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POST-TRAUMATIC STRESS DISORDER AND HIV RISK BEHAVIORS AMONG RURAL AMERICAN INDIAN/ALASKA NATIVE WOMEN

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Abstract: We assessed the relationship between post-traumatic stress disorder (PTSD), binge drinking, and HIV sexual risk behavior by examining number of unprotected sex acts and number of sexual partners in the past 6 months among 129 sexually active American Indian women. A total of 51 (39.5%) young women met PTSD criteria. Among women who met the PTSD criteria, binge drinking was associated with a 35% increased rate of unprotected sex (IRR 1.35, $p < .05$), and there was a stronger association between increased binge drinking and risk of more sexual partners (IRR 1.21, $p < .001$) than among women who did not meet PTSD criteria (IRR 1.08, $p < .01$) with a difference of 13% ($p < .05$). HIV intervention and prevention interventions in this population likely would benefit from the inclusion of efforts to reduce binge drinking and increase treatment of PTSD symptoms.

INTRODUCTION

Exposure to traumatic events increases risk for post-traumatic stress disorder (PTSD) and substance use disorders. From a public health perspective, an important but frequently overlooked sequela of trauma exposure is risk for HIV. Left untreated, PTSD symptoms present with high rates of concurrent alcohol and drug dependence ($>50\%$ and $>30\%$ respectively) (Volpicelli, Balaraman, Hahn, Wallace, & Bux, 1999), in turn elevating HIV sexual risk behavior (HSB) (Green et al., 2005; Hutton et al., 2001; Lang et al., 2003; Messman-Moore, Ward, & Brown, 2009). The rate of HIV diagnosis among American Indians and Alaska Natives (AI/ANs) in the U.S. continues to climb, rising from 9.5 per 100,000 in 2001 to 12.8 per 100,000 in 2010 (Centers for Disease Control and Prevention [CDC], 2010); one out of every three new HIV cases diagnosed is an AI/AN woman. The primary mode of exposure for AI/ANs women (67%) is heterosexual intercourse (CDC, 2012).

Particularly alarming is that, after an HIV diagnosis, AI/AN women have one of the lowest survival rates of any ethnic or racial group. Furthermore, epidemiologic evidence points to excessively high rates of sexually transmitted infections (STIs) among AI/ANs compared to the general population (Kaufman et al., 2007). These elevated rates of STIs may provide a two- to five-fold increase in risk for HIV infection among AI/ANs in the U.S. (Bertolli et al., 2004). Thus, it is important to understand this triangle of risk among trauma exposure, substance use, and HIV sexual risk behavior.

Multiple challenges place AI/ANs women at increased risk of HIV/STIs. These include a history of exposure to violence or assault (2.5 times higher than all other women; Amnesty International, 2007), alcohol misuse (U.S. Department of Health and Human Services, 2010), and elevated rates of intimate partner violence (IPV; Hess et al., 2012). Female survivors of IPV have higher STI prevalence and HIV sexual risk behaviors than women in nonviolent relationships (Hess et al., 2012). Research among non-Natives indicates that exposure to traumatic and abusive childhoods (Bartholow, Doll, Joy, & Douglas, 1994), sexual abuse (Miller & Paone, 1998), lifetime physical or sexual abuse by a partner (Molina & Basinait-Smith, 1998), and rape (Cunningham, Stiffman, Dore, & Earls, 1994) are associated with increased HIV sexual risk behaviors. These same links are likely to exist for AI/ANs. Indeed, AI/AN women have higher lifetime rates of mental health disorders associated with trauma exposure, including PTSD, than those reported by non-AI/AN women (Laudenslager et al., 2009). Increased risk for trauma exposure and its associations with substance use and PTSD have received special attention from many AI/AN communities (Libby et al., 2007; Libby, Orton, Novins, Beals, & Manson, 2005; Whitesell, Beals, Mitchell, Manson, & Turner, 2009).

The overall rate of alcohol consumption among AI/ANs is significantly lower than the national average (43.9% vs. 55.2%, respectively; Substance Abuse and Mental Health Services Administration, 2010). AI/AN women, however, are 2-3 times more likely than the general U.S. population to engage in binge drinking (May, 1996), typically defined as consuming 4 drinks over a 2-hour period for women (National Institute on Alcohol Abuse and Alcoholism [NIAAA], 2004). This pattern of alcohol consumption often co-occurs with increased engagement in HIV sexual risk behaviors and has been found to be associated with higher prevalence of violent events, lifetime diagnosis of PTSD, and increased risk for revictimization (Cook, Dinnen, & O'Donnell, 2011; Ginzburg et al., 2009; Johnson, Cottler, O'Leary, & Ben Abdallah, 2010). These cumulative findings highlight the urgency to better understand the potential etiological links between PTSD, HIV sexual risk behaviors, and substance use among AI/AN women.

PTSD has been associated with increased sexual risk behavior (Lang et al., 2003) and HIV seropositive status among women (Sherr et al., 2011). PTSD symptoms of emotional numbing or detachment, feelings of dissociation, or emotional dysregulation may interfere with women's ability

to establish emotional intimacy and, subsequently, to engage in long-term monogamous relationships (El-Bassel et al., 1998; El-Bassel, Gilbert, Vinocur, Chang, & Wu, 2011; El-Bassel, Gilbert, Witte, Wu, & Chang, 2011). Fear, mistrust, and emotional avoidance could compel individuals to engage in HIV sexual risk such as pattern of concurrent relationships and/or short-term serial monogamy (Brown et al., 2010). PTSD symptoms may have a direct relationship with HIV sexual risk behavior by interfering with cognitive or social problem-solving skills required to negotiate safe sexual practices successfully (Hien, Nunes, Levin, & Fraser, 2000). Furthermore, high sexual risk behavior may function as a means to decrease or cope with PTSD symptoms and related distress or negative affect (Kaysen et al., 2007). Similarly, alcohol misuse may result from the use of alcohol to self-soothe psychiatric distress related to PTSD symptoms (Jacobsen, Southwick, & Kosten, 2001; Ouimette, Read, Wade, & Tirone, 2010).

This study began in response to an AI/AN community's identified concerns regarding trauma, substance use, and sexual risk behaviors, and is seen as an important first step to provide the community a voice in developing empirically based interventions. We assessed the relationship between overall PTSD severity and substance use on HIV sexual risk behaviors among 129 young AI/AN women who were sexually active in the 6 months prior to the interview. We hypothesized that women with a clinical diagnosis of PTSD or subthreshold PTSD who reported more binge drinking would be more likely to engage in HIV sexual risk behaviors than women without these symptoms.

METHODS

Setting and Population

In full collaboration with a rural Northwest AI community, situated in the Plateau region, we use audio computer-assisted self-interviews (ACASI) to collect epidemiological data via respondent-driven, convenience, and venue-based recruitment methods from August to December 2011. Our venue-based recruitment focused on areas where young AI/AN women were known to socialize, such as tribal housing areas, local powwows, the maternal health clinic, high schools, and the local college. Young women 15-35 years old who self-identified as AI/AN and resided on or around the reservation were invited to participate in a survey on women's wellness. Participants were each compensated \$40. Interviews took up to 2 hours. The University of Washington Institutional Review Board for Protection of Human Subjects approved the study, and the Sacred Journey Community research team reviewed and approved all study materials.

Data were obtained from 146 women. Of these, 129 were sexually active in the past 6 months. To maintain anonymity of the respondents, oral consent was obtained from participants, and parental oral permission was obtained from females younger than 18 years unless they were

living independently from a guardian. The research protocol was approved by the University of Washington. Tribal partners participated in every phase of this research study. Specifically, they identified the area of concern, collaborated in the instrument design, conducted outreach and data collection activities, and assisted in interpretation of the findings. Tribal members governing the research approved the protocol and this manuscript.

Measures

Sociodemographic characteristics included age, high school/GED or higher versus less than 12 years of education, in school or employed (student, no job, full time, part time, or temporary) versus not in school or employed; in stable housing (own or rent, group home, dormitory) as opposed to unstable housing (homeless, transitional housing, temporary housing), whether the individual was currently living with a partner, and whether she was raising a child.

HIV sexual risk behavior with a male partner in the past 6 months. Based upon self-reported sexual histories, we calculated the number of unprotected vaginal or anal sex acts by subtracting the number of condom-protected sex acts from the total number of sex acts. We also asked about the number of male sexual partners in the last 6 months and concurrency (e.g., whether participants had overlapping sexual partners, and whether their partners had other sexual partners during the time they were together).

PTSD was measured with the 17-item PTSD Symptom Severity Interview (PSS-I; Foa, Riggs, Dancu, & Rothbaum, 1993). Participants were coded with PTSD or threshold PTSD as defined by the DSM-IV diagnostic criteria (yes/no). PTSD diagnosis included the following: re-experiencing (at least one of five items); avoidance (at least three of seven items); and hyperarousal (at least two of five items) in the past month. Nine items assessed the presence or absence of functional impairment across life domains (e.g., work, household duties, friendships). For subthreshold PTSD, we used a conservative definition: An individual had to meet the re-experiencing criteria and either avoidance or hyperarousal criteria, as well as report symptoms lasting 1 month or more and functional impairment (Blanchard, Jones-Alexander, Buckley, & Forneris, 1996).

Binge drinking. Women were asked how often they engaged in binge drinking (i.e., consumed five or more drinks within a couple of hours) in the last 12 months. Responses were on a 6-point scale from *Never* to *About once a day*. (Note that NIAAA [n.d.] defines binge drinking for women as four or more drinks within a couple of hours; thus, our findings will produce a conservative estimate of binge drinking.)

Childhood abuse. We used the sexual and physical abuse subscales from the Childhood Trauma Questionnaire (CTQ; Bernstein & Fink, 1998). Participants responded to each item in the context of “when you were growing up” and answered according to 5-point Likert scales ranging

from 1 (*Never*) to 5 (*Very often*). Items for the sexual and physical abuse subscales were summed, producing scores ranging from 5 to 25 with good to excellent internal reliabilities (Cronbach's alphas for the subscales were .95 for sexual abuse and .88 for physical abuse; Cronbach & Elbert, 2015).

IPV (Vannatter, Stancil, & D'Angelo, 2008). Physical IPV was assessed if one or more of the following occurred in the past 12 months: husband or partner physically abused (hit, slapped, kicked, choked) or threatened, limited activities against the women's will, or made [the woman] feel unsafe. Sexual IPV was assessed by asking women if they were "forced to take part in any sexual activity when did not want to" within the past 12 months.

Data Analysis

To determine if there was bias in our data collection methods and to assess our sample representativeness, we compared the sample demographic with U.S. Census Bureau American Community Survey (ACS) 2011-2013 estimates for AI/AN women ages 15-34 years old on the tribal lands. We focused on two HIV sexual risk behavior outcomes: number of unprotected vaginal or anal sex acts, and number of male sexual partners in the past 6 months. The two primary predictors of interest were binge drinking and PTSD status (threshold/PTSD diagnosis compared to no PTSD diagnosis). We considered demographics, child care and living arrangements, history of abuse, and domestic violence as potential confounding factors. We conducted bivariate analyses examining associations among demographics, social risk factors, binge drinking, and PTSD status, using chi-square tests on categorical measures and *t*-tests on continuous measures. We conducted univariate Poisson regressions to examine bivariate associations between potential covariates and the two outcomes. The impact of binge drinking and PTSD, and their interaction on HIV sexual risk behavior, then was assessed using multivariate regression models. Because the two outcomes were count variables, we considered both Poisson regression models and negative binomial models. We applied a modified likelihood ratio test to test for overdispersion. Based on the results of this test, we chose negative binomial regression model for number of unprotected sex acts and Poisson regression model for number of male sexual partners during the past 6 months. Additional covariates adjusted in the models were currently raising a child, currently living with a partner, having unstable housing, age, history of childhood sexual abuse, and sexual and physical 12-month IPV. Concurrency was excluded from the analysis due to overlap with the outcome measures. The criteria for inclusion were significant at $p < .10$ in the bivariate analysis, or suggested strongly by empirical evidence or literature regardless of statistical significance. For both outcomes, we present findings from subgroup analyses to highlight differences in effects of binge drinking on sexual risk behavior among those with and without a diagnosis of PTSD, with the significance of the difference

based on testing the coefficient of the interaction term between binge drinking and PTSD in the full model. For ease of interpretation, we present regression results in incidence rate ratio, which can be interpreted as relative risk.

RESULTS

Overall, the sample represented 15% of the population, and the participants' sociodemographic characteristics were similar to the demographic estimates reported by the ACS for the reservation for being married or having an unmarried partner (45.5% vs 42.7%, respectively) and raising a child in the household (48.8% vs. 42.6%, respectively); however, our sample had higher educational attainment (74.4% vs. 64.5% completed high school, respectively).

Sociodemographic characteristics, IPV and sexual history, and PTSD diagnosis are presented in Table 1. A total of 51 women (39.5%) met the criteria for PTSD (diagnoses: $n = 23$, 17.8%; subthreshold: $n = 28$, 21.7%). Women who met PTSD criteria were more likely to have at least a high-school diploma/GED ($\chi^2 = 4.34$, $p < 0.05$), had a greater history of childhood sexual and physical abuse ($t = 3.11$, $p < 0.01$; $t = 3.06$, $p < 0.01$, respectively), and reported greater rates of previous 12-month sexual and physical IPV ($\chi^2 = 5.54$, $p < .05$; $\chi^2 = 5.33$, $p < 0.001$, respectively) compared to those who did not meet PTSD criteria.

Table 1
Sociodemographic Characteristics, Substance Abuse, and Violence History of Those Who Met PTSD Threshold/Subthreshold Criteria Compared to Those With No PTSD Among 129 Young Rural AI/AN Women

	Total <i>N</i> = 129	No PTSD <i>n</i> = 78 (60.5%)	Threshold/ Subthreshold PTSD <i>n</i> = 51 (39.5%)	Test Statistic ^a
High school diploma or GED, # (%)	96 (74.4)	53 (68.0)	43 (84.3)	4.34*
In school or employed, # (%)	67 (51.9)	39 (50.0)	28 (54.9)	0.30
Currently raising a child, # (%)	63 (48.8)	36 (46.2)	27 (52.9)	0.57
Unstable housing, # (%)	50 (38.8)	29 (37.2)	21 (41.2)	0.21
Currently live with a partner, # (%)	59 (45.7)	37 (47.4)	22 (43.1)	0.23
Age in years, mean (<i>SD</i>)	24.5 (5.7)	24.1 (5.5)	25.1 (5.9)	0.97
Sexual Behavior (past 6 months)				
Number of partners, mean (<i>SD</i>)	1.6 (1.0)	1.8 (1.2)	1.4 (0.7)	2.44*
More than one partner, # (%)	48 (37.2)	23 (45.1)	25 (32.1)	2.25
Concurrent partners, # (%)	45 (34.9)	20 (39.2)	25 (32.1)	0.70
Number of unprotected sex acts, mean (<i>SD</i>)	22.2 (27.6)	23.0 (30.8)	21.6 (25.5)	0.29

continued on next page

Table 1, Continued
Sociodemographic Characteristics, Substance Abuse, and Violence History of Those
Who Met PTSD Threshold/Subthreshold Criteria Compared to Those With No PTSD
Among 129 Young Rural AI/AN Women

	Total N = 129	No PTSD n = 78 (60.5%)	Threshold/ Subthreshold PTSD n = 51 (39.5%)	Test Statistic^a
Binge drinking (past 12 months)				
Frequency of binge drinking, mean (SD) ^b	2.8 (1.6)	2.6 (1.5)	3.0 (1.7)	1.19
Intimate Partner Violence History				
Physical intimate partner violence, # (%)	26 (20.2)	7 (9.0)	19 (37.3)	15.33***
Sexual intimate partner violence, # (%)	11 (8.5)	3 (3.9)	8 (15.7)	5.54*
Childhood sexual abuse, mean (SD)	8.5 (5.7)	7.3 (4.5)	10.3 (6.7)	3.06**
Childhood physical abuse, mean (SD)	9.3 (4.9)	8.3 (4.1)	10.9 (5.5)	3.11**

^a Test statistics include chi square and *t* statistics; ^b Frequency of binge drinking was measured on a 6-point scale from *Never* to *Once a day*. **p* < .05, ***p* < .01, ****p* < .001.

On average, women had 1.6 (range, 1-6) sexual partners in the past 6 months, with 48 (37.2%) women reporting more than one sexual partner in the past 6 months. Forty-five (34.9%) women reported that they had concurrent sexual partners, their partner had other sexual partners, or both. Together, 59 (45.7%) women either had multiple partners or knew that they were not in a monogamous relationship during the past 6 months even though 19 (32.2%) of these women reported living with their current partner. On average, women reported having vaginal or anal sex 26.4 times (*SD* = 28.1; range, 0-105); an average of 22.2 times (*SD* = 27.6; range, 0-100) were unprotected.

HIV Sexual Risk Behavior

In the bivariate analyses (data not shown in tables), we found several associations among the two HIV sexual risk behaviors (i.e., number of unprotected sex acts and number of sexual partners) and sociodemographic characteristics, binge drinking, IPV history, and PTSD diagnostic criteria. Specifically, a greater number of unprotected sex acts was associated with older age (*b* = 0.04, *p* < 0.001), raising a child (*b* = 0.46, *p* < 0.001), unstable housing (*b* = 0.14, *p* < 0.001), living with a partner (*b* = 1.14, *p* < 0.001), concurrency (*b* = 0.15, *p* < 0.001), binge drinking (*b* = 0.06, *p* < 0.001), sexual IPV (*b* = 0.48, *p* < 0.001), physical IPV (*b* = 0.36, *p* < 0.001), and childhood sexual abuse (*b* = 0.05, *p* < 0.001). Women reported a greater number of sexual partners in the last 6 months if they were not living with a partner (*b* = -0.65, *p* < 0.01), reported greater binge drinking (*b* = 0.12, *p* < 0.01), and met PTSD criteria (*b* = 0.26, *p* < 0.10).

In Table 2, we present an adjusted subgroup analysis predicting number of unprotected sex acts in the past 6 months for women who met PTSD criteria and those who did not. Among women who met criteria for PTSD, binge drinking was associated with a 35% increased rate of unprotected sex ($IRR = 1.35, p < 0.05$), whereas, among women who did not meet the criteria for PTSD, binge drinking was not significantly associated with unprotected sex. The full model showed that there was a significant interaction between PTSD and binge drinking. Among those who met criteria for PTSD, binge drinking was more strongly associated with the rate of unprotected sex than among those who did not meet the criteria ($p < 0.001$).

Table 2
Adjusted Models within PTSD (Subgroup 1) and No PTSD (Subgroup 2) Subgroups:
Effects of Binge Drinking on Number of Unprotected Sex Acts in Last 6 Months,
Controlling for Various Factors, among 129 Sexually Active AI/AN Women

	Subgroup 1 (meet PTSD criteria) Unprotected Sex Acts $M = 1.4 (0.7)$ $n = 78 (60.5\%)$		Subgroup 2 (no PTSD) Unprotected Sex Acts $M = 1.8 (1.2)$ $n = 51 (39.5\%)$	
	IRR ^a	SE ^b	IRR	SE
Binge drinking	1.35	0.17*	0.95	0.09
Age	0.97	0.04	1.04	0.03
Currently live with a partner	4.46	2.35**	4.39	1.74***
Currently raising a child	4.05	2.02**	0.47	0.17
Unstable housing	1.74	0.77	1.56	0.47
Childhood sexual abuse score	1.00	0.04	1.00	0.04
Physical intimate partner violence in last 12 months	1.15	0.48	1.06	0.53
Sexual intimate partner violence in last 12 months	1.19	0.74	2.28	1.91
Constant	1.90	3.11	0.89	1.73

^a IRR = incidence-rate ratios; ^b SE = standard error. * $p < .05$, ** $p < .01$, *** $p < .001$

Similarly, in the subgroup analysis pertaining to number of male partners in the past 6 months (Table 3), binge drinking was significantly associated with a greater number of sexual partners among all women regardless of PTSD criteria. Also of note, women who met PTSD criteria had a higher mean number of sexual partners than those who did not. However, in the full model that included the interaction between PTSD and binge drinking, the incident rate ratio was considerably higher for women who met PTSD criteria ($IRR = 1.21, p < 0.01$) than for women who ($IRR 1.08$,

$p < 0.01$) with a difference of approximately 13% ($p < 0.05$). This finding suggests that there was a stronger positive association between binge drinking and number of sexual partners among women who met PTSD criteria compared to those who did not.

Table 3
Adjusted Models within PTSD (Subgroup 1) and No PTSD (Subgroup 2) Subgroups:
Effects of Binge Drinking on Number of Male Partners in Last 6 Months,
Controlling for Various Factors, among 129 Sexually Active AI/AN Women

	Subgroup 1 (meet PTSD criteria) Male Partners $M = 21.6$ (25.5) $n = 78$ (60.5%)		Subgroup 2 (no PTSD) Male Partners $M = 23.0$ (30.8) $n = 51$ (39.5%)	
	IRR ^a	SE ^b	IRR	SE
Binge drinking	1.21	0.6***	1.08	0.03**
Age	0.97	0.02	1.00	0.01
Currently live with a partner	0.60	0.10**	0.65	0.09***
Currently raising a child	1.20	0.20	0.96	0.09
Unstable housing	1.08	0.19	0.94	0.09
Childhood sexual abuse score	1.01	0.01	1.00	0.01
Physical intimate partner violence in last 12 months	0.85	0.15	1.03	0.13
Sexual intimate partner violence in last 12 months	1.60	0.28**	1.31	0.31
Constant	0.79	0.40	0.78	0.48

^a IRR = incidence-rate ratios; ^b SE = standard error. ** $p < .01$, *** $p < .001$.

DISCUSSION

AI/AN women are at high risk for contracting HIV and are increasingly represented in reported new cases of HIV within the U.S. Despite this trend, few studies have attempted to identify specific risk factors for HIV within this population. Based upon previous epidemiological findings within AI/AN communities, we examined the association among several important hypothesized potential risk factors, including trauma exposure, PTSD, and binge drinking (Beals et al., 2005; Deters, Novins, Fickenscher, & Beals, 2006; Liao et al., 2011; Libby et al., 2007)..

Overall, we found that meeting PTSD criteria strengthens the association between binge drinking and HIV sexual risk behavior. Binge drinking was associated with increased rates of unprotected sex and a greater number of sexual partners, especially among women who met criteria for PTSD. Specifically, women who met PTSD criteria and engaged in more frequent binge drinking also had more unprotected sex. Participants who reported having multiple sexual partners in this short 6-month time period, concurrent relationships, and a history of elevated trauma exposure reported more unprotected sex. The combination of sexual risk behavior, trauma exposure, and PTSD symptoms could translate to accelerated risk of disease transmission throughout a population (Cassels, Pearson, Walters, Simoni, & Morris, 2010; Morris, Goodreau, & Moody, 2007; Mosack et al., 2010).

Alcohol myopia posits that individuals will attend to the most salient cues in their environment when drinking (Steele & Josephs, 1990). These cues can include one's feelings of sexual arousal, which may help explain the role of binge drinking in influencing HIV sexual risk behavior (MacDonald, MacDonald, Zanna, & Fong, 2000). In other words, women who engage in more frequent binge drinking may be more likely to have sex while intoxicated, focusing their attention on sexual arousal (an impelling cue) rather than the possible risk of HIV/STIs (an inhibiting cue), leading to more instances of unprotected sex (MacDonald et al., 2000).

Consistent with AI/AN prevalence studies, we found relatively high rates of psychosocial stressors, including trauma exposure, PTSD, poverty, housing instability, and unemployment (Beals et al., 2005; Manson, Beals, Klein, & Croy, 2005). More than one third of our sample met the criteria for PTSD—a slightly higher rate than among AI/ANs in the Midwest (Beals et al., 2005). Similar to rates reported in national samples of AI/AN women, (Perry, 2004), one in two women had experienced either childhood sexual or physical abuse, and one fifth had experienced physical IPV in the last year. Of note, only 41.8% of our sample reported no history of exposure to interpersonal victimization. These findings highlight the heightened exposure to violence among this population. Furthermore, significant potential exists for long-term health consequences associated with elevated rates of trauma exposure. For example, childhood sexual abuse has been associated with increased risk of developing PTSD (Cook et al., 2011; Duran et al., 2004, 2009; Ginzburg et al., 2009; Twaite & Rodriguez-Srednicki, 2004; Widom, 1999), engaging in subsequent HIV sexual risk behaviors, and HIV transmission (Greenberg, 2001; Wyatt et al., 2002). Similarly, IPV has been found to increase the risk of both developing PTSD and engaging in a range of HIV sexual risk behaviors, including unprotected sex (Amaro, 1995; Cunningham et al., 1994; El-Bassel, Gilbert, Witte, et al., 2011; Gilbert et al., 2000; Hamburger et al., 2004; Tucker, Wenzel, Elliott, Marshall, & Williamson, 2004; Wingood & DiClemente, 1997; Wu, El-Bassel, Witte, Gilbert, & Chang, 2003), sexual practices leading to a high risk of STIs (El-Bassel et al., 1998; Wu et al., 2003), sex with multiple partners

(Gilbert et al., 2000; Tucker et al., 2004), the trading of sex for money or drugs (Beadnell, Baker, Morrison, & Knox, 2000; Rodriguez, Szkupinski, Quiroga, & Bauer, 1996), sex with risky partners (Cavanaugh, Hansen, & Sullivan, 2010; El-Bassel, Gilbert, Vinocur, et al., 2011; Hutton et al., 2001; Klein, Elifson, & Sterk, 2010; Stiffman, Dore, Earls, & Cunningham, 1992; Weir, Bard, O'Brien, Casciato, & Stark, 2008), and sex with HIV-positive partners (Cavanaugh et al., 2010; El-Bassel, Gilbert, Vinocur, et al., 2011; Weir et al., 2008). In addition, psychosocial stressors and substance use behaviors may interact with and compound each other to increase overall sexual risk. Indeed, alcohol use has been found to increase the risk of sexual assault revictimization, resulting in HIV risk (Messman-Moore et al., 2009; Testa, Hoffman, & Livingston, 2010; Ullman, Najdowski, & Filipas, 2009).

Interventions for substance use and comorbid PTSD increasingly have become an area of research focus. Promising effects of integrated treatments for PTSD and alcohol use have been found (Back, Brady, Sonne, & Verduin, 2006; Back et al., 2012; Hien, Campbell, Ruglass, Hu, & Killeen, 2010), although generalizability is limited by small sample sizes, high attrition, absence of control groups, or lack of standardization across protocols. Studies also have found that integrated treatments are not more effective than standard alcohol treatments or health education controls (Cohen & Hien, 2006; Hien et al., 2009; Morrissey et al., 2005). Combined treatments are lengthy and complex, which can create challenges when working in low-resource settings where session attendance may be more problematic. Furthermore, trauma-focused intervention research studies historically excluded individuals with comorbid alcohol or drug dependence (Riggs, Rukstalis, Volpicelli, Kalmanson, & Foa, 2003). However, recent studies suggest that focusing on trauma-related content and PTSD may improve both PTSD and substance use outcomes (Brady, Dansky, Back, Foa, & Carroll, 2001). Similarly, cognitive behavioral interventions for PTSD appear to be effective and helpful for individuals with HIV (Seedat, 2012). However, much of this research is preliminary, with small or uncontrolled trials, and generally does not examine the impact of ethnicity or income on treatment outcomes.

Due to high levels of trauma exposure in AI/AN communities, there is a need for evidence-based treatments that are culturally responsive and that target multiple psychiatric areas, including post-traumatic symptomology and alcohol misuse. Addressing trauma and related PTSD symptoms with clinical protocols for sexual risk behavior is essential and may reduce HIV/STI risk in these populations significantly. Prevention, intervention, and scientific advances for AI/AN populations would benefit from examination of the etiological effects of trauma exposure, substance use, and post-traumatic stress reactions (van der Kolk, 2009).

Limitations

There are several limitations to this study. First, the cross-sectional design limits the interpretation of the findings to associative only, and causal linkages among substance use, PTSD, and HIV sexual risk behaviors cannot be made. Future studies should examine the event-level associations between substance use and condom use among AI/AN women with and without PTSD. Second, the reliance on self-report data may have resulted in reporting bias for questions pertaining to stigmatizing behaviors such as substance use and sexual activity. However, data collection via ACASI, as opposed to interviewer-administrated data collection, may have helped encourage the disclosure of sensitive information (Lind, Schober, Conrad, & Reichert, 2013). A third limitation is generalizability to the community at large. However, in an effort to reduce selection bias, we recruited from a wide variety of venues affiliated with the AI/AN community. Finally, binge drinking was measured as five or more drinks within a couple of hours, which is a conservative estimate (as the typical definition for women involves consuming four or more drinks in a 2-hour period) and may have led to underreporting of binge drinking rates. Despite these limitations, the study also has many areas of strength, including the focus on AI/AN women and involvement of the tribal research committee in study design.

Implications and Conclusions

Among AI/AN women residing on a rural reservation, almost half met the criteria for PTSD or subthreshold PTSD. Women who reported more PTSD symptoms and who engaged in more frequent binge drinking were at greater HIV/STI risk. It is essential, therefore, to identify and address the underlying potential causes of substance use and HIV sexual risk behavior by understanding the effects of trauma on health and behavior. New interventions should address comorbid conditions such as PTSD and substance use to help reduce HIV sexual risk behaviors. Working closely with community-based organizations serving AI/AN populations to identify and address the needs of women with PTSD symptoms and substance use will help reduce both revictimization and additional costs to substance use and mental health programs. Traumatic events have besieged AI/AN women, yet these women display tremendous courage, strength, and resilience and are working together to turn this tide in their communities. Future research should examine how these collective strengths can be harnessed to reduce sexual and psychiatric risk and improve health within AI/AN communities.

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PREDICTING ATTITUDES TOWARD SEEKING PROFESSIONAL PSYCHOLOGICAL HELP AMONG ALASKA NATIVES

Brittany Freitas-Murrell, MS and Joshua K. Swift, PhD

Abstract: This study sought to examine the role of current/previous treatment experience, stigma (social and self), and cultural identification (Caucasian and Alaska Native [AN]) in predicting attitudes toward psychological help seeking for ANs. Results indicated that these variables together explained roughly 56% of variance in attitudes. In particular, while self-stigma and identification with the Caucasian culture predicted a unique amount of variance in help-seeking attitudes, treatment use and identification with AN culture did not. The results of this study indicate that efforts to address the experience of self-stigma may prove most useful to improving help-seeking attitudes in ANs.

There is a growing recognition regarding the importance of culture in psychotherapy. For example, integrating cultural beliefs, values, and preferences into the treatment decision-making process is now considered an integral part of evidence-based practice in psychology (American Psychological Association [APA], 2006). Further, research has found that culture plays an important role in one's attitudes toward psychotherapy (Conner, Koeske, & Brown, 2009; Gonzalez, Alegria, & Prihoda, 2005), decisions about starting treatment (Poleshuck, Cerrito, Leshoure, Finocan-Kagg, & Kearney, 2013), premature termination (McCabe, 2002; O'Sullivan, Peterson, Cox, & Kirkeby, 1989), and eventual treatment outcome (Coyhis & Simonelli, 2008; Gone & Trimble, 2012). Although some racial/ethnic minority groups have received much attention in psychotherapy and mental health research, others have largely been ignored, including Alaska Native (AN) groups.

AN is a term used to describe indigenous peoples encompassed by the physical boundaries of the state of Alaska (Roderick, 2011). While not exhaustive or entirely inclusive of all tribes and clans, the main cultural groups of the AN people are Aleut/Unangan, Athabascan, Eskimo (Yup'ik, Cup'ik, Siberian Yupik, Sugpiaq/Alutiiq, Inupiaq), Eyak, Haida, Tlingit, and Tsimshian (Roderick, 2011). AN peoples share some similarities to other indigenous peoples and are often grouped ethnically/culturally with American Indians. Although these groups have similarities such as emphasis on holism, use of a subsistence economy, and the experience of historical oppression

and marginalization in the U.S., AN peoples have a distinct culture that has been adapted to their specific geographical regions, including unique languages, art, spirituality, and ways of living (Roderick, 2011).

Research has indicated that ANs, as a group, show higher prevalence of several mental health problems compared to Caucasian individuals in the U.S. For example, reports have indicated that approximately 30% of ANs will suffer from depression at some point in their lifetime (Urban Indian Health Commission, 2007). Suicide also is a significant concern for many communities—it is the fourth leading cause of death for ANs, with a rate 3.6 times greater than that seen for Caucasians (Alaska Native Epidemiology Center & Alaska Native Tribal Health Consortium, 2009). Additionally, higher rates of substance abuse and interpersonal violence have been reported for this racial/ethnic group (Allen, Levintova, & Mohatt, 2011; Brems, 1996; Rodenhauser, 1994).

Despite higher rates of some mental health problems, ANs, as a group, have been found to underutilize psychotherapy services even when these services are readily available (Dickerson, 2006; National Alliance on Mental Illness, 2009; Shore & Manson, 2010). According to the National Healthcare Disparities Report, the percentage of American Indian and AN individuals who received mental health treatment in 2008 was 9.6%, and the percentage who received prescription medication for a mental health issue was 7.2% (U.S. Department of Health & Human Services, 2010). Although a number of variables could explain the underutilization of mental health services among ANs, some have suggested that attitudes toward psychotherapy likely play a significant role (Wolsko, Lardon, Mohatt, & Orr, 2007). Indeed, research across racial/ethnic groups has indicated that attitudes toward treatment are one of the best predictors of treatment use (Jimenez, Bartels, Cardenas, & Alegría, 2013; Nam et al., 2013; Vogel, Wade, & Hackler, 2007; Zhang & Dixon, 2003). Thus, an increased understanding of ANs' attitudes toward psychotherapy could aid in identifying ways to increase service utilization among ANs when it is needed.

Stigma and Attitudes toward Professional Psychological Help

In an effort to gain a deeper understanding of the attitudes that ANs hold toward mental health help-seeking behaviors, one can first identify variables that predict attitudes among other racial/ethnic groups. One variable that consistently has been found to predict attitudes toward psychotherapy is the stigma associated with help seeking. In this context, stigma has been defined as the negative effects that an individual may experience or perceive as the result of seeking psychological help and can include both social and private (self) forms (Corrigan, 2004). Social stigma consists of the perceptions of how the general society may view or treat an individual who seeks psychological help (e.g., “others will view me as weak if I seek help”). On the other hand, self-stigma includes perceptions about oneself for seeking psychological help (e.g., “I am weak if I seek help”).

Several studies have investigated the relationship between these two types of stigma and attitudes toward seeking mental health help. In one often cited study, Vogel et al. (2007) assessed social stigma, self-stigma, and attitudes toward psychotherapy in a sample of 680 undergraduate students. Both social and self-stigma were negatively correlated with help-seeking attitudes (i.e., higher levels of stigma were associated with more negative help-seeking attitudes), together explaining 57% of the variance in attitudes toward seeking psychological services. Although the exact level of prediction has varied, studies consistently have found that these two types of stigma significantly predict the help-seeking attitudes that individuals hold. In a recent meta-analysis aggregating data from 19 studies and 7,386 participants, Nam et al. (2013) found that, across studies, social stigma had a medium correlation ($r = -.24, p < .001$) and self-stigma had a large correlation ($r = -.63, p < .001$) with help-seeking attitudes.

In further exploring the relationship between social and self-stigma and attitudes toward seeking mental health help, some have examined whether the amount of variance explained by these two variables is consistent across racial/ethnic groups. For example, in a large-scale study with almost 5,000 participants, Vogel, Heimerdinger-Edwards, Hammer, and Hubbard (2011) examined the role of self-stigma in predicting attitudes toward psychotherapy with a sample of Caucasian men and with a sample of men from diverse minority racial/ethnic backgrounds. Across all groups, stigma explained 59% of the variance in attitudes toward seeking mental health services. However, the strength of the relationship between stigma and help-seeking attitudes did differ among racial/ethnic groups; the relationship between these two variables was weaker for African Americans compared to Asian, European, and Latino Americans. Vogel et al. (2011) indicated that these findings demonstrate the value of further exploring the role of stigma in predicting attitudes toward psychotherapy for other racial/ethnic minority groups.

Race/Ethnicity and Attitudes toward Psychotherapy

In addition to the potential moderating role race/ethnicity plays in the relationship between stigma and help-seeking attitudes, race/ethnicity by itself also may predict attitudes toward psychotherapy. Several studies have found that racial/ethnic groups do differ in their attitudes (Conner et al., 2009; Gonzalez et al., 2005). For example, in one meta-analysis with data from 5,713 Caucasian, Asian American, and Asian college student participants, Nam and colleagues (2010) found that Asian American and Asian participants held more negative attitudes toward psychotherapy than their Caucasian counterparts. As another example, Shim and colleagues (2009) examined attitudes in 5,386 adults and found that African Americans had more positive attitudes toward mental health help seeking compared to Caucasian and Hispanic/Latino participants. However, to our knowledge, research has yet to examine attitudes toward psychotherapy for ANs.

In addition, when studying attitudes toward psychotherapy, it is important to recognize that individuals within a racial/ethnic group are frequently heterogeneous in their levels of cultural identification. Given that psychotherapy is largely perceived as a Western form of treatment (Sue & Sue, 2008), individuals who more strongly identify with the majority culture may have more positive attitudes toward these treatments regardless of their race/ethnicity. A number of studies have found a link between acculturation and attitudes. Among Asian American college students, Leong, Kim, and Gupta (2011) found that overall levels of acculturation were positively correlated with attitudes toward psychotherapy. In another study with Asian American college students, Kim (2007) found that, although identification with the majority culture was not related to attitudes, strong identification with Asian culture was associated with more negative attitudes toward psychotherapy. Similar results have been reported in a number of other studies with Asian American participants (Atkinson & Gim, 1989; Kim & Omizo, 2003). However, to date very little research examining the relationship between strength of cultural identification and attitudes toward psychotherapy has been conducted with other racial/ethnic groups.

Purpose of the Current Study

The aim of the current study was to gain a better understanding of ANs' attitudes toward psychotherapy and examine whether those attitudes could be predicted by variables found to predict attitudes in the broader literature; specifically, social and self-stigma and strength of cultural identification with the Caucasian majority culture and AN minority culture. Given the existing literature regarding stigma and attitudes with other racial/ethnic groups, we hypothesized that stigma, particularly self-stigma, would significantly predict attitudes in AN participants in this study. Additionally, given the literature regarding cultural identification and attitudes, we hypothesized that level of cultural identification would predict attitudes above and beyond stigma alone. More specifically, we hypothesized that stronger identification with the Caucasian majority culture would be associated with more positive attitudes toward psychotherapy, and stronger identification with AN culture would be associated with more negative attitudes toward this Western form of treatment. Although it has yet to be tested empirically, this latter hypothesis has been suggested by others. For example, Grandbois (2005) suggested that, because of historical oppression and violence, those who strongly identify as AN may reject psychotherapy due to more negative attitudes toward anything that is deemed Western. Similarly, Johnson and Cameron (2001) have suggested that, although ANs who strongly identify with their culture likely would prefer more holistic forms of treatment and traditional ways of healing, ANs who identify with the Caucasian culture likely would be more open to psychotherapy. A better understanding of the attitudes that ANs hold toward psychotherapy has the potential to lead to methods for increasing service use among ANs when there is a need.

METHOD

Participants

Participants for this study were 126 self-identified AN college students attending a large Northwestern university. Several methods were used to recruit these participants, including advertisement on the Psychology Department's research portal, an e-mail sent out to AN students enrolled in the university, fliers posted on campus, and announcements made at campus organizations that serve AN students. Participants were compensated with their choice of either extra credit in an eligible psychology course, if enrolled, or entry into a drawing for one of several gift cards (value ranging from \$15 to \$25).

The majority reported their race/ethnicity as exclusively AN, and 47.6% of participants identified as being Bi-/Multiracial. These AN students self-identified as Yupik (25.4%), Inupiaq (23.8%), Athabaskan (11.1%), Aleut (9.5%), Tlingit (8.7%), other (10.4%), and two or more AN cultures (11.1%). Participants were primarily women (77.8%) and were single (40.5%) or in an unmarried committed relationship (32.5%). The average age of the sample was 27.52 ($SD = 8.24$), ranging from 18 to 58. While some graduate students did participate in the study (13.3%), the majority of participants were undergraduate students: first year (19.2%), second year (19.2%), third year (20.0%), and fourth year (28.3%). While only 15.9% of the sample currently were engaged in psychological services, more than half (62.7%) reported having participated in psychotherapy in the past. Additionally, 12.8% reported currently taking medication for a mental health issue, and 33.3% reported previous use. These percentages do overlap such that almost all of those who reported current use of psychological services or psychotropic medications also reported previous use of these two types of treatments.

Procedures

Data were collected for this study through an online survey which could be completed leisurely by participants from any computer. After providing consent, participants were asked to complete a series of demographic questions, followed by a measure of attitudes toward seeking professional psychological help, measures assessing social and self-stigma, and a measure of cultural identification, as well as a few additional measures used for other research purposes. The survey required approximately 30 minutes to complete. The study was approved by the university's Institutional Review Board and participants were treated in accordance with APA's ethical principles (APA, 2002).

Measures

Inventory of attitudes toward seeking mental health services. The 24-item self-report Inventory of Attitudes toward Seeking Mental Health Services (IASMHS; Mackenzie, Knox, Gekoski, & Macaulay, 2004) was used in this study to assess participants' attitudes toward seeking professional psychological help. Participants respond to items on the measure using a 5-point Likert-type scale (0 = *Disagree*, 1 = *Somewhat Disagree*, 2 = *Are Undecided*, 3 = *Somewhat Agree*, 4 = *Agree*). Total scores on the measure range from 0 to 96, and higher scores indicate more positive attitudes toward seeking professional psychological help. Mackenzie et al. (2004) reported a high level of internal consistency, $\alpha = .87$, and test-retest reliability, $r = .85$, as well as good discriminant, predictive, concurrent, and convergent validity for the measure. An internal consistency of $\alpha = .85$ was found with the current sample.

Orthogonal cultural identification scale. The Orthogonal Cultural Identification Scale (OCIS; Oetting & Beauvais, 1990-1991) was used in this study to measure participants' level of cultural identification, both with AN and the Caucasian majority culture. The OCIS originally was created as an alternative to other measures of acculturation which force participants to identify with either the majority or their heritage culture. Specifically recognizing that cultural identification does not have to be mutually exclusive, the OCIS was designed to allow participants to identify with multiple cultures at the same time. The OCIS consists of 6 items which are answered for both the majority culture (Caucasians) and the culture of heritage (for this study, AN). Items are presented on a 4-point Likert-type scale from 1 (*A lot*) to 4 (*None at all*). Total scores for each subscale range from 6 to 24, with lower scores indicating a higher level of identification with that specific cultural group. With other AN and American Indian samples, the OCIS has been found to be a reliable and valid measure, with an internal consistency ranging from $\alpha = .85$ to $\alpha = .95$ (Stewart, Swift, Freitas-Murrell, & Whipple, 2013). An internal consistency of $\alpha = .93$ for the AN subscale and $\alpha = .83$ for the Caucasian subscale was found with the current sample.

Self-stigma of seeking help. The 10-item self-report Self-Stigma of Seeking Help (SSOSH) scale was developed by Vogel, Wade, and Haake (2006) to measure self-stigma associated with a person's decision to seek psychological help. Items on this measure are rated on a 5-point Likert-type scale (1 = *Strongly Disagree*, 2 = *Disagree*, 3 = *Agree and Disagree Equally*, 4 = *Agree*, 5 = *Strongly Agree*). Item responses are summed with a possible range from 10 to 50, with higher scores reflecting more self-stigma. Vogel et al. (2006) report a high level of internal consistency, $\alpha = .90$, and test-retest reliability, $r = .72$, as well as adequate construct, criterion, and predictive validity (differentiating between those who do and do not seek out psychological services) across samples. An internal consistency of $\alpha = .88$ was found with the current sample.

Social stigma for receiving psychological help. The Social Stigma for Receiving Psychological Help (SSRPH) scale was designed by Komiya and colleagues (2000) to measure perceptions of social stigma associated with seeking psychological help. The SSRPH is composed of five items, each rated on a 4-point Likert-type scale (1 = *Strongly Disagree*, 2 = *Disagree*, 3 = *Agree*, 4 = *Strongly Agree*). Items are summed, producing a possible range from 5 to 20, with higher scores reflecting greater perception of social stigma. Komiya et al. (2000) report that the SSRPH has an adequate level of internal consistency, $\alpha = .72$, construct validity, and concurrent validity. An internal consistency of $\alpha = .87$ was found with the current sample.

RESULTS

A hierarchical multiple regression analysis was conducted to test whether cultural identification and perceptions of stigma could predict attitudes toward seeking professional psychological help in the sample of AN participants. Given the large body of research that already has demonstrated a significant relationship between perceptions of stigma and attitudes, cultural identification for ANs was tested as a predictor above and beyond the two stigma variables. Thus, the first regression model that we tested included social and self-stigma as predictors of help-seeking attitudes; and then, in a second model, level of identification with the Caucasian culture and identification with AN culture were added. In addition, current or previous psychotherapy use was added to both models to control for this variable which also potentially predicts attitudes. Means, standard deviations, and correlations for each of the measures can be found in Table 1. Individually, significant correlations were found among all five predictors and help-seeking attitudes. Specifically, higher perceptions of social and self-stigma were associated with more negative help-seeking attitudes. Also, a weaker identification with AN culture and a stronger identification with the Caucasian culture (lower scores on the OCIS measure represent a stronger identification with the given culture) were associated with more positive help-seeking attitudes. Also, current or previous therapy experience was associated with more positive attitudes.

Taken together, the first model, including therapy experience, social stigma, and self-stigma, as predictors of help-seeking attitudes, was significant, $R = .72$, $F(3, 112) = 40.66$, $p < .001$, indicating that 50.8% of the variance in attitudes was predicted by these three variables. The regression coefficients, t values, and squared semi-partial correlations for this first model can be found in Table 2. Of the three variables, only perceptions of self-stigma explained a significant amount of unique variance (23%) in help-seeking attitudes.

Table 1
Means, Standard Deviations, and Correlations for the Study Variables

	Treatment History ^a	Self-stigma	Social Stigma	OCIS-AN ^b	OCIS-Caucasian ^c
Attitudes	.22**	-.71**	-.50**	.19*	-.34**
Treatment History		-.15	.00	.12	-.04
Self-stigma			.61**	-.11	.20*
Social Stigma				-.10	.13
OCIS-AN					-.05
Mean		23.66	10.78	13.69	10.42
SD		7.59	3.38	4.98	3.55

^a Treatment history = Current/Previous Use of Psychotherapy; ^b OCIS-AN = Orthogonal Cultural Identification Scale – Alaska Native Subscale; ^c OCIS-Caucasian = Orthogonal Cultural Identification Scale – Caucasian Subscale. * $p < .05$, ** $p < .01$.

Table 2
Regression Coefficients, t Values, and Squared Semi-partial Correlations for Model 2 in the Hierarchical Regression Analysis

Variables	b	95% CI for b	β	t value	sr^2_{unique}
First Model					
Self-stigma	-1.15	-1.47, -0.84	-.61	7.28**	.23
Social Stigma	-0.53	-1.23, 0.17	-.13	1.51	.01
Treatment History ^a	3.80	-0.08, 7.67	.13	1.94	.01
Second Model					
Self-stigma	-1.07	-1.38, -0.77	-.57	6.96**	.01
Social Stigma	-0.50	-1.17, 0.17	-.12	1.48	.19
Treatment History	3.45	-0.29, 7.19	.12	1.83	.01
OCIS-AN ^b	0.27	-0.10, 0.63	.09	1.45	.01
OCIS-Caucasian ^c	-0.79	-1.30, -0.28	-.20	3.05*	.04

^a Treatment history = Current/Previous Use of Psychotherapy; ^b OCIS-AN = Orthogonal Cultural Identification Scale – Alaska Native Subscale; ^c OCIS-Caucasian = Orthogonal Cultural Identification Scale – Caucasian Subscale. * $p < .01$, ** $p < .001$.

The second model, which also included Caucasian identification and AN identification as predictors, also was significant, $R = .75$, $F(5, 110) = 28.84$, $p < .001$, adding significantly to the first model, R^2 change = .05, $F(2, 110) = 5.85$, $p < .01$. The regression coefficients, t values, and squared semi-partial correlations for the second model also can be found in Table 2. Given the other variables in the model, self-stigma and Caucasian identification uniquely predicted help-seeking attitudes scores above and beyond the other variables. Specifically, for each unit increase in self-stigma as measured by the SSOSH, there was a 1.07-unit decrease in help-seeking attitudes as measured by the IASMHS, indicating that greater perceptions of self-stigma were associated with more negative

attitudes toward psychotherapy. Additionally, for each unit increase in Caucasian identification as measured by the OCIS-Caucasian subscale, there was a 0.79-unit decrease in help-seeking attitudes on the IASMHS, indicating that stronger levels of identification with the Caucasian culture were associated with more positive attitudes. While self-stigma uniquely explained 19% of the variance in attitudes, Caucasian identification uniquely explained 4% for the AN participants.

DISCUSSION

This study sought to provide a better understanding of the attitudes ANs hold toward seeking mental health treatment and test whether those attitudes could be predicted by stigma toward psychological help (social and self) and cultural identification (AN and Caucasian identification)—two sets of variables that have been found to predict attitudes in other racial/ethnic groups. In first examining the relationship among social stigma, self-stigma, and attitudes, these two types of stigma together explained roughly 50% of the variance in help-seeking attitudes in the sample. A number of previous studies by Vogel and colleagues (Vogel et al., 2006, 2007, 2011) with other ethnic groups also have found that stigma explains approximately 50% of the variance in help-seeking attitudes.

It was found that cultural identification was, to a small degree, able to predict help-seeking attitudes above and beyond stigma (social and self) and current/previous use of psychotherapy. Specifically, AN participants who identified more with the Caucasian culture tended to have more positive attitudes toward seeking mental health services, while level of identification with AN culture was not significantly related. Previous research has suggested that individuals belonging to a racial/ethnic minority who have assimilated into the Caucasian culture tend to have more positive attitudes toward Western forms of psychological treatments (Chen & Mak, 2008; Grandbois, 2005; Johnson & Cameron, 2001). Similarly, in this study ANs who more strongly identified with the Caucasian culture, regardless of their identification of AN culture, were more likely to endorse positive attitudes toward seeking psychotherapy. Contrary to the hypothesis, stronger identification with AN culture was not associated with more negative attitudes toward psychotherapy. This finding contradicts research that has been conducted with Asian Americans which indicated that higher levels of enculturation were associated with more negative attitudes toward psychotherapy (Kim, 2007). Perhaps AN cultural values and beliefs are more consistent with some of the foundational aspects of psychotherapy. It is also possible that this result was due to the high report of prior exposure to psychotherapy in this sample—perhaps, given their experience with psychotherapy, as well other demographic characteristics (age, education level, residence in a more urban environment), their attitudes were not related to their identification with AN culture, but for a different sample the hypothesized relationship would be present.

Limitations of the Study

A number of limitations should be considered when interpreting the results of this study. First, this study was limited to a college student convenience sample. Thus, the participants were likely younger, more educated, and more familiar with mental health problems and psychological treatments than many other AN groups. Further, they may have had a higher level of Caucasian identification and more experience with Western mental health services than other ANs. Indeed, almost two thirds of the sample had previous or current experience with psychotherapy and one third had current or previous use of medications. Based on previous research indicating lower levels of treatment use by AI/ANs compared to Caucasians (Dickerson, 2006; National Alliance on Mental Illness, 2009; Shore & Manson, 2010), this percentage is much higher than what would be expected with other AN samples. Although the generalizability of the results is limited, the findings do speak to an important need. For example, among all age groups, the rate of suicide for ANs is 3.6 times what it is for Caucasians; for those ages 15-24 years, the rate of suicide for AN men is 9 times what it is for Caucasian men, and for AN women, it is 19 times what it is for Caucasian women (Alaska Native Epidemiology Center & Alaska Native Tribal Health Consortium, 2009). Thus, understanding factors that may influence help-seeking behavior among AN emerging adults is critical. Still, further research on help-seeking attitudes with AN samples that differ in age, education level, gender, and mental health treatment experience is needed.

This study was also limited by the variables that were included. For example, this study focused on attitudes toward seeking Western forms of mental health services, but did not address attitudes toward seeking more traditional ways of healing in AN culture (e.g., family/tribal/religious leaders; talking circles; shamanism; sweat lodges; potlatch ceremonies). Additionally, only three sets of variables (treatment use, stigma, and cultural identification) were included in the prediction of attitudes. Although previous research had indicated that these variables play an important role in predicting attitudes, other variables (e.g., expectations, preferences) also may play an important role. Finally, in this study, attitudes were assessed through a self-report questionnaire. Although self-report attitudes have been found to predict actual treatment attendance (Pettinati, Monterosso, Lipkin, & Volpicelli, 2003), the results of this study do not provide information on what variables predict service utilization. Future research examining attitudes toward other mental health treatment options, with other predictor variables, and examining service utilization by ANs, is needed.

Recommendations for Future Research

Research seeking to develop and test methods for improving attitudes toward mental health utilization among AN peoples is needed. Based on the results of this study, methods aimed at reducing self-stigma may prove most useful. Relatedly, methods familiarizing AN peoples with these types of Western interventions may go a long way to reduce stigma and improve attitudes. Additionally, research should explore historical and contextual factors such as discrimination toward AN peoples and how these may impact stigma and attitudes toward mental health help seeking. Further, research investigating ANs' preferences for treatment—another variable that, according to Stewart and colleagues (2013), can predict service utilization—also would enrich the literature in regards to providing psychological services to AN communities and individuals. Finally, methods for integrating traditional ways of healing for AN peoples into psychotherapy in hopes of developing treatment approaches that are better suited to this particular cultural group are important.

Conclusions

While there is a large body of research investigating attitudes toward mental health treatment with some racial/ethnic groups, little is known about help-seeking attitudes among ANs. In this study, attitudes toward psychotherapy in a sample of AN participants was further examined, testing whether attitudes could be predicted by perceptions of stigma and cultural identification. Taken together, these variables explained roughly 55% of the variance in help-seeking attitudes. Although each of the variables was significantly related to help-seeking attitudes when examined separately, only self-stigma and identification with the Caucasian culture uniquely explained the variance in attitudes toward seeking psychological help.

These results have a number of important implications for psychotherapy with ANs. First, mental health professionals may be able to increase service utilization by ANs who are in need by addressing stigma. In general, efforts to normalize mental health problems and treatment-seeking behaviors through public education campaigns may prove useful in addressing the stigma. However, specific efforts tailored to AN communities also may be needed. Particularly, mental health professionals should seek to advocate for psychotherapy through the appropriate community channels, such as tribal healers/doctors and community elders. Further, efforts can be made to adapt psychological services so that they build upon the strengths of AN culture. For example, a group therapy setting could incorporate aspects of AN talking circles and focus on common experiences and information sharing among AN individuals. Such incorporation of traditional healing methods into psychotherapy practice also may increase utilization of services (Coyhis & Simonelli, 2008; Gone & Trimble, 2012) and ultimately may improve attitudes toward mental health treatment. These

steps may assist mental health providers in better advocating for and delivering services to ANs, as well as offering more informed, culturally sensitive interventions that better suit the values, beliefs, and preferences of AN peoples. However, further empirical research is needed to test whether these suggested efforts to reduce stigma and improve attitudes toward mental health treatments in ANs are truly effective.

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SYSTEMATIC REVIEW OF INTERVENTIONS FOCUSING ON INDIGENOUS ADOLESCENT MENTAL HEALTH AND SUBSTANCE USE

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Abstract: Mental health and substance use are pressing public health concerns among Indigenous adolescent populations. This systematic review analyzed interventions focusing on mental health and substance use that utilize the Positive Youth Development (PYD) framework, incorporate culturally tailored programs, and are geared toward Indigenous adolescents. In total, 474 articles were retrieved from PSYCInfo and PubMed databases. Eight articles were eligible for analysis, with six focusing on AI/AN populations in the U.S. Most programs reported positive or expected outcomes. All the programs incorporated PYD variables, while all but one were culturally grounded or included deep structure adaptations. Implications are further discussed.

INTRODUCTION

Approximately one in five adolescents experiences mental health concerns, most commonly exhibited as symptoms of depression and anxiety (World Health Organization [WHO], 2005). Addressing mental health concerns during adolescence is particularly important due to the influence of mental well-being on individuals' ability to become contributing members of society, with implications for future health and quality of life (Kessler et al., 2005; WHO, 2005). During adolescence, individuals develop coping mechanisms for stressful situations (Williams, Holmbeck, & Greenley, 2002). Risky behaviors such as substance use—specifically, alcohol and tobacco use—serve as ineffective coping strategies that may both impact and be influenced by mental health (Brooks, Harris, Thrall, & Woods, 2002). These findings support the need for preventive measures addressing mental health and substance use among adolescents (Ansell et al., 2008; Williams et al., 2002).

Indigenous youth, in particular, are at greater risk for mental health concerns when compared to majority groups, with elevated prevalence and incidence of substance use, suicidality, mood disorders, and anxiety disorders (Australian Bureau of Statistics, 2011; Australian Health Ministers' Advisory Council, 2012; Goodkind et al., 2010; Look, Trask-Batti, Agres, Mau, & Kaholokula,

2013; Māuri Ora Associates, 2008; Storck, Beal, Bacon, & Olsen, 2009; Zubrick et al., 2005). In the U.S., American Indian and Alaska Native (AI/AN) youth have markedly increased rates of suicide and alcohol-related deaths, which are 3.3 and 10 times greater, respectively, than aggregate national data (Indian Health Service, 2009; Storck et al., 2009). Other Indigenous youth demonstrate similar concerns, with Native Hawaiian and Pacific Islander youth being 3.75 times more likely to make a suicide attempt compared with White youth in the U.S. (Wong, Sugimoto-Matsuda, Chang, & Hishinuma, 2012). Māori youth in New Zealand have rates of suicide two to three times greater than those of non-Māori populations (Beautrais, Wells, McGee, & Oakley Browne, 2006). In Australia, Indigenous male and female youth, respectively, have rates of suicide of 43.4 and 9.9 (per 100,000) compared with 18.7 and 3.2 for non-Indigenous youth ages 15-19 years, and are at heightened risk for experiencing mental health and substance use disorders (Australian Government Department of Health, 2013). Compared to the rest of the Canadian population, First Nations and Inuit youth have increased prevalence of substance use; in addition, First Nations youth are 5 to 7 times more likely to die from suicide, and Inuit youth are 6 to 11 times more likely to die from suicide (Government of Canada, 2006). Despite increasing efforts to address behavioral and mental health concerns in Indigenous populations, disparities continue to exist (Goodkind et al., 2010).

The purpose of this paper is to conduct a systematic review of published literature about interventions that address mental health and substance use disparities of Indigenous youth in selected English-speaking countries, including AIs/ANs and Native Hawaiians in the U.S., Māori in New Zealand, Aboriginal persons in Australia, and First Nations and Aboriginal persons in Canada. This review utilizes the Positive Youth Development (PYD) framework, which is being used increasingly to prevent adolescent risk behaviors by focusing on strengths that may buffer adversity and stress (Maslow & Chung, 2013; Youngblade et al., 2007). This systematic review also analyzes interventions based on their approach of tailoring programs to demonstrate cultural competence (Okamoto, Kulis, Marsiglia, Holleran Steiker, & Dustman, 2013).

Framework Assessment

PYD

PYD is an integral theory with adaptations from the Developmental Assets and Socio-Ecological Model (Atkiss, Moyer, Desai, & Roland, 2011) that may serve as an important framework for interventions geared toward Indigenous adolescents, due to its emphasis on protective factors to enhance their ability to cope with stressors in life (Spencer & Spencer, 2014). This strengths-based approach aims to increase the capacity of youth to develop self-expression, self-efficacy, and a sense of belonging through positive assets developed in supportive contexts, which is essential for

healthy development (Ansell et al., 2008; Spencer & Spencer, 2014). The philosophy underlying the PYD framework aligns with many Indigenous values by emphasizing holistic approaches to youth development (Durie, 2011; Mau, Blanchette, Carpenter, Kamaka, & Saito, 2010). Consistent with the PYD framework that highlights the importance of supportive relationships and environments, Indigenous adolescents often develop positive life and coping skills when appropriate support is provided by their families and communities (Ansell et al., 2008; Durie, 2011; Spencer & Spencer, 2014).

Culturally Tailored Programs

Indigenous persons are diverse, and their cultural identities may be influenced by historical, relational, and contextual factors that are unique to their communities, such as recognition of the Indigenous group by the local majority group, impacts of acculturation and discrimination, exposure to violence, and access to resources (Harris, Carlson, & Poata-Smith, 2013). However, in general, Indigenous populations face many negative consequences of cultural and historical trauma, which may be transmitted intergenerationally (Sotero, 2006). Due to colonization and compulsory assimilative strategies, Indigenous populations may experience a sense of alienation, which can contribute significantly to health disparities and adverse consequences in emotional, social, and mental well-being (Brave Heart, Chase, Elkins, & Altschul, 2011; Brave Heart & DeBruyn, 1998; Gracey & King, 2009; Mayeda, Chesney-Lind, & Koo, 2001). Moreover, previous unethical research among Indigenous populations also has led to feelings of distrust toward the scientific community (Burhansstipanov, Christopher, & Schumacher, 2005). Because adolescence is a crucial developmental time period when individuals begin to explore their identity, values, and place in society (Erikson & Erikson, 1997), Indigenous adolescents, in particular, may experience feelings of dissonance in a majority culture that often marginalizes their beliefs and practices (Atkinson, Morten, & Sue, 1993).

While differences exist in cultural identities within and among Indigenous populations, culturally tailored programs are important for increasing program effectiveness and acceptance, particularly with sensitive topics such as mental health and substance use (Betancourt, Green, Carrillo, & Ananeh-Firempong, 2003; Whaley & Davis, 2007). Culturally tailored programs may demonstrate cultural competence along a continuum ranging from culturally grounded programs, programs with deep structure adaptations, programs with surface structure adaptations, to nonadapted programs (Okamoto et al., 2013). As defined by Okamoto et al., culturally grounded programs include curricula and interventions that are derived organically by community-driven efforts that place the social and cultural contexts of the targeted population at the center. Deep structure adaptations incorporate modifications to a pre-established or evidence-based program rooted in cultural contexts and constructs to enhance acceptance by targeted participants. Surface structure

adaptations include modifications to images or text in existing or previously validated curricula to increase familiarity of concepts being taught. Although each type of approach has strengths and limitations, surface structure and nonadapted programs are least desirable and often unacceptable to minority communities due to their inability to address core cultural components.

METHOD

Articles from the PSYCInfo and PubMed databases were retrieved between September 2013 and September 2014. We used these databases due to their strong emphases on peer-reviewed literature in the medical, behavioral sciences, and mental health fields. An adaptation of the PRISMA Statement (Moher, Liberati, Tetzlaff, Altman, & the PRISMA Group, 2009) was utilized to identify peer-reviewed journal articles evaluating programs designed to improve mental health and reduce substance use among Indigenous adolescents in the U.S., New Zealand, Australia, and Canada. The PRISMA Statement helps authors review literature systematically with the intent of evaluating health interventions (Moher et al., 2009).

Inclusion Criteria

We conducted seven searches with a combination of the following words, using the Boolean operating term AND between each search category: 1) intervention; 2) Native or Indigenous or Aboriginal; 3) youth or adolescent or teenager; and 4) positive youth development, mental health, emotion, anxiety or trauma, depression or suicide, stress, and cope or coping. To be included in this review, studies needed to: 1) examine an observed variable related to mental health and/or substance use; 2) have an intervention targeting Indigenous, Native, or Aboriginal youth from selected English-speaking countries between the ages of 10 and 19 years, in accordance with the WHO definition of an adolescent; 3) be written in English; 4) be published as a peer-reviewed journal article and indexed in the PsychInfo or PubMed database, with final observed variables in the intervention; and 5) be published in 2000 or later to be consistent with classifications of the various mental health conditions (i.e., depression, anxiety disorders, and substance abuse/dependence) identified in the DSM-IV-TR, which was published in 2000 (American Psychiatric Association, 2000).

The DSM-IV-TR mental health classifications correspond to the International Statistical Classification of Diseases (ICD), the international diagnostic tool for mental health and other disorders (WHO, 2015). The adapted version of the ICD-10, ICD-10-AM/ACHI/ACS, was modified for use in Australia in 1998 and in New Zealand in 1999, while the adapted version of the ICD-10, ICD-10-CA, was modified for use in Canada and introduced in 2000. Articles published prior to 2000 were excluded for this review in hopes of standardizing criterion of mental health and

substance use disorders examined by authors. There were no restrictions on study design, study duration, follow-up period, intervention strategies, or sample size. While interventions did not need to focus exclusively on Indigenous populations, results needed to have specific information relating to Indigenous populations of interest to be included in this analysis.

Framework Analysis

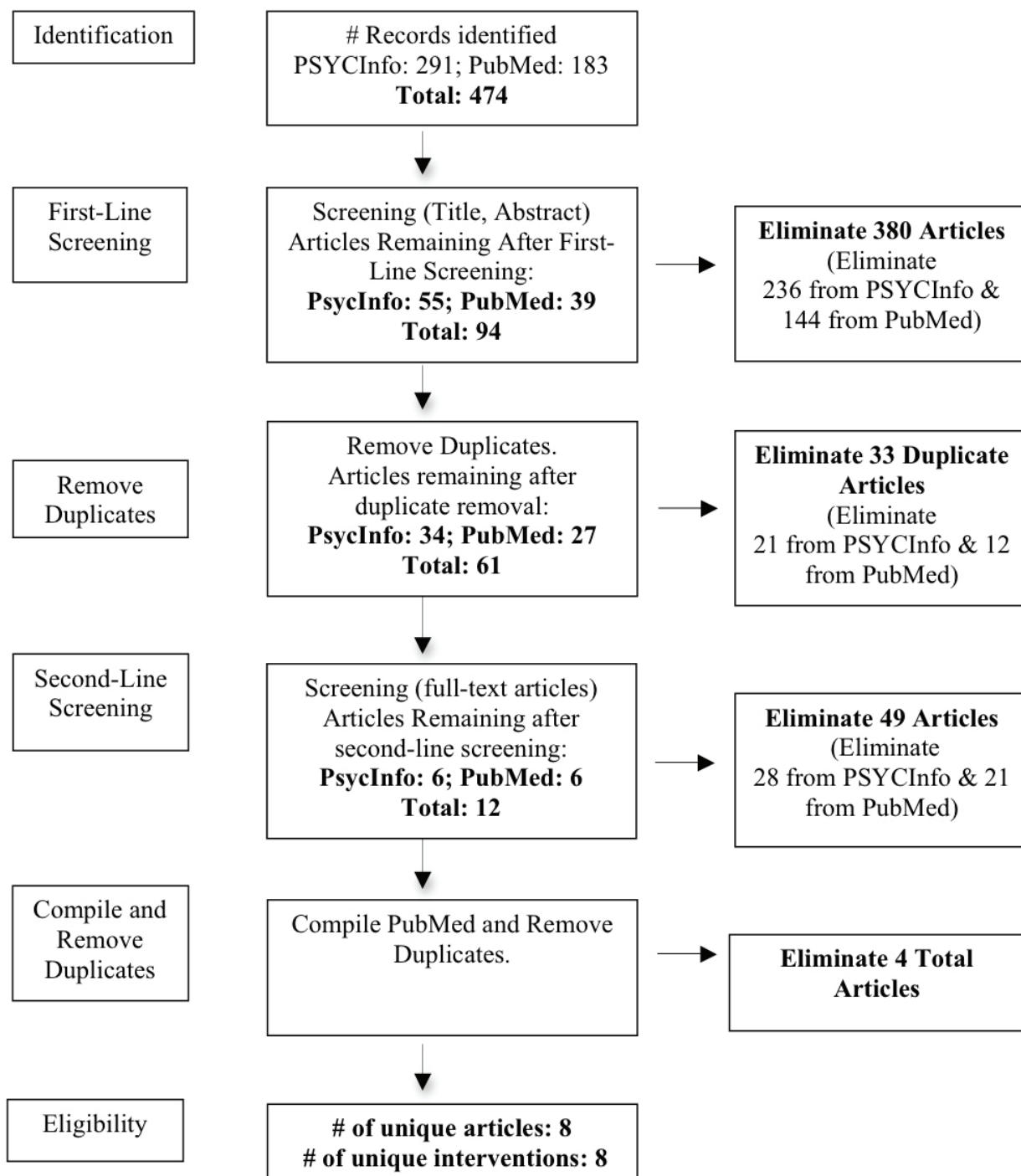
Articles included in this review were analyzed based on two different frameworks: PYD and cultural tailoring. First, based on the authors' descriptions, we analyzed interventions for their incorporation of PYD components based on 1) involvement of positive people (e.g., peers, family members, community members); 2) positive opportunities for participants to develop and apply internal assets or coping skills; or 3) availability of positive environments, generally occurring through environmental modifications during the intervention or through partnerships with the community to make changes in participants' environment (Ansell et al., 2008; Durie, 2011; Spencer & Spencer, 2014). Second, we analyzed the interventions according to the continuum of cultural tailoring provided by Okamoto et al. (2013) on a scale from 1-4, where culturally grounded programs were rated as 1, deep structure programs as 2, surface structure programs as 3, and nonadapted programs as 4.

Article Selection Process

A total of 474 articles were identified: 291 from PsycInfo and 183 from PubMed, ultimately resulting in 8 relevant articles. Figure 1 shows the screening process, with the incorporation of PRISMA guidelines. Of the 474 articles, 380 were eliminated based on title and abstract. An additional 33 duplicate articles were identified and removed, leaving a total of 61 articles (34 from PSYCInfo and 27 from PubMed) for screening according to full text. Of the 61 articles, 49 were eliminated because they did not meet the inclusion criteria of this review, leaving 12 articles. These remaining 12 articles were compiled and 4 duplicate articles were removed.

Figure 1

Selection of Articles (Adapted from Moher, Liberati, Tatzlaff, Altman, & the PRISMA Group, 2009)



RESULTS

In total, eight articles were included in the final analysis. In one of the eight articles (Mohatt, Fok, Henry, People Awakening Team, & Allen, 2014), the authors described an intervention delivered separately in two different communities based on needs and resources: the *Yupiucimta Asvairtuumallerkaa* (YA) program and the *Elluam Tungiinun* (ET) program. The ET program also was the main intervention of focus in another of the eight articles (Allen, Mohatt, Fok, & Henry, 2009). Therefore, the YA program is only described by Mohatt et al. (2014), while the ET program is described by Allen et al. (2009) and Mohatt et al. (2014).

Intervention Variables and Measures

Table 1 lists intervention variables and components. Observed variables, design, and intervention setting are described in more detail below.

Table 1
Intervention Variables and Components

Reference	Observed Variables	Design	Setting	Location	Total Sample	Participant Characteristics	Intervention Duration and Dosage
Allen, Mohatt (ET)	Risk factors of suicide and alcohol use disorder	Quasi	Comm	Alaska, U.S.	61	Yup'ik AN youth 12 to 17 years old	26 Qungasvik prevention modules over 52 total sessions
LaFromboise & Lewis	Risk factors of suicide and depression	Quasi	School Based	Zuni Pueblo, New Mexico, U.S.	128	AI youth 14 to 18 years old	2-3 times/week, 20-30 weeks (year 1). Additional booster sessions (year 3)
Listug-Lunde	Depression, Anxiety	RCT	School Based	Northern Plains, U.S.	19	AI middle school students 11 to 14 years old	15 total sessions: 13 sessions, 2/week, 7 weeks, 35-40 minutes/session. Additional 2 booster sessions within 1 month post-intervention

continued on next page

Table 1, Continued
Intervention Variables and Components

Reference	Observed Variables	Design	Setting	Location	Total Sample	Participant Characteristics	Intervention Duration and Dosage
Lowe	Substance use	Quasi ^a	School Based ^b	Oklahoma, U.S.	187	Keetoowah-Cherokee students 13 to 18 years old	10 sessions, 1/week, 10 weeks, 45 minutes/session; 3 years total duration
Mohatt (YA)	Suicide risk, alcohol use disorder	Quasi	Comm	Alaska, U.S.	53	Yup'ik AN youth 12 to 17 years old	15 prevention modules
Patten	Tobacco cessation	Pre-Exp	Comm	Western Alaska, U.S.	16	AN adolescents 12 to 17 years old	Two pilot groups: Pilot 1: 2 days, 1 night Pilot 2: 3 days, 2 nights
Ritchie	Mental health: Resilience	Mixed-Pre	Comm	Wikwemikong Indian Reserve, Northern Ontario, Canada	73	Wikwemikong youth 12 to 18 years old	10-day program during two summers
Woods & Jose	Mental health: Symptoms of depression and suicide	RCT	School Based	North Island of New Zealand	56	Māori and Pacific Islanders Year 10 students (average age 14 years)	1-year duration, 8 sessions, 90 minutes/session

^a Quasi = quasi-experimental design, RCT = randomized control trial, Pre-exp = pre-experimental design, Mixed-Pre = Mixed-Method Pre-experimental design. ^b Comm = Community-based setting.

Observed Variables

Interventions were categorized as having outcomes relating to either mental health or substance use. Some of the interventions in this analysis addressed multiple mental health and substance use concerns. Of the eight interventions, four focused on alcohol and tobacco use, four focused on suicide prevention, three focused on depression and/or anxiety, and one focused on resilience. Two studies focused on both suicide risk and alcohol use.

Study Design

Among the eight interventions, two were tested through randomized controlled trials (RCTs), four through quasi-experimental designs, and two through pre-experimental designs. For interventions using an RCT design, participants were assigned randomly to the intervention

(treatment) or to a comparable intervention (control). Quasi-experimental studies included multiple-condition quasi-experimental designs and the multiple time series design. The pre-experimental designs were nonrandomized, uncontrolled study designs, with one of the studies assessing outcome variables using a mixed method measure to determine effectiveness.

Intervention Setting

Exactly half of the interventions incorporated a school-based setting, while the other half utilized a community-based setting. All of the school-based interventions were implemented during regular school schedules. Three of the four interventions were culturally tailored, with either deep or surface structure adaptations. Two of these school-based interventions with deep structure adaptations were renamed as a skills development class or curriculum to increase attractiveness to the targeted population (LaFromboise & Lewis, 2008; Listug-Lunde, Vogeltanz-Holm, & Collins, 2013). The fourth school-based intervention, implemented by Lowe, Liang, Riggs, and Henson (2012), was the only culturally grounded program that was compared to standard education.

Three of the four community-based interventions were implemented in rural communities with AN youth; the fourth took place in an unceded Indian Reserve in northern Ontario, Canada. These interventions included different levels of community involvement throughout the research process (Allen et al., 2009; Mohatt et al., 2014; Patten et al., 2012; Ritchie, Wabano, Russell, Enosse, & Young, 2014), and differed from the school-based interventions, as they either were culturally grounded or culturally tailored with deep structure adaptations during development and implementation stages.

Participant Characteristics and Intervention Components

Table 1 lists intervention characteristics, including location, sample size, participant characteristics, and total duration. Three of the eight interventions focused on AN adolescents between 12 and 17 years of age from rural communities. These interventions focused on substance use, with two additionally focusing on suicide prevention. Sample sizes and dosage for these interventions included, respectively, 53 youth with an intervention dosage of 15 prevention modules (Mohatt et al., 2014), 61 youth who received 26 prevention modules (Allen et al., 2009; Mohatt et al., 2014), and 16 youth who received either a 2- or 3-day tobacco cessation pilot program (Patten et al., 2013).

Three of the eight interventions focused on AI youth from the U.S., with ages ranging between 11 and 18 years. All of these interventions took place in a school-based setting. Sample sizes and dosage of these programs included, respectively, 128 AI youth who attended 2-3 weekly sessions for 20-30 weeks during the first year, with additional booster sessions during the third year

(LaFromboise & Lewis, 2008), 19 AI middle school students receiving 15 sessions lasting 35-40 minutes (Lustig-Lunde et al., 2013), and 187 Cherokee students attending 10 weekly sessions lasting approximately 45 minutes (Lowe et al., 2012).

The intervention implemented by Ritchie et al. (2014) had a sample of 73 Wikwemikong youth between 12 and 18 years of age from a Canadian reserve who participated in a 10-day outdoor program that took place during two summers. Although Woods and Jose (2011) implemented their intervention with participants of various ethnicities in eight high schools located on the North Island of New Zealand, the article included here analyzed data specific to 56 Māori and Pacific Islander students in grade 10 who participated in the school's suicide prevention program, with an intervention dosage of eight 90-minute sessions.

Framework Analysis

PYD Rating

Table 2 identifies the incorporation of variables from the PYD framework. Although none of the studies explicitly cited the PYD framework in their interventions, a thorough analysis of the articles found that variables of the PYD framework were reflected in all of the interventions. The most common PYD variable, used by all eight interventions, was the emphasis on positive interpersonal relationships with peers, family members, and/or community members. Several interventions incorporated positive role models or elders who worked with participants. Some of the articles also cited the use of talking circles to enhance rapport among peers and to discuss sensitive issues related to mental health and substance use.

Table 2
Positive Youth Development and Cultural Tailoring Framework Analysis

Reference	Positive People	Positive Opportunities	Positive Environments	Culturally Tailored Program (1-4 Scale) ^a
Allen, Mohatt (ET)	X	X		1
LaFromboise & Lewis		X	X	2
Lustig-Lunde	X	X	X	2
Lowe	X	X		1
Mohatt (YA)	X	X		1
Patten	X	X	X	2
Ritchie	X		X	1
Woods & Jose	X		X	3

^a Culturally tailored programs are based on a scale from 1-4 where 1 = culturally grounded program, 2 = deep structure program, 3 = surface structure program, and 4 = nonadapted program (adapted from Okamoto et al., 2013).

Positive opportunities for the participants to develop and apply internal assets or coping skills were included in five of the eight interventions. Most of the positive opportunities were available through culturally tailored adaptations to the program, or through the promotion of self-esteem, self-efficacy, leadership, or other protective factors. For instance, Lustig-Lunde et al. (2013) cited the incorporation of cognitive-behavioral principles that were used during role-play situations to allow participants to increase their self-regulation and positive coping skills. Similarly, the intervention described by Mohatt et al. (2014) incorporated modules that encouraged participants to enhance self-efficacy while increasing their capacity for reflective assessment.

Positive environments were provided in three of the school-based interventions and two of the community-based interventions. Support from and partnerships with stakeholders enabled school-based interventions to be provided as classes, thereby allowing schools to make direct changes in participants' school environments. For example, Lustig-Lunde et al. (2013) were able to provide their life skills course as a class to increase accessibility. Community-based interventions provided safe environments to address concerns relating to mental health and substance use. To demonstrate, Patten et al. (2013) implemented a tobacco cessation program that required participants to fly in from their villages to participate as a group in a supportive environment that emphasized tobacco abstinence and focused on the goals of the intervention.

Culturally Tailored Program Rating

Table 2 also displays ratings of how each intervention was culturally tailored on a scale of 1 to 4 (Okamoto et al., 2013). Four interventions were rated as culturally grounded, including community-based programs developed by community members (i.e., planning groups, councils) with the aid of university partners. Three of the eight interventions were implemented as culturally modified versions of evidence-based programs with deep structure adaptations. These authors cited Indigenous values as the core foundation of their programs. To demonstrate, LaFromboise and Lewis (2008) incorporated Zuni core values (e.g., family, community cohesion, and precolonization traditions) in their suicide prevention program. Lustig-Lunde et al. (2013) made cultural adaptations to the Adolescent Coping with Depression course, such as changing role-play situations to be culturally relevant and incorporating discussions focusing on cultural impacts of assertiveness, eye contact, constructive criticism, and self-disclosure. Patten et al. (2013) incorporated deep structure changes to behavioral modification and social cognitive theory for tobacco cessation strategies based on feedback provided by focus groups and a teen advisory group.

Woods and Jose (2011) were the only researchers to modify an evidence-based program with surface structure adaptations. Prior to implementation, they consulted community members and professionals who provided appropriate feedback on the words, examples, and pictures that were used for the intervention materials. None of the interventions included in this analysis used a nonadapted program.

Intervention Outcomes

Main outcomes for interventions included in this analysis are shown in Table 3. In general, authors reported favorable or expected outcomes. The authors of four articles reported statistically significant results following their interventions (Listug-Lunde et al., 2013; Lowe, 2012; Ritchie et al., 2014; Woods & Jose, 2011). Authors of the remaining articles either reported positive but nonsignificant findings or did not state whether findings were statistically significant. All of the articles reported process-related measures, with two specifically reporting positive participant satisfaction. Five of the eight interventions reported participant completion rates. Four of the five programs that were either culturally grounded or had deep structure adaptations had completion rates ranging from 80-96%. One (Woods & Jose, 2011) that used surface structure adaptation had post-test completion rates of 78% for the treatment group and 64% for the control group. The ET program implemented by Mohatt et al. (2014) and Allen et al. (2009) had an average of 54% participants attending each module, while the YA program had an average of 91% participants attending each module.

Outcomes of Suicide Prevention and Substance Use Programs

Mohatt et al. (2014) implemented two interventions geared toward suicide prevention and alcohol use, with expected outcomes. For both interventions, participants reported increases in coping and life skills, an increased ability to recognize protective factors, and decreased intent to use alcohol due to community, family, and peer influences such as discouragement and disapproval.

Outcomes of Suicide Prevention Programs

The two programs that focused on suicide prevention reported favorable results. LaFromboise and Lewis (2008) found increases in coping, life skills, overall mental health, and knowledge about suicide, and decreases in participants' depressive and suicide symptomology following their intervention. Participants in the intervention implemented by Woods and Jose (2011) reported a statistically significant decrease in depressive symptoms. While the control group also reported a statistically significant decrease in depressive symptoms, the treatment group demonstrated a greater decrease. Participants in the intervention also reported general improvement in overall mental health immediately following the intervention, with increases in effective coping strategies.

Table 3
Reported Outcomes

Reference	Outcome Variable of Interest	Self-Report Outcome Measures			Process Measures
		Targeted Health Symptom or Knowledge, Attitude, and Behavior	Coping or Life Skills	Satisfaction	
Allen, Mohatt (ET)	Suicide risk or alcohol use	↓ Attitudes toward using alcohol ^a ↑ Protective factors ↑ Reasons for life	↑		Average of 33/61 (54%) participants attended each module
LaFromboise & Lewis	Suicide, depression	↑ Overall mental health ↑ Knowledge (suicide)= ↓ Reported symptoms (suicide) ↓ Reported symptoms (depression)	↑		Discontinued program 2 years following promised evaluation
Listug-Lunde	Depression Anxiety	↓ Reported symptoms* (depression) 0 Reported symptoms (anxiety)		+	Treatment: 8/10 (80%) Control: 8/9 (89%) Total: 16/19 (84%)
Lowe	Substance abuse	↓ Total symptom severity* ↓ Behavior (substance abuse)*	↑		179/187 (96%)
Mohatt (YA)	Suicide risk or alcohol use	↓ Attitudes toward using alcohol ↑ Protective factors ↑ Reasons for life	↑		Average of 48/53 (91%) participants attended each module
Patten	Tobacco cessation	↑ Knowledge (tobacco) ↓ Attitudes toward using alcohol ↑ Tobacco abstinence (Pilot 2)		+	Pilot 1: 9 attended of 9 enrolled Pilot 2: 7 attended of 12 enrolled Total: 16 attended of 21 enrolled (76%)
Ritchie	Resilience	↑ Reported short-term resilience* ↑ Overall mental health			Completion of program: 70/73 (96%)
Woods & Jose	Overall mental health	↑ Overall mental health	↑		Treatment Group Pretest: 23 Posttest: 18 (78%) Follow up: 20 (87%) 1 year: 16 (70%)
	Depression	↓ Depressive symptoms*			Control Group Pretest: 33 Posttest: 21 (64%) Follow-up: 30 (91%) 1 year: 16 (48%)

^a ↑ = increases, 0 = no change, ↓ = decreases in the measured outcome. + = positive. * = statistically significant findings for the outcome.

Outcomes of Substance Use Programs

The two programs that focused on substance use reported promising results. Compared with the control group, Lowe et al.'s (2012) intervention group reported a statistically significant decrease in symptoms of substance use and increase in life skills. Participants attending the tobacco cessation pilot program implemented by Patten et al. (2013) reported an increase in confidence to share information about tobacco cessation with family members and peers after participating in the workshop, and reported wanting to decrease tobacco use. At the 6-week follow-up, 86% and 71% of participants who attended the second pilot program reported tobacco abstinence during the last 7 or 30 days, respectively.

Outcomes of Broad-scale Mental Health Interventions

Listug-Lunde et al. (2013) found that their intervention group reported a greater statistically significant decrease in depressive symptoms, with no difference in anxiety symptoms, when compared to the control group receiving treatment as usual. Ritchie et al. (2014) found a statistically significant increase in short-term resilience immediately following their 10-day outdoor adventure leadership experience intervention.

DISCUSSION

In this paper, we examined interventions geared toward Indigenous youth and described peer-reviewed journal articles with outcome variables related to mental health and substance use. The authors intended to review interventions geared toward AI/AN and Native Hawaiians from the U.S., Māori from New Zealand, and Aboriginal youth from Australia and Canada, with the hope of examining commonalities and differences based on the PYD framework and ability to culturally tailor programs. Despite expansive search criteria, the only populations represented in this analysis through the eight retrieved articles were AIs and ANs from the U.S., Māori from New Zealand, and First Nations youth from Canada. This finding suggests the need for additional research in mental health and substance use interventions with Indigenous youth. The limited number of studies demonstrates a need for more initiatives to address mental health concerns through the evaluation of health promotion programs. Although interventions may be taking place in Indigenous communities, it is possible that these programs are not being evaluated or the findings are not being disseminated to an academic audience through publications in peer-reviewed journals. In addition, the paucity of interventions may reflect different priorities in health policies or government funding that may not prioritize mental health and substance use among Indigenous youth (LaFromboise & Lewis, 2008).

In general, interventions included in this review had positive or expected outcomes relating to mental health and substance use. Further, all of the interventions included in this analysis were culturally grounded programs or were culturally tailored as deep or surface structure programs. Authors examining interventions implemented in different communities (Allen et al., 2009, and Mohatt et al., 2014) or during different time periods (Patten et al., 2012) found more favorable outcomes for participants receiving increased dosages of culturally competent interventions. Program dosage was guided by the community's ability to implement the program based on available resources, and by participants' desire to have a longer program.

While the literature is still limited, this review demonstrates efforts being made to enhance cultural competence through culturally tailored programs. These findings may demonstrate increased desire of minority communities and like-minded researchers to address persistent health disparities through increased scholarship on community engagement and culturally competent health programs. During this process, health promotion programs may be adapted in an effort to reestablish rapport between academic researchers and Indigenous communities, which may help researchers acknowledge previous unethical research and remediate the resulting suspicion toward researchers and scientific paradigms, and, therefore, increase cultural competence, aid in implementing programs that are ethical, redistribute power between researchers and participants, empower Indigenous communities, and build sustainability to address identified health concerns (Walters et al., 2008). These findings also suggest researchers are acknowledging the need to address mental health disparities by incorporating strength-based approaches that align with the beliefs, perceptions, and social contexts of Indigenous populations (Wexler & Gone, 2012).

Although not explicitly stated, all of the interventions in this review focused on variables that aligned with the PYD framework. Researchers often integrated PYD variables that allowed interventions to be culturally tailored to the target population, most commonly through the enhancement of interpersonal relationships (e.g., with elders in the community). Elders are seen as an important source of wisdom and often serve as role models in many Indigenous communities (Iokepa-Guerrero et al., 2011). Similarly, role-play activities that enhanced positive coping skills and self-regulatory behaviors often were adapted based on the participants' cultural context. Thus, future researchers who wish to utilize culturally tailored approaches could consider similar ways of incorporating the PYD framework into the process.

Limitations and Future Directions

Although the culturally tailored interventions in this review demonstrate positive or expected outcomes, the findings should be interpreted with caution because they are not generalizable to other Indigenous populations, including other AI/AN youth, Māori youth, and First Nations youth

in Canada. Differences exist in Indigenous cultural identities as a result of relational and contextual factors (Harris et al., 2013), which may impact the prevention strategies used in culturally tailored interventions that address mental health and substance use concerns of Indigenous youth. For example, Mohatt et al. (2014) described the incorporation of different modules to address protective factors for AN youth, due to differences in their communities, members, and feedback given by the community during the curriculum development phase.

Despite this limitation, the process of analyzing components of interventions found to be effective in reducing mental health and substance use concerns may help future researchers to identify key cultural components pertinent to interventions with other Indigenous adolescents. For instance, talking circles or similar approaches to address mental health concerns may be replicated to determine their effectiveness and generalizability. As the number of studies on interventions with Indigenous adolescents increases, future reviews also should analyze the findings with disaggregated samples to account for the diverse contexts and lived experiences of Indigenous communities worldwide.

The interventions in this review also were limited to those described in peer-reviewed journal articles found in the PSYCInfo and PubMed databases dependent on specified search terms. Thus, future systematic reviews should build on this review by including other relevant search terms and sources of data. Future systematic reviews also should consider extending the analysis to the gray literature, to evaluate interventions that are described in sources that are easily accessible and available to nonacademic audiences and that complement peer-reviewed, indexed journal articles.

Conclusion

This systematic review is the first to analyze interventions specific to Indigenous adolescent populations with a focus on mental health and substance use outcomes. The review focused extensively on eight unique interventions described in peer-reviewed journal articles, which were analyzed based on their incorporation of the PYD framework and cultural tailoring approaches. Incorporating PYD variables and cultural tailoring into youth-focused interventions may enhance the development and health outcomes of Indigenous adolescents. The emphasis on protective factors in a culturally relevant context may reduce mental health disparities and substance use behaviors among adolescents, which will enhance the overall well-being of future generations of Indigenous populations.

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