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Commitment and Capacity for Providing Evidence-Based Tobacco Treatment in U.S. Drug Treatment Facilities

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Abstract

Background—Although people with mental illness, including substance use disorders, consume 44% of cigarettes in the U.S., few facilities provide tobacco treatment. This study assesses staff- and facility-level drivers of tobacco treatment in substance use treatment.

Methods—We administered surveys to 405 clinic directors selected from a comprehensive inventory of 3,800 U.S. outpatient facilities. The main outcome was the validated 7-item Index of Tobacco Treatment Quality. Other measures included the validated Tobacco Treatment Commitment Scale and indicators of facility resources for providing tobacco treatment.

Results—We used stepwise model selection to determine the relationship between capacity/resources and treatment quality. The final model retained 7 items and had good fit (adj. $R^2=0.43$). Four capacities significantly predicted treatment quality. We used SEM to test the impact of staff commitment on treatment quality; the model had good fit and the relationship was significant (CFI=0.951, RMSEA=0.054). Adding the 7 capacity/resources maintained similar model fit (CFI=0.922, RMSEA=0.053). Staff commitment was slightly strengthened in this model, with a rise in parameter estimate from 0.449 to 0.560. All resource/capacity items were also significant predictors of treatment quality; the strongest was receiving training in how to provide tobacco

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AUTHOR CONTRIBUTIONS

KPR lead the design, data collection, and analyses for this study. JJ, PC, BJG, YJ, JM, PDF assisted with data collection and analyses. All authors contributed to writing drafts of the manuscript, and all have approved the final manuscript.

treatment (0.360), followed by dedicated staff time (.279) and having a policy that requires staff to offer treatment (.272).

Conclusions—Staff commitment to providing tobacco treatment was the strongest predictor of tobacco treatment quality, followed by resources for providing treatment. Interventions to change staff attitudes *and* improve resources for tobacco treatment have the strongest potential for improving quality of care.

Keywords

Tobacco use disorder; substance use disorder; health services

INTRODUCTION

Cigarette smoking significantly increases risks for disability, illness and mortality for people with alcohol and other drug use disorders.^{1,2} Quitting smoking can improve treatment and other health outcomes among people with alcohol and other drug use disorders.^{3,4} Many clients in drug treatment would like to quit.^{5–9} Most drug treatment facilities, however, fail to provide or even offer treatment for tobacco use.^{10–13}

Several factors may hinder provision of tobacco treatment, including resource limitations such as lack of reimbursement, staff training or staff time; unfavorable staff attitudes toward treating tobacco use; and staff smoking.¹⁴ In addition, systems and/or structural factors affect tobacco treatment provision, including hospital affiliation, profit status, program size, and medical staffing.^{11,15,16} This paper reports the main outcomes of a multi-year effort to develop and validate clinic-level measures of tobacco treatment services, and identify the determinants of high quality treatment provision among U.S. drug treatment facilities.

METHODS

Overview

We interviewed staff from a sample of 405 facilities across the U.S., refined and validated scales used in analyses^{17,18}, and then conducted linear regression and SEM to identify interrelationships between attitudes, capacity, and treatment provision. We hypothesized that staff attitudes and facility resources would directly affect the quality of tobacco treatment, and that they would interact in their effects on treatment quality.

Sample

The study was conducted among substance use disorder treatment facilities in the U.S. We recruited facilities from the 3,800 outpatient, adult facilities in the 2008 Substance Abuse and Mental Health Services (SAMHSA) Inventory of Substance Abuse Treatment Services (I-SATTS).¹⁹ We calculated that data from 400 facilities would permit us to be 95% confident that the true prevalence of survey findings would fall within 5% of our findings.

The survey was conducted from November 2009 to November 2010. One clinic leader in each facility (clinic director, medical director, counseling supervisor, head nurse, or owner) was surveyed by phone, fax, email, or mail. We reimbursed participants \$20.00 for

participating in the study. The University Ethics Committee (IRB# 10979) approved all study procedures. Details on facility and respondent recruitment are provided elsewhere.¹⁷

Measures

Index of Tobacco Treatment Quality (ITTQ)¹⁷—The main outcome measure—the ITTQ—consists of seven items that assess evidence-based components of cessation services²⁰ (identifying smoking status, assessing for readiness to quit, advising clients to quit, motivating those not ready to quit, providing counseling, recommending medications, and treatment intensity). The ITTQ yields a single continuous score for quality of tobacco treatment that ranges between 1 and 5, with 1 representing little to no service provision and 5 near-perfect treatment provision to all clients. The ITTQ displayed good internal consistency (Cronbach's alpha = .844) and substantial test-retest reliability (.856).¹⁷ Ordinal confirmatory factor analysis found that a one-factor model for ITTQ fit the data very well with a CFI of 0.997 and an RMSEA of 0.042.

Staff Attitudes—We also used the study sample to develop and validate a 14-item Tobacco Treatment Commitment Scale (TTCS).¹⁸ The TTCS contains 14 items in 3 domains: *Tobacco is less harmful than other drugs*, *It's not our job to treat tobacco*, and *Tobacco treatment will harm clients*. The scale has good fit (CFI=0.950, RMSEA=0.058), and substantial unified reliability (0.975).

Capacity to Provide Tobacco Treatment—The survey included 15 items on resources and capacity for treating tobacco use disorder.²¹ Items assessed policies and procedures, leadership and prescribing authority, training and skills, and reimbursement/funding for providing services. Response categories were in the form of a 5-point Likert scale ranging from strongly agree to strongly disagree.

Facility and Respondent Characteristics—These assessed the gender, smoking status, and job title of respondents. Facility characteristics included accreditation, licensure/certification, and demographic descriptors such as clinic size, urban/rural location, and profit status.

Analytic Procedures

We calculated means and frequencies to describe facility characteristics. We used linear models to select a short list of capacity measures that were related to treatment quality. We then fit an SEM to examine the contribution of staff commitment to the quality of tobacco services provided in clinics. Finally, we combined facility capacity and staff commitment in a second SEM that examined their relative contribution to the quality of tobacco treatment provided in facilities. We selected SEM for our analyses because it permitted us to examine how commitment, a latent construct, was linked with treatment quality and capacity for treatment, which are observed variables. Moreover, SEM describes the directionality of relationships and identifies mediators of treatment effects.

The Relationship Between Capacity for Treatment and Treatment Quality—To understand which facility resources and capacity significantly contribute to treatment

quality, we conducted an initial screening of items. In order to more easily interpret relationships between variables in the model, we dichotomized responses. Responses of “strongly agree” and “agree” were combined and coded as 1; all other responses were combined and coded as 0. To identify the linear relationship of ITTQ and facilities’ tobacco treatment capacity and resources, a stepwise model selection from all possible regressions was performed using SAS 9.2. The model with the largest adjusted R^2 was selected as the best model describing the contribution of treatment capacity to treatment quality. The capacity items that remained in this model were included in SEMs examining interrelationships between capacity, attitudes, and treatment quality.

SEM Analyses—We used Lavaan package version 0.5–14 from R 2.15.2 to construct two SEMs.²² The outcome for both was the ITTQ, entered into the model as a latent variable composed of its 7 items. Both models reported standardized rather than raw effect sizes to facilitate interpretation of relationships between predictors and outcomes. We considered p-values smaller than 0.05 to be statistically significant.

We fit one SEM to understand the impact of staff attitudes (TTCS) on treatment quality (ITTQ). This model yielded an overall model fit and described the contribution of the three TTCS domains and their indicators to outcome. The model also provided an estimate of the quantitative relationship between staff commitment and treatment quality.

We fitted a second SEM to determine the relative impact of treatment capacity and staff commitment on treatment quality. The model included the TTCS latent variable, its three domains, and the items comprising its domains. It also included all 7 indicators of capacity that remained in the linear model predicting treatment quality. We fitted the model simultaneously on the TTCS score and the capacity measures. We chose to include all capacity measures in the model separately – as observed, causal variables rather than effect variables. One advantage of this framework is that it enabled us to examine individual capacities present at centers and the relative contribution of each capacity to treatment quality.

We then tested for the impact of interactions between commitment and capacity on treatment quality using SAS 9.2. To do so, we introduced interaction terms into the second SEM model. Each term consisted of [TTCS score X capacity indicator]. We tested 7 interaction terms corresponding to the 7 different capacity indicators.

RESULTS

Sample Characteristics

The final sample was comparable to all 3,800 U.S. outpatient, adult drug treatment facilities across 14 clinic characteristics.¹⁷ Nearly half (48%) of participating facilities were privately owned and not for profit. Most (66%) of the facilities had fewer than 100 clients per year. The average proportion of smokers across all facilities was 75%. Respondents included clinic directors (59%), owner (12%), head counselor (8%), and other (21%). The overall response rate was 11% (405/3800). Details on survey representativeness and main findings are available elsewhere.¹⁷

Direct Effects of Capacity for Treatment on Treatment Quality

Seven variables (items) regarding facilities' tobacco treatment capacity and resources were selected in the model predicting ITTQ. The model had good fit (adj. $R^2=0.43$). Four of the seven measures were significantly associated with the ITTQ, including "Our facility has a policy that requires staff to offer treatment for clients' tobacco dependence"; "Our staff has dedicated time for treating clients tobacco dependence"; "Our staff has the skills to treat clients tobacco dependence"; and "Our staff has received training specifically for treating tobacco dependence."

Direct Effects of Commitment to Treatment on Treatment Quality

The SEM examining the effects of on staff commitment on treatment quality had a good fit (CFI=0.951, RMSEA=0.054) (not shown). The effect size was sizable; every 1 standard deviation increase in commitment would yield a half-point (0.449) increase in treatment quality ($z=8.0$, $p<0.001$).

Combined Direct Effects of Commitment and Capacity on Treatment Quality

The Figure displays the second SEM, which also had good fit (CFI=0.922, RMSEA=0.053).

The estimates for the structural regression coefficients and their significance levels are shown in the Table. Staff commitment was slightly strengthened in this model, with a rise in parameter estimate from 0.449 to 0.560.

All resource/capacity items were also significant predictors of treatment quality. The strongest was receiving training in how to provide tobacco treatment (0.360), followed by dedicated staff time (.279) and having a policy that requires staff to offer treatment (.272).

In the final model, commitment to treat was the strongest predictor of treatment quality, followed by resources to provide treatment. For every director that agreed or strongly agreed that their facility was committed to tobacco treatment, the score on the ITTQ increased by over a half-point; for every director that agreed or strongly agreed their staff had received training in how to specifically provide tobacco treatment, the ITTQ increased by over a third of a point.

Interactions Between Capacity and Commitment, and Their Effects on Quality

Interactions between commitment and capacity had no significant impact on treatment quality (not shown). As a result, we omitted pathways between capacity and commitment in the final model (Figure).

DISCUSSION

As hypothesized, staff commitment and staff training were strongly associated with the quality of tobacco use treatment services in U.S. outpatient drug treatment facilities. Surprisingly, and contrary to our hypotheses, facility resources and staff attitudes each contributed very independently to the quality of tobacco services.

The effect size between staff commitment and treatment quality was sizable, with every 1 standard deviation increase in commitment yielding a half-point increase in treatment quality (the ITTQ). Because the ITTQ is a 5-point scale, this means that a significant improvement (1 standard deviation) in attitudes was associated with a 10% improvement in treatment quality. Top resources that significantly enhanced rates of service provision included having dedicated staff time for providing services, staff skills in tobacco treatment, and having a policy that required staff to provide care.

Because we found no interactions between the impact of attitudes and resources on treatment quality, improvements in attitudes and resources had an additive impact on quality. This suggests that an intervention focused on changing staff attitudes *and* improving specific facility resources for tobacco treatment would have the strongest potential for improving quality of care.

The study has a number of limitations and strengths. Because data are cross-sectional it will require a prospective and/or clinical trial to definitively test these relationships. Findings may not apply to inpatient facilities. Respondents included only owners or top-level administrators: the relationships between commitment, resources, and treatment might differ for different levels of staff. Last, our surveys were self-report and hence subject to social desirability bias. These findings do, however, confirm and strengthen the findings of earlier studies, many of which did not employ multivariable analyses.^{14,23,15,16} By using a sampling frame provided by SAMHSA, we were able to determine that our sample was comparable to U.S. facilities, which suggests that findings are broadly applicable. We created and validated our commitment scale (TTCS) and the Index of Tobacco Treatment Quality (ITTQ) on this same sample, so the reliability and validity of the scales used in analyses are exactly as reported.

Study findings suggest that a two-pronged approach could be most effective for integrating tobacco treatment into substance use treatment. These include changing the hearts and minds of staff, as well as delivering the training and resources that staff need to provide high quality care.

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Key to Indicators of Commitment Scale Domains

- 1a (57). Tobacco is less harmful than other addictive drugs
- 1b (54). Smoking does not have an immediate effect on clients lives but drugs do
- 1c (61). Tobacco dependence causes few, if any, problems for our clients
- 1d (41). It is better for clients to smoke than use other drugs
- 1e (59). Tobacco dependence does not affect clients ability to function in society
- 2a (60). Treating tobacco dependence should be a part of the mission of drug treatment programs
- 2b (63). Drug treatment programs should focus on fulfilling court-mandated treatment, not treating tobacco
- 2c (58). Program should not treat tobacco dependence because it is not what clients are in treatment for
- 2d (40). Tobacco dependence should not be treated in drug treatment programs
- 3a (53). Quitting smoking makes anxiety and depression worse for our clients
- 3b (64). Smoking helps clients cope with the stress in their lives.
- 3c (45). Treating tobacco dependence will hinder clients recovery
- 3d (42). Its unfair to take clients tobacco away from them
- 3e (56). Quitting all drugs at the same time is too much for clients

*We depict the ITTQ as an observed, rather than a latent variable because it is derived from observed items by calculating a mean, and not by use of a latent variable model.

Figure 1.

SEM, Impact of Capacity and Commitment on Tobacco Treatment Quality* Among 405 U.S. Drug Treatment Facilities

Table

Standardized Regression Coefficients of Capacity/Resource Indicators and Commitment Predicting Tobacco Treatment Quality

	Parameter Estimate	Standard Error	Pr > z
General attitude of staff in tobacco treatment	0.184	0.044	0.000
A. Our facility has a policy that requires staff to offer treatment for clients tobacco dependence	0.559	0.111	0.000
B. Our facility has staff that can prescribe quit smoking medications to treat clients tobacco dependence	0.085	0.100	0.396
C. Our staff has dedicated time for treating clients tobacco dependence	0.397	0.111	0.000
D. Our staff are familiar with the Public Health Services treatment guideline that is called Treating Tobacco Use and Dependence	0.182	0.095	0.056
E. Our staff has received training specifically for treating tobacco dependence	0.214	0.114	0.060
F. Our staff has the skills to treat clients tobacco dependence	0.367	0.096	0.000
G. Our staff has the skills to use quit smoking medications to treat clients tobacco dependence	0.114	0.111	0.301