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Differences between adult non-drug users versus alcohol, cocaine and concurrent alcohol and cocaine problem users

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Abstract

Concurrent drug use is a serious public health concern with significant morbidity and mortality associated with the combined use of alcohol and cocaine. Multinomial logistic regression was used to assess differences between non-drug users and alcohol, cocaine and concurrent problem users incorporating data from the 2005 National Survey on Drug Use and Health. Results demonstrated that alcohol and cocaine use is associated with mental health disturbance, other drug use and adverse social consequences. Furthermore, concurrent users were more likely to report cigarette and marijuana use as well as lifetime STDs and arrest for breaking the law. Study results have implications for planning prevention and treatment services differentially for alcohol, cocaine and concurrent users and support the need for more intense resources allocated to the prevention and treatment of the concurrent use of alcohol and cocaine.

Keywords

Alcohol Abuse; Cocaine; Drug Dependency; Surveys

1. Introduction

The prevalence of concurrent abuse and dependence of cocaine and alcohol is a serious public health problem associated with significant morbidity and mortality as well as high cost of health care (Coffin et al., 2003; Grant & Harford, 1990; McCance-Katz, Kosten, & Jatlow, 1998; Vanek et al., 1996). Concurrent use has been associated with mental health disorders, other drug use and adverse social consequences. Specifically, concurrent users were more likely to have been involved in violent trauma, have had altered mental status and have reported other substance use compared to single users (Brady, Sonne, Randall, Adinoff, & Malcolm, 1995; Vanek et al., 1996). Further, the concurrent use of cocaine and alcohol has been associated with adverse consequences, including unwanted sexual relations (Heil, Badger, & Higgins, 2001; Higgins, Budney, Bickel, Foerg, & Badger, 1994) and criminal activity (Gossop, Manning, & Ridge, 2006).

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Although several studies have delineated single users versus concurrent users in small treatment seeking populations, limited information is available on the correlates of concurrent use in a general population (Grant & Harford, 1990). The present study assessed differences between non-drug users versus cocaine, alcohol and concurrent users meeting abuse or dependence criteria in a nationally representative adult population via the 2005 National Survey on Drug Use and Health (NSDUH). Correlates, including variables that have been examined in extant literature such as demographics, mental health, other drug use and adverse consequences were assessed. Results from this study may be used to determine unmet treatment needs and for the planning of community based prevention.

2. Methods

2.1 Sample

Data was from the 2005 National Survey on Drug Use and Health (NSDUH). The 2005 NSDUH is the 25th of a series of cross-sectional surveys whose primary purpose is to measure the prevalence and correlates of drug use among the general population in the United States. The target population of this survey was non-institutionalized participants 12 years and older; for this analysis of adults, we excluded anyone less than 18 years of age. Further description of sampling methods and survey techniques may be found at the Office of Applied Statistics.

2.2 Measures

Variables reporting whether a subject had met past year abuse or dependence criteria were based upon the criteria listed in the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV). A problem use variable was created for each substance for participants reporting abuse or dependence of alcohol, cocaine or alcohol and cocaine. *'Non-drug users' were defined as survey participants who did not meet abuse or dependence criteria for any of the drug categories listed in the NSDUH survey; i.e., Alcohol, Cocaine, Marijuana, Hallucinogens, Heroin, Inhalants, etc.* Demographic variables collected in the NSDUH survey and used in this analysis included: gender, race, age, education, income and marital status. Substance use included past month marijuana and cigarette use. Mental health and adverse consequences included self-ratings of lifetime generalized anxiety disorder, depression, sexually transmitted disease (STD) and whether the participant had ever been arrested.

2.3 Statistical analysis

Multinomial logistic regression was used to characterize the relationship between demographic characteristics, substance use, mental health and adverse consequences of non-drug users versus alcohol, cocaine and concurrent users. Non-drug users were used as the referent group to calculate odds ratios (OR), adjusted odds ratios (AOR) and 95% confidence intervals (CI). For all analysis, the individual sampling weights provided by the NSDUH 2005 were used to provide estimates that were representative of the U.S. population.

3. Results

Table 1 lists the descriptive statistics for the demographic characteristics of non-drug users as well as alcohol, cocaine and concurrent users (n=36 425). Males were more likely to be represented as alcohol (68%) and concurrent users (64%); whereas both genders were approximately equally likely to be non-drug or cocaine users. Whites were approximately equally represented in all drug use categories; whereas, African Americans were more likely to report cocaine use (24%) compared to no drug use (11%), alcohol use (10%) or concurrent use (16%). Approximately, 14% of Hispanics were alcohol users compared to non-drug users (13%), cocaine users (5%) and concurrent users (11%). Whereas 18-25 year olds represented approximately 13% of non-drug users, 18-25 year olds represented 33% of alcohol and cocaine

users and 36% of concurrent users. Participants with incomes less than \$20,000 represented 19% of non-drug users; participants with low income represented 23% of alcohol users, 42% of cocaine users and 41% of concurrent users. Problem drug users were less likely to be married compared to non-drug users, with concurrent users having the highest percentage of participants to report divorce or separation (57%).

The odds of lifetime anxiety was higher for alcohol (OR=1.68, 95% CI=1.41, 2.01), cocaine (OR=3.67, 95% CI=2.01, 6.71) and concurrent (OR=3.60, 95% CI=2.44, 5.31) users compared to non-drug users. Lifetime depression was associated with alcohol (OR=1.81, 95% CI=1.52, 2.17) cocaine (OR=2.99, 95% CI=1.74, 5.14) and concurrent (OR=2.29, 95% CI=1.50, 3.49) use. Also, the odds of participants reporting past month cigarette and marijuana use was higher in all drug using groups compared to the non-drug using group with a larger percentage of concurrent users reporting than single users. Concurrent users were more likely to report lifetime STDs. Specifically, participants reporting lifetime STDs had 3.08 (95% CI=1.39, 6.84) the odds of concurrent use versus non-drug use. A higher percentage of concurrent users reported (65%) arrest compared to alcohol (42%), cocaine (61%) and non-drug (14.11%) users.

Adjusted estimates in Table II demonstrate that participants with lifetime anxiety have 2.24 (95% CI= 1.24, 4.04) the odds of participants with no lifetime anxiety of concurrent use. Also, participants with lifetime depression have 1.73 (95% CI=1.39, 2.15) the odds of participants without depression to endorse alcohol use compared to no drug use. A similar association is demonstrated for cocaine users but not concurrent users in the adjusted results. Past month cigarette and marijuana use was associated with alcohol, cocaine and concurrent use when adjusting for all other covariates in the model. In the adjusted results, an association between drug use and lifetime arrest is observed with concurrent users more likely to report arrest; however, the association between drug use and STDs was no longer statistically significant for cocaine or concurrent users.

4. Discussion

Using recent nationally representative data, we were able to distinguish between non-drug users and alcohol-only, cocaine-only and concurrent problem users. Unlike other studies which focused on differences between single and concurrent users of alcohol and cocaine in small samples or treatment seeking populations (Brady et al., 1995; Higgins et al., 1994; McCance-Katz et al., 1998; Vanek et al., 1996), our study using the NSDUH of over 35 000 are generalized to the national population. However, limitations of this study should be noted; the NSDUH 2005 survey only collected data on past year abuse and dependence. Therefore, lifetime abuse and dependence could not be assessed. Also, the NSDUH had a cross sectional design. Future research may want to follow problem users prospectively over time in order to look at longitudinal associations with outcomes. Further, the NSDUH is based on *self-reported* participant data; participants may have under or over reported their drug use due to stigmas associated with mental or physical health and drug use (Harrison, 1997).

However, our results delineated non-drug users versus single users and concurrent users of alcohol and cocaine suggesting that these groups represent substantially different populations. Furthermore, concurrent users were more likely to report lifetime anxiety, other drug use, lifetime STDs and arrest for breaking the law. Based on the current findings, prevention planners need to emphasize to 'at-risk populations' the greater destructive aspects of combining alcohol with cocaine. Thus, more intense psychiatric and drug dependence treatment resources are needed for concurrent alcohol/cocaine users both in acute care and rehabilitative treatment settings.

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Table 1

Characteristics of adult sample, non-drug users, alcohol, cocaine and concurrent

Characteristic	Non-Drug Users, N (%) (n=31,588)	Alcohol Only, N (%) (n=4,443)	Cocaine Only, N (%) (n=151)	Concurrent, N (%) (n=243)
Gender				
Female	17,841 (53.62%)	1,720 (32.13%)	88 (52.76%)	106 (35.51%)
Male	13,747 (46.38%)	2,723 (67.87%)	63 (47.24%)	137 (64.49%)
Race/ethnicity				
White	20,564 (69.88%)	3,096 (71.08%)	104 (68.31%)	165 (70.44%)
Black	3,890 (11.35%)	392 (10.02%)	21 (23.86%)	25 (15.64%)
Hispanic	4,700 (12.68%)	604 (13.98%)	16 (5.24%)	31 (11.43%)
Other	2,434 (6.09%)	351 (4.93%)	10 (2.59%)	22 (2.49%)
Age (years)				
18-25	14,487 (12.85%)	3,075 (33.35%)	98 (33.12%)	168 (36.38%)
26-34	4,782 (15.37%)	588 (22.34%)	15 (14.50%)	26 (19.72%)
35-49	7,383 (30.25%)	619 (29.40%)	32 (40.78%)	42 (35.11%)
>49	4,936 (41.53%)	161 (14.90%)	6 (11.61%)	7 (8.79%)
Education				
< Highschool	2,263 (8.62%)	216 (4.77%)	15 (7.56%)	23 (7.60%)
HighSchool	13,966 (39.18%)	1,949 (39.72%)	92 (64.64%)	128 (53.05%)
Some Undergraduate	8,819 (24.74%)	1,513 (30.78%)	37 (22.20%)	67 (30.68%)
Undergraduate or Graduate School	6,540 (27.46%)	765 (24.73%)	7 (5.60%)	25 (8.66%)
Income				
<\$20,000	7,901 (18.55%)	1,401 (22.66%)	59 (41.96%)	104 (41.03%)
\$20,000-\$49,000	11,738 (34.64%)	1,596 (36.81%)	51 (37.13%)	76 (28.17%)
\$50,000-\$74,999	5,295 (18.56%)	604 (13.90%)	24 (11.18%)	25 (10.90%)
\$75000 or more	6,654 (28.25%)	842 (26.63%)	17 (9.73%)	38 (19.89%)
Marital Status				
Not Married/ Widowed	2,959 (12.86%)	376 (15.24%)	27 (33.29%)	37 (22.80%)
Divorced or Separated	15,379 (28.18%)	3,319 (53.19%)	103 (46.76%)	179 (57.05%)
Married	13,250 (58.96%)	748 (31.57%)	21 (19.95%)	27 (20.15%)
Lifetime Anxiety [†]				
No	29,101 (93.71%)	3,914 (89.84%)	115 (80.23%)	181 (80.55%)
Yes	2,011 (6.29%)	459 (10.16%)	31 (19.77%)	55 (19.45%)
Lifetime Depression [†]				
No	27,616 (89.05%)	3,634 (81.76%)	100 (73.12%)	165 (78.03%)
Yes	3,496 (10.95%)	739 (18.24%)	46 (26.88%)	71 (21.97%)
Cigarette use past month				
No	22,358 (76.06%)	1,825 (47.79%)	36 (26.57%)	33 (15.35%)
Yes	9,230 (23.94%)	2,618 (52.21%)	115 (73.43%)	210 (84.65%)
Marijuana use past month				
No	29,582 (96.23%)	3,321 (79.72%)	75 (51.09%)	108 (40.69%)
Yes	2,006 (3.77%)	1,212 (20.28%)	76 (48.91%)	135 (59.31%)

Characteristic	Non-Drug Users, N (%) (n=31,588)	Alcohol Only, N (%) (n=4,443)	Cocaine Only, N (%) (n=151)	Concurrent, N (%) (n=243)
Lifetime STDs [†]				
No	29,936 (96.75%)	4,075 (93.65%)	131 (91.18%)	214 (90.62%)
Yes	1,176 (3.25%)	298 (6.35%)	15 (8.82%)	22 (9.38%)
Ever Arrested for Breaking the law [†]				
No	26,757 (85.89%)	2,669 (58.24%)	62 (38.98%)	95 (35.04%)
Yes	4,740 (14.11%)	1,762 (41.76%)	89 (61.02%)	148 (64.96%)

Percentages are weighted percentages, n are raw (unweighted) numbers.

[†] less than 1% missing

Table 2
Multinomial Regression Odds Ratio (OR) and Adjusted Odds Ratio (AOR) of Non-Drug Users versus Alcohol, Cocaine and Concurrent Users

Characteristic	Alcohol Only		Cocaine Only		Concurrent Alcohol and Cocaine	
	OR (95% CI)	AOR (95% CI)	OR (95% CI)	AOR (95% CI)	OR (95% CI)	AOR (95% CI)
Gender						
Female	1.00	1.00	1.00	1.00	1.00	1.00
Male	2.44 (2.21, 2.70) ^c	2.03 (1.78, 2.30) ^c	1.04 (0.62, 1.72)	0.70 (0.38, 1.30)	2.10 (1.37, 3.22) ^c	1.33 (0.83, 2.13)
Race/ethnicity						
White	1.00	1.00	1.00	1.00	1.00	1.00
Black	0.87 (0.73, 1.03)	0.72 (0.59, 0.87) ^c	2.15 (1.11, 4.20) ^d	1.21 (0.62, 2.36)	1.37 (0.81, 2.32)	0.96 (0.52, 1.80)
Hispanic	1.08 (0.91, 1.29)	1.11 (0.92, 1.33)	0.42 (0.20, 0.89) ^d	0.45 (0.20, 1.01)	0.89 (0.48, 1.65)	1.15 (0.61, 2.15)
Other	0.80 (0.63, 1.00)	0.78 (0.61, 1.00)	0.44 (0.24, 0.78) ^b	0.59 (0.33, 1.08)	0.41 (0.19, 0.86) ^d	0.50 (0.24, 1.06)
Age (years)						
18-25	1.00	1.00	1.00	1.00	1.00	1.00
26-34	0.56 (0.49, 0.65) ^c	0.66 (0.56, 0.78) ^c	0.37 (0.16, 0.82) ^d	0.50 (0.21, 1.20)	0.45 (0.23, 0.90) ^d	0.70 (0.30, 1.64)
35-49	0.37 (0.33, 0.42) ^c	0.52 (0.45, 0.60) ^c	0.52 (0.31, 0.88) ^d	0.72 (0.37, 1.41)	0.41 (0.29, 0.57) ^c	0.95 (0.49, 1.81)
>49	0.14 (0.12, 0.16) ^c	0.25 (0.21, 0.30) ^c	0.11 (0.05, 0.25) ^c	0.29 (0.09, 0.92) ^d	0.08 (0.03, 0.20) ^c	0.39 (0.11, 1.42)
Education						
< Highschool	1.00	1.00	1.00	1.00	1.00	1.00
HighSchool	1.83 (1.40, 2.40) ^c	1.46 (1.08, 1.97) ^d	1.88 (0.96, 3.70)	1.27 (0.58, 2.78)	1.54 (0.95, 2.49)	0.99 (0.60, 1.63)
Some Undergraduate	2.25 (1.69, 3.00) ^c	1.98 (1.43, 2.75) ^c	1.02 (0.48, 2.21)	0.86 (0.38, 1.95)	1.41 (0.72, 2.76)	1.25 (0.59, 2.65)
Undergraduate or Graduate School	1.63 (1.21, 2.19) ^b	2.19 (1.58, 3.04) ^c	0.23 (0.08, 0.69) ^b	0.47 (0.14, 1.57)	0.36 (0.19, 0.68) ^b	0.75 (0.35, 1.65)
Income						
<\$20,000	1.00	1.00	1.00	1.00	1.00	1.00
\$20,000-\$49,000	0.87 (0.76, 1.00)	1.01 (0.88, 1.16)	0.47 (0.24, 0.96) ^d	0.78 (0.36, 1.70)	0.37 (0.23, 0.58) ^c	0.52 (0.32, 0.84) ^b
\$50,000-\$74,999	0.61 (0.53, 0.71) ^c	0.82 (0.69, 0.98) ^d	0.27 (0.14, 0.50) ^c	0.56 (0.29, 1.09)	0.27 (0.13, 0.57) ^c	0.51 (0.23, 1.13)
\$75,000 or more	0.77 (0.66, 0.90) ^c	1.16 (0.97, 1.37)	0.15 (0.08, 0.31) ^c	0.50 (0.24, 1.08)	0.32 (0.17, 0.59) ^c	0.95 (0.50, 1.81)
Marital Status						
Not Married/ Widowed	1.00	1.00	1.00	1.00	1.00	1.00

Characteristic	Alcohol Only		Cocaine Only		Concurrent Alcohol and Cocaine	
	OR (95% CI)	AOR (95% CI)	OR (95% CI)	AOR (95% CI)	OR (95% CI)	AOR (95% CI)
Divorced or Separated	1.59 (1.35, 1.88) ^c	1.09 (0.91, 1.30)	0.64 (0.34, 1.22)	0.57 (0.25, 1.29)	1.14 (0.71, 1.83)	1.07 (0.49, 2.37)
Married	0.45 (0.38, 0.54) ^c	0.54 (0.45, 0.65) ^c	0.13 (0.06, 0.31) ^c	0.31 (0.11, 0.88) ^d	0.19 (0.10, 0.38) ^c	0.44 (0.21, 0.91) ^d
Lifetime Anxiety						
No	1.00	1.00	1.00	1.00	1.00	1.00
Yes	1.68 (1.41, 2.01) ^c	1.26 (1.00, 1.60)	3.67 (2.01, 6.71) ^c	1.82 (0.97, 3.42)	3.60 (2.44, 5.31) ^c	2.24 (1.24, 4.04) ^b
Lifetime Depression						
No	1.00	1.00	1.00	1.00	1.00	1.00
Yes	1.81 (1.52, 2.17) ^c	1.73 (1.39, 2.15) ^c	2.99 (1.74, 5.14) ^c	1.75 (1.05, 2.92) ^d	2.29 (1.50, 3.49) ^c	1.41 (0.79, 2.52)
Cigarette use past month						
No	1.00	1.00	1.00	1.00	1.00	1.00
Yes	3.47 (3.13, 3.85) ^c	1.95 (1.73, 2.20) ^c	8.78 (4.42, 17.43) ^c	2.37 (1.03, 5.44) ^d	17.52 (10.28, 29.85) ^c	5.63 (2.77, 11.45) ^c
Marijuana use past month						
No	1.00	1.00	1.00	1.00	1.00	1.00
Yes	6.49 (5.64, 7.46) ^c	2.33 (2.02, 2.68) ^c	24.41 (14.15, 42.13) ^c	8.62 (4.58, 16.22) ^c	37.18 (23.43, 58.98) ^c	11.19 (6.15, 20.38) ^c
Lifetime STDs						
No	1.00	1.00	1.00	1.00	1.00	1.00
Yes	2.02 (1.55, 2.63) ^c	1.44 (1.10, 1.87) ^b	2.88 (1.34, 6.20) ^b	1.46 (0.63, 3.43)	3.08 (1.39, 6.84) ^b	1.72 (0.80, 3.69)
Ever Arrested for Breaking the law						
No	1.00	1.00	1.00	1.00	1.00	1.00
Yes	4.36 (3.88, 4.91) ^c	2.71 (2.36, 3.11) ^c	9.53 (5.52, 16.44) ^c	4.18 (2.15, 8.12) ^c	11.28 (7.79, 16.34) ^c	4.23 (2.59, 6.90) ^c

^a p<.05,^b p<.01,^c p<.001