribal sovereignty as the fundamental determinant of the primary service ecology designated for AI/ANs. In terms of tribal sovereignty, a thorough description of the distinctive political status of federally recognized tribes falls beyond the scope of this review (but see Pevar 2012). In short, owing to a history of treaties and other federal–tribal relations, AI/AN communities occupy an utterly unprecedented and unparalleled legal designation within U.S. law as domestic dependent nations. This status signifies that federally recognized tribes continue to exercise some of the sovereign powers of free nations. Thus, for example, tribal nations are not subject to the "free exercise" clause of the U.S. Constitution (which mandates a separation of church and state) and can determine their own citizenship criteria (albeit within federal constraints— adoption of non-Indians is not recognized). This complex designation reconfigures AI/AN status as fundamental expressions of political rather than ethnoracial identity. More specifically, AI/ANs are citizens of tribal nations who are collectively engaged in the exercise of self-governance and self-determination.

The unique legal and political status of federally recognized tribes has engendered a "trust relationship" between tribal nations and the U.S. government akin to a ward and its guardian (Pevar 2012). For most of the history of federal–tribal relations, this has afforded coercive intrusion into the lives of AI/ANs by government representatives. In 1975, however, the U.S. Congress passed the Indian Self-Determination and Education Assistance Act, which marked a dramatic shift in federal orientation toward AI/ANs. Since this landmark legislation, the federal government has become much better at supporting tribal initiatives in self-governance, land management, law enforcement, housing, education, health care, and so on. The BIA and IHS are specific federal agencies tasked with many of

Domestic dependent nations: the peculiar legal status of federally recognized tribal communities that recognizes inherent rights to political sovereignty and self-determination

Indian Self-Determination and Education Assistance Act: key legislation passed by the U.S. Congress in 1975 that affirmed the federal commitment to tribal sovereignty and fulfillment of the federal trust responsibility

Mental health disparities: high rates of mental health problems in comparison to averages for the U.S. national population

these responsibilities. Relative to the domain of behavioral health (i.e., mental health and substance abuse treatment services), the IHS administers or supports treatment programs for AI/ANs through its extensive network of more than 700 reservation-based hospitals, clinics, and other health facilities across 12 geographic regions (or service areas)—in addition, it funds behavioral health programs in most of its 34 clinics in urban areas (where it is estimated that roughly two-thirds of AI/ANs reside) (Natl. Counc. Urban Indian Health 2011).

As an expression of the trust responsibility, IHS support for addressing AI/AN community mental health needs creates a distinctive service ecology that differs markedly from mainstream health services: The Indian Self-Determination and Education Assistance Act of 1975, as amended, affords tribes the opportunity for direct administration of federal services (with federal funds) in support of tribal members. As a consequence, 54% of IHS-supported mental health programs and 84% of IHS-supported substance abuse treatment programs are administered directly by tribes (Indian Health Serv. 2011a). Obviously, direct tribal control of behavioral health programs affords comparatively greater latitude in the tailoring of services to local needs (albeit within the confines of accreditation standards, federal oversight, and limited resources). Even when not directly administered by tribal governments, however, such programs remain accountable to tribal interests through government-to-government (i.e., federal–tribal) consultations and agreements. This remarkable degree of tribal influence on federally funded services renders such programs responsive to local community priorities to an extent that is largely unprecedented in health-care settings more generally.

Summary

Although many Americans might legitimately lay claim to AI/AN ancestry, the problem of widespread self-identification threatens to undermine the meaningfulness of AI/AN identity relative to presumed commonalities in

orientation, outlook, and experience. For the purposes of reviewing AI/AN mental health issues and concerns, we have adopted the admittedly conservative and inescapably arbitrary strategy—albeit with thoughtful justification—of defining AI/ANs as citizens of the 565 tribal nations that are recognized as such by the federal government. The population of AI/ANs so designated has not been tallied, but most likely numbers between 2 and 2.5 million individuals, representing 0.8% of the U.S. population (Humes et al. 2011). As citizens of domestic, dependent nations, AI/ANs occupy an utterly distinctive political status in the United States—marked by a long history of federal–tribal relations—that has often worked to the detriment of tribal communities. Since 1975, however, the U.S. government has embraced a progressive stance in tribal affairs that explicitly supports tribal sovereignty and self-determination. One result has been the emergence of a specific community-based service ecology for addressing the mental health needs of AI/AN communities through the IHS, as influenced significantly by federal-tribal consultations as well as tribal assumption of administrative authority over IHS-funded programs.

AI/AN MENTAL HEALTH DISPARITIES

With this background information in mind, we turn to a discussion of AI/AN mental health disparities, with specific attention to the prevalence of mental health problems within these populations. Prior to proceeding, however, two further asides are briefly warranted. First, on the basis of a wide range of indicators, AI/ANs have been routinely shown to be less well off—that is, poorer, less educated, less employed, less healthy, and so forth—than virtually any other demographic group in the United States (Ogunwole 2006, U.S. Census Bur. 2007). The important point to note here is that these demographic trends are typically based on samples for which no distinction has been made between self-identified AI/ANs and those who are members of federally recognized tribes. Given

various factors such as reservation segregation, isolation, and poverty, these indicators likely skew even less favorably for AI/AN tribal citizens, potentiating greater disparities in their mental health status. Second, despite a disproportionately vast literature on AI/AN mental health (for an early index of 1,363 publications on this topic, see Kelso & Attneave 1981), studies addressed to the prevalence of mental health problems for AI/ANs have remained difficult to confidently interpret until recently (O'Nell 1989). This publication paradox likely stems from both the stark conspicuousness of AI/AN distress to outside clinicians working in these settings (many of whom have routinely found publication venues for their impressionistic observations) and the formidable difficulties associated with conducting controlled research in AI/AN communities (such challenges include small samples, remote locales, linguistic and cultural differences, and suspicion of Euro-American outsiders, especially academic researchers).

AI/ANs have been the subject of European and Euro-American scrutiny for centuries. With the advent of the "psy" disciplines in the late-nineteenth century (Rose 1998), many of these (frequently dismissive or denigrating) observations and attributions were cast in the language of mental health and psychopathology. In his sweeping historical overview of mental health inquiry among the indigenous peoples of North America, Waldram (2004) traced the early emergence of two contradictory schools of thought. On one hand, AI/ANs were thought to be especially vulnerable to psychopathology owing to their primitive standing in the evolutionary arc of the world's human societies. On the other hand, AI/ANs were noted for their remarkable resistance to various forms of mental illness, which just happened to demonstrate a lack of need for institutionalization and other forms of publicly funded support. By the second half of the twentieth century, however, a shift was observed by Waldram toward the now familiar professional consensus that AI/ANs do in fact suffer from disproportionately high rates of mental disorder owing principally to

acculturation pressures—or, more specifically, Native resistance to such pressures—from mainstream society. Throughout most of this history, these various discourses lacked dispositive evidence in the form of compelling data. The first systematic efforts to assess the prevalence of mental health problems for North American indigenous peoples did not emerge until the 1970s (Roy et al. 1970, Sampath 1974, Shore et al. 1973); however, it is difficult to interpret epidemiological findings in psychiatry prior to the watershed release of the third edition of the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-III) (Am. Psychiatr. Assoc. 1980).

Indeed, it was the emphasis on diagnostic reliability by the neo-Kraepelinian architects of the DSM-III that rendered modern psychopathology research possible (Blashfield 1984, Gone & Kirmayer 2010). Fortunately for this review, the empirical record in the realm of psychiatric epidemiology has improved dramatically during the past 30 years, yielding numerous studies of the distribution of various DSM mental disorders and associated forms of risk and distress for a range of AI/AN samples and populations. Given the regular appearance of review articles that have summarized intersecting portions of this knowledge base (Abbott 2006; Barter & Barter 1974; Gone 2004; Green et al. 1981; LaFromboise 1988; McShane 1987, 1988; Meketon 1983; O'Nell 1989; Shore & Manson 1983; Storck et al. 2009; Trimble et al. 1984; U.S. Congr. Off. Technol. Assess. 1990; U.S. Dep. Health Human Serv. 2001; Waldram 2004), we confine our summary of this literature to major studies undertaken with AI/AN communities that have appeared since 2000—also, owing to problems of interpretation relative to excessive AI/AN self-identification, we do not summarize results from national datasets for which the citizenship status of AI/AN respondents was not reported or cannot be inferred (e.g., Compton et al. 2007, Rutman et al. 2008). Fortunately, even with these delimiting criteria, the studies included here reflect impressive methodological advances and represent the realities of Indian Country

DSM: *Diagnostic and Statistical Manual of Mental Disorders*

more accurately than ever before. Moreover, the conclusions to be drawn from this literature are reasonably apparent: AI/AN communities suffer from clear disparities for diagnostic categories associated with substance use, trauma and violence, and the externalizing behaviors of youth (although intra- and cross-tribal prevalences of mental health problems vary substantially). We organize our summary of these studies in terms of AI/AN population versus sample findings, ranging from most to least representative of actual AI/AN communities.

Diagnostic Findings for AI/AN Community Populations

The most ambitious attempt to characterize the mental health status of tribal communities was known as the American Indian Service Utilization, Psychiatric Epidemiology, Risk and Protective Factors Project (AI-SUPERPFP) (Beals et al. 2003). Essentially a replication of the National Comorbidity Survey (NCS) (Kessler et al. 1994) for two large tribal populations, the AI-SUPERPFP employed a sampling frame that would afford generalization of results to the resident adult (aged 15–54) reservation populations of interest. Prevalence rates for nine mental disorders were derived from administration of a culturally modified version of the University of Michigan Composite International Diagnostic Interview (CIDI) to 1,446 Southwestern tribal members and 1,638 Northern Plains tribal members (Beals et al. 2005b). Lifetime prevalence rates for any DSM-IV (Am. Psychiatr. Assoc. 1994) disorder were 44.5% for the Northern Plains AI population and 41.9% for the Southwestern AI population; these included lifetime rates of 16.6% and 9.8%, respectively, for alcohol dependence, 14.2% and 16.1% for posttraumatic stress disorder (PTSD), 7.8% and 10.7% for major depressive episode (not major depressive disorder), and 4.8% and 4.0% for drug dependence. A chief benefit of this study was the implementation of a relatively intact methodology from the NCS that might afford fairly direct comparability in findings.

The question of direct comparison, however, is slightly more convoluted than one might expect. As one of the first epidemiological studies to report prevalences for DSM-IV mental disorders, the AI-SUPERPFP is historically positioned between the NCS, which reported prevalence rates of DSM-III-R (Am. Psychiatr. Assoc. 1987) disorders for the adult U.S. population, and the more recent National Comorbidity Survey-Replication (NCS-R) (Kessler et al. 2005), which employed the substantially revised World Mental Health version of the CIDI rather than the older University of Michigan version to achieve the same goal.

Fortunately, Beals et al. (2005c) also reported DSM-III-R prevalence rates for the AI-SUPERPFP, but only for the two tribal populations as further divided by gender. This strategy revealed marked diversity (e.g., the lifetime prevalence for alcohol dependence ranged between 8.7% for Southwestern AI women and 31.1% for Southwestern AI men) even while affording comparisons to NCS DSM-III-R rates (e.g., the lifetime prevalence for alcohol dependence for adult Americans was 8.2% for women and 20.1% for men). Moreover, these results can also be triangulated with the DSM-IV prevalence rates from the NCS-R (which, for example, estimated a lifetime rate for alcohol dependence among the adult U.S. population of 5.4%). Taken together, these comparisons demonstrate that the AI-SUPERPFP populations were 1.5 to 2.5 times more likely to report suffering from lifetime alcohol dependence than the adult U.S. population (with the exception of Southwestern AI women), between two and three times more likely to report suffering from PTSD, about equally likely to report suffering from drug dependence, and between one-half and two-thirds as likely to report suffering from major depression (with the exception of Southwestern AI men). The question of overall comparability for any disorder between these tribal populations and adult Americans remains ambiguous, with the DSM-III-R comparisons suggesting an additional 2% to 10% of the AI populations reporting a lifetime history of one of these nine disorders versus the

DSM-IV comparisons suggesting (if anything) a slightly lower prevalence of these problems.

One important methodological distinction between the AI-SUPERPFP and the NCS/NCS-R was the hiring of tribal members as CIDI interviewers in the AI/AN study. These interviewers were thus known to many of the respondents they assessed, although whether this difference systematically skewed the results is unclear. Perhaps respondents were more likely to acknowledge psychiatric symptoms in the face of possible interviewer awareness of these problems prior to the interview (reasoning that deception would be detected) or, alternately, perhaps respondents were less likely to do so (out of concern for personal stigma or deleterious effects on family reputation). As a consequence, this methodological innovation—upon which the very feasibility of the study likely depended—leaves open certain questions about the validity of the results (Gone 2001), particularly insofar as these diverge from anecdotal accounts that suggest an overall greater prevalence of psychopathology within these settings in comparison to the U.S. national population. Either way, the AI-SUPERPFP remains an impressive scientific achievement, and additional results from this study have appeared in dozens of other publications devoted to further examination of these generative data, such as the relationships between psychopathology and childhood abuse (Libby et al. 2005) or other psychological traumas (Manson et al. 2005).

Another impressive study has investigated the developmental emergence of psychiatric disorders among AI youth. Specifically, Costello et al. (2010) reported findings from a recent wave of the Great Smoky Mountains Study for a representative sample of three cohorts of Appalachian adolescents—including Cherokee tribal members—who have been followed since 1993. This longitudinal assessment of mental health is complex, and the prevalence rates of DSM-IV disorders for this population—having now attained adulthood—have yet to be reported in a straightforward manner (for results of the first childhood wave,

see Costello et al. 1997). Nevertheless, on the basis of interviews using the Young Adult Psychiatric Assessment with 349 tribal members (at ages 19 and 21) across three age cohorts, these authors reported that 41.3%, 41.7%, and 31.4% of the respective populations (who were 13, 11, and 9 years of age when the study began) met criteria for any psychiatric disorder during the three-month period prior to the interviews. The prevalence estimates were 27.9%, 22.1%, and 14.4%, respectively, for alcohol abuse or dependence; 24.0%, 24.4%, and 10.2%, respectively, for cannabis abuse or dependence; and 6.4%, 5.9%, and 5.3%, respectively, for an emotional disorder (defined as depressive and/or anxiety disorders). Two trends are worthy of note. First, given the short three-month window for diagnosis, the rates seem high until one recognizes that substance abuse (in addition to the more severe substance dependence) was included in these estimates. Second, the youngest cohort evidenced significantly lower prevalences in comparison to the older cohorts, a fact that we return to later.

Because AI/ANs have long served in the U.S. Armed Forces at disproportionately high rates, assessment of PTSD among Vietnam veterans in AI communities was mandated by the U.S. Congress. In the American Indian Vietnam Veterans Project, Beals et al. (2002) extrapolated their findings from 218 interviews using the Structured Clinical Interview for the DSM-III-R to estimate rates of PTSD for the populations of Vietnam veterans residing on or near two large reservations. Lifetime prevalences for PTSD were 45% and 57% for each reservation, respectively, whereas past-month prevalences were 22% and 25%. These were the highest rates of PTSD reported for any ethnoracial group of Vietnam veterans previously studied, although the disparity vanished once exposure to war-zone stress was controlled for statistically. Curiously, on the basis of the broader sample of 591 Vietnam veterans who had completed the CIDI and the Mississippi Scale for Combat-Related PTSD for this study, Dillard et al. (2007) found that a (retrospectively reported) history of conduct

disorder was associated with elevated PTSD symptoms even when controlling for war zone stress and other pertinent factors. The authors surmise that a history of conduct disorder might indicate a compromised ability to cope with traumatic stress as a result of cognitive deficits and limited emotional regulation.

Diagnostic Findings for Select AI/AN Samples

Diagnostic prevalence rates from community and clinical AI/AN samples cohere even less well than the population findings just reviewed. Although the particular disorders in question vary across these samples, the prevalence rates appear to demonstrate higher on-average mental health problems than those of comparable non-Native samples. Among AI youth, for example, Whitbeck et al. (2008) investigated mental health problems from a lagged sequential study of 651 tribally enrolled adolescents from eight culturally related reservations and reserves in the Midwestern United States and Canada. Using the Diagnostic Interview Schedule for Children-Revised, they documented changes in lifetime, 12-month, and/or 30-day prevalences between waves one (when the respondents were 10–12 years of age) and four (when they were 13–15 years of age) for 11 DSM-IV disorders. The adolescent respondents and/or their caregivers reported lifetime rates for at least one disorder that increased from 25.6% in wave one to 44.8% in wave four of the study, including a shift in lifetime substance use disorders from 3.2% initially to 27.2% most recently. Similarly, the lifetime rates for disruptive behavior disorders (i.e., attention deficit/hyperactivity disorder, oppositional defiant disorder, and conduct disorder) increased from 21.4% to 32.7%, cannabis dependence increased from 1.4% to 12.4%, and alcohol dependence increased from 0.5% to 7.2%. The 12-month prevalence of major depressive disorder increased from 3.2% to 7.8%. Having noted that the lifetime prevalence of any disorder for these AI/AN young people equals that from other studies of the U.S. na-

tional adult population, the authors concluded that a "mental health crisis exists on the indigenous reservations and reserves that participated in this study" (Whitbeck et al. 2008, p. 890).

Interestingly, Whitbeck et al. (2006) also reported diagnostic prevalence rates for the caregivers of these same adolescents. On the basis of results from the CIDI with 861 adult respondents, nearly 75% of the sample met criteria for at least one of five lifetime DSM-III-R disorders, including 20.9% for alcohol dependence (which was much more prevalent among men than women) and 17.1% for major depression (which was much more prevalent among women than men). In a different community context, Gilder et al. (2004) interviewed 483 Mission Indians recruited from six reservations in Southwestern California—but without intending to generalize results back to these tribal populations—using the Semi-Structured Assessment for the Genetics of Alcoholism. They found lifetime prevalence rates for DSM-III-R alcohol dependence of 66% for men and 53% for women. The rates for other disorders were comparatively low—the most prevalent being independent major depressive disorder, which afflicted 12% of the sample—leading these authors to propose that alcohol problems were neither the source nor the result of affective and anxiety disorders for these communities. On the basis of this same study (but with a sample of 513 respondents), Gilder et al. (2006) found prevalence rates for DSM-III-R cannabis dependence of 43% for male and 24% for female Mission Indians. Again, rates of other disorders were unremarkable, leading the authors to conclude that cannabis dependence may be less etiologically risky for this population in terms of predisposal to other psychiatric problems.

For another community sample of 582 Southwestern adult AI tribal members selected not by convenience but rather by membership in three large interrelated family pedigrees, Saremi et al. (2001) reported rates for DSM-III-R diagnoses of alcohol dependence. Using the Schedule for Affective Disorders and Schizophrenia-Lifetime Version, the authors determined that more than 80% of men

and about 50% of women met criteria during their lifetimes. By adding three additional pedigrees from a Northern Plains tribal group for comparison purposes, Robin et al. (2007) estimated DSM-III-R lifetime prevalence rates for schizophrenia among these samples at 8.6 per 1,000 for the Southwest sample and 3.02 per 1,000 for the Northern Plains sample, which do not differ markedly from prevalences documented for non-AI/AN populations. As a brief aside, we note here that data from this same Southwestern sample were published more than a decade ago to demonstrate relatively high rates of trauma and PTSD (Robin et al. 1997a), sexual abuse (Robin et al. 1997b), and binge drinking (Robin et al. 1998) for these families.

In a clinical setting, Duran et al. (2004) screened 489 AI women who presented for primary care at the IHS hospital in Albuquerque, New Mexico; a subset of 234 of these patients completed the CIDI. The estimated lifetime prevalence of any DSM-IV substance, mood, anxiety, and/or somatoform disorders for this population was over 80%, with an estimated lifetime prevalence of 38.2% for major depression, 30.7% for specific phobia, 29.8% for alcohol dependence, 29.0% for PTSD, and 17.6% for drug dependence. The lifetime estimate for any substance use disorder exceeded 60% for this population, a disparity so marked in comparison to other studies of women in primary care that the authors hastened to contextualize these findings with reference to other research demonstrating high rates of AI/AN abstention from substance use, too (which, of course, does not preclude a diagnosis of lifetime substance dependence prior to a period of recovery). Additionally, this is one recent study that found remarkably high rates of major depression among AI/AN respondents; although clinical depression has been frequently described as disproportionately afflicting AI/AN communities, the other studies reviewed here frequently fail to bear this out (Beals et al. 2005a).

In a separate clinical setting, this time an IHS-funded, tribally administered residential substance abuse treatment program for multitribal adolescents, Novins et al. (2006) assessed 89 adolescent AI patients using the Diagnostic Interview Schedule for Children and the substance abuse module of the CIDI. Unsurprisingly, 94% of the sample was diagnosed with a DSM-IV substance use disorder, with 84.3% meeting criteria for a cannabis use disorder and 67.2% for an alcohol use disorder. Also of interest, 82% of the sample met criteria for comorbid mental disorders during the past year, including 74.2% for conduct disorder, 18.0% for attention deficit/hyperactivity disorder, 14.6% for major depressive disorder, and 10.1% for PTSD. The authors noted the comparatively high rates of cannabis use disorders relative to other young substance abuse treatment populations, as well as the high comorbidity with other mental disorders. Throughout these diverse samples—both community and clinic based—the general conclusion is that rates of at least one (and usually more than one) form of psychiatric distress are disproportionately high for a variety of mental disorders among AI/AN respondents.

Suicidal Behaviors Among AI/ANs

One final component of mental health status that remains crucial to address for AI/AN populations—although not a form of psychopathology per se—is suicide. Suicide rates have not been routinely reported in epidemiological surveys of AI/AN populations owing to obvious methodological constraints. The most recent statistics recorded by the IHS indicate that, for the years 2002–2004, AI/ANs killed themselves at a rate of 17.9 per 100,000 population (adjusted for misreporting), a prevalence that has remained relatively stable for 25 years (Indian Health Serv. 2002–2003). For 2003, this was 1.7 times the U.S. All Races rate of 10.8 per 100,000. For AI/AN youth between 15 and 24 years of age, the adjusted prevalence was 34.2 per 100,000 (in comparison to 9.2 for U.S. All Races), and for adults between 25 and 34, the adjusted prevalence was 37.5 per 100,000 (in comparison to 12.7 for U.S.

All Races)—these rates represent a threefold increase in risk of completed suicide among these age groups. A handful of informative reviews of AI/AN suicide have appeared during the past several years (Alcántara & Gone 2007, Goldston et al. 2008, Olson & Wahab 2006), and few major new studies have been published recently. It appears that many of the usual risk factors for suicide apply to AI/ANs as well (e.g., family disruption, violence and abuse, psychiatric distress, heavy alcohol use), but despite intermittent national attention to reservation suicide clusters, the summary IHS statistics cited above conceal tremendous diversity in suicidal behaviors by region, tribe, age, gender, history, and spiritual practice. This is true over time, as when dramatic cluster suicides among adolescents in reservation settings are sometimes followed by a return to "expected" rates relative to local non-Native communities. This is also true across place, as in the case of Alaska. Specifically, the Alaska area of the IHS frequently reports the highest suicide rates in Indian Country (e.g., 44.5 per 100,000 in 1996–1998), but with considerable variation across nine widely dispersed service units (ranging between 17.0 and 72.4 per 100,000) (Alaska Native Tribal Health Consort. 2001). The significance of these variations is difficult to fathom in light of limited comparative and longitudinal investigations of this (still) extremely low base-rate phenomenon in AI/AN communities.

Summary

The scientific knowledge base regarding the mental health status of AI/ANs was initiated four decades ago and has improved greatly since the year 2000. In addition to careful diagnostic description for a range of AI/AN samples using established DSM categories, some studies have ensured generalization to select age cohorts of AI/ANs within reservation communities or even to entire reservation populations. Other research is tracking the development of large groups of AI/AN youth longitudinally. The results of these studies indicate two significant trends. First, AI/ANs on average appear to suffer from alarmingly high rates of certain mental disorders, including alcohol and marijuana abuse and dependence, PTSD, childhood conduct disorder, and suicidal behaviors. Interestingly, the studies found no disparities in most other internalizing disorders, with the possible exception that major depression was reported less frequently by AI/AN respondents in comparison to non-AI/ANs. Furthermore, it remains unclear whether AI/ANs suffer from higher global rates of psychopathology than does the non-AI/AN U.S. adult population. Second, there appears to be significant inter- and intratribal heterogeneity in diagnostic prevalence—including, for example, widely diverse community suicide profiles or substantial reservation rates of both heavy consumption of as well as abstinence from alcohol—such that community outsiders must take care to set aside any preconceived assumptions about the mental health status of AI/ANs with whom they are initially interacting. Apparently, the only remedy for reliable knowledge in the context of the rampant diversity that characterizes Indian Country is sustained engagement with particular AI/AN communities.

AI/AN MENTAL HEALTH SERVICES

In the face of demonstrated mental health disparities in many AI/AN communities, the effort to attenuate these problems promises not only to reduce individual AI/AN distress but also to enhance collective AI/AN projects of self-determination. In short, realization of robust visions for flourishing AI/AN communities depends first and foremost on the well-being of tribal members who comprise the body politic. Unfortunately, for a host of reasons, the current prospects for eliminating mental health disparities in Indian Country are not encouraging. In this section of our review, we first explore the kinds of mental health services that are available for AI/AN community members and then examine how effective such services have been for remedying AI/AN distress. In doing so, we

necessarily return to the distinctive service ecology for AI/AN communities that results from tribal sovereignty and the trust responsibility, primarily as a consequence of IHS administration and support of mental health services in Indian Country. At the outset, we caution that the empirical literature dedicated to these questions is much less developed than for issues of diagnostic prevalence. Although a large subset of publications on AI/AN mental health is devoted to psychosocial interventions with these populations (Devereux 1951, Duran 2006, French 2002, Gone 2010, Gone & Alcántara 2007, Herring 1999, Johnson & Cameron 2001, LaFromboise et al. 1990, Lane & Simmons 2011, Manson 2000, Manson & Altschul 2004, Manson et al. 1987, Mohatt 1988, Nelson et al. 1992, Reimer 1999, Renfrey 1992, Spang 1965, Torrey 1970, Trimble & Gonzalez 2008), these are almost exclusively review, reflection, and advocacy pieces rather than systematic empirical investigations of therapeutic processes and practices with AI/AN participants. In fact, there are only a handful of empirical investigations of mental health treatments with AI/ANs. In other words, for the intervention arena in particular, the implications of the publication paradox are keenly felt.

Availability of Mental Health Services

In theory, AI/ANs who desire or require mental health services may pursue the same kinds of clinical care that are available to other Americans. That is, subject to service availability and the means for payment, AI/ANs can locate a provider, schedule an appointment, and commence treatment for the usual range of difficulties and distress. Research has shown, however, that most Americans with mental health problems do not obtain treatment—and the proportion who do so from nonspecialty mental health providers is increasing—for reasons as diverse as societal stigma, local unavailability, and inability to pay (U.S. Dep. Health Human Serv. 1999, Wang et al. 2005). Furthermore, among the minority of adult Americans with diagnosable mental disorders

who do seek treatment for their conditions, research has shown that only one-fourth of such patients received care consistent with evidence-based treatment guidelines (Wang et al. 2000). Thus, if the treatment profile for mental health problems within mainstream America seems discouraging, the services portfolio for AI/AN communities remains utterly demoralizing. Because AI/ANs are disproportionately poorer than other Americans, they are consequently less likely to maintain job-based or private health insurance, corresponding to lower rates of access and utilization of health care more generally (Zuckerman et al. 2004). Medicaid coverage is another option for low-income AI/ANs, but it is unknown how much of the more than $2 billion expended through these programs on behalf of AI/AN health care per year is for mental health services (Indian Health Serv. 2011a). The Veteran's Administration health care system is available to many AI/AN veterans. Other government-funded programs for the prevention and treatment of mental health problems are sporadically available in AI/AN communities [e.g., discretionary grant-funded projects from the Substance Abuse and Mental Health Services Administration (SAMHSA)], but these typically remain adjunctive to the existing services system.

Service utilization and preferences. The AI-SUPERPFP (described above) assessed help-seeking for various mental health problems among two large AI tribal populations. For substance use disorders specifically, Beals et al. (2006) reported that 13.3% of study participants had sought help for substance use problems during the year prior to assessment. Of those participants with past-year substance use disorders, 38.9% had sought help during the year prior to assessment. Assistance for alcohol and drug problems was obtained by 52% of this group from biomedical sources (e.g., IHS or mental health specialists), by 40% from traditional sources (e.g., traditional healers), and by 41% from 12-step programs (e.g., Alcoholics Anonymous support groups). Seven percent of this group sought help from all three sources,

while an additional 9% sought help from both biomedical and traditional sources, 7% from both biomedical and 12-step programs, and 3% from both traditional and 12-step programs. On the basis of comparisons to NCS data for the U.S. national population, the authors concluded that these AI populations were somewhat more likely to seek help for their substance use problems than were mainstream Americans. Also of note was the relatively substantial proportion of respondents who consulted traditional healers for their substance use problems (although because these past-year statistics were collapsed across the two populations, any intertribal variety in this regard was obscured).

For mental health problems more generally, Beals et al. (2005b) reported lifetime help-seeking for the AI-SUPERPFP tribal populations from mental health professionals, other medical professionals, or traditional healers. Within the Northern Plains population, for lifetime depressive and/or anxiety disorders only, 40.1% of AIs sought help from mental health professionals, 37.3% from medical professionals, and 33.7% from traditional healers (with any help-seeking for these problems totaling 63.6%). For lifetime substance use disorders only in the Northern Plains population, the percentages were 28.6, 19.4, and 16.9, respectively (with any help-seeking totaling 40.1%). For lifetime depressive and/or anxiety disorders that were comorbid with lifetime substance use disorders in the Northern Plains population, the percentages were 49.3, 34.6, and 37.4, respectively (with any help-seeking totaling 67.6%). Within the Southwestern population, for lifetime depressive and/or anxiety disorders only, 34.6% of AIs sought help from mental health professionals, 29.1% from medical professionals, and 48.9% from traditional healers (with any help-seeking for these problems totaling 66.6%). For lifetime substance use disorders only in the Southwestern population, the percentages were 26.1, 19.0, and 37.7, respectively (with any help-seeking totaling 55.8%). For lifetime depressive and/or anxiety disorders that were comorbid with lifetime substance use disorders in the Southwestern population, the

percentages were 42.7, 35.4, and 61.0, respectively (with any help-seeking totaling 73.7%).

Of particular interest from these broader findings was the diversity between populations in terms of the use of traditional healers for mental health problems: The Southwestern population was more likely to consult traditional healers than mental health professionals for their disorders, whereas the opposite was true for the Northern Plains population (although this disparity was driven primarily by Northern Plains women) (see also Beals et al. 2005c, Gurley et al. 2001, Novins et al. 2004). Given the unknown influence of access factors on AI service use for mental health problems—whether for biomedical services or traditional healing—it is instructive to consider AI service preferences alongside service utilization. For a longitudinal study of AI adolescents from eight Midwestern reservations and reserves (described above), Walls et al. (2006) surveyed 865 adult AI caregivers concerning their perceived effectiveness of 21 different kinds of services for mental health problems. Loosely grouped into traditional informal services (e.g., talking to an elder, offering tobacco and praying, consulting a traditional healer, participating in sweat lodges) and formal medical services (e.g., doctor on/off reservation, IHS, social worker on/off reservation), the former were endorsed as very or extremely effective for an emotional or substance abuse problem at percentages much higher than the latter. Specifically, the eight traditional services were ranked among the top nine most preferred options in terms of perceived effectiveness. Note that the IHS was ranked twelfth in this hierarchy, with endorsement as effective by just 27.2% of the sample.

The IHS service ecology. It has been estimated that about 55% of AI/ANs in the United States rely on the IHS for health care (Indian Health Serv. 2006). Thus, especially for AI/ANs who reside on reservations or in other identifiable AI/AN communities, the mental health services of interest are those supported by the IHS (although, again, the majority of these programs are administered directly by

tribal governments). As a specific mental health service ecology for AI/ANs, several aspects of IHS-supported mental health services warrant additional consideration. First, IHS-supported programs comprise the primary system of mental health care that is deliberately targeted to and tailored for AI/ANs. We have noted that large numbers of AI/ANs reside away from their "home" or ancestral reservation or village communities, but these individuals—when dispersed in urban areas—rarely attain a critical mass that can sustain the operation of specialty programs specifically designed to serve their mental health needs (with the exception of the 34 IHS-funded Urban Indian Health Organizations). Thus, AI/ANs either access mental health care specifically designated for them through IHS-funded venues at government expense (as a result of the federal trust obligation) or they access mainstream mental health care just as other Americans do. Second, AI/AN access to IHS-funded mental health programs is severely compromised by a dearth of resources (U.S. Comm. Civil Rights 2003). This is because IHS operations are rarely a priority during the federal appropriations process, resulting in insufficient allocation of funding. For example, the recent personal health care expenditures for the IHS user population per capita were just $2,741 in comparison to $6,909 for the general population (Indian Health Serv. 2011b). Underfunded IHS budgets likely impact AI/AN mental health status even more profoundly, given that less than 10% of the funds allocated for clinical services was dedicated to mental health and substance abuse treatment in 2010 (Indian Health Serv. 2011c).

Finally, a clear portrait of the specific clinical approaches and therapeutic interventions that are provided through IHS-supported programs is not available, but it seems likely that the kinds of treatments offered are as diverse as the providers who offer them (for a brief case example, see Gone 2004). One endemic structural challenge is the reality that many of the mental health service providers employed by IHS-supported programs are not themselves AI/ANs and often remain in service for only a few years (departing, for example, once their educational loan repayment commitment has been met). As a consequence, the learning curve for working effectively in AI/AN communities is both steep and omnipresent in the face of frequent provider turnover. Of the mental health service providers who are AI/AN, these tend to be concentrated in the professions that require comparatively less education and training; thus, a majority of the substance abuse counselors and social workers are themselves AI/ANs, whereas a much lower proportion of the psychologists and virtually none of the psychiatrists are AI/ANs (Gone 2004). Given the largely unsuccessful search for evidence that doctoral training produces more effective psychotherapists in comparison to master's level training (Atkins & Christensen 2001, Bickman 1999), the key implication of this disparity instead pertains to the fact that so much of current mental health treatment is centered on pharmacotherapy rather than psychotherapy (Wang et al. 2006). Although provision of specialty mental health care has not been studied for the IHS, the dearth of mental health resources in general within these settings at least suggests that non-AI/AN primary care physicians may well be the primary source of mental health treatment in the IHS, raising concerns that AI/AN mental health issues may be regularly overlooked or ignored.

Effectiveness of Mental Health Services

The portrait for AI/AN access to mental health services is complex, but what remains almost completely unexplored is the quality of services that AI/ANs do in fact access. The issue of treatment quality is frequently framed in terms of patient access to evidence-based or empirically supported treatments (or clinician adherence to treatment guidelines based on such evidence). Evidence-based treatments (EBTs) are clinical interventions that have been scientifically evaluated in controlled trials for producing beneficial outcomes for patients with specific disorders (Chambless &

EBTs: evidence-based treatments

Ollendick 2001, Kazdin 2008). Although well over 100 psychosocial treatments have been designated as evidence-based in this sense, it is important to note that ethnoracial minority patients are alarmingly underrepresented as participants in efficacy studies—in one review, the pool of 9,266 research participants across multiple outcome studies serving as the basis for developing treatment guidelines for four major disorders included just 671 patients of color, with exactly zero AI/AN participants (Miranda et al. 2005). In a review of the mental health treatment literature for AI/ANs, Gone & Alcántara (2007) identified just nine intervention outcome studies for AI/ANs with mental health problems; six of these simply measured pre- and postintervention outcomes without reference to a comparison group, and one explored a pharmacotherapy with just four AI/AN children. Thus, only two instances of controlled evaluation research were found for psychosocial mental health interventions with AI/AN participants that allowed for inferences of causal efficacy. Fortunately, since this earlier review, the record has (slightly) improved.

Outcome studies. The first instance of a controlled evaluation identified by Gone & Alcántara (2007) was a quasi-experimental investigation that found positive effects for an adapted version of the Coping with Depression curriculum (Manson & Brenneman 1995). Administered to 22 older AI/ANs who were contending with chronic health problems, this program consisted of 16 weeks of two-hour sessions based on principles of cognitive behavioral therapy (CBT). The principal outcomes were a decrease in both depressive symptoms and involvement in unpleasant events and an increase in involvement in pleasant events. Note, however, that participation was based on depressive symptoms only (i.e., risk for major depression) as opposed to a diagnosis of clinical depression. The second study evaluated the Zuni Life Skills Development curriculum with 69 high school students deemed at risk for suicide at Zuni Pueblo (LaFromboise & Howard-Pitney 1995). This quasi-experiment

assessed a package of about 100 in-school sessions offered three times per week throughout the school year. These sessions consisted of familiar adolescent life skills training modules, as adapted in consultation with local authorities. Positive outcomes included decreased suicidality and hopelessness, and increased problem-solving and suicide intervention skills, although attrition of one-quarter of the sample during the intervention complicated the interpretation of results. This curriculum has since been retooled as the AI Life Skills Development curriculum for broader relevance to additional AI/AN communities and has subsequently enjoyed widespread circulation throughout Indian Country (although rarely in its original form of 100 in-school sessions) (LaFromboise & Lewis 2008).

It is significant to note that neither of these outcome studies evaluated a more classically clinical form of treatment for active mental disorders. The evaluation of programs designed to prevent a range of undesirable developmental outcomes among AI/AN youth—especially for substance use problems (Hawkins et al. 2004)—comprises a slightly more robust literature. Consideration of preventive interventions is most relevant for this review in the context of AI/AN suicidal behaviors (because any intervention for suicide must be by definition preventive). Middlebrook et al. (2001) identified nine AI/AN suicide prevention programs and determined that just one had been formally evaluated, indicating that "changes in risk and protective factors were measured, with reductions noted in certain risk factors" (p. 140): this was LaFromboise's AI Life Skills Development program. Since Gone & Alcántara's (2007) review, LaFromboise has conducted a randomized controlled trial of the AI Life Skills Development program in a different AI community setting with a younger sample, but the intervention did not produce favorable outcomes relative to the non-Native-oriented youth prevention comparison program (LaFromboise 2009)—a second controlled trial of this intervention was under way back at Zuni in early 2011.

The one domain for which minor progress appears to have been made in recent years is outcome research on AI/AN substance abuse treatment. In addition to a recent randomized controlled trial of a pharmacotherapy (naltrexone with and without sertraline) for alcohol problems in Alaska (O'Malley et al. 2008), 25 AIs were randomized to three psychosocial treatment conditions for alcohol dependence as part of the large, multisite Project MATCH treatment study. On the basis of complete follow-up assessments for 23 of these AI participants, Villanueva et al. (2007) reported differentially positive benefits from motivational enhancement therapy relative to either CBT or 12-step facilitation (but, given low statistical power, this was reflected through just one statistically significant outcome difference at follow-up). Elsewhere, on the basis of archived treatment records, Evans et al. (2006) assessed outcomes for 368 AIs who entered 39 designated drug and alcohol abuse treatment programs (including 21 outpatient, 14 residential, and four narcotic replacement programs) in California between 2000 and 2002. Comparison of these participants to non-AI matched control participants revealed that—although both groups improved equally following treatment (with reduced composite scores on the Addiction Severity Index)—AIs in residential treatment had lower retention and AIs in general accessed fewer treatment sessions and out-of-program services (for a follow-up study with similar results, see Dickerson et al. 2011).

Treatment Adaptations. Just because AI/ANs have participated in only a handful of clinical outcome studies for mental health treatments does not mean that they cannot in principle benefit from established EBTs. In fact, given the logistical complexities and resource constraints for conducting controlled trials with ethnoracial minority samples, an increasingly common refrain is the call to culturally adapt established EBTs for use with populations of color in the United States (Bernal et al. 2009, Cardemil 2010, Whaley & Davis 2007).

Moreover, there is now compelling evidence that mental health interventions so adapted are moderately more effective with ethnoracial minority clients than are those that are not modified (Griner & Smith 2006). Interestingly, a greater number of adaptations for any given treatment has been shown to correspond with greater effectiveness (Smith et al. 2011). Even so, for AI/ANs, established EBTs for mental health problems have rarely been culturally adapted for use in clinical treatment. Two decades ago, Renfrey (1992) proposed that CBT was congruent with AI/AN needs and preferences; more recently, DeCoteau et al. (2006) detailed the challenges of adapting manualized CBTs for AI/ANs who suffer from anxiety disorders. The adaptions of the Coping with Depression curriculum (Manson & Brenneman 1995) and adolescent life skills (LaFromboise & Howard-Pitney 1995) are examples of CBT-based programs that have been modified for use with AI/ANs. In addition, a 10-week, school-based program known as the Cognitive Behavioral Intervention for Trauma in Schools (Stein et al. 2003) has been adapted to reduce symptoms of PTSD and depression associated with exposure to violence among AI adolescents (Goodkind et al. 2010, Morsette et al. 2009). None of these efforts, however, represent adaptations for clinic-based intervention per se.

In contrast, cultural adaptation for AI/AN patients has been undertaken for sexual abuse–specific CBT (Cohen & Mannarino 1998). Known as Honoring Children, Mending the Circle (BigFoot & Schmidt 2010), this tailored form of intervention provides a culturally grounded orienting template for the clinical treatment of psychological trauma. Based on the cultural significance of the sacred circle, the Honoring Children approach arranges the five holistic facets of human existence (i.e., mental, physical, emotional, relational, and spiritual) in circular fashion as a means for conceptualizing and representing trauma treatment. AI/AN cultural practices such as prayer and burning sacred plants may be included in treatment plans for individual or family counseling with traditionally oriented AI/AN clients.

Conventional components of CBT remain at the core of the intervention, however, including gradual exposure to trauma-based emotions and memories (although it remains unclear to what degree clinicians in actual practice balance the various components of this more inclusive treatment approach). The intervention has not been formally evaluated—indeed, it may require greater standardization first—but it remains the most developed of four evidence-based CBT modalities adapted for dissemination by the SAMHSA-funded Indian Country Child Trauma Center within the National Child Traumatic Stress Network. As a consequence, it enjoys wide familiarity throughout Indian Country.

Finally, cultural adaptation has also been undertaken for AI/AN substance dependence. Specifically, motivational interviewing (MI), a directive client-centered approach for enhancing readiness for change in treatment (Hettema et al. 2005), inspired a concerted modification effort by Venner et al. (2007). As the basis for motivational enhancement therapy—which was found to be effective for alcohol dependence by the Project MATCH Research Group (1998)—MI served as the foundation for systematic consultation with AI/AN behavioral health providers and community members. The behavioral health providers went on to assist the researchers with the creation of an AI/AN MI manual that was culturally adapted to AI/AN communities in several ways, including overt discussion of spirituality, community, and cultural identity as well as reference to ceremonies and an optional MI-themed prayer. The manual is available for free download on the Internet (Venner et al. 2006) and currently serves as the basis for a randomized trial of MI in an AI substance abuse treatment program in the Southwestern United States (K.M. Venner, personal communication). One final example of (a minor) adaptation of MI for AI/AN substance dependence was reported by Boyd-Ball (2003). Briefly, in her partnership with an IHS-funded residential substance abuse treatment program for AI/AN adolescents, Boyd-Ball sought to

incorporate a family enhancement component to residential treatment as usual. This component supplemented MI for the parents of treated youth (as the basis for motivating them to support their offspring's sobriety) with a cultural "coming home" ceremony that honored the youth's completion of the treatment. The intervention was scheduled for evaluation, but results are yet to be published.

Cultural competence. Of course, beyond intentional and systematic cultural adaptation of existing EBTs, another form of adapting clinical interventions for AI/AN mental health problems could presumably be employed by skilled clinicians on the fly during treatment. Better known as cultural competence, this form of adaptation is routinely called for but is not well studied (Sue et al. 2009). The call for cultural competence in Indian Country arose from the apparent incompatibility between conventional psychotherapeutic approaches and the cultural practices of AI/ANs. Spang (1965) and Bryde (1971) were among the few who first identified the inherent difficulties in counseling AI/ANs. In a seminal empirical study, Sue et al. (1978) demonstrated that AI/ANs tended to dramatically underuse existing mental health services, with a majority of first-time AI/AN clients never returning for a second session of psychotherapy. Barter & Barter (1974) attributed this problem to the perceptions of certain urban AI/ANs that these services were not culturally responsive to their needs. Sue (1977), Schoenfeld et al. (1971), and Manson & Trimble (1982) added that underuse might be the result of negative attitudes among AI/ANs toward the presence of non-Native clinicians who were presumably insensitive to the cultural complexities of AI/AN problems. By building clinician competence to work with AI/AN clients in the domains of skills, knowledge, and awareness, multicultural professional psychology has sought to bridge the gap between mental health treatments and culturally diverse clienteles such as AI/ANs (Sue 2001).

It remains unclear, however, to what degree promotion of cultural competence can remedy

the problem of treatment efficacy for AI/ANs struggling with mental health problems. First, cultural competence tends to emphasize the accrual of a stock of relevant knowledge about various ethnoracial minority groups in the context of terrific intragroup diversity. The result is often an indefensible form of cultural essentialism that can create greater misunderstandings than it purports to remedy (Lakes et al. 2006, Waldram 2004). Second, cultural competence focuses on the role of the clinician in providing culturally consonant treatment. And yet, the issue of cultural compatibility between mental health treatment approaches and AI/AN cultural practices appears to run much deeper (Gone 2008a), motivating a shift in emphasis from the production of culturally competent therapists to the development of culturally commensurate therapies (Wendt & Gone 2011). Third, cultural competence cannot ensure that clinicians—no matter how skilled, knowledgeable, and self-aware—will actually provide efficacious treatments for AI/AN mental health problems, both because the evidence for the efficacy of established EBTs for AI/ANs is so limited and because many clinicians choose not to use established EBTs in their clinical practice. Finally, even if culturally competent clinicians did offer efficacious treatments for AI/AN mental health problems, there is no guarantee that AI/AN communities would prefer them because the basic knowledge assumptions that undergird scientific outcome assessment for mental health interventions are dismissed by many AI/ANs as ethically bankrupt owing to their ideological contamination through association with Euro-American colonization (Gone 2009, 2011b).

Summary

The effort to remedy evident disparities in AI/AN mental health status through clinical interventions has not been well studied for these culturally distinctive populations. Although AI/ANs can, in theory, avail themselves of the usual array of mental health programs and treatments, disproportionate levels of impair-

ment, poverty, lack of insurance coverage, and limited availability of treatment options ensure that far too many AI/ANs with diagnosable distress—like most Americans with these problems—do not obtain effective help in times of need. Interestingly, for some AI/AN populations help-seeking itself may not be appreciably lower than for the national population in general, especially when consultations with nonprofessional traditional cultural and spiritual providers are included. Nevertheless, large numbers of AI/ANs depend on IHS-supported health care for formal behavioral health treatment even though this federal agency remains chronically underresourced in multiple ways. It is unclear which specific psychosocial treatment modalities are available through the IHS-supported system, but few AI/ANs have participated in studies dedicated to the identification of efficacious mental health interventions. Moreover, efforts to tailor established EBTs to the needs of Indian Country have been few and far between, though fledgling efforts have occurred for both trauma and substance abuse. Nevertheless, even if a wider range of established EBTs were disseminated to AI/AN communities, it remains a strong possibility that AI/ANs would still prefer informal traditional services rather than clinic-based interventions for mental health problems. As a result, calls for cultural competence notwithstanding, the basic effectiveness of mental health services provided to AI/ANs has not been convincingly established and remains a cause for great concern.

REMEDYING AI/AN MENTAL HEALTH DISPARITIES

In this review, we have presented the most recent evidence for the durable existence of key mental health disparities in AI/AN communities. Despite the comparatively alarming prevalence of suicide, PTSD, substance abuse, and other externalizing disorders for these populations, reliably accessible, culturally appropriate, and demonstrably effective mental health services appear to remain in short supply for AI/AN clients. In the context of longstanding

Ethnopsychologies:
distinctive forms of
mental life expressed
in given cultural
communities

Historical trauma:
the collective,
cumulative, and
intergenerational
psychosocial legacy of
colonization or other
forms of mass
oppression

obligations by the U.S. government to protect
and promote the well-being of AI/AN com-
munities, such "unequal treatment" (Smedley
et al. 2002) registers as an appalling national
travesty. Clearly, if AI/AN mental health sta-
tus is to improve significantly in the foresee-
able future, a great deal more will need to be
done in service to this country's first Americans.
It remains a temptation when closing reviews
such as this to recommend the obvious: In-
dian Country deserves and requires additional
mental health resources for all domains of
the professional enterprise. More resources are
required for research surveillance of mental
health problems—including both risk and pro-
tective factors—and for empirical evaluation of
treatment outcomes—including both efficacy
and effectiveness trials—with AI/AN commu-
nity samples. Additionally, more resources are
required for the hiring of culturally sophisti-
cated mental health service providers who will
find a home working in Indian Country and
for the identification and recruitment of tal-
ented new mental health professionals who are
themselves AI/ANs. Finally, more resources are
required for the dramatic expansion of health
and mental health services through the IHS
and other (frequently rural) health care systems
that might reach increasing numbers of AI/AN
consumers.

If there is good news on any of these fronts,
it is the recent passage of the Patient Protection
and Affordable Care Act of 2010, which perma-
nently reauthorized the Indian Health Care Im-
provement Act of 1976. Besides ensuring that
more Americans in general will be covered by
health insurance (including AI/ANs), this legis-
lation also promised enduring support for a host
of specific behavioral health priorities in Indian
Country, including more comprehensive pro-
gramming for sexual abuse, domestic violence,
substance abuse, and suicide. The act even con-
tains provision for increased research on AI/AN
behavioral health issues (Indian Health Serv.
2011a). It remains an open question, of course,
whether Congress will appropriate adequate
funding for the success of these endeavors. As
worthy as this legislation may be, however, it is

crucial to note that efforts based on the alloca-
tion of additional resources for what are essen-
tially professional approaches and strategies for
addressing AI/AN mental health needs repre-
sent an investment in just one potential pathway
for future improvements in AI/AN mental
health status. And yet, as we hinted previously
in our discussion of cultural competence, there
is some doubt among growing numbers of
AI/ANs that simply buttressing and refining
the existing mental health service system will
truly remedy longstanding community mental
health disparities. Instead, an alternative vision
for a second pathway toward the amelioration
of mental health problems has arisen locally
from the shared insights of AI/AN behavioral
health experts, human services providers, and
community advocates with personal stakes in
the future well-being of Indian Country (Gone
2009, Goodkind et al. 2011, Novins et al.
2011). In contrast to professional construals of
mental health problems, this local vision di-
rectly implicates Euro-American colonization
as the source of mental health disparities.

Essentially, this local AI/AN alternative to
professional mental health discourse recognizes
colonization as the principal cause of mental
health disparities, ethnopsychologies as the
orienting frameworks for delineating AI/AN
wellness, cultural reclamation as the proper
treatment for mental health problems, and
traditional knowledges as the arbiter of mental
health treatment efficacy (Gone 2007, 2008b,
2009, 2010, 2011c). Briefly, in AI/AN behav-
ioral health contexts, the concept of historical
trauma is now routinely invoked for identifying
colonization as the prime cause of AI/AN
mental health problems (Evans-Campbell
2008, Gone 2009, Whitbeck et al. 2004).
Historical trauma was adopted by Brave Heart
(1998) from a clinical literature concerned with
Holocaust survivors and their offspring. She
applied this concept to AI/AN populations to
designate a form of posttraumatic response that
is distinguishable from PTSD by virtue of its
intergenerational, collective, and cumulative
impacts. Widely circulated throughout Indian
Country, this concept provides an explanation

for pathological distress that (*a*) anchors such experience to tangible histories of power inequity, (*b*) reinforces collective AI/AN cultural identity, and (*c*) overcomes resistance to therapeutic transformation by displacing paralyzing forms of self-recrimination. If historical trauma is the malady, then the goal of therapeutic intervention is to restore AI/ANs to wellness. AI/AN conceptions of wellness, however, differ in significant ways from mainstream American perspectives on well-being. Instead, these are grounded in enduring or revitalized community ethnopsychologies (Gone 2008b, 2011a). Ethnopsychologies are traditional community frameworks for conceiving of self, identity, personhood, social relations, and spirituality. They afford a compelling basis for identifying normative attributes of AI/AN well-being, such as construing personal identity in relation to family, community, and the environment or maintaining holistic balance and harmony between distinctive facets of the self (Gone 2011c).

Once the true etiology of AI/AN mental health problems and the attributes of AI/AN wellness have been properly appreciated, the prescribed forms of intervention within this alternative vision become self-evident. Specifically, if the deliberate repression of traditional AI/AN life ways by Euro-Americans led to epidemic prevalences of mental health problems in AI/AN communities, then reclamation and revitalization of these practices—especially ceremonial and ritual practices that affect the circulation of vitality within the cosmos—are the means for healing and restoration (Gone 2007, 2008b). Obviously, the practices most relevant for combatting the downstream effects of historical trauma pertain to traditional healing (Gone 2010, McCabe 2007), so there remains specific interest in indigenous AI/AN healing practices such as doctoring rituals, spirit consultations, pipe ceremonies, sweat lodges, and so forth. Finally, the mere survival of these therapeutic traditions—not just through the colonial encounter but also during the long precolonial era—is frequently accepted as locally compelling testimony regarding their

efficacy. In contrast, then, to the recent proliferation of evidence-based practice in mental health services, many AI/ANs instead assert the therapeutic efficacy of traditional cultural practices on the grounds of practice-based evidence (Echo-Hawk et al. 2011, Isaacs et al. 2005). That is, AI/AN suspicions of scientific rationality—especially when wedded to government policies as in the case of EBTs—find expression through alternative epistemologies referred to as traditional knowledges (Castellano 2000). In Indian Country, these knowledges routinely valorize first-hand experience—whether directly lived or recounted by authorities—as the ultimate arbiter of epistemic confidence (Darnell 1991). As a consequence, the rigor and expense of controlled trials for mental health interventions can seem absurd and wasteful to AI/AN community members in light of traditional AI/AN ways of knowing.

It is easy to casually dismiss the preceding account of AI/AN mental health disparities as mere folk discourse. And yet, we feel that several facets of this alternative construal readily lend themselves to a postcolonial project of community-based AI/AN restoration to wellness. For one thing, it seems a simple matter of historical fact that AI/AN community epidemics of substance dependence, family violence, and suicide emerged with the subjugation of AI/ANs to reservation captivity or forced "sedentarization" (Hicks 2007). Anthropologists have characterized the psychosocial disruptions of such brutal encounters as postcolonial disorders (Good et al. 2008). For another thing, countless AI/ANs today have recovered from substance abuse, violence, and suicidal behavior, and a large subset of these AI/ANs attribute their recovery to newfound participation in traditional cultural and spiritual practices (Gone 2011c, Spicer 2001, Torres Stone et al. 2006). We readily acknowledge that none of this can be taken as dispositive evidence for the "culture as treatment" hypothesis that follows from this alternative local AI/AN mental health discourse (Gone & Calf Looking 2011). Nevertheless, we

Postcolonial: the period of agentic community expression and self-determination, despite ongoing structural constraints, that typically follows collective experiences of colonization

"Culture as treatment" hypothesis: a claim by many AI/AN community members that the return to traditional indigenous worldviews and practices is itself an efficacious mental health intervention

think it perfectly appropriate to call for at least one rigorous demonstration project that, rather than starting with established EBTs and culturally modifying these for evaluation purposes, instead formulates a locally grounded "mental health" intervention on the basis of AI/AN ethnopsychology and therapeutic tradition for evaluation with regard to locally specified outcome criteria (Gone 2009). To our knowledge, not even one effort of this kind has been funded for evaluation, leading us to observe that support for such an endeavor—a seemingly pressing priority in Indian Country—should perhaps be framed as a matter of social justice.

In closing, we recognize two distinctive pathways toward future elimination of AI/AN mental health disparities. The more familiar of these is grounded in professional knowledge, activities, and institutions in the context of clinical health services. The second, alternative pathway is grounded in local AI/AN knowledge, activities, and institutions in the context of community projects of cultural reclamation and tribal self-determination. Whereas the former attempts to orchestrate therapeutic benefit through psychosocial intervention in clinical encounters with (usually) individual AI/ANs, the latter seeks to achieve therapeutic benefit through collective AI/AN empowerment and the postcolonial refashioning of small-scale AI/AN societies (i.e., nation building). There can be little doubt that the professional pathway for combating mental health disparities has received much greater attention and legitimacy in U.S. society. Nevertheless, it would be premature to underestimate the promise of the alternative pathway. In this regard, we conclude by revisiting the Great Smoky Mountains Study of Cherokee and white Appalachian youth. Specifically, this comparative longitudinal investigation of developmental psychopathology coincided with the establishment of a tribal casino and the distribution of community revenues to the families of Cherokee youths (but not to their white counterparts) midway into the study (Costello et al. 2003). The result of this particular instance of AI/AN nation building was a reduction of externalizing disorders among Cherokee adolescents at subsequent points of assessment and lower levels of psychiatric disorder (among the youngest cohort, which had been exposed to the income supplement for the longest) by the time they reached adulthood (Costello et al. 2010). This compelling natural experiment serves to remind us that, when it comes to AI/AN mental health disparities, the pathway to remedy may not necessarily originate from the conventions of the mainstream.

SUMMARY POINTS

1. AI/AN mental health status is increasingly difficult to study owing to societal shifts in ethnoracial identification whereby formerly non-Native individuals are increasingly transiting to self-reported AI/AN identities.

2. AI/ANs suffer from specific mental health disparities including disproportionately high rates of substance abuse, posttraumatic stress, youth behavior problems, and suicide.

3. Mental health services provided specifically for AI/ANs are funded primarily by the federal government and administered by the Indian Health Service or tribal governments.

4. Although a few evidence-based treatments have been culturally adapted for use with AI/AN clients, very little empirical intervention outcome research has been conducted with these populations.

5. Many AI/ANs are skeptical toward or dismissive of mainstream mental health services owing to differences in cultural orientation and commitments to tribal self-determination.

FUTURE ISSUES

1. The U.S. Congress should appropriate funds for adequately realizing the stated goals of the recently reauthorized Indian Health Care Improvement Act.

2. Mental health researchers must begin to routinely record whether AI/AN respondents are citizens of federally recognized tribal Nations.

3. Controlled outcome research of mental health interventions with AI/AN clients should be undertaken to determine treatment efficacy for AI/AN community populations.

4. Small-sample methodologies should be refined and circulated for incorporation into treatment outcome research in AI/AN communities.

5. Culturally grounded alternative interventions should be developed in partnership with AI/AN communities for subsequent implementation and evaluation to ensure congruence with tribal self-determination.

6. Additional community-based explorations of indigenous ethnopsychologies and healing traditions are necessary for identifying and preserving local cultural constructs of wellness and recovery.

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