

## Risk of Future Offense Among Probationers with Co-occurring Substance Use and Mental Health Disorders

Elizabeth Balyakina · Christopher Mann ·  
Michael Ellison · Ron Sivernell · Kimberly G. Fulda ·  
Simrat Kaur Sarai · Roberto Cardarelli

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**Abstract** The criminal justice system is the primary service delivery system for many adults with drug and alcohol dependence, mental health, and other health service needs. The purpose of this study was to examine the relationship between risk of future offense, mental health status and co-occurring disorders in a large substance abuse diversion probationer population. A purposive sample of 2,077 probationers completed an assessment to screen for mental health disorders, substance use disorders, risk of future crime and violence, and several demographic characteristics. Probationers who screened positive for co-occurring substance use and mental health disorders were significantly more likely to be at higher risk of future crime and violence compared to probationers who screened

positive for only substance use, only a mental health disorder, or no substance use or mental health disorder. Implications for substance use and mental health service delivery are discussed, and recommendations are made for further research.

**Keywords** Mental health screening · Co-occurring disorders · Recidivism · Probationers

### Introduction

The criminal justice system is the primary service delivery system for many adults with drug and alcohol dependence, mental health and other health service needs (Human Rights Watch 2003; Taxman et al. 2007). Adequate health care, including mental health care, is constitutionally mandated, and with 1 in 99 adults in the United States imprisoned, it constitutes one of the highest cost factors in correctional budgets (Estelle v Gamble 1976; Ruiz v Estelle 1980; The Pew Center on the States 2008). Texas in particular is faced with the largest correctional population in the United States. In fiscal year 2003, the Texas Department of Criminal Justice spent \$383 million on health care, constituting approximately 11 % of total correction's expenditures ("2002–2003 State Health" 2005; "2003 State Expenditure" 2004).

As a result, Texas and other states have begun to embrace strategies to reduce recidivism through community supervision and treatment programs, thereby decreasing the number of low-risk offenders that are imprisoned and ensuring space for offenders with more serious crimes (The Pew Center on the States 2008). In 2002, 61.5 % of probationers screened by the Texas Treatment Alternative to Incarceration Program had a substance use disorder that

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E. Balyakina · S. K. Sarai · R. Cardarelli (✉)  
Department of Community and Behavioral Health, Primary Care  
Research Center, Texas Prevention Institute, University of North  
Texas Health Science Center, 3500 Camp Bowie Blvd,  
Fort Worth, TX 76107, USA  
e-mail: roberto.cardarelli@unthsc.edu

C. Mann  
Eagle Medical Centers, PA, 809 W. Harwood Rd., Hurst,  
TX 76054, USA

M. Ellison  
Department of Graduate Counseling Programs, Texas Wesleyan  
University, 1201 Wesleyan St., Fort Worth, TX 76105, USA

R. Sivernell  
Tarrant County Community Supervision and Corrections  
Department, 200 W. Belknap St., Fort Worth, TX 76102, USA

K. G. Fulda  
Department of Family Medicine, Primary Care Research Center,  
Texas Prevention Institute, University of North Texas Health  
Science Center, 3500 Camp Bowie Blvd, Fort Worth, TX 76107,  
USA

required intervention (Texas Department of Justice 2003). Research suggests that 70–80 % of people entering substance abuse treatment programs have at least one comorbid psychiatric disorder and offender populations are at increased risk for having untreated mental illness and co-occurring disorders (Dennis et al. 2006; Drug and Alcohol Services Information System 2001; Baker et al. 1995; Ditton 1999; Steadman et al. 2009; Westmoreland et al. 2010).

Untreated mental illnesses and co-morbid disorders are associated with high rates of suicide, medical problems, homelessness, unemployment, high rates of incarceration, and recidivism (Hogan 2003; Rihmer et al. 2010; Tondo et al. 2003; Cox et al. 2001; Pritchard et al. 1997). In a study of 61,000 Texas inmates, those with co-occurring disorders were significantly more likely to have been incarcerated multiple times during the study's 6 year follow-up period as compared to inmates with psychiatric or substance abuse diagnoses alone (Baillargeon et al. 2009). Other studies have confirmed that probationers with mental illness are significantly more likely to have their probation revoked, to commit a new offense, or be rearrested (Skeem and Louden 2006; Solomon et al. 2002; Munetz et al. 2001). A higher risk of violence has also been associated with co-occurring disorders as compared to mental illness or substance abuse disorder alone (Elbogen and Johnson 2009).

Under-diagnosis of mental health and co-morbid disorders among offenders is common and unacceptably high. In a study of repeat DUI offenders, 233 individuals were screened for psychiatric conditions that were then compared to diagnosed conditions documented by independent treatment providers. Among this offender population, 97.2 % of bipolar disorder cases, 67.5 % of major depression cases and 100 % of obsessive–compulsive disorder cases were undiagnosed (McMillan et al. 2008). Although studies generally suggest that diversion programs reduce recidivism and improve drug treatment outcomes, significant barriers remain in providing adequate mental health treatment services in correctional settings (Harvey et al. 2007). Barriers include a lack of linkage between service delivery systems and a diverse staff that is expected to participate in treatment delivery without adequate role clarity or skills training (Taxman et al. 2009).

The purpose of our study was to investigate the relationship between the risk of future crime and violence, mental health status and co-occurring disorders in a large substance abuse diversion probationer population. The increasing number of individuals entering diversion programs merits a characterization of the risk associated with re-offense among probationers with mental health and co-occurring disorders, and the impact of related characteristics such as medication use.

## Method

### Study Population

The Mental Health Screening and Treatment Initiative (MHSTI) is a collaborative, multi-institutional project involving a purposive sample of 2,077 Tarrant County probationers that were referred to the Tarrant County Community Supervision and Corrections Department's (CSCD) Treatment Alternative to Incarceration Program (TAIP). All study participants were non-incarcerated probationers recruited from the central TAIP facility presenting for substance use disorder assessment between September 1, 2009 and July 30, 2010. Participants were eligible for the study if they were 17 years of age or older, a part of the Tarrant County CSCD probation population, and able to read or understand audio English or Spanish. No incarcerated offenders participated in this study.

Probationers reported to the downtown Fort Worth CSCD facility prior to their scheduled substance use disorder assessment with a Licensed Chemical Dependency Counselor. At this time they were asked to complete a self-reported electronic questionnaire designed to screen for undiagnosed and untreated mental health disorders, and at completion were given the option to choose to release or not release their responses to the study. A total of 2,479 probationers completed the questionnaire, of whom 2,077 (83.8 %) chose to release their responses. If they consented to participate in the study, an information sheet was printed out along with their survey "report card." The information sheet explained that the survey was completely anonymous, voluntary, and confidential.

### Measures

The Mental Health Screening Tool (MHST) consisted of a series of previously validated surveys and was designed to be completed in no more than 45 min. Most participants took 20–25 min to complete the survey, but were not limited in the amount of time allowed to take the survey. The survey screened for mental health and substance use disorders, ADHD, depression, anxiety, bipolar disorder, and included a number of demographic measures (Kemp et al. 2008; Kessler et al. 2005; Dennis et al. 2006; Spitzer et al. 2006; Arroll et al. 2005). The "report card" sheet provided summary scores and risk level for internalizing disorders, externalizing disorders, substance use disorders, risk of future crime and violence, suicide, ADHD, depression, anxiety, and bipolar disorder. Scores also included recommendations such as mental health referral, referral to a specialist trained to perform dual-diagnoses assessments, and referral for further substance abuse assessment.

### *Demographic Information Measures*

The study collected a number of demographic measures and screened for special need circumstances such as homelessness and joblessness. Age was registered as a continuous variable (years). Race/ethnicity was self-reported and categorized as White, African American, Hispanic, American Indian/Native American, Native Hawaiian/Pacific Islander, and other. Education was measured using highest level of education completed and coded as a categorical variable. Socioeconomic status was assessed using “number of people that live in your household” and “average yearly income for everyone in your household combined.”

### *The Global Appraisal of Individual Needs–Short Screener (GAIN-SS)*

The GAIN-SS is a 20 question mental health screening instrument validated for use in offender populations to screen for mental illnesses, substance use disorders, and for repeat crime and violence risk (Dennis et al. 2006; Dennis et al. 2004). The GAIN-SS has a sensitivity of 90 % and a specificity of 92 %. The instrument is divided into four sections: internalizing disorders, externalizing disorders, substance use disorders, and repeat crime/violence risk. Internalizing disorders include depression, anxiety, somatic disorders, traumatic distress including Post-Traumatic Stress Disorder, and suicide risk. Externalizing disorders include adult ADHD and conduct disorders. Substance use disorders include substance abuse and substance dependence. The crime/violence risk category can be used to stratify probationers according to future crime/violence risk. This category measures the extent to which violent strategies have been used to address interpersonal conflict and the types of drug related, property, and interpersonal crimes committed within the past year. A score of  $\geq 3$  is considered a positive screen on each of the subscales, except for risk of future crime and violence, which is categorized according to low, moderate, and high risk. A score of 4–5 is considered high risk for future crime and violence, and a score of 2–3 is considered moderate risk (Dennis et al. 2008).

### *The Adult ADHD Self-Report Scale (v.1.1)*

The ASRS-v1.1 is a six question short form of the 18 question ADHD Self-Report Scale (ASRS), and has a demonstrated sensitivity of 68.7 and a specificity of 99.5 for screening adult ADHD. A cut-off point of  $\geq 4$  is considered high risk for adult ADHD (Kessler et al. 2005).

### *The 3-Question Depression Screener*

The 3-Question Depression Screener is 96 % sensitive and 89 % specific for a diagnosis of depression (Arroll et al.

2005; Whooley et al. 1997). A participant is considered at high risk for depression if they respond yes to one of the first two questions of the screener and yes to the help question.

### *The 2-Item Generalized Anxiety Disorder Scale*

The GAD-2 is a short version of a seven question screening instrument (GAD-7) used to screen for anxiety disorders (Spitzer et al. 2006; Kroenke et al. 2007). The 2-item scale has high sensitivity and specificity for detecting generalized anxiety disorder in primary care settings and also has good sensitivity and specificity for screening for other anxiety disorders. Each item asks participants to rank their symptoms on a scale of 1–4 from not at all to nearly every day, and scores from each item are added for a total score. Using a cut off of  $\geq 3$  as a positive screen, the GAD-2 has a sensitivity of 86 % and specificity of 83 % for detecting generalized anxiety disorder. A total score of  $\geq 3$  is considered an indication for high risk of anxiety.

### *The Mood Disorder Questionnaire*

The MDQ is a screening tool developed to screen for bipolar disorder. It has been validated for use in offender populations using a cut-off point of  $\geq 3$  responses on the first 13 questions of the screening tool. The MDQ has demonstrated a sensitivity of 71 % and specificity of 68 % in correctional settings (Kemp et al. 2008).

### *Criminal, Psychiatric, and Substance Use History*

In addition to previously validated surveys, the MHST included questions about prior history of substance use and psychiatric disorders, current psychiatric medications, criminal history, and a question asking if the participant felt like they needed to be referred to a mental health service provider for treatment. A number of questions were also modified from the Texas Christian University ENG-Form to assess treatment readiness (TCU ENGForm 2007).

### *Study Procedures*

Probationers reporting to the TAIP unit were escorted to a room to complete the 72-question Mental Health Screening Tool (MHST) before meeting with their Licensed Chemical Dependency Counselor (LCDC). The Primary Care Research Center at the University of North Texas Health Science Center collaborated with the CSCD to design the MHST and implement five touch screen stations in a designated intake room to administer the MHST assessment. This assessment became an integrated part of the standard of care for the TAIP intake process and provided LCDCs

with focused mental health evaluations and histories of the probationers.

The survey was administered on five Digivey™ touch screen survey stations to securely collect the survey data. Each station was fitted with a color touch-screen and headphones to enable bi-lingual audio capabilities and to overcome literacy limitations. Data were merged into a single database at a sixth station where all reports were printed. If the participant provided consent to participate in the study, de-identifiable responses to the MHST survey and referral status were released to the Primary Care Research Center for research purposes. After completing the MHST survey, probationers were escorted to meet with their assigned LCDC to complete their overall assessment and review survey results.

### Statistical Analysis

All statistical analyses were performed using SPSS version 19.0 (SPSS 2010). Positive and negative screening scores for mental health pathology were calculated for ADHD, depression, anxiety, and bipolar disorder. A composite score for any mental health disorder was calculated including ADHD, depression, anxiety, and bipolar disorder. Due to the possibility of false positives when using the MDQ in high substance use populations (Villagonzalo et al. 2010), a composite score for mental health disorders was also calculated without bipolar disorder and included only ADHD, depression, and anxiety.

Scores for co-occurring disorders were calculated based on a positive screening score for substance use disorders on the GAIN-SS and depression, ADHD, anxiety, and bipolar disorder individually. A composite score for co-occurring substance use and any mental health disorder was calculated based on individual scores for co-occurring substance use and depression, ADHD, and/or anxiety. Bipolar disorder was not included in the composite score for co-occurring disorders due to the possibility of false positives, and this led to a more conservative measure of co-occurring disorders.

Independent samples *t* tests and Chi square analyses were performed to test for differences in independent variables between probationers who demonstrated a moderate to high risk of future crime and violence and low risk of future crime and violence. Multiple logistic regression was performed to assess the association between future crime/violence and co-occurring disorders. Two regression models are presented. One model adjusted for age, gender, race/ethnicity, number of people in household, total yearly household income, education and employment status. Another model was composed by adding medication use to the final model. Unadjusted and adjusted odds ratios and 95 % confidence intervals were calculated ( $\alpha = 0.05$ ).

All study procedures were approved by the University of North Texas Health Science Center Institutional Review Board. None of the authors had any competing interests related to the funding source for this project or the manuscript itself, and certify their responsibility for the manuscript.

## Results

### Descriptive Information

Study participants were on average 31.7 (sd = 11.4) years of age, male (71.7 %) and white (56.3 %). Twenty-two percent of participants were African American, and 18.3 % were Hispanic/Latino. Over 70 % had graduated from high school or received their GED, and 42.9 % had completed some college. The most common current offense was drug related or driving while intoxicated (64.9 %). Of current offenses, 10.7 % were for assault, and 7.9 % were related to fraud or theft. Almost 37 % lived in a household of 4 or more persons, and 38.4 % were jobless. Approximately 59 % of participants made under \$20,000 per year.

### Mental Health Diagnosis and Medication Treatment

Over 23 % of participants had been previously diagnosed for depression by a mental health professional. In addition, 25.3 % had been treated with medication for depression at some point during their lifetime. However, only 8.4 % of participants were currently being treated for depression. Similarly, 15.7 % had been previously diagnosed with an anxiety disorder, and 19.5 % had previously taken medication for anxiety. Only 5.6 % were currently receiving medication treatment for the condition. A similar pattern was apparent for bipolar disorder and schizophrenia/psychotic disorders.

### Mental Health Screening Scores

Over 28 % of participants screened positive for internalizing disorders on the GAIN-SS, 8.4 % screened positive for externalizing disorders, and 23.3 % were positive for substance use disorders. Approximately 6 % were at high risk for suicide, and 9.0 % were at moderate to high risk for future crime and violence. A little over 6 % screened positive for ADHD on the ASRS-v1.1, 16.8 % screened positive for depression on the 3-Question Depression Screener, and 13.0 % screened positive for anxiety on the GAD-2. Over 41 % screened positive for bipolar disorder on the MDQ.

Approximately 47.0 % of probationers screened positive for any mental health disorder, including ADHD, depression,

anxiety and/or bipolar disorder. When bipolar disorder was removed from the composite score, 22.3 % screened positive for any mental health disorder including ADHD, depression, and/or anxiety. Over 12 % screened positive for co-occurring substance use and depression, 15.8 % screened positive for substance use and bipolar disorder, 3.6 % screened positive for substance use and ADHD, and 7.2 % screened positive for co-occurring substance use and anxiety. Approximately 18 % screened positive for co-occurring substance use and any mental health disorder when composite scores were calculated for substance use and ADHD, depression, anxiety, and/or bipolar disorder. Slightly over 13 % screened positive for co-occurring substance use and any mental health disorder excluding bipolar disorder.

#### Co-occurring Disorders and Risk for Crime/Violence

Probationers who screened positive for any co-occurring substance use and mental health disorders were significantly more likely to be at moderate to high risk of future crime and violence compared to probationers who screened positive for only substance use, probationers who screened positive for only a mental health disorder, or probationers who had no substance use or mental health disorder. This held true across all co-occurring disorder categories, with the greatest differences observed for substance use and bipolar disorder.

Probationers with co-occurring substance use and bipolar disorder were 22.6 times more likely to have a moderate to high score for future crime and violence as compared to those who did not screen positive for substance use or bipolar disorder in the adjusted model (95 % CI 13.5–37.7). Probationers who screened positive for substance use, but not bipolar disorder were significantly more likely to have moderate to high scores for future crime and violence than those who did not screen positive for substance use or bipolar disorder (OR = 10.4, 95 % CI 5.6–19.5). Although the odds of having a moderate to high score for future offense was significant for probationers with positive scores for bipolar disorder only (OR = 3.5, 95 % CI 2.0–6.1), they were much lower than among those with either co-occurring substance use and bipolar disorder, or substance use alone.

A lower odds ratio for co-occurring substance use and bipolar disorder predicting future crime and violence was observed when medication use was added to the model. For co-occurring substance use and bipolar disorder, the odds of being at moderate to high risk for future offense were 22.6 (95 % CI 13.5–37.7) in the adjusted model and 20.4 (95 % CI 12.2–34.2) with the addition of medication use. Among probationers with a substance use disorder and no bipolar disorder, an odds ratio of 10.4 (95 % CI 5.6–19.5) was observed in the adjusted model, and 10.1 (95 % CI

5.4–19.0) with the addition of medication use. An odds ratio of 3.5 (95 % CI 2.0–6.1) was observed in the adjusted model, and 3.2 (95 % CI 1.8–5.7) in the model with medication use for probationers with bipolar disorder only.

In the fully adjusted model with medication use, probationers with co-occurring substance use and depression were 10.3 times more likely to have a moderate to high crime/violence score compared to those with no substance use or depression (95 % CI 6.4–16.7). Those with a substance use disorder only were 11.5 times more likely to have a moderate to high risk score (95 % CI 7.6–17.3) and those with depression only were 2.5 times more likely to have a moderate to high risk score (95 % CI 1.3–4.8). Among probationers with both a substance use disorder and ADHD, an odds ratio of 15.5 (95 % CI 8.5–28.2) was observed in the fully adjusted model. Probationers with a substance use disorder only were 10.4 times more likely to have a moderate to high risk score (95 % CI 7.1–15.3), and those with ADHD alone were 6.2 times more likely to have a moderate to high risk score (95 % CI 2.8–13.6). An odds ratio of 12.9 (95 % CI 7.8–21.1) was observed among probationers with co-occurring substance use and anxiety, while an odds ratio of 10.7 (95 % CI 7.1–16.0) was observed among those with substance use alone and 3.4 (95 % CI 1.7–6.7) among those with anxiety alone.

For co-occurring substance use and any mental health disorder (excluding bipolar disorder), the odds of having a moderate to high risk score for future crime and violence were 13.9 (95 % CI 8.8–22.1) in the adjusted model and 12.0 (95 % CI 7.5–19.2) in the model with medication use. In contrast, among probationers with a substance use disorder alone, the odds of having a moderate to high risk score for future crime and violence were 12.8 (95 % CI 8.2–19.9) in the adjusted model, and 12.6 (95 % CI 8.1–20.0) in the model with medication use. The odds of having a moderate to high risk score for future offense were 3.2 (95 % CI 1.8–5.8) in the adjusted model, and 2.9 (95 % CI 1.6–5.2) in the model with medication use for probationers with a mental health disorder alone.

#### Discussion

Results of this study parallel prior findings that co-occurring disorders are associated with higher risk for future offense, crime and violence as compared to either substance use or mental health disorder alone among offenders (Baillargeon et al. 2009, 2010; Elbogen and Johnson 2009). Furthermore, the study suggests the possibility of screening probationers on the basis of risk for future offense and associated factors such as co-occurring disorders in order to direct potentially limited resources and community services to probationers at highest risk for future violence and recidivism. Screening



tools are not a substitute for diagnostic evaluation, but do provide a valuable method of directing probationers to appropriate mental health services.

The odds of moderate to high risk for future crime and violence were highest for probationers who screened positive for co-occurring substance use and bipolar disorder. Rates of bipolar disorder are expected to be high among the offender population and among populations with high rates of substance abuse. For example, diagnostic evaluation of a sample of jail detainees found that 33.5 % of them met diagnostic criteria for bipolar disorder (Kemp et al. 2008). However, a recent study has shown that there is a risk of false positives when using the MDQ in populations with high rates of substance use disorders because the instrument does not clearly differentiate between symptoms of bipolar disorder and drug intoxication (Villagonzalo et al. 2010). Further investigation is needed to determine the utility of the MDQ to screen for bipolar disorder in high substance use populations.

A downward trend in odds ratio predicting future offense was observed with the addition of medication adherence to the adjusted model. However, this decrease did not result in a substantial reduction in the odds ratio in the present study. Previous studies suggest there is a link between violent behavior and medication noncompliance among persons with co-occurring disorders. A longitudinal study of 331 in-patients with severe mental illness found that individuals with both noncompliance and substance abuse problems were more likely to commit violent acts, while those with either of these problems alone had no greater risk (Swartz et al. 1998). Another study found that poor insight into illness and poor adherence to psychotropic medication regimens interacted to increase severity of violence directed towards others among 60 male psychotic inpatients (Alia-Klein et al. 2007). However, medication adherence has not been found to consistently decrease violence among persons with mental illnesses. For example, one study found that after stratifying for history of childhood conduct problems, adherence to antipsychotic medication was found to significantly reduce violence only in the group without a history of conduct problems (Swanson et al. 2008). The etiological heterogeneity of violence needs to be appreciated as a potential confounder in pharmacological treatment (Volavka and Citrome 2008). Further research is needed to more clearly understand the relationship between medication adherence and risk of future offense.

The study presents a method by which mental health screening can be incorporated into the daily procedures of a substance use diversion program. The association between substance use, mental health status, and future offense among probationers presented in this study suggests that the assessment of prior or current probationer status in

primary care and community health settings may be used as a cue to screen for mental health disorders. This may become increasingly relevant with greater numbers of offenders diverted to community supervision and treatment programs (The Pew Center on the States 2008). Future studies should focus on determining the efficacy of the MHST screening tool in appropriate treatment and referral, and whether this results in reduced number of offenses among probationers with mental health and co-occurring disorders.

The strengths of this study include a large sample size, and the use of validated instruments to screen for mental health disorders, substance use, and risk for future crime and violence. However, the results of this study are specific to the Tarrant County probationer population and therefore may not be generalizable to other offender populations. Due to the exclusion of bipolar disorder from our measure for co-occurring disorders, results may not be an accurate representation of probationers with mental health disorders not included in the composite measure. Moderate and high risk scores for future crime and violence were combined because there was not a large enough sample size for high risk of future crime and violence alone ( $n = 13$ ). It is, therefore, difficult to generalize results to offenders with the highest risk for future offense. The cross sectional nature of the data precludes us from determining causality.

## Conclusions

Study results confirm the intensification of risk for future crime and violence among probationers with co-occurring disorders as compared to those with substance use or mental health disorders alone. Factors leading to non-adherence and lack of continuum in services arising at the individual and structural level of the criminal justice system need to be further examined to determine more specific mechanisms by which future offense can be reduced among probationers with co-occurring disorders. Further research is also needed to investigate the effectiveness of the MHST in appropriate referral and treatment outcomes.

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