

# SUICIDAL BEHAVIORS AND SUBSTANCE USE AMONG PATIENTS UNDERGOING TB SCREENING IN COMMUNITY HEALTH CENTERS IN PUERTO RICO

Reyes, JC, Robles RR, Colón HM, Marrero CA, Matos TD, Díaz N, Castillo X  
 Center for Addiction Studies, School of Medicine, Universidad Central del Caribe, Bayamón, Puerto Rico  
 Research Institute, Mental Health and Anti-Addiction Services Administration, San Juan, Puerto Rico

## Introduction

Alcohol and drug abuse are associated with a higher frequency of suicidal ideation, suicidal attempts and suicide completion (1-3). Although statistics for actual suicides among drug abusers are alarmingly high, the estimates of the number of suicidal attempts are even more striking (4). The rate of suicide attempts among opiate addicts is equivalent to that found in alcoholics, with a rate of suicide attempts in both groups substantially higher than in the general population (5). Follow-up studies of suicide among adolescents indicate that drug abuse is closely related to mortality by suicide (6). Although in Puerto Rico we do not have data related to specific causes of mortality among drug users, our ethnographic data indicate that suicide and HIV/AIDS infection are among the main causes of death among drug users not in treatment. The purpose of this study is to assess the prevalence of suicidal ideation and attempts among patients attending public primary health care clinics. We seek to understand the characteristics and

behaviors that distinguish patients reporting suicidal ideation from those who have attempted to end their lives.

## Methods

**Study Population and Data Collection.** The study population comprised 401 subjects recruited in three clinics in the San Juan metropolitan area from March, 1994 to February, 1995. Participants were interviewed during their first visit to the clinic. The eligibility criteria for the study included: 18 years of age or older and having visited the clinic for the first time. Subjects agreeing to participate were compensated for the time spent in the interview. During the interview, the following information was obtained: sociodemographic characteristics, physical and mental health conditions, patterns of drug use, health care utilization and suicidal behaviors. The completion rate for the interview was 90%. The study design and enrollment procedures were approved by the Institutional Review Board of the School of Medicine of

the Universidad Central del Caribe.

**Analysis.** Univariate, bivariate and multivariate analyses were conducted. Univariate statistics were used to describe the study population. Bivariate tests of independence were carried out to assess the association between suicidal behaviors (ideation and attempts) and three domains of variables (sociodemographics, physical and mental health, and drug use). The SPSS Logistic procedure was employed to construct two regression models entailing suicidal ideation and attempts as the two dependent variables. Gender, marital status, economic strains, physical incapacity, depressive symptomatology, mental dysfunction due to alcohol or drug use, experience of drug treatment, and drug use during the last year were entered into the model as dichotomous variables. In order to include age and education, a set of dummy variables was created representing each category. A P value of less than 0.05 was considered indicative of statistical significance. SPSS, V. 7.0 for Windows was used for all statistical analyses.

## Results

Table 1 shows sociodemographics characteristics, physical and mental health conditions, patterns of drug use during the last year, and suicidal behaviors of the 401 participants. The study population consisted of 224 males and 177 females. The majority of the subjects were 35 years of age or older and 50% of them had not attained a high school degree. Nearly 70% of the study sample was married and almost two-thirds reported economic strains. More than 28% of the participants reported physical incapacity, and 56.3% (223) reported highly depressive symptomatology. Almost 20% presented mental dysfunction due to alcohol or drug use. Surprisingly, 21% had experience in residential drug treatment, although drug use during the previous year was not significantly high. Less than 10% reported the use of marijuana (5.5%), crack (5.0%), cocaine (7.8%), heroin (8.5%), or speedball (5.2%). However, 43 individuals reported suicidal ideation and other 38 subjects reported at least one suicidal attempt.

**Table 1. Sociodemographic Characteristics, Physical and Mental Health, Drug Use and Suicidal Behaviors**

	N	%
<b>Sociodemographics</b>		
Gender		
male	224	55.9
female	177	44.1
Age		
less than 25 years old	72	18.0
25 to 34 years old	141	35.3
35 years old or older	167	45.8
Education		
less than high school	203	50.9
completed high school	111	27.8
more than high school	86	21.5
Marital Status		
not married	211	52.6
married	189	47.4
Economic Strains		
no	121	30.3
yes	279	69.7
Physical and Mental Health		
Physical incapacity		
no	297	74.1
yes	114	28.4
Depressive Symptomatology (CES-D)		
less than 15	173	43.1
15 or more	223	55.9
Mental Dysfunction Due to Alcohol or Drug Use		
no	322	80.3
yes	79	19.7
Drug Use Related		
Drug Treatment Experience		
no	315	78.6
yes	85	21.4
Drug Use During Last Year		
Marihuana		
no	377	94.5
yes	22	5.5
Crack		
no	390	97.5
yes	20	5.0
Cocaine		
no	352	88.0
yes	49	12.2
Heroin		
no	357	89.3
yes	44	10.7
Speedball		
no	390	97.5
yes	21	5.2
Suicidal Behaviors		
Ideation		
no	358	89.3
yes	43	10.7
Attempt		
no	363	90.5
yes	38	9.5

N = 401 cases

Examination of the factors related to ideation and suicidal attempts are presented in Table 2. This table shows that economic strains were significantly associated to suicidal ideation and attempts. Also, participants with highly depressive symptoms and mental dysfunction due to alcohol or drug use reported higher rates of both suicidal behaviors. Moreover, subjects who reported drug treatment experience or using drugs during the previous year also showed significantly higher rates of suicidal ideation and attempts. Not surprisingly, subjects who reported suicidal ideation also reported suicidal attempts.

**Table 2. Sociodemographic Characteristics, Physical and Mental Health, and Drug Use by Suicidal Behaviors**

	Suicidal Behaviors			
	Ideation		Attempt	
	n	%	n	%
Gender				
male	22	9.8	18	8.0
female	21	11.9	20	11.9
Age				
less than 25 years old	6	11.1	7	9.7
25 to 34 years old	11	7.9	13	9.0
35 years old or older	24	12.9	18	9.5
Education				
less than high school	23	11.3	19	9.4
completed high school	9	9.1	8	7.2
more than high school	11	12.9	11	12.9
Marital Status				
not married	28	13.3	25	11.4
married	15	7.9	13	5.9
Economic Strains				
no	5	5.0	5	4.1
yes	37	13.3**	35	11.4**
Physical and Mental Health				
Suicidal Ideation				
no	—	—	13	3.5
yes	—	—	25	58.1***
Physical incapacity				
no	20	7.0	20	7.0
yes	23	20.2***	19	15.9**
Depressive Symptomatology (CES-D)				
less than 15	4	2.3	3	1.7
15 or more	39	17.0***	34	15.2**
Mental Dysfunction Due to Alcohol or Drug Use				
no	22	5.8	20	5.2
yes	21	25.5***	18	22.8**
Drug Use Related				
Drug Treatment Experience				
no	23	7.3	17	5.4
yes	20	23.5***	21	24.7***
Drug Use During Last Year				
Marihuana				
no	37	9.9	30	9.0
yes	5	27.3**	9	35.4***
Crack				
no	35	9.2	29	7.5
yes	8	40.0***	3	45.0***
Cocaine				
no	33	9.9	29	7.9
yes	10	32.3***	9	29.0***
Heroin				
no	23	7.9	25	6.8
yes	14	41.2***	13	36.2***
Speedball				
no	35	9.2	30	7.9
yes	8	38.1***	8	38.1***

\*\* p < 0.05  
 \*\*\* p < 0.001

Results of two separate logistic regression analyses to assess the independent contribution of each variable to suicidal ideation and attempts are shown in Table 3. The first model demonstrates that participants with suicidal thoughts were more likely to be young, less than 25 years of age, physically incapacitated, and presenting higher depressive symptomatology. In the second model, the results are somewhat different. Subjects more likely to report suicidal attempts were female, and showed highly depressive symptomatology. Moreover, participants who reported suicidal thoughts were nineteen times more likely to report suicidal ideation. Drug users reporting at least one episode of drug treatment were five times more likely to attempt suicide in comparison with those without that experience. Surprisingly, marihuana users were nearly thirteen times more likely to report suicidal ideation than non-marihuana users.

**Table 3. Logistic Regression for Suicidal Behaviors**

	Suicidal Behaviors			
	Ideation		Attempt	
	O.R.	95% C.I.	O.R.	95% C.I.
Gender				
male	1.00		1.00	
female	1.91	(0.84-4.35)	3.11	(1.01-9.59)
Age				
less than 25 years old	1.00		1.00	
25 to 34 years old	0.15	(0.04-0.60)	0.40	(0.09-1.92)
35 years old or older	0.40	(0.14-1.14)	0.48	(0.19-1.05)
Education				
less than high school	1.00		1.00	
completed high school	1.04	(0.40-2.67)	1.39	(0.43-4.49)
more than high school	1.58	(0.55-4.24)	2.55	(0.75-9.34)
Marital Status				
not married	1.00		1.00	
married	1.03	(0.45-2.31)	1.25	(0.45-3.52)
Economic Strains				
no	1.00		1.00	
yes	2.39	(0.91-7.04)	2.52	(0.57-9.51)
Physical and Mental Health				
Suicidal Ideation				
no	—	—	1.00	
yes	—	—	19.20	(5.55-55.40)
Physical incapacity				
no	1.00		1.00	
yes	2.45	(1.15-5.38)	0.97	(0.31-2.46)
Depressive Symptomatology (CES-D)				
less than 15	1.00		1.00	
15 or more	6.45	(2.08-19.97)	5.35	(1.14-25.07)
Mental Dysfunction Due to Alcohol or Drug Use				
no	1.00		1.00	
yes	1.55	(0.53-5.10)	0.20	(0.03-1.13)
Drug Use Related				
Drug Treatment Experience				
no	1.00		1.00	
yes	1.59	(0.54-4.59)	5.08	(1.36-19.70)
Drug Use During Last Year				
Marihuana				
no	1.00		1.00	
yes	1.37	(0.33-5.58)	12.98	(2.22-74.57)
Crack				
no	1.00		1.00	
yes	3.12	(0.84-11.58)	5.55	(0.99-31.25)
Cocaine				
no	1.00		1.00	
yes	1.37	(0.31-6.14)	0.37	(0.05-2.84)
Heroin				
no	1.00		1.00	
yes	4.55	(1.04-20.08)	3.43	(0.53-22.12)
Speedball				
no	1.00		1.00	
yes	0.59	(0.12-3.82)	5.10	(0.52-49.0)

\* p < 0.05  
 \*\* p < 0.01  
 \*\*\* p < 0.001

## References

- Lewy JC, Gayton EY. Suicidality, depression and substance abuse in adolescence. *Am J Psych* 1999;146:1452-1467.
- Mans R. Pathways to suicide: A survey of self-destructive behaviors. Baltimore: Johns Hopkins University Press; 1991.
- Feltz WM, Cherner T, Barnes R. Drug use and suicide ideation and behavior among North Carolina public school students. *Am J Public Health* 1992;82:870-872.
- Saxon S, Kuntz E, Alarich S. Drug abuse and suicide. *Am J Drug Alcohol Abuse* 1978;5:485-485.
- Dudley DL, Mules JE, Roszell DK, Glickfield G, Hague WH. Frequency and magnitude distribution of life change in heroin and alcohol addicts. *Int J Addict* 1975;11:977-987.
- Crumley FE. Substance abuse and adolescent suicide behavior. *JAMA* 1990;263:3051-3055.

## Conclusions

The present study indicates that suicidal ideation is significantly related to suicidal attempts, although the variables related with each one of the behaviors is somewhat different. If suicidal behavior is a cognitive process that goes on over time, it will be expected that ideation, attempts, and suicide completion are highly associated among our subjects. However, a longitudinal design is needed to test these assumptions. Although variables are related with both suicide behaviors of concern, primary prevention of suicide must be targeted to those individuals who report suicide ideation. At this level, primary prevention can help reduce suicidal ideation among high risk groups, such as drug users in treatment programs and psychiatric patients. Findings related to marihuana use in this study are of great concern. Adolescents, both in the US and in Puerto Rico, are increasing drug use, especially marihuana. Eradicating the belief that marihuana is a friendly drug is important if preventive programs among adolescents are to be effective. Suicide is a prevalent cause of death among adolescents which may very well be related to marihuana use. However, more research is needed to be able to better understand these associations.