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Gender differences among Alaska Native people seeking alcohol withdrawal treatment

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Abstract

Background—Few studies focus on gender differences among patients who utilize detoxification services; even fewer focus on detoxification for Alaska Native people. This analysis focused on gender differences at admission among a sample of Alaska Native patients seeking alcohol withdrawal treatment.

Methods—The sample included 383 adult Alaska Native patients admitted to an inpatient alcohol detoxification unit during 2006 and 2007. Logistic regression was used to estimate unadjusted and adjusted associations with gender.

Results—Women were 88% more likely to have stable housing than men (odds ratio [OR] = 1.88, 95% confidence interval [CI] = 1.15, 3.05, $P = .01$). Women were 87% less likely to be seasonal workers (OR = 0.13, 95% CI = 0.03, 0.48, $P = .003$) and 50% less likely than men to be seeking employment (OR = 0.50, 95% CI = 0.29, 0.84, $P = .01$) at admission. Women had more than 5 times the odds of having children in the home at admission (OR = 5.64, 95% CI = 3.03, 10.56, $P < .001$) and almost 3 times the odds of experiencing physical abuse than men (OR = 2.96, 95% CI = 1.31, 6.66, $P = .01$). Additionally, women were 50% less likely to accept a referral to substance abuse treatment following detoxification (OR = 0.50, 95% CI = 0.30, 0.83, $P = .01$).

Conclusions—The study found significant differences based upon gender. For instance, women are in need of services that accommodate women with children and services that address histories of physical abuse. Conversely, men are in need of housing and employment opportunities. Post detoxification follow-up, case management, and transition to care should include gender as a factor in treatment planning.

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Keywords

Alaska Native; alcohol; American Indian; detoxification; gender

Introduction

Nationally, the proportion of women admitted to substance abuse treatment programs is lower than men. Although the rate of substance use disorders among women is half of that for men (5.8% versus 10.8%, respectively),¹ women constituted only 33% of substance abuse admissions.² Over 40 years ago, women were identified as a special subgroup among the alcohol use disorder population who were underserved and excluded from research; therefore, little information specific to women was known.³ The National Institute on Alcohol Abuse and Alcoholism³ and the National Institute for Drug Abuse⁴ have long recognized women as an at-risk population in need of more research and improved treatment. National policy related to substance abuse and women changed, and specific funding for women's services emerged in the 1980s.⁵ The Food and Drug Administration⁶ and the National Institutes of Health⁷ developed guidelines on the inclusion of women in research that served as a catalyst for gender-specific research. Now, substance abuse research with both genders^{8–16} is common, and research focused on the specific needs of women with substance use problems co-occurring with eating disorders,¹⁷ pregnancy,¹⁸ mental disorders,¹⁹ and human immunodeficiency virus/sexually transmitted diseases²⁰ has emerged. Although these represent great advances in the inclusion of women in alcohol and drug abuse research, little focus has been given to gender differences in a specific treatment-seeking population— in particular, those seeking detoxification treatment services.

Research suggests that detoxification patients are a unique subset of substance abuse patients in need of new treatment approaches²¹ and treatment linkages.²² Investigators caution that generalizing research findings from inpatient substance abuse treatment programs to inpatient detoxification programs may be inappropriate, as variables generally viewed as important substance abuse predictors (gender, age, living situation, background, psychopathology, coping style) do not reliably predict detoxification outcomes.²³ Few detoxification patients (21%–51%) will move to subsequent substance abuse treatment; indeed, the number making this transition has declined.²² Furthermore, as the number of detoxification admissions increases, the likelihood of entering substance abuse treatment or rehabilitation programs decreases.²⁴

Relatively few studies focus on gender difference in patients admitted to detoxification treatment; all consider distinct populations and examine different variables of interest.^{9,25–29} In a study of adolescents, females admitted to inpatient withdrawal services were more likely than males to be homeless, use heroin, engage in intravenous drug use, share injection equipment, use with a partner, and use for emotional reasons.²⁵ Among Canadian Aboriginals admitted to inpatient alcohol withdrawal treatment, women were younger, more likely to have a history of physical and sexual abuse, and within the detoxification setting were administered more medications and medical tests compared with men.²⁶ Women patients treated in an outpatient alcohol detoxification program were more likely to have

housing, insurance, and lower incomes and less likely to have legal problems than men.³⁰ Additionally, women were found to have more psychiatric problems,^{28,29} and women detoxifying from opioids were more likely than men to have family and social relationship problems and poor health-related quality of life and functioning.²⁸ In addition to these findings, women were found to be at greater risk than men for childhood history of physical and sexual abuse.²⁷ Although these studies vary with respect to patient age and race/ethnicity as well as intervention setting, it is clear that women admitted to detoxification were uniformly at greater risk for a range of problems compared with men.

Although a relatively small percent (14%)³¹ of the Alaska state population, Alaska Native people account for almost half (47%)³² of substance abuse treatment admissions in the state. The substance abuse treatment admission rate for women in Alaska is 6% higher than the national rate; women account for 39%³² of admissions in the state. Mortality due to alcohol abuse is 16 times higher among Alaska Native people than the US Caucasian population.³³ Alcohol abuse is the second leading cause of death among Alaska Native women aged 25–54.³³ Overall, the 1-year readmission rates to alcohol detoxification for Alaska Native people is 42%,³⁴ compared with 27% among patients receiving publicly funded detoxification services in the United States.³⁵

In this study, we explored potential gender differences in demographic/psychosocial characteristics, clinical factors, alcohol use–related behaviors, and health care utilization among Alaska Native patients admitted to an inpatient alcohol detoxification unit. Based upon the literature that used adult samples, we hypothesized that the women admitted to this facility, compared with their male counterparts, would be younger, have stable housing, be more likely to have been victims of physical abuse, have more mental health diagnoses, have lower global assessment functioning (GAF) scores at admission, and have fewer legal problems.

Methods

Study sample

Our analysis included adult patients admitted to an inpatient medically managed 6-bed detoxification unit that was tribally owned and operated in Southcentral Alaska. The unit almost exclusively served Alaska Native people and was funded primarily through the Indian Health Service. The detoxification unit was part of comprehensive substance abuse services that included outreach, screening, assessment, brief intervention, inpatient detoxification, outpatient treatment, intermediate residential treatment, and continuing care. Additional details on the unit, staff composition, detoxification admission criteria, and the Alaska Native Medical Center have been described elsewhere.³⁴ Only one other detoxification unit operated intermittently in the area during the study time period. Almost all patients were referred to the detoxification unit from the Alaska Native Medical Center, which was located in close proximity to the unit. A small number of patients were referred from hospitals located in the area.

A retrospective cohort design was used to examine patients admitted to the detoxification unit over 2 years beginning January 1, 2006, and ending December 31, 2007. A total of 419

patients were admitted during this time period. We excluded 18 patients who were neither Alaska Native nor American Indian^I. Alcohol withdrawal and drug withdrawal differ from one another in treatment protocols, clinical presentation, pharmacological treatments, and indicators of withdrawal severity.³⁶ Thus, we also excluded 19 patients with a primary diagnosis of drug withdrawal. One patient met both exclusion criteria, resulting in a final study population of 383.

Data source

The data were collected at the detoxification unit by treatment staff during standard admission and discharge procedures. Data were recorded in the unit's electronic medical record (EMR) system, extracted, and provided de-identified in Microsoft Excel format. The data used in the analyses presented here were determined “exempt” by the Alaska Area Institution Review Board and “not human subject research” by the Colorado Multiple Institutional Review Board. The manuscript was submitted to the tribal review processes of the organization from which the data originate, Southcentral Foundation, and the Alaska Native Tribal Health Consortium.

Measures

Outcome variable—The outcome variable was gender, dichotomized, females represented by 1 and males represented by 0.

Independent variables—The independent variables used in these analyses are as follows:

Demographic and psychosocial characteristic included age at admission, education, marital status, stable housing (i.e. living in own home or apartment), employment status, children residing in the home at admission, and household composition. Problems with primary support and social environment, history of physical abuse, and current legal problems were drawn from DSM-IV (*Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition*) Axis IV diagnoses³⁷ recorded in the EMR.

Clinical characteristics included the GAF of DSM-IV Axis V, which measured severity of symptoms and social/occupational/psychological functioning,³⁷ existence of a secondary drug diagnosis, history of delirium tremens/seizures, medical conditions, and diagnosed psychiatric conditions.

Use related behaviors included alcohol use within the 30 days prior to admission, age at first use of alcohol, and days abstinent prior to last drinking episode.

Health care utilization variables included length of stay, readmission to this detoxification unit within 1 year, successful completion of alcohol detoxification treatment, referral to substance abuse treatment upon completion of detoxification, and confirmed entry into a substance abuse treatment program upon discharge.

^IAlaska Native is intended to include people who originate within the boundaries of Alaska and either identify as Alaska Native or American Indian

Statistical methods

In Table 1, descriptive statistics, both overall and stratified by gender, characterize the sample. *T* tests (for continuous variables) and chi-square tests (for categorical variables) were used to identify bivariate associations with gender. Logistic regression estimated the bivariate association of each variable with gender. Purposeful selection was used for final model building.³⁸ Statistically significant bivariate relationships with a *P* value of .25 were considered for the final multiple logistic regression model, and variables were added iteratively in the order in which they appear in the Table 1. An alpha level of .05 was used to identify statistically significant results between men and women.

List-wise deletion would eliminate cases with missing data in modeling building; therefore, full information maximum likelihood was used to address missing data and retain the entire sample for analysis. A sensitivity analysis was conducted to compare patients with missing data to those without missing data. SAS³⁹ was used for data management; *Mplus*⁴⁰ for statistical analysis.

Results

The results of the sensitivity analysis indicated that 27% of the study cohort had 1 or more missing variables. Patients who completed treatment had problems with their social environment, and had a longer length of stay in treatment had less missing data (*P* values .01).

Patient characteristics appear in Table 1. The average age was 42.8 years old (SD = 10.4). About half (45%) had never been married; slightly more than half had stable housing (56%); 36% were not in the labor force, whereas 42% were seeking employment. About three fourths (72%) had children residing in the home. Physical abuse was reported by 7%; 17% reported legal problems. About one fourth (28%) had a secondary drug diagnosis. The average age of first use of alcohol was 14.6 (SD = 4.8) years, and the average length of stay was 5.1 days (SD = 2.4). About one third (36%) of the patients were referred to substance abuse treatment after detoxification. Of those referred to substance abuse treatment, 58% had a confirmed entry to a substance abuse treatment facility. Bivariate associations are similar to the adjusted final model, which is discussed next.

Of the 9 variables with statistically significant (*P* < .05) bivariate associations with gender (Table 1), 7 were retained in the final adjusted logistic regression model (Table 2). After controlling for other variables in the model, a 1-year increase in age was associated with 4% decrease in the odds of being female (odds ratio [OR] = 0.96, 95% confidence interval [CI] = 0.93, 0.98, *P* = .001). Women were 88% more likely to reside in their own homes or apartments compared with men (OR = 1.88, 95% CI = 1.15, 3.05, *P* = .01). Women were 87% less likely to be seasonal workers (versus not in the labor force) (OR = 0.13, 95% CI = .03, .48, *P* = .001) and 50% less likely to actively be seeking employment (versus not in the labor force) (OR = 0.50, 95% CI = 0.29, 0.84, *P* = .01) at the time of admission compared with men. Women also had more than 5½ times the odds of having children in the home (OR = 5.64, 95% CI = 10.56, *P* = .001) and about 3 times the odds of a history of physical abuse (OR = 2.96, 95% CI = 1.31, 6.66, *P* = .01). A 1-year increase in the age of first use

was associated with a 10% increase in the odds of being female (OR = 1.10, 95% CI = 1.16, $P = .001$). Women were 50% less likely to have received a referral to substance abuse treatment following alcohol detoxification (OR = 0.50, 95% CI = 0.30, 0.83, $P = .01$).

Discussion

Key results

As hypothesized, in this study of gender differences in admission to alcohol detoxification among Alaska Native people, women were younger at admission and more likely to have stable housing and a history of physical abuse than were men admitted to the same facility. Our findings support previous research indicating that women admitted to detoxification tended to be younger,²⁶ were at increased risk of physical abuse,^{26,27} and were less likely to be homeless than men.³⁰ Contrary to our hypothesis, we did not find statistically significant gender differences in mental health diagnosis, GAF scores, or legal problems.

Although not specifically hypothesized, gender differences were found in employment status, having children in the home, age of first alcohol use, and referral to substance abuse treatment. Children in the home at admission, age of first alcohol use, and referral to substance abuse treatment following detoxification have not previously been examined in studies investigating gender differences in detoxification samples. These findings are new contributions to the literature. Previous studies that examined the relationship of employment and gender in detoxification samples did not find statistically significant relationships.^{30,41} In this study, men were more likely to be seeking employment at admission or to be seasonal workers. We suspect high rates of unemployment along with available employment opportunities in Alaska that may be more appealing to men (i.e., oil, gas, fishing, etc.) impacted our findings. During the study time period, 2006 and 2007, Alaska's unemployment rate was 6.5% and 6.1%, respectively, compared with 4.6% for the nation.⁴² Reliance upon the subsistence way of life by some Alaska Native people together with harsh weather conditions^{43,44} that impact this way of life may have contributed to the seasonal employment findings.

Men may have been referred to follow-up substance abuse treatment service after alcohol detoxification more often than women for several reasons. Other non-Alaska Native women with children do not attend substance abuse treatment due to family responsibilities,⁴⁵ fear of perceived child abuse,⁴⁶ and fear of losing child custody.⁴⁷ Alaska Native women may share in these same concerns. Similarly, Alaska Native women may be less inclined to seek referral to substance abuse treatment following detoxification due to the potential threat of termination of parental rights—with more than 5 times the odds of having children in the home than men—entering substance abuse treatment following detoxification may pose a more severe threat on parental rights for women than men. Any of these factors or a combination may have contributed to women being less inclined to seek referral to substance abuse treatment following detoxification. In this sample, men were more likely to be homeless and unemployed, which may reduce the perceived barriers to substance abuse treatment entry following detoxification. Although men were more likely to be referred to substance abuse treatment, we did not observe a gender difference in the confirmed entry into substance abuse treatment programs following detoxification. This suggests that men

may require additional support to follow through on substance abuse treatment recommendations following detoxification.

Treatment implications

Distinct gender differences were found among Alaska Native patients seeking alcohol detoxification; these differences point to the need for targeted posttreatment services based upon gender. For women, aftercare or follow-up services should assist them in identifying treatment options that accommodate women with children. Women stay longer in treatment, and treatment completion rates are higher at facilities offering childcare services.⁴⁶ Also, Alaska Native women have increased odds of having a history of physical abuse. Aftercare and substance abuse services should provide counseling, treatment groups, and interventions for Alaska Native women with alcohol dependence problems who are at risk of being involved in abusive relationships. Women with histories of abuse are at increased risk of substance use disorders.⁴⁸ This explains the current advent of trauma-informed care in many treatment programs across the nation.⁴⁹

Alaska Native men in alcohol detoxification have specific needs that can be addressed post treatment as well. In particular, men may benefit from case management that addresses housing and employment issues along with support to follow through on treatment referrals. It is important to note that the organization from which these data derived has since instituted a 2-year residential treatment program for men with addiction problems who are homeless and/or reentering society after incarceration. Previous research indicated that providing housing to homeless individuals with chronic alcohol problems decreased alcohol use.⁵⁰

Methodological issues and limitations

This study relied upon EMR data collected for treatment purposes rather than research. Consequently, the data did not include potentially important predictors that may impact the discovery of gender differences such as history of sexual abuse, administration of antibiotics and antidepressants, use of medical tests, drug withdrawal,²⁶ and intravenous drug use.²⁵ Additionally, the data do not include measures contained in the Clinical Institute Withdrawal Assessment of Alcohol Scale, such as agitation, anxiety, headache, nausea/vomiting, etc., that have been linked to multiple admissions to general medical services for those seeking alcohol withdrawal treatment.⁵¹ Number of physical health conditions, history of physical abuse, legal involvement, and history of delirium tremens/seizures (DTs)/seizures relied upon patients' self-report to providers. Additionally, some patients may be reluctant to report sensitive information such as physical abuse, alcohol-related health problems, or legal system involvement. There may be underreporting of these indicators leading to biased effects.

This was a single-facility study; therefore, we were unable to consider treatment, setting, and other processes of care elements that may impact gender differences, such as the availability of Alaska Native or gender-specific counselors. This detoxification unit was located in Alaska's primary urban area; results are therefore not generalizable to rural areas of the state and to all Alaska Native people. We also were unable to study larger economic and social

issues related to the Southcentral Alaska area such as housing and employment opportunities that may affect the use of detoxification services. Access to care in the state of Alaska is exceptionally important to consider. These data are limited to those who accessed detoxification services; we were unable to study factors that might impact the treatment-seeking process, such as distance from home to the health care facility, access to health care by a road system, or modes of transportation in and out of villages.

Despite these limitations, the results of these analyses make an important contribution to the alcohol detoxification literature. The availability of residential treatment facilities, in particular detoxification options, in the state of Alaska is limited.⁵² These data provided a unique opportunity to focus on detoxification using a sample of Alaska Native people whom we know little about but are at increased risk for alcohol use disorders. Furthermore, this work provides a critical perspective of the gender differences in admission to detoxification.

Conclusion

This study demonstrated important significant gender differences among Alaska Native people admitted to inpatient alcohol detoxification. Women are at increased risk of physical abuse and more likely to have children in the home, whereas men are more likely to be seeking work or be seasonally employed and not having housing. Detoxification staff should be aware of these differences that can be used to guide postdetoxification treatment referrals and transition to care while avoiding referrals to substance abuse services that do not meet patient needs.

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Table 1

Sample characteristics and bivariate relationships with gender.

Characteristic	Entire sample (N = 383)			Men (n = 219)			Women (n = 164)			Unadjusted logistic regression		
	n/mean	%/SD		n/mean	%/SD		n/mean	%/SD		OR	95% CI	P value*
<i>Demographic and psychosocial characteristics</i>												
Age	42.8	10.4		43.9	10.2		41.2	10.4		0.98	0.96, 0.99	.01
Education												
Less than high school	97	25%		57	26%		39	24%		1.03	0.62, 1.70	.92
High school education	179	47%		107	49%		71	43%		1.00	—	—
More than high school	107	28%		55	25%		54	33%		1.47	0.91, 2.38	.12
Marital status												
Living as married	65	17%		30	14%		34	21%		1.30	0.72, 2.34	.38
Single never married	173	45%		112	51%		63	38%		0.64	0.41, 1.01	.06
Divorced, separated, widowed	145	38%		77	35%		67	41%		1.00	—	—
Housing status												
Stable	214	56%		101	46%		112	68%		2.52	1.65, 3.84	<.001
Unstable	169	44%		118	54%		52	32%		1.00	—	—
Employment status												
Employed	61	16%		35	16%		26	16%		0.64	0.35, 1.17	.14
Seasonal work/other	19	5%		19	9%		4	2%		0.14	0.04, 0.48	.002
Seeking employment	163	42%		101	46%		59	36%		0.51	0.32, 0.80	.004
Not in labor force	140	36%		64	29%		75	46%		1.00	—	—
Children in the home												
Yes	277	72%		132	60%		145	88%		5.03	2.90, 8.71	<.001
No	106	28%		87	40%		19	12%		1.00	—	—
Patient lives with												
Alone	168	44%		109	50%		61	37%		0.60	0.40, 0.90	.02
Family or nonfamily	215	56%		110	50%		103	63%		1.00	—	—
Problems related to primary support												
Yes	298	78%		169	77%		130	79%		1.18	0.70, 2.00	.54
No	85	22%		50	23%		34	2%		1.00	—	—

Characteristic	Entire sample (N = 383)		Men (n = 219)		Women (n = 164)		Unadjusted logistic regression		
	n/mean	%/SD	n/mean	%/SD	n/mean	%/SD	OR	95% CI	P value *
Social environment problems									
Yes	341	89%	193	88%	148	90%	1.21	0.60, 2.44	.59
No	42	11%	26	12%	16	10%	1.00	—	—
Physical abuse									
Yes	26	7%	9	4%	16	10%	2.45	1.01, 5.99	.04
No	357	93%	210	96%	148	90%	1.00	—	—
Legal problems									
Yes	65	17%	39	18%	26	16%	.61	0.46, 1.47	.51
No	318	83%	180	82%	138	84%	1.00	—	—
Clinical characteristics									
GAF at admission	43.6	8.9	43.1	8.6	44.5	9.1	1.02	0.99, 1.05	.11
Secondary diagnosis drug related									
Yes	107	28%	59	27%	47	29%	1.09	0.69, 1.71	.71
No	276	72%	160	73%	117	71%	1.00	—	—
History of delirium tremens or seizures									
Yes	119	31%	72	33%	48	29%	.45	0.53, 1.27	.38
No	264	69%	147	67%	116	71%	1.00	—	—
Medical conditions									
None	191	50%	107	49%	86	52%	1.00	—	—
One or more	192	50%	112	51%	79	48%	0.90	0.60, 1.40	.62
Diagnosed psychiatric problems									
None	333	87%	195	89%	138	84%	1.00	—	—
One or more	50	13%	24	11%	26	26%	1.46	0.78, 2.72	.23
Use-related behaviors									
Alcohol use in the last 30 days									
<29	195	51%	114	52%	82	50%	1.00	—	—
= 30	188	49%	105	48%	82	50%	1.09	0.72, 1.63	.69
Age first alcohol use	14.6	4.8	13.9	3.8	15.5	5.7	<.001	1.03, 1.13	<.001
Days abstinent prior to last use									
0–30	246	64%	140	64%	107	65%	1.00	—	—

Characteristic	Entire sample (N = 383)			Men (n = 219)			Women (n = 164)			Unadjusted logistic regression		
	n/mean	%/SD		n/mean	%/SD		n/mean	%/SD		OR	95% CI	P value*
31+	137	36%		79	36%		57	35%		0.91	0.60, 1.40	.67
<i>Health care utilization</i>												
Length of stay	5.1	2.4		5.3	2.5		4.8	2.3		0.92	0.84, 1.01	.06
Readmitted to detoxification ^a												
Yes	164	43%		96	44%		66	40%		0.83	0.55, 1.25	.47
No	219	57%		122	56%		99	60%		1.00	—	—
Treatment status												
Complete	287	75%		171	78%		118	72%		1.39	0.87, 2.21	.17
Incomplete	96	25%		48	22%		46	28%		1.00	—	—
Referred to treatment												
Yes	138	36%		91	42%		47	29%		0.57	0.37, .87	.01
No	245	64%		128	58%		117	71%		1.00	—	—
Enter treatment (N = 138)												
Yes	80	58%		53	58%		27	57%		0.97	0.47, 1.97	.93
No	58	42%		38	42%		20	43%		1.00	—	—

Note. n/mean = number for categorical variables/mean for continuous variables; %/SD = percentage for categorical variables/standard deviation for continuous variables. OR = odds ratio; CI = confidence interval; GAF = global assessment functioning.

^aReadmitted to this detoxification facility within 1 year.

* An alpha level of .05 was used to identify statistically significant results.

Table 2

Multivariate analyses for gender differences in admission to alcohol detoxification ($N = 383$).

Characteristic	Adjusted results		
	OR	95% CI	<i>P</i> value [*]
Age	0.96	0.93, .98	<.001
Housing status			
Stable	1.88	1.15, 3.05	.01
Unstable	1.00	—	—
Employment status			
Employed	0.52	0.26, 1.04	.07
Seasonal work/other	0.13	0.03, 0.50	.003
Seeking employment	0.50	0.29, 0.84	.01
Not in labor force	1.00	—	—
Children in the home			
Yes	5.64	3.03, 10.56	<.001
No	1.00	—	—
Physical abuse			
Yes	2.96	1.31, 6.66	.01
No	1.00	—	—
Age first alcohol use	1.10	1.04, 1.16	<.001
Referred to treatment			
Yes	0.50	0.30, 0.83	.01
No	1.00	—	—

Note. OR = odds ratio; CI = confidence interval.

^{*} An alpha level of .05 was used to identify statistically significant results.