

Original Investigation

Organizational Characteristics and Readiness for Tobacco-Free Workplace Program Implementation Moderates Changes in Clinician's Delivery of Smoking Interventions within Behavioral Health Treatment Clinics

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Abstract

Background: Smoking is elevated amongst individuals with behavioral health disorders, but not commonly addressed. *Taking Texas Tobacco Free* is an evidence-based, tobacco-free workplace program that addresses this, in-part, by providing clinician training to treat tobacco use in local mental health authorities (LMHAs). This study examined organizational moderators of change in intervention delivery from pre- to post-program implementation.

Methods: LMHA leaders completed the Organizational Readiness for Implementing Change (ORIC) and provided organization demographics pre-implementation. Clinicians ($N = 1237$) were anonymously surveyed about their consistent use of the 5As (Asking about smoking; Advising clientele to quit; Assessing willingness to quit; Assisting them to quit; Arranging follow-up) pre- and post-program implementation. Adjusted generalized linear mixed models were used for analyses (responses nested within LMHAs), with interaction terms used to assess moderation effects.

Results: Clinician delivery of 5As increased pre- to post-implementation ($p < .001$). LMHAs with fewer employees ($ref = \leq 300$) demonstrated greater increases in Asking, Assessing, and Assisting over time. LMHAs with fewer patients ($ref = \leq 10000$) evinced greater changes in Asking over time. Less initial ORIC Change Efficacy, Change Commitment, and Task Knowledge were each associated with greater pre- to post-implementation changes in Asking. Less initial Task Knowledge was associated with greater increases in Advising, Assessing, and Assisting. Finally, less initial Resource Availability was associated with greater increases in Assisting (all moderation term $ps < .025$).

Conclusion: The smallest and least ready LMHAs showed the largest gains in tobacco cessation intervention delivery; thus, low initial readiness was not a barrier for program implementation, particularly when efficacy-building training and resources are provided.

Implications: This study examined organizational moderators of increases in tobacco cessation treatment delivery over time following the implementation of a comprehensive tobacco-free workplace program within 20 of 39 LMHAs across Texas (hundreds of clinics; servicing >50% of the state) from 2013 to 2018. Overall, LMHAs with fewer employees and patients, and that demonstrated the least initial readiness for change, evinced greater gains in intervention delivery. Findings add to dissemination and implementation science by supporting that low initial readiness was not a barrier for this aspect of tobacco-free workplace program implementation when resources and clinician training sessions were provided.

Introduction

Cigarette smoking remains the leading preventable cause of disability and death globally.¹ Despite the overall decreases in smoking seen in the last few decades within the United States, many subpopulations, especially individuals with behavioral health conditions (BHCs), exhibit significantly higher smoking rates than are seen in the general population.¹⁻³ For example, in 2017, 14% of the general adult population in the United States were current cigarette smokers, whereas the smoking rate for adults with BHCs was 23%.⁴ This rate spikes to 61% among adults with three or more conditions.² In fact, people with BHCs account for 200 000 tobacco-related deaths each year, which represents about half of the total deaths associated with tobacco use in the United States.² These striking statistics have informed an effort to recognize smoking among those with BHCs as a tobacco-related health disparities group, and established an urgent need to address cigarette smoking among individuals with BHCs.^{3,5,6}

Despite the efforts of public-private partnerships like that of the Substance Abuse and Mental Health Services Administration and the Smoking Cessation Leadership Center,⁷ resources to assist smokers with BHCs to quit smoking have been limited,⁸ with less than half of behavioral health facilities reporting screening for tobacco use.⁹ The reasons why behavioral health facilities lag in the implementation of evidence-based practices for tobacco control is not completely clear. One explanation is that some behavioral health professionals have accepted tobacco use as part of the BHC environment³ and misperceive nicotine dependence treatment as having harmful effects on behavioral health or comorbid substance dependence recovery.¹⁰ Extensive data, however, indicate that smoking cessation positively impacts mental health and substance use recovery outcomes.^{9,11} Other possible explanations include the lack of training to address nicotine dependence, competing clinical priorities, and the prevalence of tobacco use among clinicians in behavioral health treatment clinics.^{8,12,13} Ultimately, these misbeliefs and challenges to treatment implementation contribute to substandard care for nicotine dependence in BHC patients in behavioral health facilities. Moreover, they stand in stark contrast to research showing that behavioral health patients and the clinicians who treat them report a pressing need for proper tobacco cessation services and training.¹⁴ To address this concern, programs that educate behavioral health clinicians on nicotine addiction and treatment and help to establish a culture for tobacco use screening and brief intervention as a standard of care practice within behavioral health treatment clinics are needed.

Taking Texas Tobacco-Free (TTTF) is an evidence-based, comprehensive tobacco control program designed to decrease tobacco-related risks among patients and employees (clinicians and non-clinical/general staff) at behavioral health treatment clinics across Texas. TTTF contains elements related to (1) tobacco-free

workplace policy implementation and enforcement; (2) employee education about tobacco use hazards (for non-patient-facing local mental health authority [LMHA] staff); (3) specialized training for clinicians to regularly screen for and address tobacco dependence via intervention (accompanied by statistics and a rationale detailing why this is important to execute); (4) provision of resources to clinics to promote cessation (eg, nicotine replacement therapies [NRT], permanent workplace signage, passive dissemination materials); and (5) community outreach to address and prevent tobacco use to facilitate a broader context for tobacco-free living.¹⁵ Each of these components are evidence-based, and together, they are recommended practice for changing the culture around how tobacco use is treated in behavioral health and substance use treatment settings.⁹ TTTF has been implemented in hundreds of behavioral health treatment clinics across the state of Texas and has significantly increased their capacity to deliver evidence-based tobacco cessation care to their patients.^{12,13,15,16} It is important to note that the implementation of programs with elements similar to those in TTTF have also shown promise in improving clinician efforts to deliver tobacco cessation treatment.^{17,18}

With the effectiveness of evidence-based, comprehensive tobacco control programs established,^{9,11,19} a critical “next step” in this line of research is to identify how organization-level structural factors, including organizational readiness to implement change and organizational demographics like clinic size (number of staff, annual patient contacts), influence the adoption and penetration of these programs given that they are intended to shift organizational culture.^{15,16} Emerging research within this area has also found, for example, that knowledge of the requirements for change, perceived availability of resources, and the number of annual clinic patient contacts moderated gains in staff knowledge following training, whereas perceived value in the change and number of patient contacts moderated knowledge gain among clinicians.¹² Although this study added to the literature on knowledge gained through education, an outcome potentially more tied to the patient experience is changes in clinician behaviors to address tobacco use with patients. Such research is critical to understanding organizational factors that may influence clinician behaviors and support or hinder program delivery to achieve maximal penetration and impact.

The aim of this study was to examine organizational demographics and readiness to change as moderators of clinician assessment of smoking and tobacco cessation intervention delivery from pre- to post- TTTF program implementation. Specifically, the current study extends the literature by understanding the moderators influencing clinician’s delivery of the 5As (Asking about smoking; Advising patients to quit; Assessing willingness to quit; Assisting them to quit; Arranging follow-up). Use of the 5As are consistent with best practices in the field and is associated with patient quit attempts.²⁰⁻²²

It was hypothesized that clinician delivery of tobacco screening/intervention would increase from pre- to post-implementation, and that changes would be moderated by organizational-level factors. Given the relative lack of data in this area, directional hypotheses were not asserted.

Methods

Organizational Participant Characteristics and Consent

LMHAs are state-supported, geographically-organized, nonprofit, community mental health organizations that provide behavioral health services to Texans within a varying number of clinics embedded within each service area. Texas has 39 LMHAs overall and all (aside from the TTTF community partner, Integral Care of Austin/Travis County) were invited to participate. Recruitment was accomplished via an email invitation addressed to each LMHA Chief Executive Officer. LMHAs were selected by the TTTF team to participate based on their responses to an initial leadership survey assessing organizational characteristics and readiness for organizational change (Organizational Readiness for Implementing Change [ORIC]),²³ whereby we prioritized LMHAs in order of overall readiness to our enrollment capacity. Written consent for participation was obtained from participating LMHA leadership prior to study participation via a Memorandum of Understanding. Participating LMHAs also completed an investigator-generated survey about their organizational and patient demographic characteristics.

Program Implementation

The TTTF program was implemented within each LMHA over the course of a 6-month implementation period (for more information, see refs.^{15,16,24}). LMHAs were recruited, enrolled, and participated in TTTF across two funded grant awards: the first award facilitated program implementation in 19 LMHAs (2013 to 2016) and the second award entailed implementation in three LMHAs (2016 to 2018). Key differences between the two implementations were: (1) LMHAs from the first award were provided a starter kit of nicotine replacement therapy and monies for signage regarding the tobacco-free workplace policies; and (2) LMHAs from the second award participated in leadership, clinician, and patient focus groups pre- and post-implementation about the program implementation. These differences were based on the purposes of the associated requests for applications and differing financial support between the two grants. However, in all cases, data reported herein were collected at the same time point relative to the implementation of the TTTF program in the LMHA. Thus, data were collected throughout 2013–2018 and no LMHA had an advantage of greater experience implementing the TTTF program relative to another LMHA at the time of data collection.

Participating Clinicians Survey and Consent

Prior to and following the 6-month implementation period, an investigator-generated survey was administered within each LMHA to professionals who were engaged in the provision of clinical services with behavioral health patients (ie, clinicians). The survey queried clinicians' current screening, treatment, and referral behaviors that address patients' tobacco dependence. Survey links were distributed by the LMHA leadership, and each administration included a consent cover letter that explained: (1) the purpose of the study, (2) that participation was voluntary, and that (3) by responding to the

survey, clinicians were giving consent to participating in the research study. Data from clinicians were collected anonymously; thus, pre- and post-administration data could only be linked to the LMHA and not at the level of each participating clinician. All clinicians in each LMHA were sent the survey link and requested to participate, with follow-up requests for survey completion, over a period of 3–4 weeks both pre- and post-program implementation. The program implementation and data collection as described were approved by the Institutional Review Boards of the University of Houston and Rice University and the Quality Improvement Advisory Committee of the University of Texas MD Anderson Cancer Center.

Measures of Relevance

Organizational Demographics

Organization leaders provided information on the number of annual patient contacts made within the organization (0 = ≤20 000; 1 = >20 000), number of unique patients served annually (0 = ≤10 000; 1 = >10 000), and the number of full-time employees during the year before TTTF implementation (0 = ≤300; 1 = >300). These data were assessed within pre-established ranges and later collapsed based on within-sample distribution, commensurate with cut-points used in prior work.¹² Data were collected via Survey Monkey prior to TTTF implementation.

Organizational Readiness for Implementing Change

The ORIC assesses organizational readiness for change²³ and was administered to LMHA leadership prior to TTTF implementation. Prior work suggests that greater organizational readiness for change is related to more change, more effort toward change, more persistence toward change, and enhanced cooperation toward change.²⁵ The ORIC has 5 subscale scores formed from 24 items, each of which are scored from 1 (disagree) to 5 (agree). Higher scores indicate greater beliefs related to organizational change for the specific subscale domain. Subscale domains, a sample item, and internal consistency are as follows: (1) organizational efficacy toward change (Change Efficacy), "People who work here feel confident that the organization can support staff as they adjust to this change," $\alpha = 0.92$; (2) commitment to change (Change Commitment), "People who work here will do whatever it takes to implement this change," $\alpha = 0.94$; (3) knowledge of the requirements for change (Task Knowledge), "We know what resources we need to implement this change," $\alpha = 0.89$; (4) perceived availability of resources (Resource Availability), "We have the expertise we need to implement this change," $\alpha = 0.82$; and (5) perceived valence in the change (Change Valence), "We believe that implementing this change is a good idea," $\alpha = 0.87$.

Clinician Screening and Treatment Behaviors

Clinician screening and treatment behaviors of interest were the 5As: Ask ("In your clinical work here last month, did you ask patients about their smoking status?"); Advise ("With regard to patients that you saw last month who smoked, did you advise them to quit smoking?"); Assess ("With regard to patients that you saw last month who smoked, did you assess their willingness to make a quit attempt?"); Assist ("With regard to patients that you saw last month who smoked, did you assist them to quit by providing treatment or making a referral for treatment?"); and Arrange ("With regard to patients that you saw last month who smoked, did you arrange to follow up with them to assess their progress regarding smoking cessation?").^{20–22} Response options were coded as 0 = no or 1 = yes.

The 5As were assessed via Survey Monkey pre- and post-program implementation.

Statistical Analysis

Data for 20 of 22 participating LMHAs were available for analysis, as two LMHAs failed to complete the post-implementation surveys. Differing sample sizes on the pre- and post-implementation surveys within LMHA are attributable to a combination of selective nonparticipation and clinician turnover. The distribution of 5As pre- and post-implementation were examined using chi-square tests, as pre- and post- data were un-matched at the participant level. Moderation effects were examined for organizational demographics (ie, number of annual patient contacts, number of unique patients, and number of full-time employees) and readiness for change via the ORIC subscales on change in the delivery of the 5As over time. The ORIC subscales were mean-centered prior to moderation analyses. Tests of moderation were evaluated in covariate-adjusted models. In adjusted moderation models of each organizational demographic variable, covariates included the overall ORIC score and the other organizational demographics. In adjusted moderation models of the ORIC subscales, covariates included each of the three organizational demographic variables. To account for the nested data structure of clinicians within LMHA and the binary 5A outcomes, generalized linear mixed models (GLMM, binomial distribution, logit link, variance components for the variance matrix) were performed to assess all moderation effects. All analyses were conducted using SAS 9.4.²⁶ Alpha was set at 0.05.

Results

Organization Demographics

Nine (45%) LMHAs reported ≤ 20000 annual patient contacts, 14 (70%) reported serving ≤ 10000 unique patients annually, and 11 (50%) reported ≤ 300 full-time employees. The means (\pm SD) of the ORIC were as follows: Change Efficacy (4.31 ± 0.77), Change Commitment (4.34 ± 0.79), Task Knowledge (3.22 ± 1.17), Resource Availability (3.49 ± 1.04), Change Valence (4.79 ± 0.44), and overall ORIC (4.14 ± 0.67).

Pre- to Post-Implementation Change in Clinician Screening and Intervention Behaviors

There was a significant increase in the provision of each of the 5As from pre- to post-program implementation: Ask: 44.54% to 57.58%; Advise: 55.18% to 72.42%; Assess: 53.66% to 73.23%; Assist: 29.32% to 60.96%; and Arrange: 24.92% to 44.88%), with all $ps < .001$. See Table 1 for detailed information.

Organizational Demographics as Moderators of Clinician Intervention Changes

In adjusted analyses, changes in Asking about smoking over time were significantly moderated by number of unique patients served annually (ref = ≤ 10000 ; $\gamma = -0.645$, standard error [SE] = 0.201, $p = .001$), and the number of full-time employees (ref = ≤ 300 ; $\gamma = -0.438$, SE = 0.176, $p = .013$). The number of full-time employees (ref: ≤ 300) also significantly moderated Assessing willingness to quit ($\gamma = -0.618$, SE = 0.219, $p = .005$), and Assisting patients to quit smoking ($\gamma = -0.672$, SE = 0.218, $p = .002$) over the implementation period. Examination of these significant interactions suggested that LMHAs with fewer unique patients served annually and fewer

full-time employees, respectively, exhibited greater odds of providing screening/intervention from pre- to post-implementation relative to LMHAs with higher numbers on these organizational demographics (Table 2). The number of annual patient contacts (ref = ≤ 20000) was not a moderator for change in the delivery of any of the 5As across time.

Organizational Readiness to Change Moderators of Clinician Intervention Changes

In analyses adjusted for organizational demographics, the moderation effect of Change Efficacy ($\gamma = -0.315$, SE = 0.123, $p = .011$), Change Commitment ($\gamma = -0.331$, SE = 0.117, $p = .005$), and Task Knowledge ($\gamma = -0.228$, SE = 0.075, $p = .002$) were significant in changes in Asking about smoking over time. In addition, Task Knowledge was also a significant moderator in Advising patients to quit ($\gamma = -0.207$, SE = 0.092, $p = .024$), Assessing willingness to quit ($\gamma = -0.261$, SE = 0.093, $p = .005$), and Assisting quit attempts ($\gamma = -0.353$, SE = 0.091, $p < .001$) over time. Resource Availability also moderated Assisting patients to quit over time ($\gamma = -0.308$, SE = 0.107, $p = .004$). Each significant moderation showed that LMHAs with less initial readiness were more likely to endorse "Yes" post-implementation on these screening/intervention variables relative to LMHAs with greater pre-implementation readiness (Table 3). Change Valence was a non-significant moderator for each of the 5As.

Discussion

The present study's aim was to examine organizational demographics and readiness to change as moderators of clinician screening and intervention delivery of the 5As for cigarette smoking cessation from pre- to post-TTTF program implementation. Through the specialized training for clinicians to regularly screen for and address tobacco dependence provided as part of the TTTF program, clinician delivery of the 5As significantly increased from pre- to post-implementation overall. Moderators of changes included both organizational demographics (the number of patients served and the number of full-time time employees) and organizational readiness to change (Change Efficacy, Change Commitment, Task Knowledge, and Resource Availability). Overall, these findings provide evidence that clinician behaviors to address tobacco use can change following training provision and that organizational characteristics impact those over-time changes in intervention practices. Thus, results provide insight into factors that can enhance or inhibit the translation of education/training into practice regarding smoking cessation intervention provision to behavioral health patients. Moreover, results suggest that low initial readiness was not a barrier for LMHAs to successfully adopt this aspect of the program.

The significant increase from pre- to post-TTTF implementation in using the 5As demonstrates that the specialized training for clinicians to regularly screen for and address tobacco dependence can significantly impact their delivery of the 5As to patients. Specifically, clinician rates of asking about smoking increased 13.04% (to 57.58% of clinicians engaging in this behavior). Among patients who smoked, advising patients to quit increased 17.24% (to 72.42% of clinicians engaging in this behavior), assessing willingness to quit increased 19.57% (to 73.23%), assisting with quitting rose 31.64% (to 60.96%), and arranging follow-up rose 19.96% (to 44.88%). Given that the 5As are synonymous with best practices in smoking cessation treatment, these improvements are promising.²⁰⁻²² Although this study did not assess the mechanisms by which training affected

Table 1. Change in Clinician Screening and Treatment Behaviors Pre- to Post-Program Implementation by Local Mental Health Authority (LMHA)

Clinician behaviors	Pre-test N	Pre-yes (%)	Post-test N	Post-yes (%)	p	Clinician behaviors	Pre-test N	Pre-yes (%)	Post-test N	Post-yes (%)	p
Ask	1237	44.54	1141	57.58	<.0001	Assess	915	53.66	777	73.23	<.0001
LMHA 1	54	44.44	17	58.52	.0007	LMHA 11	93	61.29	57	70.18	.2692
LMHA 2	29	41.38	45	73.33	.006	LMHA 12	58	60.34	37	83.78	.0156
LMHA 3	119	60.5	46	82.61	.0069	LMHA 13	21	38.1	9	77.78	.1086
LMHA 4	43	51.16	49	30.61	.0449	LMHA 14	35	60	43	76.74	.111
LMHA 5	59	32.2	38	71.05	.0002	LMHA 15	56	55.36	41	70.73	.1236
LMHA 6	71	47.89	55	41.82	.4972	LMHA 16	23	65.22	40	80	.1944
LMHA 7	84	44.05	62	50	.476	LMHA 17	11	63.64	52	63.46	1
LMHA 8	132	48.48	105	74.29	<.0001	LMHA 18	27	74.07	47	55.32	.1093
LMHA 9	34	50	63	61.9	.2574	LMHA 19	40	35	33	72.73	.0013
LMHA 10	28	46.43	44	65.91	.1022	LMHA 20	68	36.76	69	63.77	.0016
LMHA 11	110	52.73	69	72.46	.0086	Assist	914	29.32	771	60.96	<.0001
LMHA 12	68	47.06	56	53.57	.4704	LMHA 1	42	33.33	13	46.15	.4011
LMHA 13	29	41.38	13	76.92	.033	LMHA 2	25	12	36	58.33	.0003
LMHA 14	42	45.24	60	58.33	.1922	LMHA 3	92	48.91	36	75	.0075
LMHA 15	73	34.25	46	63.04	.0021	LMHA 4	21	14.29	18	55.56	.0064
LMHA 16	28	64.29	54	72.22	.4591	LMHA 5	46	19.57	29	62.07	.0002
LMHA 17	13	69.23	66	54.55	.3283	LMHA 6	53	43.4	34	47.06	.7375
LMHA 18	31	54.84	68	45.59	.393	LMHA 7	59	23.73	35	65.71	<.0001
LMHA 19	97	20.62	80	30	.1506	LMHA 8	99	20.2	72	73.61	<.0001
LMHA 20	93	29.03	105	47.62	.0074	LMHA 9	27	40.74	41	56.1	.2153
Advise	917	55.18	776	72.42	<.0001	LMHA 10	21	33.33	34	55.88	.1037
LMHA 1	42	54.76	13	76.92	.1541	LMHA 11	93	23.66	56	58.93	<.0001
LMHA 2	25	56	36	72.22	.1897	LMHA 12	58	32.76	37	78.38	<.0001
LMHA 3	92	68.48	36	83.33	.09	LMHA 13	21	14.29	9	55.56	.0192
LMHA 4	21	52.38	18	66.67	.3659	LMHA 14	35	28.57	42	59.52	.0066
LMHA 5	46	54.35	29	58.62	.7166	LMHA 15	55	34.55	41	63.41	.005
LMHA 6	54	61.11	35	74.29	.199	LMHA 16	23	34.78	40	67.5	.0119
LMHA 7	59	61.02	35	80	.0563	LMHA 17	11	54.55	51	58.52	.7943
LMHA 8	99	49.49	71	83.1	<.0001	LMHA 18	27	40.74	47	44.68	.7419
LMHA 9	27	59.26	41	78.05	.0961	LMHA 19	39	20.51	32	71.88	<.0001
LMHA 10	21	61.9	34	70.59	.5649	LMHA 20	67	19.4	68	51.47	<.0001
LMHA 11	92	61.96	57	70.18	.3063	Arrange	911	24.92	771	44.88	<.0001
LMHA 12	58	51.72	37	75.68	.0196	LMHA 1	42	28.57	13	38.46	.5111
LMHA 13	21	42.86	9	88.89	.0197	LMHA 2	25	4	36	36.11	.0034
LMHA 14	35	60	43	81.4	.0368	LMHA 3	91	37.36	36	58.33	.0316
LMHA 15	56	53.57	42	61.9	.4094	LMHA 4	20	15	18	38.89	.095
LMHA 16	23	56.52	40	85	.0124	LMHA 5	45	22.22	29	37.93	.1434
LMHA 17	11	72.73	51	62.75	.5303	LMHA 6	54	29.63	34	35.29	.5786
LMHA 18	27	70.37	47	63.83	.5669	LMHA 7	59	18.64	35	48.57	.0022
LMHA 19	40	35	33	78.79	.0002	LMHA 8	99	18.18	71	54.93	<.0001
LMHA 20	68	32.35	69	56.52	.0044	LMHA 9	27	26.93	41	48.78	.1164

Table 1. Continued

Clinician behaviors	Pre-test N	Pre-yes (%)	Post-test N	Post-yes (%)	p	Clinician behaviors	Pre-test N	Pre-yes (%)	Post-test N	Post-yes (%)	p
Assess	915	53.66	777	73.23	<.0001	LMHA 10	21	9.52	34	35.29	.033
LMHA 1	42	45.24	13	69.23	.1305	LMHA 11	93	25.81	57	36.84	.1523
LMHA 2	25	52	36	83.33	.0083	LMHA 12	58	29.31	36	58.33	.0053
LMHA 3	92	73.91	36	86.11	.1383	LMHA 13	20	30	9	44.44	.6749
LMHA 4	21	28.57	18	72.22	.0066	LMHA 14	35	28.57	43	53.49	.0267
LMHA 5	46	47.83	29	72.41	.036	LMHA 15	55	29.09	41	39.02	.3071
LMHA 6	52	48.08	35	68.57	.0588	LMHA 16	23	30.43	40	52.5	.0897
LMHA 7	58	55.17	35	80	.0153	LMHA 17	11	27.27	52	36.54	.5581
LMHA 8	99	45.45	72	86.11	<.0001	LMHA 18	27	37.04	47	38.3	.9143
LMHA 9	27	66.67	41	75.61	.4213	LMHA 19	40	20	32	53.13	.0034
LMHA 10	21	47.62	34	61.76	.3041	LMHA 20	66	16.67	67	43.28	.0008

clinician behaviors, prior studies have suggested that training may increase knowledge,^{7,12,17} improve clinician confidence in delivering screenings and interventions,^{17,18} and affect positive attitudes about intervention.^{17,27}

Although clinician delivery of the 5As increased over time, it is important to note that there is still room for improvement in implementation, as the goal of the TTTF program was that clinicians ask all patients about their smoking status at every clinical contact and to attempt to engage as many smoking patients as willing in a smoking quit attempt. Regarding the ~42% of clinicians who did not endorse consistently ask patients about smoking status, it is possible that assessment yielding a “nonsmoker” status at intake deterred further inquiry at subsequent contacts. Moreover, anecdotally, some clinicians reported working with populations that were unlikely to be smokers (eg, young children, or pregnant women who did not smoke immediately prior to pregnancy), and thus did not ask about their smoking status. It is also notable that assisting and arranging occurred among at a lower percentage than did advising and assessing at post-implementation. Anecdotal reasons reported by clinicians were that the “5Rs” (Relevance, Risks, Rewards, Roadblocks, and Repetition)²⁸ were implemented for those indicating no current interest in quitting; thus, assisting and arranging was not applicable. Other clinicians anecdotally indicated that their positions were linked to a specific role (eg, personality disorder treatment) and that referral to other clinicians or resources represented their terminal intervention on smoking. Unfortunately, other statewide programs training behavioral health clinicians on smoking cessation interventions have likewise faced implementation rates less than 100% (eg, 18.1% implementing a group intervention at 2 months post-training), which may be attributable to staff turnover, clinician resistance, or coordination challenges.¹⁷ Overall, more information is needed to better understand barriers to consistent administration of 5As, which may provide insight into methods to facilitate additional change (eg, more hands-on training efforts).

Results also indicated that a lower number of unique patient contacts per year and employees, respectively, yielded greater likelihood of exhibiting significant increases in compliance with best practices in asking about tobacco use post-TTTF implementation. A possible explanation for this trend is that lower numbers of unique patients could have facilitated greater contact and clinician familiarity. This may have reduced competing priorities during any particular patient contact (because the patient was likely to come back) and facilitated a stronger working alliance, reducing barriers to consistently asking about smoking. However, these results may also reflect other factors, including that smaller organizations—namely, those with fewer employees and a more consistently visiting/enduring patient base—may have been better able to adopt the TTTF program and its recommendations for practice possibly through greater leadership support or lower staff resistance.²⁹

Results from the current study also indicated that a lower number of full-time employees was associated with better compliance with assessing patients for interest in quitting and assisting with quit attempts. Possible explanations for this include that there may be larger caseloads in centers with more employees overall, decreasing the time these clinicians had to attend to TTTF training and/or execute changes in practice. Another explanation could be that in a center with more employees, the penetration of the education/training may not have been as strong as in smaller settings. This might be due to a reduced ability to detect training session non-attendees in a bustling treatment facility and thus a greater likelihood of clinician “no

Table 2. Adjusted Model of Organizational Demographics as Moderators of Clinician Screening and Treatment Behaviors Pre- to Post-Program Implementation

Clinician behaviors	Number of annual patient contacts (ref: ≤20000)				Number of unique patients (ref: ≤10000)				Number of full-time employees (ref: ≤300)			
	Effect	Estimate	SE	p	Effect	Estimate	SE	p	Effect	Estimate	SE	p
Ask	Time (ref: pre-implementation)	0.713	0.128	.000	Time (ref: pre-implementation)	0.747	0.102	.000	Time (ref: pre-implementation)	0.783	0.120	.000
	Number of annual patient contacts	-0.009	0.214	.967	Number of unique patients	0.176	0.254	.488	Number of full-time employees	0.323	0.229	.159
	Time*number of annual patient contacts	-0.249	0.176	.156	Time*number of unique patients	-0.645	0.201	.001	Time*number of full-time employees	-0.438	0.176	.013
	ORIC overall	-0.099	0.162	.540	ORIC overall	-0.11	0.162	.497	ORIC overall	-0.107	0.162	.509
Advise	Number of unique patients	-0.133	0.236	.575	Number of annual patient contacts	-0.146	0.196	.456	Number of annual patient contacts	-0.155	0.196	.429
	Number of full-time employees	0.085	0.211	.688	Number of full-time employees	0.083	0.211	.695	Number of unique patients	-0.15	0.235	.524
	Time (ref: pre-implementation)	0.796	0.154	.000	Time (ref: pre-implementation)	0.773	0.121	.000	Time (ref: pre-implementation)	0.959	0.150	.000
	Number of annual patient contacts	0.041	0.176	.817	Number of unique patients	0.106	0.217	.625	Number of full-time employees	0.086	0.195	.660
Assess	Time*number of annual patient contacts	0.012	0.215	.954	Time*number of unique patients	0.141	0.268	.599	Time*number of full-time employees	-0.33	0.216	.126
	ORIC overall	0.024	0.127	.848	ORIC overall	0.026	0.126	.837	ORIC overall	-0.019	0.128	.885
	Number of unique patients	0.158	0.195	.417	Number of annual patient contacts	0.049	0.152	.745	Number of annual patient contacts	0.034	0.153	.826
	Number of full-time employees	-0.061	0.169	.719	Number of full-time employees	-0.059	0.169	.725	Number of unique patients	0.14	0.195	.473
Assist	Time (ref: pre-implementation)	0.915	0.155	.000	Time (ref: pre-implementation)	0.88	0.124	.000	Time (ref: pre-implementation)	1.234	0.156	.000
	Number of annual patient contacts	0.063	0.184	.730	Number of unique patients	-0.13	0.224	.562	Number of full-time employees	0.279	0.206	.176
	Time*number of annual patient contacts	0.026	0.217	.904	Time*number of unique patients	0.216	0.265	.415	Time*number of full-time employees	-0.618	0.219	.005
	ORIC overall	-0.205	0.134	.126	ORIC overall	-0.201	0.133	.130	ORIC overall	-0.222	0.138	.107
Arrange	Number of unique patients	-0.048	0.202	.813	Number of annual patient contacts	0.08	0.159	.616	Number of annual patient contacts	0.052	0.165	.754
	Number of full-time employees	0.004	0.177	.982	Number of full-time employees	0.006	0.176	.971	Number of unique patients	-0.078	0.206	.704
	Time (ref: pre-implementation)	1.229	0.152	.000	Time (ref: pre-implementation)	1.495	0.124	.000	Time (ref: pre-implementation)	1.714	0.153	.000
	Number of annual patient contacts	-0.146	0.174	.400	Number of unique patients	0.221	0.219	.315	Number of full-time employees	0.332	0.207	.108
Arrange	Time*number of annual patient contacts	0.315	0.213	.140	Time*number of unique patients	-0.453	0.255	.075	Time*number of full-time employees	-0.672	0.218	.002
	ORIC overall	-0.181	0.115	.116	ORIC overall	-0.19	0.120	.113	ORIC overall	-0.203	0.126	.107
	Number of unique patients	0.019	0.18	.917	Number of annual patient contacts	0.000	0.142	1.000	Number of annual patient contacts	-0.014	0.149	.926
	Number of full-time employees	-0.037	0.156	.814	Number of full-time employees	-0.047	0.160	.771	Number of unique patients	-0.038	0.193	.844
Arrange	Time (ref: pre-implementation)	0.933	0.155	.000	Time (ref: pre-implementation)	0.982	0.124	.000	Time (ref: pre-implementation)	1.107	0.150	.000
	Number of annual patient contacts	-0.047	0.166	.780	Number of unique patients	0.172	0.208	.408	Number of full-time employees	0.168	0.191	.379
	Time*number of annual patient contacts	0.024	0.214	.909	Time*number of unique patients	-0.158	0.259	.542	Time*number of full-time employees	-0.343	0.218	.116
	ORIC overall	-0.178	0.103	.084	ORIC overall	-0.181	0.104	.082	ORIC overall	-0.188	0.107	.079
Arrange	Number of unique patients	0.093	0.161	.565	Number of annual patient contacts	-0.038	0.123	.758	Number of annual patient contacts	-0.046	0.126	.716
	Number of full-time employees	-0.031	0.138	.824	Number of full-time employees	-0.033	0.139	.814	Number of unique patients	0.074	0.166	.655

ORIC = Organizational Readiness for Implementing Change.

Table 3. Adjusted Model of Organizational Readiness to Change Subscales as Moderators of Clinician Screening and Treatment Behaviors Pre- to Post-Program Implementation

Clinician behaviors	Effect	ORIC change efficacy			ORIC change commitment			ORIC task knowledge			ORIC resource availability			ORIC change valence		
		Estimate	SE	p	Estimate	SE	p	Estimate	SE	p	Estimate	SE	p	Estimate	SE	p
Ask	Time ^a	0.572	0.088	<.001	0.561	0.088	<.001	0.551	0.089	<.001	0.555	0.089	<.001	0.585	0.088	<.001
	ORIC subscale	0.071	0.156	.647	0.147	0.150	.329	-0.007	0.094	.94	0.049	0.113	.665	0.076	0.251	.763
	ORIC subscale*time	-0.315	0.123	.011	-0.331	0.117	.005	-0.228	0.075	.002	-0.168	0.088	.058	-0.218	0.210	.301
Advise	Number of unique patients	-0.153	0.240	.525	-0.179	0.246	.466	-0.166	0.221	.452	-0.172	0.231	.456	-0.163	0.230	.480
	Number of annual patient contracts	-0.137	0.199	.492	-0.140	0.200	.484	-0.148	0.189	.433	-0.146	0.203	.472	-0.137	0.195	.481
	Number of full-time employees	0.092	0.215	.670	0.060	0.209	.774	0.131	0.204	.522	0.084	0.211	.690	0.065	0.206	.753
Assess	Time ^a	0.816	0.109	<.001	0.812	0.109	<.001	0.779	0.110	<.001	0.788	0.110	<.001	0.802	0.108	<.001
	ORIC subscale	-0.085	0.124	.494	0.020	0.118	.865	0.066	0.082	.416	0.070	0.094	.455	0.005	0.203	.982
	ORIC subscale*time	0.133	0.145	.357	0.143	0.138	.300	-0.207	0.092	.024	-0.062	0.107	.564	0.218	0.247	.378
Assist	Number of unique patients	0.194	0.193	.315	0.129	0.195	.507	0.148	0.191	.439	0.146	0.190	.443	0.152	0.190	.425
	Number of annual patient contracts	0.058	0.152	.703	0.035	0.150	.813	0.038	0.154	.806	0.066	0.156	.674	0.053	0.153	.728
	Number of full-time employees	-0.041	0.170	.810	-0.063	0.161	.695	-0.043	0.171	.801	-0.070	0.167	.677	-0.059	0.166	.723
Arrange	Time ^a	0.929	0.109	<.001	0.921	0.110	<.001	0.906	0.111	<.001	0.907	0.110	<.001	0.915	0.109	<.001
	ORIC subscale	-0.211	0.129	.101	-0.109	0.130	.403	-0.009	0.084	.917	-0.008	0.101	.939	-0.045	0.221	.840
	ORIC subscale*time	-0.006	0.152	.967	-0.006	0.143	.966	-0.261	0.093	.005	-0.158	0.109	.148	-0.046	0.260	.860
Assist	Number of unique patients	-0.032	0.198	.871	-0.064	0.214	.765	-0.129	0.197	.512	-0.120	0.206	.561	-0.124	0.207	.548
	Number of annual patient contracts	0.106	0.159	.503	0.091	0.168	.588	0.060	0.161	.708	0.042	0.173	.806	0.070	0.169	.679
	Number of full-time employees	0.028	0.176	.872	-0.042	0.179	.816	0.007	0.178	.970	-0.026	0.183	.886	-0.046	0.183	.803
Arrange	Time ^a	1.393	0.108	<.001	1.368	0.109	<.001	1.329	0.109	<.001	1.341	0.109	<.001	1.381	0.108	<.001
	ORIC subscale	-0.208	0.116	.072	-0.005	0.125	.966	0.114	0.083	.173	0.090	0.097	.353	0.102	0.211	.630
	ORIC subscale*time	-0.054	0.145	.709	-0.159	0.142	.261	-0.353	0.091	<.001	-0.308	0.107	.004	-0.330	0.258	.200
Assist	Number of unique patients	0.042	0.172	.805	-0.034	0.197	.864	-0.103	0.189	.586	-0.077	0.192	.688	-0.066	0.184	.721
	Number of annual patient contracts	0.039	0.132	.766	0.022	0.150	.882	0.001	0.152	.997	-0.009	0.155	.953	0.005	0.147	.974
	Number of full-time employees	-0.011	0.152	.943	-0.081	0.163	.622	-0.051	0.170	.763	-0.062	0.168	.713	-0.090	0.162	.577
Assist	Time ^a	0.958	0.110	<.001	0.938	0.110	<.001	0.911	0.110	<.001	0.934	0.111	<.001	0.927	0.109	<.001
	ORIC subscale	-0.235	0.108	.030	-0.093	0.115	.418	-0.014	0.077	.857	-0.061	0.091	.504	-0.012	0.198	.952
	ORIC subscale*time	0.120	0.140	.394	0.024	0.139	.863	-0.150	0.090	.098	-0.058	0.108	.590	-0.006	0.252	.982
Assist	Number of unique patients	0.100	0.154	.513	0.068	0.172	.691	0.035	0.160	.826	0.055	0.163	.734	0.018	0.166	.915
	Number of annual patient contracts	-0.006	0.116	.958	-0.022	0.129	.867	-0.033	0.125	.795	-0.069	0.129	.590	-0.035	0.131	.786
	Number of full-time employees	-0.014	0.135	.917	-0.072	0.141	.611	-0.027	0.142	.848	-0.050	0.141	.723	-0.076	0.144	.598

ORIC = Organizational Readiness for Implementing Change.

^aReference: pre-implementation.

shows” to the education/training session. Prior research has also indicated that coworkers influence each other in their attitudes toward tobacco cessation which ultimately results in the implementation of the 5As²⁹; therefore, it follows that there would be an easier diffusion of tobacco cessation knowledge in a center with lower numbers of full-time employees where contact between fellow clinicians would likely be higher than in a large center. In addition, bureaucratic holdups could have also limited clinics with larger staff numbers from a swift implementation of best practices. Potential reasons for results are suppositional, and more work is needed to understand the factors underlying these interactions.

Five facets of organizational readiness were examined for their effect on changes over time in clinician delivery of the 5As: change efficacy, change commitment, task knowledge, resource availability, and change valance. Of these, the first three played moderating roles in compliance with asking about smoking over time in analyses. Task knowledge was also a moderator of advising patients to quit, assessing willingness to quit, and assisting with a quit attempt. Likewise, resource availability was a moderator of assisting with a quit attempt. However, the patterns evinced in the results seem counterintuitive, as lower readiness for change in each of these areas resulted in a greater likelihood of compliance with recommended clinician behavioral intervention delivery over time. This pattern of results is not dissimilar to those cited in a previous study of organizational moderators of knowledge gained during a clinician education provided during the TTTF implementation with a subset of the LMHAs in the current study.¹² In that study, LMHAs with lower change valance pre-TTTF implementation (eg, placed less value in the implementation of smoking treatment as standard care) exhibited greater knowledge gains relative to LMHAs that placed higher value on the change.¹² Authors suggested that organizations that more highly valued the change at pre-implementation may have already been exposed to information about its necessity and thus comprising clinicians may have potentially paid less attention during the educational session than in organizations less familiar with the importance of addressing smoking in behavioral health settings.¹² It is possible that a similar interpretation of results can be applied to the current findings. That is, higher scores on some manifestations of organizational readiness to implement change may convey an over-confidence that can negatively affect adoption of this facet of the TTTF program. Alternatively, it can also represent a disconnection between leadership’s vision of the organization as being ripe/well-suited for uptake versus the perceptions of the comprising clinicians regarding efficacy, commitment, knowledge, and resources to implement changes in intervention delivery. More research is needed to truly understand the reasons underlying the described pattern of results. Nevertheless, results suggest that behavioral health organizations with greater initial “readiness for change” in tobacco treatment policies and practices may be less likely to benefit from the organizational implementation of a comprehensive tobacco-free workplace program, at least as far as in their delivery of the 5As to their patients. Thus, they may require additional attention in such implementations to ensure they experience equivalent gains as their less “ready” counterparts to more effectively address the tobacco-related health disparities experienced by their clientele.

Study limitations include that TTTF was solely implemented and evaluated in Texas; results may not be generalizable to behavioral health treatment agencies in other states. Moreover, our data and methods precluded an exact delineation of the mechanisms underlying our findings; the anecdotal information provided

to potentially explain results were not systematically gathered or sufficiently representative. Factors underlying moderation in changes in clinician intervention behaviors would have benefitted from, for example, the implementation of qualitative methods with participating clinicians and leadership to enhance understanding.³⁰ Although we implemented qualitative procedures in the second grant, it only applied to 2 of the 20 LMHAs in the current study and thus are not ideal for revealing underlying themes. Future studies should consider a mixed-methods approach to assessing organizational impacts on changes in service delivery following education/training.³¹ In addition, we were not able to invite LMHAs that were the least ready to implement change; however, we engaged 22 of the 38 possible LMHAs in the state (58%; excluding our partner LMHA on the grants) for TTTF implementation, which likely resulted in the exclusion of only late adopters and laggards. Finally, the organizational readiness scales were completed by leadership, whereas the intervention delivery was executed by clinicians. Future studies in this area might align data sources (ie, have data on both organizational readiness and intervention behaviors provided by clinicians) to ensure that disconnection between leadership sentiment and “boots on the ground” experience is not highly divergent. In addition, linking pre- and post-implementation surveys to track changes at the clinician-level, while allowing respondents to remain anonymous, might be helpful to tease apart behavior changes without influences from staff turnover and to further delineate behavior changes by profession (cf.^{17,18}).

In conclusion, the present study contributes to the literature on the effects of organizational characteristics and readiness for tobacco-free workplace program implementation on changes in clinician behaviors to address patients’ smoking in behavioral health treatment clinics. Overall results support that larger organizations (characterized as having greater unique patient visits more full-time employees) and those indicating greater readiness to implement tobacco-free workplace programming (in each readiness area assessed with the exception of overall change valance or value) may need more or more targeted attention and training to exhibit greater changes in the implementation of clinician interventions for smoking among their behavioral health patients. Alternatively, the smallest and least ready LMHAs showed the largest gains in clinician intervention provision for smoking; thus, low initial readiness was not a barrier for program implementation, particularly when efficacy-building trainings and resources are provided. Future research should explore ways in which the program can be modified and strengthened to better support equivalent clinician behavior changes within all participating behavioral health treatment clinics.

Supplementary Material

A Contributorship Form detailing each author’s specific involvement with this content, as well as any supplementary data, are available online at <https://academic.oup.com/ntr>.

Funding

This work was supported by funding from the Cancer Prevention and Research Institute of Texas (grant numbers PP130032 to CL and LRR, and PP160081 to LRR). Work on the manuscript was supported by the Cancer Prevention and Research Institute of Texas through PP170070 to LRR. Conclusions drawn in this work are solely the responsibility of the authors and do not necessarily represent the official views of the sponsoring organizations.

Declaration of Interests

None declared.

Acknowledgments

We are grateful to the many patients, clinicians, staff, and clinic leaders who generously shared their time and views with us to make this study possible.

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