Smoking Cessation Outcomes Among Individuals with Co-Occurring Substance Use Disorder History and Mental Illness

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BACKGROUND

•Individuals with Substance Use Disorders (SUD) and/or Mental Illness (MI) are disproportionately affected by morbidity and mortality due to tobacco use. Few studies have examined the smoking cessation outcomes of individuals with a co-occurring SUD and/or MI accessing outpatient treatment services.

•The Tobacco Dependence Clinic (TDC) is a program that provides smoking cessation counseling and up to 26 weeks of free pharmacotherapy for clients through Vancouver Coastal Health Addiction Services , British Columbia, Canada.

•The purpose of this study is to examine the effects of a history of co-occurring SUD and/or MI on smoking cessation outcomes of an intensive smoking cessation program

Eligibility

•Tobacco dependent with a history of substance use disorder and/or mental illness.

Treatment

•Behavioral counseling : 8 sessions of weekly, structured group therapy followed by up to 18 further weeks of a less structured support group.

•Pharmacotherapy : With nicotine replacement therapy (NRT), "off-label "prescribing may be considered; that is, higher doses, product combinations, and extended duration of use (up to 26 weeks).

•Group therapy and medication are provided at no cost.

Data collection

Data from patient charts and questionnaires administered during the course of the program were obtained for individuals accessing the TDC sites from September 2007 to March 2009.

Measures

•**Sociodemographics** (gender, age), **tobacco use history** (number of cigarettes smoked per day, age at smoking initiation), **social supports for quitting** (none, one, two, three or more), **number of evidence-based modalities** (i.e., nicotine replacement therapy, oral medications, or behavioural counseling) **used to quit smoking in the past** (none, one, two or more), **Fagerstrom Test for Nicotine Dependence** (FTND) scores, **importance and confidence in quitting smoking** (on a scale of 1 to 10), **expired Carbon monoxide (CO) level**, **total number of visits of to the program, the amount of NRT per visit**, and **co-occurrence of substance use and mental illness** (i.e., none = 0, SUD history only = 1, MI history only = 2, and co-occurring SUD and MI history = 3).

•Smoking cessation was defined as not smoking in the past 7 days, based on participant self-report and verified by expired CO levels.

Table 1. Sample characteristics

	Total (N = 200)		Neither[a] (n = 10)		Substance use history only (n = 68)		Mental illness history only (n = 12)		Co-occurring (n = 120)		Difference[b]
	n	%	n	%	n	%	n	%	n	%	p
Gender (n = 201)											.204
Female	80	39.8	4	40.0	18	30.0	7	58.3	51	42.9	
Male	121	60.2	6	60.0	42	70.0	5	41.7	68	57.1	
Evidence-based modalities used to quit in the past											.152
none	89	43.5	6	60.0	27	45.0	3	25.0	53	43.3	
One	84	41.0	4	40.0	24	40.0	4	33.3	52	43.3	
Two or more	30	14.9	0	0.0	9	15.0	5	41.7	16	13.3	
Social support for quitting											.068
none	32	15.8	3	30.0	12	20.0	3	25.0	14	11.7	
One	63	31.2	3	30.0	11	18.3	6	50.0	43	35.8	
two	63	31.2	4	40.0	24	40.0	1	8.3	34	28.3	
Three or more	44	21.8	0	0.0	13	21.7	2	16.7	29	24.2	
Pharmacotherapy											.058
NRT only	164	81.6	6	60.0	52	86.1	7	58.3	99	82.5	
NRT and Oral Medications	25	12.4	2	20.0	6	10.2	4	33.3	13	10.8	
Oral Medications only	12	6.0	2	20.0	1	1.7	1	8.3	8	6.7	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	p
Age of participant in years	48.3	11.1	59.6	10.6	45.6	10.8	55.3	9.7	48.0	10.7	<.0001
Age at smoking initiation	14.2	4.1	14.9	3.3	13.9	3.9	16.3	4.9	14.1	4.1	.298
Importance of quitting	9.0	1.3	9.4	1.8	8.9	1.4	9.4	1.0	9.1	1.3	.542
Confidence in quitting	7.3	2.3	7.1	2.8	7.7	2.1	6.4	2.7	7.3	2.4	.357
Cigarettes smoked per day	21.6	10.3	22.0	11.8	21.7	11.9	24.0	10.5	21.1	9.4	.681
FTND	6.4	1.8	6.8	2.5	6.0	2.8	6.6	1.8	6.6	1.6	.215
CO level at baseline	22.8	12.8	25.7	9.8	22.3	13.9	23.2	8.9	22.8	12.9	.927
Total visits to the TDC	11.4	7.1	11.1	6.5	10.7	7.8	11.8	5.8	11.8	7.4	.798
NRT dose per visit	157.9	93.8	84.6	78.7	147.6	77.0	156.2	92.7	169.3	95.8	.026

a The "neither" category includes 10 individuals, who were enrolled in the TDC for tobacco addiction, yet had no history of a SUD or MI.
[b]Differences are calculated using chi-square analyses for categorical and ordered categorical values, and using Analysis of Variance (ANOVA) Tests. For all ANOVA tests, Levene's test for equality of variance was applied and differences between groups were calculated post hoc using Bonferroni tests.

RESULTS

•There were no significant differences between groups in study variables, with the exception that individuals with neither SUD nor MI and those with only MI were younger than those with SUD only or co-occurring SUD and MI; and individuals with co-occurring SUD and MI required higher doses of NRT per visit as compared to individuals with neither SUD nor MI (**Table 1**).

•Individuals with a SUD and co-occurring SUD and MI were less likely to achieve abstinence at end-of-treatment as compared to individuals with neither SUD nor MI or MI only (**Figure 1**).

•In multivariate logistic regression analysis, having co-occurring SUD and MI or SUD only were significant predictors of failed cessation. However, having a lower expired CO level at baseline and a greater number of visits to the TDC clinic were significant predictors of successful cessation (**Table 2**).

Fig 1. Smoking cessation outcomes by history of substance use disorder (SUD) only, Mental Illness (MI) only, and co-occurring disorder (N= 202).

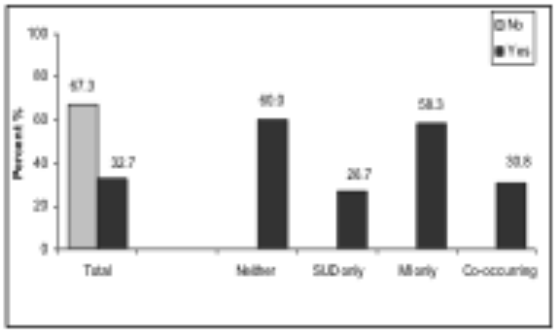

Table 2. Multivariable associations[a] for smoking cessation within 26 weeks

	Program completers (n = 143)		Intent to treat (n = 198)	
	Odds Ratio	95%CI	Odds Ratio	95%CI
SUD and/or MI history				
None (reference)	1.0		1.0	
SUD only	.87*	.01-.86	.11*	.02-.70
MI only	.36	.03-5.23	.64	.08-5.49
Co-occuring	.09*	.01-.94	.13*	.02-.81
CO level at baseline	.96*	.93-1.00	.96*	.93-1.00
Total # of visits to the TDC	1.17***	1.10-1.25	1.22***	1.15-1.30

a. Only variables which significantly predicted smoking cessation at > .05 in the univariate analyses were included in the multivariate analysis
* = p < .05, *** = p < .001

CONCLUSIONS

•A co-occuring history of SUD and MI is an important predictor of failed smoking cessation.

•However an intensive, tailored approach to smoking cessation appears to be promising.

•Future studies may need to further address the nature of tobacco dependence treatment in settings were other SUD's and MI's are managed in order to achieve optimal outcomes