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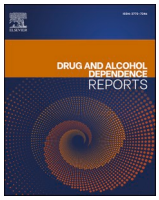

Short communication

Predictors of improved clinician screening, assessment, and treatment for tobacco use for clients in community mental healthcare following training

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HIGHLIGHTS

- Gaps in tobacco use treatment exist for smokers with mental illness.
- An increase in treatment was predicted by an increase in perceived clinical skills, ethics, and motivation to quit smoking.
- Changes in clinician beliefs following training are predictive of improved clinician treatment of patient tobacco use.

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ABSTRACT

Introduction: People with mental illness (MI) are more likely to smoke cigarettes and less likely to receive treatment for tobacco use than the general population. Understanding factors associated with improved staff treatment of tobacco use in community mental health settings has received limited study.
Methods: We used data from a completed cluster-randomized clinical trial that tested two interventions designed to increase treatment for tobacco use in mental health clinics. Among 222 clinic staff, we examined demographic and employment characteristics, changes in perceived skills, knowledge, and beliefs using the S-KAP (i.e., perceptions of staff responsibility to treat tobacco use; client quit motivation; client outcomes; and barriers) as predictors of change in clinician reported delivery of tobacco use treatment following training.
Results: Clinician reported treatment of client tobacco use significantly increased from baseline to week 52 across both study arms ($p<0.001$). This increase in reported treatment for tobacco use was associated with increases from baseline to week 52 in clinician reported skills to treat tobacco use, perceptions of responsibility to treat client tobacco use, and perceptions about client motivation to quit smoking (p's<0.05).
Conclusions: Training clinicians in community mental healthcare to address client tobacco use may improve outcomes by helping them to develop the needed skills, convincing them that treating tobacco use is part of their role as clinicians, and by helping clinicians to recognize that clients are motivated to quit smoking. These may be targets to improve how clinicians in community health settings address client tobacco use.

1. Introduction

The rate of tobacco use among individuals with a mental illness (MI) is 2–3 times greater than the general population (Asharani et al., 2020; Dickerson et al., 2018). The high rates of cigarette smoking (herein referred to as smoking) among this group have serious medical and mental health consequences; in fact, tobacco related disease is the primary cause of death among Americans with a MI (Cook et al., 2014) and

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tobacco use in this population is associated with up to 25 years of life lost compared to the general population (Walker et al., 2015). As clinicians and healthcare providers strive for improvements in treatment for individuals with MI, tobacco use is often overlooked and undertreated in this cohort.

Despite the increased risk of tobacco and nicotine use to individuals with MI, evidence-based tobacco use treatments available to this group are largely underutilized by mental healthcare providers (Taylor et al., 2020; National Survey of Substance Abuse Treatment Services, 2019). Many barriers exist to implementing tobacco use treatments for clients with MI. These include a lack of resources, training, and knowledge related to treating tobacco use, tobacco use by mental health agency personnel, and provider beliefs around the benefits of tobacco use or the need for tobacco use treatment such as the belief that tobacco is a successful harm reduction strategy for clients with an MI despite research supporting the opposite (Iyahen et al., 2023; Himelhoch et al., 2014; Brown et al., 2015; Evins et al., 2023; Rogers et al., 2018). The belief that clients are not interested in quitting smoking also persists among community mental healthcare clinicians despite surveys that show those with a MI would appreciate more assistance from their mental health counselors to quit smoking (Bartlem et al., 2013).

Interventions designed to enhance clinician knowledge, address beliefs about client tobacco use that undermine treatment, and train clinicians in specific tobacco cessation practices may promote tobacco use treatment in these clinical settings. A recent cluster-randomized clinical trial tested two forms of clinician training in community mental healthcare to better address client tobacco use (Schnoll et al., 2023). Based on reports from clients, the Addressing Tobacco Use Through Organizational Change (ATTOC) intervention, that used an organizational change framework to address clinician behavior with traditional didactic training, yielded significantly higher rates of tobacco use treatment in community mental healthcare settings, compared to traditional didactic training only. However, the specific mechanisms through which these interventions can augment clinician treatment of patient tobacco use was not tested.

To address this gap, we used data collected from this trial from the clinician perspective to assess predictors of clinician change over time following provision of the interventions. This study of data collected from this completed clinical trial may reveal predictors of improvements to clinician tobacco use treatment that can be further targeted to promote more individual provider change in practice to address tobacco use in clients with MI.

2. Methods

2.1. Overview

This secondary analysis used data from community mental health clinic (CMHC) staff who participated in a cluster randomized clinical trial testing two forms of training in the treatment of tobacco use in mental healthcare (ClinicalTrials.gov ID: NCT02849652). Fifteen sites were randomized to standard didactic training or Addressing Tobacco through Organizational Change (ATTOC). The primary aim, which focused on changes in clinician treatment of tobacco use (using client, clinician, and health record data) across study arms, was previously reported (Schnoll et al., 2023). Here we examined predictors of changes in clinician-reported treatment of tobacco use across time.

2.2. Participants

The parent study recruited clinic staff who were age ≥18, had clinical, administrative/leadership, or supervisory duties, and were able to communicate in English and provide informed consent. A total of 222 staff were recruited, between 11 and 25 per site (91 from standard and 131 from ATTOC sites; mean staff/site=17.1; range = 11–25 staff/site. $n = 222$) Inclusion criteria required staff to be 18 years of age or older, performing clinical care or supervisory duties, and demonstrating the ability to communicate in English and provide written informed consent.

2.3. Procedures

Once sites were recruited and randomized to didactic training only or ATTOC, staff were recruited and screened during site meetings. Eligibility screening based on the criteria described above was conducted verbally at staff meetings; staff who were ineligible or not interested in the study left the session. After providing informed consent, staff completed a baseline assessment. Site training was scheduled and implemented over 36 weeks. Assessments with the staff ($n = 222$) were conducted at Weeks 12, 24, 36, and 52.

2.4. Interventions

Standard didactic training was a 2-day in-person training program that involved formal instruction and case study review on: the rationale for treating tobacco use in mental healthcare, an introduction to nicotine dependence, a review of guidelines for the treatment of tobacco use that included methods to identify people who smoke, and the provision of behavioral interventions and guidelines for the medical management of tobacco use among those with a MI.

The ATTOC training program provided both onsite training (2 days) and video conference meetings (8 h over 36 weeks). The onsite training had about 10 h of staff training on evidence-based tobacco use treatment (similar to standard didactic training) and 6 h on organizational change. The 8 h of video conferencing focused on coaching and support for the site champion and leadership team who were leading the organizational change, including encouraging these leaders to do ongoing informal training with their clinical staff (Flitter et al., 2019; Ziedonis et al., 2007). Sites completed an average of 7.3 hourly videoconference sessions (range 4–9). The videoconference sessions focused on: 1) two pre-site visit meetings to prepare for and implement the intervention, and 2) six additional meetings focused on consultation and technical assistance based on results of a baseline and follow-up environmental scan (i.e., current patient assessment and treatment; staff smoking, training, attitudes and beliefs; and evaluation of indoor and outdoor agency spaces for evidence of tobacco use and tobacco-related policies). Videoconference training also included support for the champions and leadership team on organizational change implementation of the agency's change plan to achieve staff and agency goals (e.g., initiation of tobacco use treatment training), resolving questions related to training in treating tobacco, sustained consultations and feedback, and web-based support.

2.5. Measures

Demographic and Employment Characteristics. Variables such as years of experience, number of clients in caseload, age, gender, race, education, and smoking status were self-reported.

Staff Reported Tobacco Use Treatment Behavior and Attitudes. The 44-item Smoking Knowledge, Attitudes, and Practices Instrument (S-KAP; Delucchi et al. 2009) was used to assess the primary outcome (practices) and predictors (e.g., knowledge). We used the revised S-KAP factor structure from Siegel et al. (2021) and the following subscales: 1) clinical practices (e.g., asking about tobacco use, advising to quit, providing behavioral counseling and/or medication; Range = 0–32), 2) skills (e.g., the ability to treat tobacco use; Range = 3–20), 3) barriers (e.g., lack of time or reimbursement; Range = 0–15); 4) ethics (e.g., cessation counseling is an important part of my agency; Range = 3–20), 5) perceived patient motivation (e.g., patients are interested in tobacco use treatment; Range = 0–6), 6) perceived patient outcomes (e.g., patients want to and can quit; Range = 3–25), and 7) knowledge (e.g., health risks associated with smoking; Range = 4–20).

2.6. Analyses

We used descriptive statistics to characterize the sample and examine differences between the treatment arms and used repeated measures ANOVA to assess differences in clinical practices from baseline to week 52. We then used multiple linear regression to examine predictors of change in clinical practices. Controlling for treatment arm, mental health clinic, and demographic and employment characteristics, we assessed change from baseline to week 52 in skills, barriers, ethics, perceived patient motivation, perceived patient outcomes, and knowledge as predictors of change in clinical practices from baseline to week 52. Predictors were assessed in terms of standardized regression weights, probability, and 95 % confidence intervals. Longitudinal analyses were conducted with 159/222 (72 %) of the sample who were retained at the week 52 assessment.

3. Results

3.1. Sample characteristics and clinical practices

The sample was mostly women (78 %) and were 50 % Black or African American. Staff reported an average of 42 current clients and had been working at the agency for more than 6 years on average. The proportion of staff at clinic sites across the trial arms differed in terms of race and gender, but no differences in clinical practices or any of the S-KAP predictors across trial arms were found (see Table 1). As such, the multiple linear regression was conducted merging the sites, although trial arm was included as a covariate. Clinical practices were significantly greater at week 52 (M = 12.1, SD=8.2), compared to baseline (M = 7.7, SD=6.3; F[1153]=44.74, $p < 0.001$), when the arms were combined.

Table 1
Sample characteristics.

Characteristic	Standard (N = 91) % or Mean (SD)	ATTOC (N = 131) % or Mean (SD)	Overall (N = 222) % or Mean (SD)
Age*	38.8 (15.6)	45.5 (13.4)	42.7 (13.8)
Gender* (% Female)	82.4	75.6	78.4
Race (% Minority)	53.9	67.9	62.3
Education (% College Degree)	90.1	81.7	85.1
Tobacco Use (% Yes)	20.9	23.7	22.5
Number. of Active Clients	42.2 (66.3)	41.9 (61.5)	42.0 (63.4)
Years at Agency	5.4 (6.9)	6.6 (7.3)	6.1 (7.2)
Baseline Knowledge	16.0 (3.3)	15.3 (3.3)	15.6 (3.4)
Baseline Skills	11.2 (3.3)	10.9 (2.6)	11.0 (2.9)
Baseline Ethics	13.0 (3.3)	13.6 (2.8)	13.3 (3.0)
Baseline Perceive Client Motivation	4.7 (1.4)	4.5 (1.4)	4.6 (1.4)
Baseline Perceived Client Outcomes	13.7 (3.8)	12.8 (3.1)	13.2 (3.4)
Baseline Perceived Barriers	8.2 (2.7)	8.7 (2.4)	8.5 (2.5)
Baseline Clinical Practices	7.5 (6.2)	7.2 (6.5)	7.3 (6.4)
Week 52 Knowledge	17.0 (2.6)	16.8 (2.9)	16.9 (2.7)
Week 52 Skills	13.5 (2.8)	13.9 (2.6)	13.7 (2.7)
Week 52 Ethics	14.4 (2.7)	15.2 (3.0)	14.9 (2.9)
Week 52 Perceive Client Motivation	4.4 (1.3)	4.4 (1.6)	4.4 (1.5)
Week 52 Perceived Client Outcomes	14.1 (4.0)	13.5 (3.3)	13.8 (3.6)
Week 52 Perceived Barriers	7.6 (2.6)	8.1 (2.4)	7.9 (2.5)
Week 52 Clinical Practices	11.4 (7.5)	12.5 (8.5)	12.1 (8.1)
Change in Knowledge	1.55 (2.91)	1.65 (3.12)	1.99 (2.89)
Change in Skills	2.36 (3.1)	3.08 (2.8)	2.78 (3.0)
Change in Ethics	1.44 (2.94)	1.61 (3.03)	1.62 (3.05)
Change in Perceived Client Motivation	0.36 (1.59)	0.19 (1.53)	0.26 (1.55)
Change in Perceived Client Outcomes	0.19 (3.39)	0.76 (3.62)	0.53 (3.53)
Change in Perceived Barriers	−0.58 (2.99)	−0.82 (2.63)	−0.72 (2.9)
Change in Clinical Practices	3.72 (7.83)	4.9 (8.43)	4.83 (8.14)

Note. * indicates only age and gender were statistically different across treatment arms ($p < 0.05$).

3.2. Predictors of clinician reported treatment of client tobacco use

Table 2 shows the results of the linear regression model predicting change in clinical practices from baseline to week 52. When trial arm (standard didactic training vs. ATTOC), mental health clinic, and demographic and employment characteristics were included as predictors, the model was not predictive of change in clinical practices (F [9130]= 1.09, p = 0.37), no variables were associated with change in clinical practices, and the model accounted for only 7 % of variance in the change in clinical practices. The model that included the additional S-KAP sub-scales was significant (F[15,124]=5.1, $p<0.001$) and accounted for 31 % of the variance in the change in clinical practice. The increase in clinical practices was predicted by an increase in perceived clinical skills, clinical ethics, and perceived patient motivation (see Table 2).

4. Discussion

This study evaluated predictors of changes in clinician treatment of tobacco use in community mental healthcare settings following two didactic training programs. We assessed prospective changes in clinician knowledge, skills, and belief regarding client tobacco use along with demographic and employment characteristics. Based on reports of treating client tobacco use from the clinician perspective, both programs yielded a significant increase in the treatment of client tobacco use over time. This increase was associated with prospective increases in clinician perceptions that they had the skill to treat client tobacco use, that treating tobacco use as part of their professional role, and that clients were more motivated to quit tobacco or nicotine use than they realized.

Clinician beliefs about tobacco use treatment in mental health settings have been previously associated with the provision of tobacco use treatment to clients. For example, greater rates of tobacco use treatment among clinicians in mental health treatment settings have been associated with clinician perceptions that organizations and leaders support tobacco use treatment (Knudsen et al., 2012); that patients are interested in tobacco use treatments (Himelhoch et al., 2014); and greater clinician perceived skill in providing tobacco treatments (Laschober et al., 2015). These past studies, however, were cross-sectional. As such, the present results strengthen the existing literature by showing that prospective changes in these clinician beliefs following training are predictive of improved clinician treatment of patient tobacco use. In turn, these findings strengthen the case for training programs to target clinician perceptions of their ability to deliver tobacco treatment,

Table 2
Multiple regression analysis of predictors of clinician reported tobacco use treatment.

	β	95 % CI		p
Treatment Arm	.034	−1.96	3.051	.667
Organization	−0.067	−0.42	.16	.382
Age	−0.096	.296	0.164	.296
Number of Clients in Caseload	.105	−0.005	.031	.160
Race	.006	−2.427	2.631	.937
Education	−0.044	−4.493	2.517	.578
Smoking Status	−0.026	−3.401	2.40	.733
Sex	.092	−1.135	5.076	.211
Years Working at Agency	−0.018	−0.218	.179	.845
Change in Knowledge	−0.060	−0.583	.260	.449
Change in Perceived Skills	.420	.722	1.613	<0.001
Changes in Perceived Ethics	.245	.211	1.093	.004
Changes in Perceived Patient Outcomes	.028	−0.285	.412	.718
Changes in Perceived Barriers	.052	−0.297	.604	.502
Changes in Perceived Patient Motivation	.253	.540	2.127	.001

patient interest in quitting, and the centrality of treating tobacco use as a core aspect of the clinic's mission.

4.1. Limitations

The findings should be considered in the context of limitations. First, while the prospective nature of the data increases confidence that clinician beliefs are important drivers of their behavior concerning the treatment of client tobacco use, no causal interpretations should be made. Second, clinician treatment of client tobacco use was assessed from the clinician's perspective, which may be biased. Notably, the main trial from which these data were extracted reported increases in tobacco treatment based on client reports and electronic health record data as well, which are likely to be less susceptible to bias, and ongoing analyses from the parent award is examining predictors of client-level data. Lastly, the primary outcome measure used in this study utilized a factor structure developed in the parent trial and, thus, may need to be validated in independent samples.

4.2. Conclusion

The results from this study provide further support for the important role played by clinician beliefs about patient tobacco use in the context of community mental healthcare. Continued efforts to help mitigate health inequities in this population by improving the use of evidence-based tobacco treatment may be helped by ensuring that clinicians have a sense of efficacy to provide such treatments, understand that addressing client smoking is part of their professional role, and recognize that clients are motivated to quit smoking.

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Contributors

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Casey Foster led the drafting of this paper. Dr. Schnoll served as Principal Investigator. Dr. Ziedonis assisted with ascertaining grant support and oversaw the team that provided the delivery of the ATTOC intervention arm, including the staff training in the ATTOC intervention. Dr. Leone supported the delivery of didactic training in the control intervention. Mackenzie Quinn served as project manager, overseeing project staff, intervention delivery, and data collection. Nathaniel Stevens assisted with data collection. Dr. Wileyto served as the statistician. Dr. Siegel helped with measure refinement and data analysis. Fodie Koita assisted with the paper. All authors contributed to writing and approved the paper.

CRediT authorship contribution statement

Casey D. Foster: . **Mackenzie Hosie Quinn:** Project administration, Supervision. **Fodie Koita:** Writing – review & editing. **Frank T. Leone:** Methodology. **Nathaniel Stevens:** Project administration. **Scott D. Siegel:** Data curation, Formal analysis. **E. Paul Wileyto:** Data curation, Formal analysis. **Douglas Ziedonis:** Funding acquisition, Project administration, Supervision. **Robert A. Schnoll:** Conceptualization, Funding acquisition, Writing – review & editing.

Declaration of Competing Interest

The authors declare the following financial interests/personal relationships which may be considered as potential competing interests:

Dr. Robert Schnoll reports financial support was provided by the National Cancer Institute and the National Institute on Drug Abuse.

Data Availability

The datasets generated and/or analyzed during the current study are not publicly available due to the risk of identifying participants, but extracts are available from the corresponding author upon reasonable request.

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Supplementary materials

Supplementary material associated with this article can be found, in the online version, at doi:10.1016/j.dadr.2023.100208.

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