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Practices Surrounding Pain Management among American Indians and Alaska Natives in Rural Southern California: An Exploratory Study

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Abstract

Objectives: This exploratory study examined pain management practices among American Indians and Alaska Natives in the service area of a rural tribal clinic in Southern California.

Methods: Researchers invited 325 individuals to complete an anonymous survey in clinic waiting rooms and tribal gatherings. Analysis of the 295 eligible responses included calculating frequencies and conducting multiple logistic regressions and a Mantel-Haenszel analysis.

Results: Among respondents in this study, being male, being younger, and having less education were strong predictors for riskier methods for managing pain.

Conclusions: Understanding the methods individuals use to manage pain in a rural setting constitutes a steppingstone to developing strategies for reducing and preventing misuse and abuse of prescription medications and other drugs in rural American Indian and Alaska Native communities.

Keywords

drug abuse; epidemiology; health disparities; pain management

From 1999 to 2010, the sales of opioid prescription pain medications by United States retail pharmacies quadrupled, reaching \$210 million.¹ Although sales have slowed, concerns regarding unintended consequences of opioid use remain high. As of 2015, a significant number of individuals aged 12 or older misused a prescription pain medication, numbering approximately 7.2 million people.² Nonmedical use of these potentially addictive drugs presents many risks and remains a major health concern in the US.³

American Indians and Alaska Natives (AI/AN) report a higher incidence of nonmedical use of prescription pain medications across different age groups than do members of other US

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populations, although there is a noteworthy lack of much literature with specific prevalence of prescription drug misuse among AI/AN. One study reported significant use of non-prescribed pain medications with study participants among 18- to 25-year-olds living on a Midwestern American Indian reservation.⁴ Another study found that among those 50 years and older, there is a 9% prevalence of nonmedical use of prescription drugs for AI/AN compared to 1.3% for whites and 1.9% for Hispanics.⁵ A recent study of opiate prescription overdose cases found that nearly as many AI/AN experienced overdose as non-Hispanic whites did, and at double the rates of Latinos and African Americans.⁶ Furthermore, in a review of causes of death from 1999 to 2009, Calcaterra and colleagues found that AI/ANs had the highest rates of pharmaceutical opioid-related deaths (IRR 13.06, 95% CI: 9.30–18.34).⁷

With rising misuse of prescription painkillers and related problems, including dependence and death by overdose, it is important to assess accurately the role of these and other drugs in pain management strategies. The purpose of this study is to explore the relationship of demographic factors with practices toward pain management among AI/AN in the service area of a rural tribal clinic in Southern California. The geographic area served by the clinic consists of a large rural area (by US Census criteria, with a population density of fewer than 30 persons per square mile) containing the reservations on which most of the American Indian (and a few Alaska Native, hence our use of AI/AN) clients reside. This exploratory study used a brief survey to assess the frequency, distribution, and correlates of pain management methods with demographic characteristics and current and past experience with pain. Although the unit of analysis is the individual, the analyses point to shared patterns within the communities served by the tribal clinic.

Methods

For this exploratory study, a convenience sample was collected using a cross-sectional design. Over the course of 2 months, participants were recruited from the Behavioral Health, Medical, and Dental departments from the Southern California Tribal Health Clinic] sites and at various local health promotion events, such as a traditional health gathering organized by the clinic, a pow wow, a women's health conference, and health expos. Criteria for participation included being 18 years of age or older and an enrolled tribal member or a descendent of an enrolled tribal member from a federally recognized tribe within the United States.

Research staff set up recruitment tables at the aforementioned event spaces and invited individuals to participate in a brief survey on prescription pain medication use. If participants agreed, the research staff followed a protocol on consent and survey administration.

In the recruitment process, the research staff explained that the study was voluntary, that participants could skip questions they did not want to answer and could withdraw at any time without penalty and still receive a \$15 Target gift card offered as an incentive. After potential participants agreed to participate, they completed the survey on their own. The only exceptions were individuals who needed assistance, in which case, study staff read the

survey questions in a private location to maintain confidentiality. Respondents typically filled out the 4-page survey within 10–15 minutes. Participants placed the completed surveys in a sealed box, after which they were given the gift card and were offered a list of Behavioral Health services at the Southern California Tribal Health Center. Because the majority of clinic clients only access medical or dental services, we offered this list of services to acquaint them (and non-clients) with Western and traditional treatment modalities provided by the clinic's Behavioral Health Department.

Sample

Of 325 individuals approached to participate, 311 completed the survey for a response rate of 95.7%, with those refusing primarily citing concerns about time constraints or having another engagement to attend. Moreover, 16 surveys were excluded because the participants did not meet the inclusion criteria. The analyses therefore are based upon the responses of 295 individuals eligible for the study (94.9% of potential respondents).

Measures

The survey featured the following measures: a brief demographic questionnaire and survey questions developed by the current research staff and from an instrument used in a previous statewide study of prescription opioid use, misuse, and disposal.⁶ Although Johnson and colleagues' study⁶ focused upon prescription drug misuse among a predominantly non-Hispanic white population within both rural and urban settings, and its novel questions were not tested for their psychometric properties, that study's pragmatic questions were directly relevant for the present research.

Study Variables

Social and Demographic Characteristics

Respondents were asked to report their age, sex, primary racial/ethnic identity, and educational level.

Substances Used for Pain Management

Respondents were asked to identify any substances they used in the preceding 12 months to manage pain, including a prescribed pain medication, a prescribed pain medication belonging to someone else, alcohol, marijuana, or an illegal drug (yes, no, don't know). Drawing from these measures, we created a summary binary variable (yes, no/unsure) to indicate if respondents had used any of the latter three substances (alcohol, marijuana, or illegal drugs, other than prescription medications) in the previous 12 months to manage pain.

Health-Related Variables

Health-related variables included respondents' self-reports of (a) current chronic pain (yes, no/unsure), (b) ever experienced level 10 pain on a scale from 1 to 10 (10 being the most extreme imaginable pain; yes, no/unsure), and (c) believing that pain from a previous illness or accident will continue throughout their lifetime (yes, no/unsure).

Analysis Plan

The data were manually entered into SPSS (IBM Corp, Armonk, NY) and were verified by 2 study staff for accuracy. Analytical procedures included calculating frequencies, correlations, and multiple logistic regressions using SPSS version 22. A stratification of age as a covariate was examined using a Mantel-Haenszel analysis for the associations between predictor variables and outcome variables. The investigators stratified by age to reduce its effects on other predictor variables in the study. The logistic regressions excluded predictor variables that were not significant in the models for the outcome variables.

Two Institutional Review Boards (IRBs) approved the protocols for this study, the Pacific Institute for Research and Evaluation IRB and the Southern California Tribal Health Center IRB. All study interviewers, including one research assistant, completed the Collaborative Institutional Training Initiative's Human Subjects Research Curriculum and were trained in how to collect data and follow the study protocol in a culturally appropriate manner.

Results

Table 1 summarizes the sample characteristics. Respondents' ages ranged from 18 to 94 ($M = 45.63$, $SD = 15.97$) years old and 63% lived on a reservation. Women comprised the majority of the sample (71.5%). Approximately 74.7% reported having a high school diploma/ G.E.D or some college/ associate degree, while 15.8% reported completing a college degree and 9.6% did not finish high school. Overall, 41.5% of respondents reported experiencing chronic pain, and 35.6% reported they were currently taking a prescription pain medication. A significant percentage of respondents reported that they had experienced a 10 level pain (30.5%) and believed that pain from a previous illness or accident would continue throughout their lifetime (34.9%). A small number of respondents reported using alcohol or marijuana to control pain (4.1% and 8.2%, respectively). Approximately 31% of the sample reported using a prescribed pain medication belonging to someone else to manage their pain in the last 12 months, and 9.6% reported using an illegal drug to manage pain. Finally, 15.6% of the sample reported using alcohol, marijuana, or an illegal drug to manage pain.

Mantel-Haenszel Analysis

Adjusting for age using Mantel-Haenszel showed (Table 2) that use of alcohol to manage pain was significantly higher among those with no high school degree (14.3%); use of marijuana to manage pain was significantly higher among males (18.5%) and for younger adults between the ages of 18 and 25 years old (25%). Use of marijuana was also associated with those currently experiencing chronic pain (11.9%) and those who have experienced a level 10 pain (10.0%). Use of an illegal drug to manage pain was significantly higher among younger adults between the ages of 18 and 25 years old (25.7%); use of alcohol, marijuana, or another illegal drug was significantly higher among males (24.7%), younger adults between the ages of 18 and 25 years old (36.1%), those with less than a high school degree (32.1%), and those who have experienced a level 10 pain (17.8%).

Multiple Logistic Regression Analyses

We used multiple logistic regression analyses to further examine the relations of demographic and health-related variables with pain management practices (Table 3). The best model for using alcohol to manage pain was having less than a high school level of education (odds ratio [OR]: 5.29, 95% confidence interval [CI]: 1.28–18.86). The variables displaying the strongest association with using marijuana to manage pain include being male (OR: 6.01, CI: 2.33–14.42), being 18–25 years old (OR: 10.24, CI: 3.29–31.91), and having experienced a level 10 pain (OR: 6.26, CI: 1.68–23.37). Additionally, being 18–25 years old (OR: 4.26, CI: 1.75–10.39) was a significant correlate of using other illegal drugs to manage pain. Lastly, we found that being male (OR: 2.78, CI: 1.37–5.56), being 18–25 years old (OR: 5.96, CI: 2.33–15.22), having less than a high school education (OR: 4.08, CI: 1.58–10.50), and having experienced a level 10 pain (OR: 3.94, CI: 1.54–10.08) were strongly associated with the summary variable of using alcohol, marijuana, or other illegal drugs to manage pain.

Discussion

This exploratory study using a brief survey found that pain management practices among respondents varied by demographic and health-related variables. Within this convenience sample, the odds of using alcohol for managing pain is 5 times higher for those with less than a high school education (14.3%), while the odds for using marijuana for managing pain are 6 times higher for being male (18.5%), 10 times higher for being 18–25 years old (25%), and 6 times higher for having experienced a level 10 pain in the past (6%). Additionally, the odds of using an illegal drug to manage pain are 4 times higher for being 18–25 years old (25.7%). The summary variable of using alcohol, marijuana, or other illegal drugs for managing pain revealed that the strongest predictor variables were being male (24.7%), being 18–25 years old (36.1%), having less than a high school education (32.1%), and having experienced a level 10 pain in the past (17.8%).

Interestingly, the demographic and health-related variables were not significant predictors for using a non-prescribed medication for managing pain. Other studies have reported significant use of non-prescribed pain medications with study participants,^{3,5,8} including among 18- to 25-year-olds living on a Midwestern American Indian reservation.⁴ One reason may be that the definition for non-prescribed medication was not clear to participants from the question on the survey. Participants may have thought the question referred to an over-the-counter medication, instead of non-prescribed prescription opioid medications, such as Vicodin, Oxycontin, or Percocet.

Although the findings shed light on some of the associations related to demographics and pain management methods, they should be interpreted with caution. The design of the study was cross-sectional, which precludes causal inferences. It is not clear, for example, whether reported experiences of pain are a precursor to using alcohol or non-prescribed drugs or an after-the-fact rationalization for using these substances. Future studies using longitudinal designs would help disentangle these relations. Even given this limitation, this study is an important first step toward understanding the prevalence of different methods used to

manage pain in an AI/AN population. Understanding the methods individuals use to manage pain constitutes a steppingstone to developing strategies for reducing and preventing problems related to non-medical use of prescription pain medications and non-prescription drugs in rural American Indian/Alaska Native communities. The findings here are generally consistent with those of a 2011 literature review of pain management among AI/AN.⁹ In that review, Jimenez and colleagues found a number of articles in which AI/AN people report a higher prevalence of pain symptoms than do members of the non-AI/AN US general population. Their literature review also found that relative to the general population, AI/AN experiencing pain frequently use alternative modalities to manage it.⁹ However, because our study was exploratory, the operationalization of pain was not as detailed as other research cited in Jimenez and associates⁹ and that may be the reason there was such a high level of current and ever-experienced extreme pain in this study. These preliminary findings point to the need to take additional steps to understand the dimensions of problems surrounding the management of pain in rural tribal settings and to develop public health strategies to improve health and wellness in these environments. Using community-based participatory research (CBPR) is a methodological approach that is recommended for tribal communities as a respectful form of engagement with the community.¹⁰ CBPR maintains community oversight at all levels of the research process, including in survey development and research protocols and procedures. When possible, as in the present study, a tribal Institutional Review Board can help in providing oversight over the research process and how information is disseminated thereafter.

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References

1. Compton WM, Volkow ND. Major increases in opioid analgesic abuse in the United States: Concerns and strategies. *Drug Alcohol Depend* 2006;81(2):103–107. doi: 10.1016/j.drugalcdep.2005.05.009. [PubMed: 16023304]
2. Hughes A, Williams M, Lipari R, Bose J, Copello E, Kroutil L. Prescription drug use and misuse in the United States: Results from the 2015 National Survey on Drug Use and Health. *NSDUH Data Review* 2016, A1–A24. Available at <https://www.samhsa.gov/data/sites/default/files/NSDUH-FFR2-2015/NSDUH-FFR2-2015.htm>. Accessed July 8, 2018.
3. Goebel JR, Compton P, Zubkoff L, et al. Prescription sharing, alcohol use, and street drug use to manage pain among veterans. *J Pain Symptom Manage* 2011;41(5):848–858. [PubMed: 21256706]
4. Momper SL, Delva J, Tauiliili D, Mueller-Williams AC, Goral P. OxyContin Use on a rural Midwest American Indian reservation: Demographic correlates and reasons for using. *Am J Public Health* 2013;103(11):1997–1999. [PubMed: 24028230]

5. Blazer DG, Wu L-T. Nonprescription use of pain relievers by middle-aged and elderly community-living adults: National Survey on Drug Use and Health. *J Am Geriatr Soc* 2009;57(7):1252–1257. [PubMed: 19486199]
6. Johnson EM, Porucznik CA, Anderson JW, Rolfs RT. State-level strategies for reducing prescription drug overdose deaths: Utah's Prescription Safety Program. *Pain Med* 2011;12(suppl 2):S66–S72. [PubMed: 21668759]
7. Calcaterra S, Glanz J, Binswanger IA. National trends in pharmaceutical opioid related overdose deaths compared to other substance related overdose deaths: 1999–2009. *Drug Alcohol Depend* 2013;131(3):263–270. [PubMed: 23294765]
8. Harrell ZAT, Broman CL. Racial/ethnic differences in correlates of prescription drug misuse among young adults. *Drug Alcohol Depend* 2009;104(3):268–271. [PubMed: 19616903]
9. Jimenez N, Garrouette E, Kundu A, Morales L, Buchwald D. A review of the experience, epidemiology, and management of pain among American Indian, Alaska Native, and Aboriginal Canadian peoples. *J Pain* 2011;12(5):511–522. [PubMed: 21330217]
10. Wallerstein N, Duran B. Community-based participatory research contributions to intervention research: The intersection of science and practice to improve health equity. *Am J Public Health* 2010;100(S1):S40–S46. [PubMed: 20147663]

Table 1.Characteristics of Participants ($n = 295$)

Characteristic	% (n)
Age ($M = 45.63$, $SD = 15.97$)	
18–25	12.3 (36)
26–49	45.5 (133)
50–64	30.8 (90)
65 +	11.3 (33)
Missing	1 (3)
Gender	
Female	71.5 (208)
Male	28.5 (83)
Missing	1.4 (4)
Education	
Less than high school	9.6 (28)
High school/ GED/ some college/ Associates degree	74.7 (218)
College graduate	15.8 (46)
Missing	1 (3)
Currently experiencing chronic pain	41.5 (119)
Believe pain will continue throughout lifetime	34.9 (103)
Experienced a level 10 pain	69.5 (203)
Used alcohol to manage pain	4.1 (12)
Used marijuana to manage pain	8.2 (24)
Used illegal drug to manage pain	9.6 (28)
Used alcohol, marijuana, or illegal drug to manage pain	15.6 (46)
Used a non-prescribed pain medication to manage pain	30.2 (89)

Table 2.

Associations of Pain Management Strategies with Characteristics

	Gender		Age		Education		Current Chronic Pain		Believe Pain will Continue		Experienced Level 10 Pain	
	Female (n = 208)	Male (n = 83)	25 (n = 36)	26 (n = 256)	<HS (n = 28)	>HS (n = 264)	No (n = 168)	Yes (n = 119)	No (n = 192)	Yes (n = 103)	No (n = 89)	Yes (n = 203)
Alcohol	2.4	7.4	2.8	3.9	14.3 [*]	2.7	2.4	6.0	3.7	4.0	2.3	4.5
Marijuana	4.4	18.5 ^{***}	25.0 ^{***}	5.9	10.7	7.7	8.4	8.5	6.3	11.9 [*]	4.6	10.0 [*]
Illegal Drug	7.9	14.8	25.7 ^{**}	7.5	17.9	8.9	10.9	7.7	10.1	9.1	7.1	10.9
Alcohol, Marijuana, or Illegal Drug	12.1	24.7 [*]	36.1 ^{***}	12.5	32.1 [*]	13.4	14.9	16.2	14.7	16.8	10.3	17.8 [*]
Non-Prescribed Pain Medication	33.0	25.3	19.4	32.8	29.6	31.3	26.2	38.8	28.9	35.4	21.2	35.2

Note: Table entries are percentages.

Mantel-Haenszel analysis was used to control for age:

^{*} $P < .05$ ^{**} $P < .01$ ^{***} $P < .001$

Table 3:**Final Logistic Regression Models**

Predictor Variables	b	SE _b	OR	95% CI OR	P
Using Alcohol to Manage Pain (<i>n</i> = 12)					
< High School Education	1.66	.65	5.29	1.28 – 18.86	.010
Using Marijuana to Manage Pain (<i>n</i> = 24)					
Male	1.80	.50	6.01	2.33 – 14.42	<.001
18–25 years old	2.33	.58	10.24	3.29 – 31.91	<.001
Experienced level 10 pain	1.83	.67	6.26	1.68 – 23.37	.006
Using Other Illegal Drug to Manage Pain (<i>n</i> = 28)					
18–25 years old	1.45	.45	4.26	1.75 – 10.39	.001
Using Alcohol, Marijuana, or Other Illegal Drug (Summary Variable) to Manage Pain (<i>n</i> = 44)					
Male	1.02	.36	2.78	1.37–5.66	.005
18–25 years old	1.79	.50	5.96	2.33–15.22	<.001
< High School Education	1.41	.48	4.08	1.58–10.50	.004
Experienced level 10 pain	1.37	.48	3.94	1.54–10.08	.004