

Drug-abusing Offenders with Co-morbid Mental Disorders: Gender Differences in Problem Severity, Treatment Participation, and Recidivism*

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Abstract

Objective This study examined the gender differences in drug-related problems and predictors of recidivism among a sample of 1444 offenders with co-morbid drug abuse and mental disorders participating in California's Proposition 36 Program.

Methods Background characteristics and problem severity in multiple key life areas were assessed at intake by using Addiction Severity Index, and drug treatment participation, mental health diagnoses and arrests were based on official records.

Results Women demonstrated greater problem severity than men in family relationships, health, psychological health, and sexual and physical abuse history. Men on the other hand had greater criminal history, high rates of attention disorder, and psychotic disorder. More men than women were rearrested during the year after treatment admission. Logistic regression analyses showed that for the combined sample, male, young age, cocaine use (relative to methamphetamine), drug abuse severity, methadone treatment, arrest history and fewer prior treatment history were associated with higher recidivism at 12-month follow-up; lower education, cocaine use, and arrest history were related to women's recidivism, while young age, outpatient treatment, and arrest history were predictors of men's recidivism.

Conclusion Although the specific type of mental disorder did not seem to be predictive of recidivism, the high rates of mental health disorder and arrest of this population is problematic. Intervention strategies taking into consideration gender-specific problems and needs can improve outcomes for both.

Key words: Drug abuse; Offender; Mental disorder; Gender difference

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INTRODUCTION

The co-occurrence of mental health disorders in substance abusing populations, or of substance abuse

disorders in mentally ill individuals, has been a research subject since the early 1980s^[1]. Epidemiological studies have shown that 55% to 69% of individuals with a substance disorder have a co-occurring mental health disorder^[2] and that as

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many as 60% of those who have been diagnosed as a mental disorder also have co-occurring substance use disorder. It has been estimated that in the United States, seven to ten million individuals reveal evidence of such co-morbid disorders (COD)^[3]. Studies have identified substance abuse as a risk factor, which increases the likelihood that an individual with mental disorders may become violent^[4-5].

Empirical data also indicate that COD individuals are more likely to be arrested or incarcerated, and spend more time in incarceration than those without mental disorders^[6-7]. As a result, substance-abusing offenders with co-morbid mental disorder may represent a particular challenge to substance abuse treatment.

Representing a significant change in criminal justice policy, Proposition 36, a program initiated by voters in California, has allocated \$120 million annually to provide community-based treatment to drug offenders who would have otherwise been ignored. To enter treatment under Proposition 36, the eligibility was first determined based on the offender's current offense and past criminal history, after which eligible offenders were offered treatment in lieu of routine criminal justice processing, and offenders who chose to participate were requested to complete a treatment assessment and then entered the treatment. Participants who successfully completed Proposition 36 would expunge the criminal arrest and conviction that made them eligible for the program.

While some positive findings have been reported for Proposition 36 offenders in general^[8-10], little is known about Proposition 36 offenders with co-morbid mental disorders. What are the problems and needs among these substance-abusing offenders with co-morbid mental health disorders? What treatment did they get and for how long? And most importantly, what were their recidivism rates and what factors were related to recidivism? Addressing these questions will have important implications for improving Proposition 36 strategies. The purpose of this article is to fill this gap by addressing these important questions based on a large sample of Proposition 36 offenders who also have mental health disorders as demonstrated by their mental health service records.

Furthermore, the article examines gender differences with respect to these outstanding questions. Gender differences among substance abusers have been examined in many previous

studies. For example, research findings derived from samples of community based-treatment indicated that women were confronted with more serious problems than men in several areas of drug abuse. Similar to community samples, an emerging body of literature on gender differences among samples of incarcerated men and women suggest that compared to incarcerated men, women are more likely to have experienced sexual and/or physical abuse, have lifetime episodes of depression, and have been involved in problematic relationship. Men are more likely to report being employed prior to incarceration and have a prior criminal commitment^[11-12]. These findings suggest that there are different problems/needs and impact factors of outcomes between male and female drug users. Do these gender-related differences also exist among COD offenders? The present study based on COD offender population will examine problem severity or treatment needs in multiple key life domains, treatment participation, recidivism, and gender-related differences in these issues.

MATERIALS AND METHODS

Sample and Participants

Data analyzed in this study were derived from the project "Treatment System Impact and Outcomes of Proposition 36 (TSI)," which is a National Institute on Drug Abuse (NIDA)-funded multisite prospective treatment outcome study designed to assess the impact of Proposition 36 on California's drug treatment delivery system. Mental health services from the California Department of Mental Health (DMH) and arrest histories from the California Department of Justice (DOJ) were acquired for all participants. The Institutional Review Boards at UCLA and at the California Health and Human Services Agency approved the study procedures.

The present study included 1444 Proposition 36 clients (820 men, 624 women) who had been enrolled in the TSI study and diagnosed at least as one mental disorder (as demonstrated in their DMH records) and had criminal justice records in administrative data sources.

Instruments and Measures

Addiction problem severity was measured at baseline assessment with the Addiction Severity Index (ASI). ASI is a semi-structured instrument that assesses a range of problems, including drug and

alcohol use, physical and psychiatric problems, employment, legal status, and family and social relationships^[13]. Each of these domains yields a composite score ranging from 0 to 1, with higher scores indicating greater problem severity. In the logistic regression, we included ASI scores multiplied by 10 to ease interpretation of odds ratios. The reliability and validity of ASI have been established in diverse ethnic populations.

Mental health diagnosis. Information regarding mental health diagnoses was obtained from the California Department of Mental Health (DMH). DMH maintains the Client and Service Information (CSI), a database with psychiatric diagnoses for clients treated in mental health facilities funded by DMH (excluding state hospitals).

Drug treatment placement (outpatient drug-free and residential treatment) was extracted from the California Alcohol and Drug Data System, a database that contains information on participants in alcohol or drug treatment programs maintained by the Department of Alcohol and Drug Programs.

Recidivism was calculated by using arrest history records acquired from the California Department of Justice for all individuals. Arrests that occurred before assessment and 12 months after assessment for Proposition 36 treatment were analyzed.

Data Analysis

Descriptive statistics (mean or percentage) were provided for the total sample, as well as for women and men separately. To compare differences between men and women, we conducted *t*-tests for continuous variables and chi-square tests for categorical variables. Logistic regression analysis examined recidivism (with 0=no recidivism during the 12 months post admission vs. 1=any arrest during the 12 months after admission). We modeled male and female outcomes separately to investigate factors influencing recidivism in men and women. Statistical significance was set at $P < 0.05$ for all tests. All statistical analyses were done with SPSS version 15.0.

RESULTS

Participants' Characteristics

Of the 1444 participants in the analyzed samples the mean age was 36.1 (10.0) years. Of them 57.5% were white, 16.5% were black, 20.3% were Hispanic and 5.7% were from other ethnic groups. Totally,

86.6% of the participants were never married or divorced; three-quarters of them were not in the labor force or unemployed. 80.4% of them had less than high school education. In terms of gender differences, females were much more likely than their male counterparts to be white and have a high school education. Conversely, females were much less likely to be employed with a full-time or part-time job, and more women were also divorced/separated. (Table 1 presents baseline characteristics of the sample).

Table 1. Baseline Characteristics of the Sample

	Male (n=820) % or Mean (SD)	Female (n=624) % or Mean (SD)	Total (n=1444) % or Mean (SD)
Age (years)*			
18 to 24	19.3	14.4	17.2
25 to 34	24.7	26.0	25.2
35 to 44	31.9	38.9	34.9
45 and older	24.2	20.7	22.6
Mean Age (SD)	36.0 (10.6)	36.3 (9.2)	36.1 (10.0)
Ethnicity*			
White	54.8	61.0	57.5
Black	18.7	13.7	16.5
Hispanic	21.3	18.9	20.3
Others	5.2	6.4	5.7
Marital Status**			
Married/Remarried	12.3	14.8	13.4
Widowed/Separated/ Divorced	30.0	46.5	37.1
Never Married	57.7	38.7	49.5
Employed*			
Employed full time/ Part time	27.2	19.7	23.9
Not in the Labor Force/ Unemployed	72.8	80.3	76.1
Education*			
Less than high school	82.8	77.2	80.4
High school	17.2	22.8	19.6

Note. * $P < 0.05$ on gender difference. ** $P < 0.01$ on gender difference.

In terms of primary drug problem at baseline, both men and women reported methamphetamine as the primary drug. The mean age of the first drug use was 19.4 years (7.8), but males were significantly younger than females at drug use initiation. There were no gender differences on the number of prior drug abuse treatments. Female offenders also demonstrated higher severity of problems related to family/social relationships, medical status, and psychiatric status. Of all the participants, more than three quarters reported outpatient treatment, with more females than males to participate in residential treatment (23.6 % vs. 15.9%). In terms of retention, the average days of treatment were 120.4 (111.8);

females stayed more days than males although there was no statistical difference. More male participants stayed in treatment less than 30 days compared to females (29.7% vs. 16.1%).

Men reported more lifetime arrests ($M=10.9$, $SD=11.1$) than women ($M=7.2$, $SD=8.7$). Men also reported a mean of 6.6 ($SD=8.9$) days committing crime in the past 30 days, which was significantly higher than the mean for women ($M=4.9$, $SD=8.0$). Men were more likely than women to recidivate during the 12 months after admission (65.6% vs. 52.2%). (Table 2 presents histories of drug abuse, drug abuse treatment and criminal behavior of the sample).

Table 2. Histories of Drug Abuse, Drug Abuse Treatment, and Criminal Behaviors of the Sample

	Male (n=820) % or Mean (SD)	Female (n=624) % or Mean (SD)	Total (n=1444) % or Mean (SD)
Primary drug used**			
Meth	43.2	47.8	45.2
Heroin	12.1	9.0	10.7
Cocaine	10.1	15.1	12.3
Others (Alcohol, Marijuana)	27.1	21.6	23.8
Age of initiating primary drug**	18.8 (8.0)	20.1 (8.4)	19.4 (7.8)
Treatment times for drug abuse	2.2 (4.0)	2.4 (3.0)	2.3 (3.6)
ASI score (lifetime)			
Alcohol severity	0.10 (0.18)	0.09 (0.17)	0.095 (0.18)
Drug	0.13 (0.11)	0.14 (0.11)	0.14 (0.11)
Employment	0.78 (0.27)	0.80 (0.24)	0.79 (0.26)
Family**	0.16 (0.19)	0.22 (0.23)	0.19 (0.21)
Legal	0.23 (0.18)	0.25 (0.19)	0.24 (0.19)
Medical**	0.26 (0.34)	0.32 (0.35)	0.29 (0.35)
Psychiatric**	0.25 (0.24)	0.30 (0.25)	0.27 (0.25)
Modality**			
MMT	4.3	2.3	3.4
Outpatient	79.8	74.1	77.3
Residential	15.9	23.6	19.3
Retention**			
<30 days	29.7	16.1	19.8
31-60 days	16.7	19.3	18.6
61-89 days	9.1	15.3	13.6
>90 days	44.5	49.3	48.0
Retention days	108.8 (113.8)	124.8 (110.9)	120.4 (111.8)
Criminal behavior			
Number of arrest**	10.9 (11.1)	7.2 (8.7)	9.3 (10.3)
Incarcerated in the 30 days**	6.6 (8.9)	4.9 (8.0)	5.7 (8.4)
Recidivism**	65.6	52.2	60.0

Note. * $P<0.05$ on gender difference. ** $P<0.01$ on gender difference.

Mental Health Status, Family Function, and History of Physical Abuse, and Sexual Abuse

In this sample, more than half of the participants were diagnosed as depressive disorders. Women were significantly more likely to be diagnosed as anxiety and depressive disorder. Men were more likely to be diagnosed as psychotic disorder and attention deficit disorder. In regard to personal and family characteristics, about 70% of female clients and 46.5% of male clients had children under the age of 17 ($P<0.01$). Among these participants who had children less than 17 years, 17% of the women and 6.2% of the men had children living with someone else by child protection court. Parents' rights had been terminated for 23.7% of female parents and 9.8% of male parents. Women, relative to men, had higher rates of sexual (53.6% vs. 15.2%) and physical (69.7% vs. 31.8%) abuse history in their lifetime (Table 3).

Table 3 . Mental Health Status, Family Function, Physical Abuse, and Sexual Abuse History of this Sample

Mental Disorders	Male (n=820) % or Mean (SD)	Female (n=624) % or Mean (SD)	Total (n=1444) % or Mean (SD)
Depression**	44.5	57.9	50.3
Anxiety**	7.4	15.5	10.9
Attention disorder**	10.2	4.3	7.7
Psychotic Disorder**	30.1	14.7	23.5
Bipolar disorder	28.9	30.8	29.7
Others (Cognitive, dissociative and eating disorders)	1.6	1.0	1.3
Number of children under 17**	46.5	69.9	56.5
Children living with someone else by child protection court**	6.2	17.0	10.8
Parental rights being terminated**	9.8	23.7	3.9
Physically abused (lifetime)**	31.8	69.7	48.2
Sexually abused (lifetime)**	15.2	53.8	31.8

Note. * $P<0.05$ on gender difference. ** $P<0.01$ on gender difference.

Treatment Outcome (Recidivism)

Results of logistic regression analyses predicting follow-up status with respect to recidivism is presented in Table 4. For overall model, the positive predictors included young age, male, cocaine use, drug severity of ASI, methadone treatment (relative to residential), and total number of arrests prior to admission. Logistic regression analyses were also conducted for males and females separately. For men, significant positive predictors were young age, methadone treatment, and total number of arrests prior to admission. Younger males with more frequent arrest prior to admission were likely to be rearrested during the 12 months' follow-up. However, compared to MMT, residential treatment was associated with lower recidivism. For women, cocaine use and total number of arrests were positively associated with recidivism; female cocaine users were two and half times more likely to be rearrested compared to Meth users. Prior numbers of treatments for drug abuse and drug composite score of ASI were significant in the model for the total sample. However, the effect became non-significant in each separate model by gender. This might be due to less power by a smaller sample size in each separate model. The interaction terms of residential and gender, residential and pre-arrest times were not significant in this study.

DISCUSSION

The purpose of this study was to outline problem severity and gender differences among COD offenders entering Proposition 36 and to explore the relationship of these differences with post-treatment recidivism. Our analysis revealed many similarities and some differences in characteristics and predictors for recidivism between men and women. At intake assessment, both male and female COD offenders were faced with many problems including unemployment (76%), low education (about 80% not finishing high school), and low social support (e.g., more than 85% of the participants were either divorced or never married). Women were at a substantial disadvantage compared to their male counterparts in most key life areas, including lower employment rates and more severe emotional disorders such as depression and anxiety, and women were also more likely to have been sexually and physically abused.

Table 4. Logistic Regression Predicting Recidivism at 12-Month Follow-up

	Odds Ratio (95% CI)		
	Total	Male	Female
Age (vs. 45+)			
18 to 24	2.42 (1.47-3.98)**	3.29 (1.93-7.76)**	1.32 (0.60-2.93)
25 to 34	1.89 (1.26-2.85)**	2.64 (1.45-4.65)**	1.35 (0.71-2.58)
35 to 44	1.24 (0.86-1.79)	1.53 (0.92-2.54)	0.97 (0.55-1.72)
Female (vs. male)	0.63 (0.47-0.85)**		
Race (vs. white)			
Black	0.93 (0.61-1.43)	1.12 (0.66-2.01)	0.76 (0.36-1.59)
His	1.02 (0.73-1.43)	1.02 (0.64-1.63)	0.87 (0.51-1.48)
Other	1.05 (0.76-1.46)	0.89 (0.58-1.37)	1.37 (0.77-2.42)
Education	0.90 (0.84-0.97)	0.85 (0.53-1.35)	0.85 (0.77-0.95)**
Marital status (vs. marriage)			
Divorced	1.25 (0.83-1.90)	0.85 (0.46-1.57)	1.58 (0.89-2.79)
Never marriage	1.07 (0.71-1.61)	0.83 (0.46-1.50)	1.27 (0.69-2.36)
Primary drug (vs. Meth)			
Cocaine	1.72 (1.06-2.79)**	1.10 (0.55-2.18)	2.47 (1.21-5.05)**
Heroin	1.22 (0.72-2.06)	1.00 (0.51-1.98)	1.67 (0.74-3.80)
Others	0.88 (0.38-2.05)	0.94 (0.39-2.25)	1.65 (0.67-2.12)
ASI			
Alcohol	0.99 (0.99-1.01)	1.00 (0.99-1.01)	0.99 (0.98-1.01)
Drug	1.02 (1.00-1.03)*	1.02 (0.99-1.04)	1.01 (0.99-1.03)
Employment	1.00 (0.99-1.01)	1.00 (0.99-1.01)	1.00 (0.99-1.01)
Family	0.99 (0.99-1.01)	0.99 (0.98-1.01)	1.01 (1.00-1.01)
Legal	1.01 (0.99-1.01)	1.00 (0.99-1.01)	1.01 (0.99-1.01)
Medical	0.99 (0.99-1.00)	1.00 (0.99-1.00)	1.00 (0.99-1.01)
Psychiatric	0.99 (0.99-1.00)	1.00 (0.99-1.01)	0.99 (0.98-1.00)
Modality (vs. MMT)			
Outpatient treatment	0.80 (0.50-1.29)	0.66 (0.36-1.21)	1.03 (0.46-2.34)
Residential treatment	0.50 (0.29-0.86)*	0.41 (0.19-0.87)*	0.54 (0.22-1.29)
Retention (vs. >90 days)			
<30days	0.71 (0.47-1.07)	0.68 (0.37-1.27)	0.67 (0.36-1.22)
31-60 days	1.07 (0.68-1.67)	1.61 (0.67-3.87)	0.89 (0.51-1.55)
61-90 days	0.72 (0.43-1.21)	1.18 (0.36-3.82)	0.60 (0.33-1.12)
Number of prior arrests	1.04 (1.03-1.06)**	1.05 (1.03-1.07)**	1.04 (1.01-1.07)**
Anxiety	1.17 (0.78-1.77)	1.51 (0.73-3.10)	1.08 (0.64-1.83)
Depression	1.21 (0.92-1.56)	1.38 (0.95-2.01)	1.12 (0.77-1.74)
Psychotic disorder	1.06 (0.75-1.51)	0.94 (0.60-1.46)	1.50 (0.81-2.79)
Number of prior treatment times for drug abuse	0.94 (0.90-0.99)*	0.96 (0.89-1.02)	0.93 (0.87-1.01)
Residential*gender	0.93 (0.45-1.92)		
Residential*pre-arrest time	1.75 (0.87-3.53)		

Note. Chi-square test on Odds ratio equals 1, * $P < 0.05$; ** $P < 0.01$.

Previous studies have shown that younger age, male sex, an earlier onset of crime or drug abuse, multiple prior criminal arrests, co-morbid diagnosis of antisocial personality or psychopath are risk factors for failure in rehabilitation among drug-abusing offenders. The degree to which these factors affect recidivism and how these patterns differ by gender among COD offenders are less clear. The present study provides an empirical assessment of these predictors in relation to recidivism among the overall sample and by gender.

Consistent with previous findings based on the drug user populations, the regression model based on the overall sample showed that age (young), number of prior drug abuse treatment, cocaine use (compared to Meth), drug severity (measured by ASI), and methadone treatment (relative to residential treatment) were positively associated with recidivism^[14-16]. Although previous studies indicated that psychiatric severity was an important predictor of abstinence at short time follow-up and might have positive association with recidivism in other studies^[15-16], our study results have shown that psychiatric severity (measured by ASI), and specific types of psychiatric disorder such as depression, anxiety, and psychotic disorder were not associated with recidivism. The associations between co-occurrence of mental disorders and treatment outcome among drug users have been examined in many previous articles, but the conclusions were mixed. For example, Hser reported that psychiatric severity was negatively associated with abstinence and employment, but was not associated with recidivism at 3 month follow-up under Proposition 36^[16]. Conversely, another study reported that regardless of gender, drug abusers with severe psychological problems were more likely to recidivate^[15]. We provide two plausible explanations for these different findings. First, studies differ in the length of follow-up period. The first article assessed outcomes at the 3-month follow-up; although short-time follow-up is a good way to predict longer term outcomes, recidivism and drug use might diverge greatly with the passage of time. Second, these studies have different definitions of "mental disorders". In the present study, we used the ASI psychiatric severity, psychotic disorders, depression and anxiety as independent variables to explore the association between co-occurring mental disorders and recidivism. The study did not include other diagnosed disorders such as antisocial personality which might impact on

recidivism among this population. Future studies should explore whether these other diagnosed mental disorders are also related to recidivism among COD offenders.

Some previous researches identified the difference in treatment outcomes between men and women among both drug use offender and non-offenders. Consistent with previous literature, we have found that men are more likely to recidivate than women^[17-19]. To explore the predictors of recidivism for different genders among this sample in an in-depth manner, we used the regression modal for men and women separately. After controlling the effects of other characteristics, we found both similarity and difference between men and women in the pattern of significant predictors. Prior arrest history was positively associated with recidivism for both men and women. Our study was consistent with other research results and confirmed that criminal history and total years in prison over one's lifetime were associated with recidivism among drug use offenders^[15-16]. No other predictors of recidivism were found either for men or women, which had been proved in other researches concerning race and co-occurrence of mental disorders.

Another issue that had to be addressed was cocaine use among female offenders. Although cocaine was not the most prevalent primary drug used in this sample, regression results showed that cocaine (relative to Meth) was significantly positively related to recidivism in women CODs. Prior researches have shown the positive association between cocaine use and criminal behavior, especially in women. Friedman reported that women who abused cocaine were more likely to be charged with a crime than those who did otherwise; another research also reported a higher proportion of female arrestees than male arrestees who were tested positive for cocaine use in most of other studies^[20-21].

Finally, offenders treated in residential programs demonstrated lower likelihood of recidivism, though the relationship was only significant for men. Given the high severity in many key life areas of this population, treatment of greater intensity such as a residential stay may be necessary to achieve favorable outcomes. Nevertheless, only about 20% of the subjects were treated in residential programs, suggesting that Proposition 36 could be improved if more residential services would be offered to this difficult population.

The present study has a number of limitations. First, participant intake data are based on self-reporting, and as such is a subject of concerns over reliability and validity. However, the instruments used in this study have been used in similar studies with this population. Second, the study sample is restricted to those who have mental health records, and thus may include only more severe cases. Third, the outcome of the present study is limited to recidivism, and a more comprehensive set of outcome measures including drug use and mental health will be desirable. Finally, the follow-up period is only 12 months post treatment admission, thus limiting potential differences that may be revealed over longer periods of observation.

The results of this study reveal many severe problems that COD offenders are faced with, the generally high rates of recidivism, and related gender differences. Particularly, female COD offenders appear to present more severe problems than men. The consistency of this finding with other studies highlights again the need to place greater emphasis on female COD offenders. Another issue that needs to be addressed is cocaine use among female COD offenders in light of the strong association between cocaine use and recidivism among female COD offenders. Furthermore, residential treatment has demonstrated more favorable outcomes, particularly among male offenders. Policymakers and medical staffs need to address these problems to improve the treatment outcomes among female and male COD offenders.

In conclusion, the limited number of predictors identified for recidivism among COD offenders is notable. Greater knowledge is needed as to what leads to successful outcome for women and men offenders with mental disorders. Future studies will be needed to explore and incorporate additional predictors of post-treatment outcomes that suggest pathways to recovery for COD offenders.

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