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Racial Discrimination's Influence on Smoking Rates among American Indian Alaska Native Two-Spirit Individuals: Does Pain Play a Role?

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Abstract

High rates of racial discrimination and non-ceremonial tobacco smoking exist among American Indian/Alaska Native (AIAN) Two-Spirit/LGBT (Lesbian, Gay, Bisexual, Transgender) populations. The authors examined whether or not pain mediates between racial discrimination and smoking among Two-Spirits. Two-Spirit adults (n=447) from seven urban U.S. locations were surveyed during the HONOR project. The Indigenist stress coping model was used as framework in which to conduct descriptive, bivariate and regression analyses. A majority of the participants reported smoking (45.2%) and pain (57%). Pain was found to mediate the association between racial discrimination and smoking. Racial discrimination appears to be a significant factor influencing tobacco smoking and health behaviors within Two-Spirit populations. Effective tobacco cessation and/or prevention planning for Two-Spirits and others who experience frequent

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racial discrimination, stress, and trauma should also consider the influence of pain. Pain may serve as the embodiment of discrimination, and this possibility requires future research.

Keywords

American Indians; Two-Spirits; Lesbian Gay Bisexual Transgender (LGBT) health care disparities; racial discrimination; intersectionality; Indigenist stress coping; tobacco/cigarette smoking; pain

In the United States, tobacco smoking remains "the single most preventable cause of disease, disability, and death."[1] Little research exists on smoking rates among American Indians/Alaska Natives (AIANs) despite the fact that AIANs have the highest rate of active smokers (31.5%) of all other U.S. racial/ethnic groups (19.0%).[2] These rates are alarming given that tobacco smoking was identified as a causal factor for 30% of all U.S. cancer deaths and 80% of cardiovascular-related deaths during 2000–2004.[3] The fact that the majority of AIAN deaths are attributable to cancer and cardiovascular diseases[4,5] underscores the urgency of developing effective smoking prevention and intervention programs. However, psychological factors such as chronic stress exposure can serve as a barrier to the prevention and cessation of tobacco smoking.[6] In particular, in non-AIAN populations, psychological stress has been found to increase when individuals experience racial discrimination.[7] Racial discrimination has further been seen to increase smoking rates,[8,9,10] by nearly two-fold.[11] Given that racial discrimination has been found significantly higher among AIANs than among members of other U.S. racial/ethnic groups,[12,13] this may explain why their smoking rates are increasing *versus* declining- as seen among other U.S. racial/ethnic groups.[3,14]

Discrimination experienced by AIANs may vary inter-tribally and intra-tribally based on sexual orientation and gender group status. Until colonization most, if not all, tribes valued or respected AIAN diverse sexual and gender expression (i.e., lesbian, gay, bisexual, transgender/LGBT, as well as heterosexual), with some tribes recognizing three or more genders.[15] However, after colonization and within the U.S. majority context, AIAN LGBT groups have faced ongoing violence, marginalization, and discrimination.[14] Researchers, tribal community members, and AIAN individuals commonly refer to AIAN LGBT people as *Two-Spirits*, calling to mind the balance, or bridge, between male and female spirits and recognizing the multiple sexual and gender roles that exist among tribes.[16–18] Though not all AIAN LGBT individuals identify as Two-Spirits, this term will be used here as a placeholder to reflect the Indigenous belief that AIAN cultural, sexual, and gender identity are inherently part of a complex whole.[19,20] Given this, Two-Spirit populations may have increased risks for non-ceremonial smoking that have not been previously explored among LGBT or aggregated AIAN populations.[21,16]

Specific smoking risks among Two-Spirits.

Two-Spirit individuals may have increased racial discrimination and smoking risks associated with their racial/ethnic and sexual orientation and gender identity. Typically, researchers have targeted one socio-demographic variable at a time (e.g., those differing by gender, race, ethnicity, age) for smoking intervention, prevention, and cessation

campaigns.[22,23] While these campaigns may address racial discrimination stressors for AIANs or homophobia discrimination stressors for LGBT people, these campaigns may fail to reach Two-Spirit populations who experience both racism in LGBT communities and increased homophobia in the mainstream culture.[17,24,25] The effects of racism and homophobia for Two-Spirits have been argued inseparable.[16,18] Hence, Two-Spirits' experience of racial discrimination and resulting smoking risks may differ from those of other AIANs based on their tribal and sexual orientation and gender identities.

First, as tribal members, Two-Spirit people may experience disproportionate rates of smoking in relationship to their tribal community norms. For instance, some tribal communities endorse low-harm risk perceptions and lenient attitudes towards smoking, which may influence tribal members' increased smoking rates.[26] Furthermore, Two-Spirits' tribal communities are more likely to be bombarded by tobacco company advertisements. Tobacco companies have been seen to target AIAN cultural activities intentionally and provide monetary support of pow-wows and other tribal gatherings,[27] thereby, (potentially) increasing tribal allegiance and subsequent individual use. Moreover, many tribal communities utilize tobacco for ceremonial and religious purposes. However, tribal communities often differentiate between ceremonial use, and most communities discourage abuse of this.[28,29] Therefore, this study's use of the term *smoking* will refer to non-ceremonial tobacco smoking and as a form of tobacco abuse. Depending on the tribal community and individual views, Two-Spirit individuals may or may not view smoking as abuse. Thus complex AIAN group-related factors likely influence Two-Spirits' use of tobacco and should be considered during research.

Secondly, Two-Spirit people's sexual orientation/gender identity may contribute to increased smoking risks. In the U.S., LGBT groups have higher smoking rates than non-LGBT groups.[30–32] A recent review found anywhere between 11% to 50% of LGBT adults smoke.[33] These high rates of smoking may be associated with tobacco industry advertisements that specifically target LGBT populations,[34] similar to their targeting AIAN communities. In addition, LGBT groups' smoking prevalence may differ from those of non-LGBT populations and include health risks of marginalization, fear of violence, reduced social support, internalized homophobia, and discrimination.[34] Furthermore, several demographic factors among LGBT groups have been associated with high smoking rates, including HIV/AIDS status and education level. HIV/AIDS positive status, as opposed to a negative status, has been correlated with higher smoking risks.[35,36] Two-spirit populations have a much higher prevalence rate for HIV than non-Native populations, on par with rates found in sub-Saharan Africa (percentage was highest for Two-Spirit men who had sex with men [MSM] at 36%), followed by MSM who also had sex with women (19%), Two-Spirit women who had sex with men (WSWM; 15%), and Two-Spirit women who had sex only with women (2%).[37] Higher levels of education have also been seen to increase risks of smoking among LGBT groups, in contrast with non-LGBT groups.[33] Two-spirits may experience all of these LGBT-related risk factors, as well as additive risks related to intergenerational effects of AIAN historical trauma.[17,24,38] Through understanding the complex relationship between LGBT and AIAN smoking risks, effective smoking interventions may be developed for Two-Spirit populations.

Racial discrimination and pain.

Two-Spirits who have experienced high rates of racial discrimination also reported increased physical pain and related impairment.[39] One explanation for this may be that racial discrimination stress directly increases sensitivity to pain, as has been observed for other groups regarding stress and pain.[40–42] Furthermore, pain has been associated with chronic smoking and smoking cessation relapse.[10] Hence, Two-Spirits who experience racial discrimination without pain may have lower smoking risks than those who experience racial discrimination with accompanying levels of pain. These cumulative potential risks highlight the need to investigate whether or not racial discrimination influences smoking rates within Two-Spirit populations.

This study sought to determine if pain mediates the association between discrimination and current smoking status among Two-Spirits. We selected self-reported pain due to supporting evidence that racial discrimination is associated with high self-reported pain levels.[37] We further expanded *pain*'s definition to include pain-related impairment to reduce self-report bias, following Chae and Walters.[39] This information may be applicable to other vulnerable populations that face high rates of racial discrimination and increased risks for smoking.

Methods

This study involved a secondary analysis of data from the HONOR Project (NIMH: R01MH65871). The HONOR project is a multi-site cross-sectional national survey of Lesbian, Gay, Bisexual, Transgender or Two-Spirit (LGBT, T-S) American Indians/Native Americans (AIAN; as previously described in Chae and Walters[39]). Local recruitment and interviewing was conducted at community-based cultural and social centers serving the AIAN communities.

Participants.

Between July 2005 to March 2007, using a combination of targeted, partial network, and respondent-driven sampling techniques designed to maximize coverage of the heterogeneity of the population and to minimize selection bias, AIAN adults who self-identified as enrolled in a tribe and as Gay, Lesbian, Bisexual, Transgender, and/or Two-Spirit, or engaged in same-sex behavior over the previous 12 months were recruited from seven metropolitan areas across the U.S. (Seattle-Tacoma, San Francisco-Oakland, Los Angeles, Denver, Tulsa-Oklahoma City, Minneapolis-St.Paul, and New York City). The Honor Project achieved a total response rate of 80.1% and there were no significant differences between respondent-driven sampling (seeds and nominees) and volunteer respondents by city or on key socio-demographic variables (i.e., gender, education, employment, income, or housing) that might reflect regional or sampling differences. Specifics regarding the recruitment and study procedures have been detailed elsewhere.[16,39] A total of 447 AIAN participants completed a computer-assisted three to four-hour interview and were compensated $65 for their time and effort.

Measures.

Our dependent variable, smoking, was measured by participants' self-reported non-ceremonial use of cigarettes. Those who indicated smoking at least daily during the previous 12 months = 1, and all others = 0. *Pain* was measured as both *subjective bodily pain* and *pain-related impairment via* two items that asked for a) subjective ratings of bodily pain in the previous four weeks and b) the level of interference with work inside or outside of the home. Those who reported pain that interfered with work = 1, all others = 0. Self-reported stress due to experienced *racial discrimination*, including episodes of physical and verbal violence and harassment or mistreatment was assessed as the mean of responses to 33 items from the Microaggressions Distress Scale (range of possible values = 0 not at all to 5 extreme), developed by Walters.[43]

Control variables.

Sociodemographic variables and those that may influence smoking were included in multivariate models, including self-reported age (continuous), HIV status (positive = 10, all else = 01), sexual orientation (gay/lesbian, bisexual, Two-Spirit, heterosexual [i.e., who self-identified as *heterosexual* but also endorsed same-sex sexual relationships], and "other." Categories are represented as a series of dummy variables, with those identifying as gay/lesbian serving as the reference group in multivariate analyses), education status (less than high school = 1, high school = 2, some college = 3, and college graduate or more = 4), and insurance status (0 = no insurance, 1 = insured).

Results

Descriptive results.

Participants within this sample identified as Gay/Lesbian (n= 202), Bisexual (n= 129), Two-Spirit (n= 70), and Heterosexual (n= 29)/other (n= 15). The latter two groups were combined given their small numbers. Additional descriptive information for major study variables is displayed across the bottom row of Table 1. Nearly half (45%) of the study sample reported smoking daily or more during the past 12 months, and 57% said they had experienced pain related impairment. The average age of participants was 39.8 years. The mean score for the racial discrimination measure was 1.5 (s.d. = 1.1). Table 1 displays bivariate associations among key study variables (note: associations between sexual orientation variables are not displayed due to coding interdependence). Racial discrimination and pain were both positively and significantly associated with past year daily smoking.

Mediation/regression analyses results.

We followed Baron and Kenny's suggested steps for testing mediation[44] by running a series of multivariate regression models among a set of three variables, x, y, and m, where x = racial discrimination (independent variable), y = smoking (outcome), and m = pain (the proposed mediator).

First, we tested associations between x and y, net the control variables (Table 2, Step 1). We found that racial discrimination was significantly associated with smoking. Second, we ran a regression to determine if x was associated with the mediator, m (Table 2, Step

2). Results revealed that discrimination was indeed significantly related to pain, even after accounting for several control variables. Third, we investigated a model (Table 2, Step 3) in which both x and m are regressed on the outcome, y. After including pain in the model, the odds ratio for the relationship between discrimination and pain was reduced from 1.48 to 1.20 and dropped from statistical significance. Those reporting pain were 82% more likely also to report smoking daily or more, even after accounting for all control variables and discrimination. The Sobel test[45] results (Sobel test = 2.15, SE = .11; $p < .05$) indicated that this mediating effect was statistically significant. We further found significant differences of pain-related impairment by self-reported sexual orientation (p=.00; see Table 3).

Discussion

Our study among urban Two-Spirit individuals illustrates the significant association of racial discrimination on health behaviors, particularly health risk behaviors such as smoking and mediating factors such as self-reported pain. From 2005–2007, we found that daily smoking rates for Two-Spirits (45.2%) were higher than U.S. AIAN smoking rates (up to 36.4%).[21] Furthermore, the majority of the Two-Spirits sampled suffered from pain (57%). Theses findings are supported by a recent literature review indicating that AIAN consistently report higher pain levels than other racial/ethnic groups.[46] As hypothesized, reports of racial discrimination and smoking were positively correlated among Two-Spirit people. Overall, our findings indicate that racial discrimination, and resulting stress, likely increases pain risks and subsequently smoking.

An unexpected finding was that pain and racial discrimination varied significantly with sexual orientation and gender within the Two-Spirit sample. While self-identifying *Gay* and *Lesbian* AIAN individuals had the lowest pain impairment rates, self-identified *Heterosexual* (i.e., identified as Heterosexual but also engaged in same gender sexual activity) and self-identified *other* AIAN groups had the highest pain impairment rates (see Table 3). Those self-identifying as *Bisexual, Two-Spirit*, and *Transgender* reported mid-level pain. One explanation may relate to significant experiential differences between these subgroups, where heterosexually-identified/Other Two-Spirits may experience greater levels of social or cultural distress given the greater latitude between sexual identity and behavioral sexual expression (i.e., internalized heterosexism or lateral oppression from LGBT groups for heterosexual identity, as described elsewhere[47]). Disaggregated Two-Spirit groups' experiences of marginalization and coping may result in differences in stress, which may influence health behaviors for pain and smoking. Recent literature has also identified gender-specific risks for increased pain experiences and addiction; for instance, emotional distress and trauma for men was a higher risk than for women.[48] Hence, more research is needed regarding smoking among disaggregated Two-Spirit gender groups.

Several implications arose regarding smoking among Two-Spirits. First given racial discrimination has been found to increase pain among Two-Spirit people,[18] smoking and stress have been associated with increased sensitivity to pain and smoking cessation relapse.[10] Therefore, if pain increases smoking and smoking increases pain, this cyclical effect may result in higher smoking risks and lower likelihood of tobacco cessation, as seen in Figure 1. Secondly, our findings indicate a need for tobacco cessation interventions

to be culturally-tailored and directed toward Two-Spirit populations. Given the unique risk etiology existing between racial discrimination and smoking, as mediated by pain, effective tobacco cessation promotion and interventions should consider this complexity. There is also a need to examine systematically the potential risk factors within frameworks that dually consider marginalization status of Two-Spirits and the biology of inequality. Consideration of the intersectionality of multiple identities may assist in future research among Two-Spirit populations.[39]

Finally, the Indigenist stress coping model[41] shifts focus from individual risks to the influences of historical trauma[38,49,50] and ongoing oppression on a population. Our findings imply that Two-Spirit populations have higher smoking risks within a context of historical trauma that cannot be ignored. Their self-reported pain could further be considered the embodiment of discrimination distress,[38,39] and thus, the potential mediator between racial discrimination events and health-risk behaviors. Studying the embodiment of discrimination distress as manifested through self-reported pain will allow us to determine the driving forces for smoking behaviors and patterns among AIANs.[38,51] Such knowledge will likely yield important directions for developing culturally-relevant smoking policies and prevention practices to reduce AIAN smoking disparities and improve AIAN health.

This study must be understood in light of several caveats. First, only aggregated data for urban Two-Spirits were analyzed this limits generalization to rural and specific tribal groups that may differ by specific tribal affiliations. Furthermore, as noted by Chae and Walters,[39] we cannot infer causality between pain and smoking, as there may be unmeasured latent constructs at work (such as social support) that were beyond the scope of this paper. For instance, other studies have found dynamic, culturally supportive behaviors are associated with lower substance use than those receiving less support among AIAN groups.[52] Therefore, the influence of cultural affiliation and social support on Two-Spirits' smoking remains to be determined and should be considered for future research. Nonetheless, this is the first known study to indicate that racial discrimination, as mediated by pain, increases the likelihood of non-ceremonial smoking among AIANs, specifically for Two-Spirit AIANs.

In conclusion, this study indicated that increased racial discrimination correlates with increased smoking risks, as mediated by pain amongst AIAN LGBT, Two-Spirit people. Hence a Two-Spirit person who experiences increased racial discrimination and pain likely has higher smoking risks than someone who experiences racial discrimination with less pain. The Indigenist stress coping model and resulting approach outlined in this study allows for a rational way of merging social, cultural, and biological experiences in order to understand how racial discrimination continues to be a determinant of health and health behaviors. The intersections of cultural, social, and biological experiences form the complex arena for population patterns of health, disease, and well-being among Two-Spirit populations. Additionally, pain continues to be a significant factor that may represent the embodiment of discrimination stress and requires additional cultural-specific considerations in treatment and/or prevention planning. Tailoring interventions for only race, sexual orientation, or gender may not effectively reduce smoking among this population.

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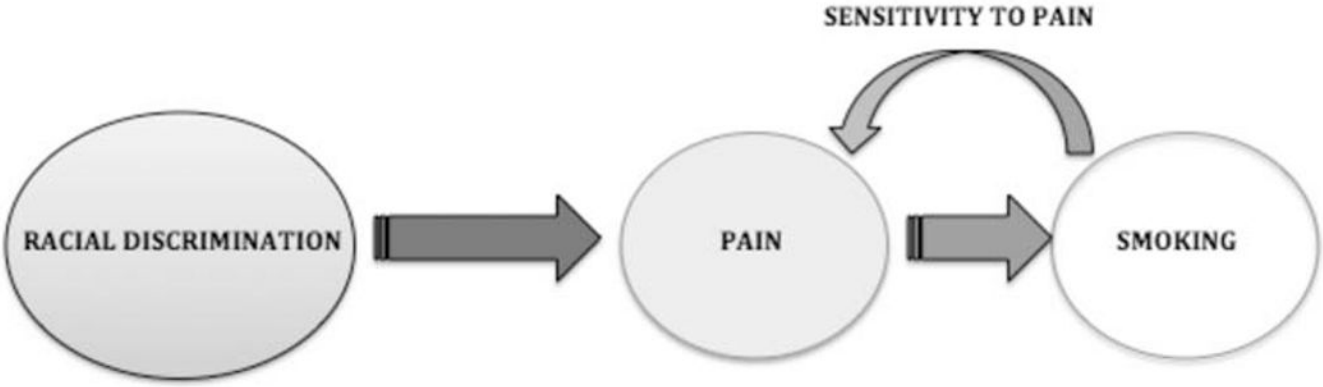

Figure 1.
The complex relationship between racial discrimination and smoking as mediated by pain among an AIAN two-spirit group from the HONORS project.

Table 1

DESCRIPTIVE STATISTICS AND BIVARIATE ASSOCIATIONS AMONG KEY STUDY VARIABLES

	1	2	3	4	5	6	7
1. Daily Smoking (past yr)	1						
2. Discrimination (Microaggressions)	.10*	1					
3. Pain/Impairment	.14**	.15**	1				
4. Insurance Status (1 = uninsured)	−.04	.02	.08	1			
5. Education	−.17***	.17**	−.14**	.07	1		
6. Age	−.10*	−.03	.23***	.10*	.14**	1	
7. HIV Status (Positive = 1)	−.04	−.19***	.06	.11*	−.10*	.13**	1
8. Bisexual	.07	−.01	.03	.01	−.27***	−.13**	−.14**
9. Two-spirit	−.05	.12*	.03	−.08	.12*	.01	−.05
10. Gay/Lesbian	−.05	−.14**	−.15**	.07	.22***	.03	.11*
11. Heterosexual/Other	.03	.10*	.17**	−.03	−.11*	.14**	.08
%/ mean (s.e.)	45.2%	1.5/(1.1)	57%	76.5%	2.5/(1.0)	39.8/(10.8)	21.5%

* p<.05

** p<.01

*** p<.001

Table 2

TEST OF MEDIATING EFFECTS OF PAIN-RELATED IMPAIRMENT ON THE ASSOCIATION BETWEEN DISCRIMINATION AND SMOKING

	Model A (Step 1)		Model B (Step 2)		Model C (Step 3)	
	Smoking		Pain-related impairment		Smoking	
Outcome Variable:	**b(SE)**	**exp(b)**	**b(SE)**	**exp(b)**	**b(SE)**	**exp(b)**
Education	−.39(.11)	.68***	−.41(.12)	.66***	−.34(.12)	.71**
HIV Positive	−.15(.26)	.86	.24(.27)	1.27	−.18(.26)	.84
Age	−.01(.01)	.99	.05(.01)	1.05***	−.02(.01)	.98
Bisexual	.04(.25)	1.04	.35(.26)	1.41	.00(.26)	1.00
Two-Spirit	−.24(.3l)	.79	.41(.30)	1.51	−.31(.31)	.73
Heterosexual/Other	−.06(.37)	.94	1.05(.44)	2.87*	−.18(.37)	.84
Insured	−.12(.24)	.88	.45(.25)	1.57	−.18(.10)	.83
Discrimination	.23(.10)	1.25*	.39(.11)	1.48***	.18(.10)	1.20
Pain-related impairment					.60(.22)	1.82**

*p<0.05

**p<0.01

***p<0.001

Table 3

CROSS TABULATION OF SELF-REPORTED SEXUAL ORIENTATION BY PAIN-RELATED IMPAIRMENT FOR AIAN TWO-SPIRIT INDIVIDUALS FROM THE HONOR PROJECT

	Orientation				
	Gay/Lesbian	**Bisexual**	**2-spirit**	**Heterosexual**	**Other**
% Reporting Pain-Related Impairment	49.0%	59.7%	60.0%	82.8%	80.0%

$\chi 2 = 16.994$, df = 4, p = .002