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Suicide risk and associated demographic and clinical correlates among primary care patients with problem drug use

Adam Carmel, PhD^{1,2}, Richard Ries, MD¹, Imara I. West, MPH¹, Kristin Bumgardner, BS¹, and Peter Roy-Byrne, MD¹

¹University of Washington at Harborview Medical Center, Department of Psychiatry & Behavioral Sciences. 325 9th Ave, Box 359911, Seattle, WA 98104

²Harvard Medical School, Massachusetts Mental Health Center, Division of Public Psychiatry, Beth Israel Deaconess Medical Center, 75 Fenwood Road, Boston, MA 02115

Abstract

Background—There is an increased need to prepare primary care clinicians to effectively gauge the risk of suicidal behavior occurring within primary care patients who may abuse drugs, especially those served in safety-net settings.

Objectives—The objectives of this paper were to explore suicide risk in a population of individuals endorsing recent drug use, and to describe patient demographic, medical, psychiatric, social, and substance use characteristics across different levels of suicide risk.

Methods—867 primary care patients with reported drug use in the previous 90 days were studied. Based upon their responses to two Addiction Severity Index questions, four suicide risk categories were constructed: (1) low risk; (2) moderate-low (suicidal ideation in the past 30 days); (3) moderate-high (history of a lifetime suicide attempt); and (4) high risk (history of a lifetime suicide attempt and suicidal ideation in the past 30 days). The association between suicide risk groups and demographic and clinical variables were assessed.

Results—Forty percent of primary care patients endorsing recent drug use reported a lifetime suicide attempt. Compared to individuals in other suicide risk groups, individuals at high suicide risk had higher rates of substance use severity, recently used two or more substances, and were more likely to have a comorbid psychiatric condition.

Conclusion—These findings indicate that the percentage of patients with suicide risk may be higher among patients with recent drug use. Primary care clinicians should be aware that they may be encountering patients with suicide risk among those with recent drug use.

Keywords

SBIRT; substance use; primary care; suicide

Introduction

Suicide was among the 10 leading causes of death in the United States in 2010 (1). Previous research in a representative U.S. population survey found that 4.6% of the 5,877 respondents reported a lifetime suicide attempt (2). Patients with substance use disorders have elevated risk for both suicidal ideation and suicide attempts (3–5). A study of the general U.S. population found that alcohol and drug use predicted suicide attempts after controlling for sociodemographic factors and comorbid psychiatric disorders (6). A meta-analysis of fifteen prospective cohort studies found that tobacco use significantly increased the risk of completed suicide (7).

Suicide risk is well recognized in specialty psychiatric settings, but it is less well recognized and studied in primary care (8–9), and even less so in primary care patients with substance use problems. Primary care providers may play an important role in suicide prevention. A study examining engagement in services among completed suicides found that while nearly one-third of individuals who completed suicide had contact with mental health services in the year before suicide, a much higher proportion (77%) had contact with a primary care provider (10). Yet suicide risk assessment is less commonly performed in primary care settings (11–12). Many patients seen in primary care have medical conditions, comorbid psychiatric disorders, and may have substance use disorders, all of which are also risk factors for suicide (13–15). Changes in health care reform have led to a growing interest in integrating behavioral health and primary care. In this context, there is a need for clinicians to be aware of suicide risk in primary care patients.

Screening, Brief Intervention, Referral and Treatment (SBIRT) is a framework for screening and intervention with the goal to reduce risk associated with substance use (16). Primary care clinicians can help patients reduce high-risk behaviors and negative consequences associated with drug use by integrating SBIRT into standard clinical practice (17). The objectives of this paper were to determine the prevalence of suicide risk among primary care patients with recent drug use enrolled in a large randomized trial of SBIRT, and to describe patient demographic, medical, psychiatric, social, and substance use characteristics across different levels of suicide risk.

Methods

Sample

Between April 2009 and September 2012, 867 primary care patients were enrolled in a randomized controlled trial of brief interventions for drug use. The study was conducted at Harborview Medical Center, a safety net medical center located in downtown Seattle, Washington. Details about the trial design have been published previously (18). Primary care patients were eligible if they were at least 18 years old, used an illegal drug or nonprescribed medication at least once in the past 90 days, had plans to continue care in the clinic for the next year, spoke English, and had a telephone or email for outcome assessments. Patients were excluded if they had active psychosis, cognitive impairment, a life-threatening medical illness, or if they attended formal substance abuse treatment in the past 30 days. They were also excluded if their baseline interview responses triggered a suicide risk assessment

protocol, and they endorsed imminent suicidal intent and an inability to control their impulses. Patients excluded for imminent suicidal intent were referred to appropriate resources based on clinical need. Enrolled participants provided written consent and received a \$25 gift card for their participation. The present study includes baseline data from 867 trial participants.

Measures

Construction of Suicide Risk Categories—Categories of suicide risk were assigned using baseline responses to Addiction Severity Index-Lite (ASI) items regarding suicidal ideation in the past 30 days and history of lifetime suicide attempts (19) which are known predictors of completed suicide (20, 21). The two items assess whether participants experienced serious thoughts of suicide and whether a suicide attempt took place. The ASI is a comprehensive measure of contextual domains of functioning among individuals with substance use and was used to collect data in the original trial, including the only survey data on suicidal behaviors. We constructed our suicide risk groups using these two ASI variables and individuals were placed in the following four categories: (1) low risk; (2) moderate-low (suicidal ideation in the past 30 days); (3) moderate-high (history of a lifetime suicide attempt); and (4) high risk (history of a lifetime suicide attempt and suicidal ideation in the past 30 days). Previous suicide behavior and suicidal ideation are also well-known predictors of future suicidal behavior thus a lifetime suicide attempt was classified as moderate risk over the lower risk of recent suicidal ideation (2, 8, 20, 21).

Additional Study Measures—Patient characteristics were assessed using self-reported demographic information, the ASI, the EuroQol EQ-5D (22), the Drug Abuse Screening Test (DAST-10; 23) the Thoughts About Abstinence Scale (24) and the HIV Risk-taking Behaviour Scale (25). Drug use severity was defined using the DAST-10, where a score of 1 or 2 corresponds with low drug use severity, a score of 3 to 5 with intermediate drug use severity, and a score of 6 to 10 with substantial/severe drug use severity (26). Self-reported data from 867 participants were supplemented with data from several administrative sources for the 1 year prior to baseline, including state inpatient hospitalization records, medical utilization and psychiatric diagnosis data from the safety-net medical setting where the study took place, felony and gross misdemeanor arrests from the state patrol, and state chemical dependency treatment records.

Analysis

One-Way Analysis of Variance (ANOVA) tests were used to assess differences between suicide risk groups for continuous measures with equal variances and Welch ANOVA for continuous measures with unequal variances. The Chi-Square Test of Association was used to assess the association between suicide risk group and all categorical variables. Post-hoc tests were completed for specific subgroup differences of statistically significant tests. Tukey and Games-Howell tests were used for continuous measures and pairwise comparisons for proportions were adjusted using a Bonferroni correction. Statistical significance was evaluated at $P < .05$.

Results

Overall, individuals were primarily men (70%), middle-aged, and nonwhite (55%) with a mean age of 47 (Table 1). Most were not married or living with a partner (81%), not working (91%), and approximately 30% were homeless at least 1 night in the past 90 days. On average they had 6 chronic medical conditions and 56% had comorbid mental illness. Many used marijuana (76%), and about 42% used stimulants, 26% used opiates, and 45% had used 2 or more drugs in the past 30 days (Table 3). A majority also used alcohol (69%) and nicotine (72%).

Participants were placed in the following four suicide risk categories: (1) low risk; (2) moderate-low (suicidal ideation in the past 30 days); (3) moderate-high (history of a lifetime suicide attempt); and (4) high risk (history of a lifetime suicide attempt and suicidal ideation in the past 30 days). Of the 867 individuals included in the study, 43% were found to have at least moderate-low risk for suicide at baseline based on this categorization system (Table 2). Nearly 40% of individuals had attempted suicide in their lifetime and 12% reported suicidal ideation in the past 30 days. Individuals at the highest risk for suicide, meeting criteria for both lifetime suicide attempt and suicidal ideation in the past 30 days, comprised 9% of the sample.

Individuals assigned to the high suicide risk group were younger, more likely to be disabled, more likely to use other drugs, and more likely to have at least one inpatient hospitalization than individuals in the low risk group. They were also more likely to fall into the highest DAST-10 drug use severity category (i.e., substantial/severe, DAST-10 score = 6) than individuals in the moderate-low and low risk groups. On average, they had higher mean ASI drug use composite scores and higher mean ASI family/social support composite scores than low risk individuals, which indicated more problems related to drug use and family and social support.

Individuals in the moderate-high suicide risk group were more likely to be female than individuals in the other groups. They were also more likely to be disabled and use nicotine than individuals in the low risk group. Those in the moderate-high risk group used their most popular drug more days than the low risk group on average. They also had lower mean ASI family/social composite scores than the high risk group, indicating fewer issues with family and social support. Individuals in the moderate-low risk group, moderate-high, and high risk groups, were more likely to have documentation of at least one psychiatric illness in the 1 year prior to baseline than the individuals in the low risk group.

Discussion

Recent suicidal ideation and lifetime attempts were common among this sample of 867 primary care patients with recent drug use. National figures from a representative U.S. population survey show that 4.6% of individuals reported making a lifetime suicide attempt (2). In this study, 40% of primary care patients with recent drug use reported a lifetime suicide attempt. This difference is substantial and may be explained by the characteristics of the present study's primary care patients. These patients were socioeconomically

disadvantaged, and had medical and psychiatric comorbidities, all of which are known risk factors for suicide (13–15, 20, 27).

Although the validity (beyond self report) of the suicidal ideation and prior suicide attempt items used to define the suicide risk groups was not assessed in the current study, these two items were used similarly as constructs to define suicide risk in a recent prospective cohort study. Mundt and colleagues (2013) found that individuals reporting lifetime suicidal ideation with intent and/or a history of suicidal behavior are 4 to 9 times more likely to report suicidal behavior within several months (21). In contrast to Mundt et al's (2013) prospective cohort study, which included separate subscales to measure severe suicidal ideation and suicidal behavior, the suicide risk classification system used in the current study was based solely on two dichotomous items indicating the presence or absence of current suicidal ideation or lifetime suicide attempt. This classification system provides a practical and simple assessment tool to be used by SBIRT providers during a primary care visit, however, additional research is needed to determine its validity and whether this classification system can prospectively identify primary care patients who attempt suicide.

The individuals at high suicide risk endorsed greater substance use severity than individuals found to be at moderate-high, moderate-low, and low risk. This result supports the work of others in finding the relationship between suicide risk and substance use severity (15, 28). Although there weren't significant differences in type of drug used across risk groups, individuals in the high risk group were significantly more likely to have used two or more drugs in the past month than the other groups. This is similar to a previous finding within a national sample that the number of different substances was found to be more important than the type of substance in predicting a suicide attempt (6). Nicotine use was associated with suicide risk which is consistent with results of a meta-analysis of fifteen prospective cohort studies indicating that smoking significantly increased the risk of completed suicide; however the strong association between smoking and depression should be considered when interpreting these results (7). Individuals at higher suicide risk also had higher rates of medical problems and comorbid psychiatric disorders which previous research has shown to be established risk factors for suicide in addition to substance use disorders (13–15).

There were several important limitations to the study. Because the patients in this study recently used drugs, had chronic medical conditions and comorbid mental illness, and were socially and economically disadvantaged, the results of the above analyses may not be generalizable to all primary care patients. However, with the implementation of the Affordable Care Act, some individuals new to primary care settings may use drugs and share similarities with the patients in this study. Due to the exclusion criteria of having received substance use treatment in the past 30 days or reporting current suicidal intent, individuals most likely at risk are not included within this sample. Therefore the exclusion of highly suicidal individuals limits the generalizability of findings. Established factors such as thwarted belongingness or perceived burdensomeness (29) may also be associated with suicide risk in the current sample, and future studies would benefit from capturing these factors in addition to demographic, medical, psychiatric, social, and substance use characteristics. This descriptive study has several methodological limitations including high correlation between two of the four suicide risk groups that were both characterized by

recent suicidal ideation in the past 30 days, which may explain the similarities across several characteristics. This limitation might explain the lack of differences between the moderate-low group and others. Future research on suicide risk and associated factors should employ more rigorous methodology to control for confounding variables, including the use of multivariate and regression analyses whenever possible over the approach of conducting multiple independent correlational analyses.

Future research on the patterns of suicide risk in primary care patients with substance use disorders will provide key information for efforts aimed at suicide prevention and will inform our understanding about how risk factors can vary depending on care delivery context. SBIRT services and personnel working in primary care settings should be prepared to both identify and plan interventions for suicidality among this population as such issues will likely be encountered. Primary care clinicians and SBIRT providers need to be aware of the high prevalence of risk for suicide found in the current study, and consider the using the suicide ideation and attempts items to identify suicide risk and the associated demographic and clinical correlates among primary care patients reporting recent drug use.

Acknowledgments

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Table 1
Select Baseline Characteristics of Participants Overall and by Suicide Risk Classification

Characteristics	Suicide Risk Classification *				P-value [†]
	Overall (n = 867)	Low Risk (n = 492)	Moderate-Low Risk (n = 30)	Moderate-High Risk (n = 271)	
Demographics					
Age, mean years (SD)	47.75 (10.89)	48.57 (11.19)	48.77 (9.79)	46.93 (10.52)	44.91 (10.08)
Women	264 (30)	129 (26)	7 (23)	109 (40)	19 (26)
Race [‡]					
White	386 (45)	202 (42)	16 (55)	125 (46)	43 (60)
Black	319 (37)	209 (43)	7 (24)	85 (31)	18 (25)
Other	150 (18)	73 (15)	6 (21)	60 (22)	11 (15)
Hispanic	72 (9)	35 (8)	1 (4)	25 (10)	11 (16)
Marital status					
Married/living with partner	161 (19)	90 (18)	5 (17)	51 (19)	15 (20)
Divorced/separated/widowed	347 (40)	196 (40)	9 (30)	115 (42)	27 (36)
Never married	357 (41)	204 (42)	16 (53)	105 (39)	32 (43)
Education					
Some high school or less	165 (19)	80 (16)	4 (13)	64 (24)	17 (23)
High school graduate	254 (29)	160 (33)	7 (23)	64 (24)	23 (31)
Beyond high school	447 (52)	251 (51)	19 (63)	143 (53)	34 (46)
Employment status					
Working	78 (9)	54 (11)	3 (10)	17 (6)	4 (5)
Unemployed/retired/in school/ homemaker/other	238 (27)	160 (33)	8 (27)	61 (23)	9 (12)
Disabled and unable to work	550 (64)	277 (56)	19 (63)	193 (71)	61 (82)
Homeless in shelter or on street 1 night in past 90 days	263 (30)	145 (30)	10 (33)	81 (30)	27 (36)
Medical					
Washington State inpatient hospitalizations [§]	221 (26)	104 (22)	9 (30)	77 (29)	31 (42)
Safety-net hospital emergency	427 (50)	235 (49)	19 (63)	126 (48)	47 (64)

Characteristics	Suicide Risk Classification*				P-value [†]
	Overall (n = 867)	Low Risk (n = 492)	Moderate-Low Risk (n = 30)	Moderate-High Risk (n = 271)	High Risk (n = 74)
department visits [§]	760 (90)	432 (90)	26 (87)	239 (91)	63 (86)
Safety-net hospital outpatient visits [§]					
Number of CDPS medical conditions, mean (SD) [§]	6.12 (3.56)	5.83 (3.59)	6.60 (3.98)	6.37 (3.42)	6.88 (3.53)
Extreme pain or discomfort ^{//}	165 (19)	87 (18)	6 (20)	56 (21)	16 (22)
Psychiatric					
1 Mental illness ICD-9 diagnosis code [§]	477 (56)	225 (47)	24 (80)	170 (65)	58 (79)
Depression [§]	348 (41)	155 (32)	23 (77)	117 (44)	53 (73)
Legal and Social					
Arrests for felony or gross misdemeanor [§]	79 (9)	45 (9)	3 (10)	28 (11)	3 (4)
ASI Family/Social composite score, mean (SD) ^{//}	0.17 (0.22)	0.14 (0.20)	0.25 (0.28)	0.17 (0.22)	0.29 (0.26)

Abbreviations: ASI, Addiction Severity Index

* Data are reported as No. (%) of participants unless otherwise indicated. Missing values are not included in this table.

[†] P-value based on chi square or ANOVA.

[‡] Assessed by self-report using National Institutes of Health reporting categories for federally funded clinical research.

[§] Administrative data available for 847 participants in the 2 years prior to study enrollment.

^{//} From the Euroqol (EQ-5D) which was used to assess health, including pain/discomfort (I have no pain or discomfort, I have moderate pain or discomfort, I have extreme pain or discomfort), at assessment.

[¶] ASI composite scores range from 0 to 1, with 1 indicating greatest problem severity.

Table 2

Classification of suicide risk behaviors among participants at baseline

	Overall* (n = 867)
Suicidal Intent and Attempts	
Attempted Suicide in Lifetime	345 (40)
Suicidal Ideation in the Past 30 Days	104 (12)
Level of Suicide Risk	
Low: No Suicidal Ideation in the Past 30 Days or Lifetime Suicide Attempts	492 (57)
Moderate-Low Risk: Suicidal Ideation in the Past 30 Days	30 (3)
Moderate-High Risk: Attempted Suicide in Lifetime	271 (31)
High Risk: Suicidal Ideation in the Past 30 Days AND Attempted Suicide in Lifetime	74 (9)

* Data are reported as No. (%) of participants.

Table 3
Substance Use and CD Treatment Characteristics of Participants Overall and by Suicide Risk Classification

Characteristics	Suicide Risk Classification *				P-value [†]	
	Overall (n = 867)	Low Risk (n = 492)	Moderate-Low Risk (n = 30)	Moderate-High Risk (n = 271)		High Risk (n = 74)
Substance Use						
ASI days most frequently used drug, mean (SD) [‡]	13.84 (11.01)	13.04 (10.75)	12.03 (10.76)	15.31 (11.33)	14.49 (11.18)	0.04
ASI Drug Use composite score, mean (SD) ^{‡,§}	0.11 (0.10)	0.10 (0.10)	0.11 (0.09)	0.12 (0.11)	0.14 (0.12)	0.01
ASI drug use, any in past 30 days						
Cannabis	656 (76)	373 (76)	22 (73)	206 (76)	55 (74)	0.98
Stimulants	361 (42)	220 (45)	9 (30)	102 (38)	30 (41)	0.14
Cocaine	324 (37)	202 (41)	7 (23)	90 (33)	25 (34)	0.05
Amphetamines	63 (7)	31 (6)	2 (7)	22 (8)	8 (11)	0.50
Opiates	228 (26)	130 (26)	8 (27)	64 (24)	26 (35)	0.26
Heroin	59 (7)	42 (9)	2 (7)	11 (4)	4 (5)	0.12
Methodone and other opiates/analgesics non-prescribed	208 (24)	114 (23)	8 (27)	62 (23)	24 (32)	0.34
Sedatives/hypnotics/ tranquilizers	72 (8)	38 (8)	4 (13)	20 (7)	10 (14)	0.25
Other drugs ^{‡,¶}	51 (6)	21 (4)	3 (10)	15 (6)	12 (16)	< 0.001
2 or more drugs used in past 30 days [‡]	389 (45)	215 (44)	12 (40)	117 (43)	45 (61)	0.04
Intravenous drug use in past 30 days	72 (8)	45 (9)	2 (7)	18 (7)	7 (10)	0.64
Lifetime intravenous drug use	300 (35)	168 (34)	9 (30)	95 (35)	28 (38)	0.87
DAST-10 drug use severity [‡]						0.01
Low (1–2)	278 (32)	174 (35)	9 (30)	82 (30)	13 (18)	
Intermediate (score 3–5)	327 (38)	180 (37)	13 (43)	109 (40)	25 (34)	
Substantial/severe (score 6)	262 (30)	138 (28)	8 (27)	80 (30)	36 (49)	
Goal of total abstinence from drugs ^{‡,¶}	322 (37)	187 (38)	7 (23)	95 (35)	33 (45)	0.18

Characteristics	Suicide Risk Classification [*]				P-value [†]
	Overall (n = 867)	Low Risk (n = 492)	Moderate-Low Risk (n = 30)	Moderate-High Risk (n = 271)	High Risk (n = 74)
ASI Alcohol Use composite score, mean (SD) [§]	0.15 (0.20)	0.14 (0.19)	0.21 (0.23)	0.14 (0.20)	0.20 (0.24)
ASI alcohol use, any in past 30 days	598 (69)	347 (71)	23 (77)	181 (67)	47 (64)
Nicotine use, any in past 30 days	619 (72)	326 (67)	21 (70)	214 (79)	58 (78)
CD treatment services^{**}					
Admitted to CD treatment	112 (13)	65 (14)	1 (3)	32 (12)	14 (19)
Detoxification (not followed by CD treatment)	42 (5)	27 (6)	1(3)	9 (3)	5 (7)

Abbreviations: ASI, Addiction Severity Index; DAST-10, Drug Abuse Screening Test 10-item; CD, chemical dependency

^{*} Data are reported as No. (%) of participants unless otherwise indicated. Missing values are not included in this table.

[†] p-value based on chi square or ANOVA.

[‡]Excludes use of alcohol or nicotine.

[§] ASI composite scores range from 0 to 1, with 1 indicating greatest problem severity.

// ASI drug use groups reported are not mutually exclusive.

[¶]“Other drugs” can include all other abused medications (e.g. antihistamines, antidepressants) or drugs of abuse (e.g., hallucinogens, inhalants) not included in the existing categories.

[#] From the Thoughts about Abstinence measure, which is used to assess one’s goal for changing drug use (no goal, controlled use, occasional use, temporary abstinence, total abstinence slip is possible, total abstinence never use again). The reported “Goal of total abstinence from drugs” includes “Total abstinence, never use again”, and “Total abstinence, slip is possible.”

^{**} Administrative data available for 847 participants in the 2 years prior to study enrollment.

Table 4

Post hoc results for statistically significant baseline characteristics in Tables 1 and 3

Characteristics	Post hoc <i>P</i>				
	High vs. Moderate-High Risk	High vs. Moderate-Low Risk	High vs. Low Risk	Moderate-High vs. Moderate-Low Risk	Moderate-Low vs. Low Risk
Demographics					
Age *	ns	ns	0.04	ns	ns
Women †	ns	ns	ns	ns	ns
Race †	ns	ns	ns	ns	ns
ns	ns	ns	0.001	ns	0.002
Medical					
Washington State inpatient hospitalizations †	ns	ns	0.001	ns	ns
Safety-net hospital emergency department visits †	ns	ns	ns	ns	ns
Number of CDPs medical conditions, mean (SD) *	ns	ns	ns	ns	ns
Psychiatric					
1 Mental illness ICD-9 diagnosis code †	ns	ns	<0.001	ns	<0.001
Legal and Social					
ASI Family/Social composite score, mean (SD) †	0.002	ns	<0.001	ns	ns
Substance Use					
ASI days most frequently used drug, mean (SD) *	ns	ns	ns	ns	0.03
ASI Drug Use composite score, mean (SD) *	0.01	ns	ns	ns	ns
ASI Other drugs, any in past 30 days †	ns	ns	<0.001	ns	ns
2 or more drugs used in past 30 days †	ns	ns	ns	ns	ns

Characteristics	Post hoc <i>P</i>					
	High vs. Moderate-High Risk	Moderate-Low Risk vs. High Risk	High vs. Moderate-Low Risk	Moderate-high vs. Moderate-Low Risk		Moderate-Low vs. Low Risk
				Low Risk	High Risk	
DAST-10 drug use severity [†]	ns	ns	0.003	ns	ns	ns
ASI Nicotine use, any in past 30 days [‡]	ns	ns	ns	ns	0.002	ns

Abbreviations: ns, not significant; CDPS, Chronic Illness and Disability Payment System; ICD-9, International Classification of Diseases Version 9; ASI, Addiction Severity Index; DAST-10, Drug Abuse Screening Test 10-item

^{*} Data provided as Tukey-adjusted *P* values.

[†] Data provided as Bonferroni-adjusted *P* values.

[‡] Data provided as Games-Howell-adjusted *P* values.