Adapting and Evaluating Implementation of a Tobacco-Free Workplace Program in Behavioral Health Centers

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Objectives: State-administered community behavioral health centers (CBHCs) rarely treat tobacco dependence, despite high client tobacco use. Using a mixed-methods approach we examine the adaptation and implementation of an evidence-based tobacco-free workplace (TFW) program in 2 CBHCs (17 individual clinics). **Methods:** Varied data collection included pre- and post-implementation leader, clinician, and staff surveys; pre-, mid-, and post-implementation staff and client focus groups; and monthly implementation logs. The RE-AIM framework guided translation of behavioral interventions into sustainable practice. **Results:** Pre- to post-implementation increases were seen in training receipt among clinicians and employees. Both CBHCs adopted a 100% TFW policy, integrated tobacco screenings into routine practice, and delivered evidence-based practices (EBPs). Qualitative methods enlisted key stakeholders contributing towards adapting program strategies to local contexts, addressing barriers, adjusting tobacco screening administration, and understanding reasons for success or failure to implement specific components. **Conclusions:** Program implementation at both CBHCs increased organizational capacity in the provision of EBPs to treat tobacco dependence through successfully meeting the majority of our RE-AIM targets. Findings contribute to the development of flexible strategies and interventions responsive to variable implementation contexts and barriers; enhancing the effectiveness and sustainability of a TFW program.

Key words: tobacco control; behavioral health; mixed methods

Behavioral health clients (BHCs) – individuals with mental and/or substance use (non-nicotine legal and illegal drug and alcohol) disorders – represent ~21% of the population, yet consume about half of the cigarettes sold in the United States (US)[1] with smoking prevalence rates nearly 5 times that of the general population.[2-7]

Consequently, BHCs account for 50% of annual smoking-related deaths.[8] Practice guidelines[2,9,10] recommend that smokers with and without behavioral health challenges receive the same evidence-based-practices (EBPs)[11] proven effective in helping individuals in both groups successfully quit smoking[12,13] and at the same rates.[14,15] Nonetheless,

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BHCs are less likely to quit smoking compared to those in the general population[1,3] despite research showing equally high motivation to quit among both groups.[16-18]

Whereas many factors influence the persistently high smoking rates among BHCs, an important contributor is the hesitancy of clinicians to offer specialized care for quitting.[19,20] One nationwide study indicated that only 48.9% of community behavioral health centers (CBHCs) screened patients for tobacco use, only 37.6% provided tobacco cessation counseling, and only 26.2% offered nicotine replacement therapy (NRT).[21] The main barriers to implementing EBPs for tobacco use within CB-HCs include several clinician-level factors such as lack of training on treating tobacco dependence,[22,23] undervaluing of tobacco addiction as a problem,[24] lack of, or failure to, enforce tobacco-free workplace (TFW) policies,[2] high staff tobacco use rates,[11] and misconceptions regarding motivation for, and the behavioral effects of, quitting smoking for BHCs.[11] Clinicians also widely believe that quitting smoking will jeopardize substance recovery efforts and trigger depression, aggressive behavior, suicide attempts or other self-harming behaviors.[19] Although evidence indicates these clinician beliefs are myths,[19] they persist and have a strong negative impact,[25,26] along with organizational barriers,[27] on successful implementation of tobacco cessation interventions. Given the systemic nature of these barriers, implementing interventions with a focus on organizational change is recommended.[28,29]

Taking Texas Tobacco-Free (TTTF) is a multicomponent TFW program assisting CBHCs (aka Local Mental Health Authorities) throughout Texas to implement comprehensive and sustainable tobacco cessation services[30] designed to target known implementation barriers across diverse levels of influence – organizational, community, clinician, and client. CBHCs are non-profit state agencies that provide behavioral health services within the safety-net healthcare system serving underserved, lower-income individuals across Texas.[31] As a comprehensive TFW program, TTTF includes TFW policy implementation, education provision to employees, specialized training for clinicians to use EBPs to treat tobacco dependence, technical assistance to embed systems for consistent tobacco screenings and treatment provision to clients, and

community outreach.[2] Prior work suggests that TTTF was effective in building capacity for the integration of EBPs in assessing and treating tobacco dependence and helping clients and staff within 18 CBHCs successfully quit smoking.[32]

Although widely recommended in implementation research,[33-37] few studies have applied mixed methods in evaluating smoking cessation interventions. Interventional studies have focused on evaluating the use of mono- rather than multicomponent smoking cessation interventions.[38-40] The current study redresses this gap by adopting a 3-phase mixed-methods design to examine the adaptation and implementation of the multicomponent TTTF program within 2 new CBHCs (comprising 17 individual clinics) relative to RE-AIM (reach, effectiveness, adoption, implementation and maintenance) objectives.[41] The purpose of this work is to present the processes and outcomes of program implementation with a focus on the contribution of mixed methods to adapt the delivery of evidence-based program components, tailor program strategies and interventions to local contexts, and integrate TTTF into CBHCs. Real-world implementation challenges are reviewed, with suggestions proposed, toward the goal of providing a model for implementation of a TFW program adaptable to other CBHCs interested in becoming tobacco-free.

METHODS
Study Design

Following the successful implementation of TTTF within 18 CBHCs,[30,32] we were funded to enable its dissemination through active and passive means and to implement a more cost-effective TTTF within additional CBHCs, this time using a mixed-methods approach not included in the prior implementation. Researchers recommend the use of qualitative and mixed-methods approaches to address the complexities involved in implementing interventions across diverse contexts[42] and for developing strategies that facilitate EBP implementation.[33,34] Mixed methods are particularly suited to evaluating complex interventions. The quantitative component assesses program impact, and the qualitative component provides insight into contextual factors and change processes that are key to program adaptation and implementation,[43,44]

facilitating effective integration of EBPs into local contexts. Our purpose in using a mixed-methods design was for *complementarity*, (ie, qualitative data is used to elaborate or enhance the results of quantitative analyses), and *expansion*, (ie, using quantitative data to examine outcomes and qualitative to examine processes).[45] Combining qualitative and quantitative approaches extends the capabilities of both, providing a more comprehensive understanding of implementation issues, greater knowledge yield, and unique insights inaccessible via either method alone.[46]

We used a multistage evaluation mixed-methods design[47] consisting of 3 phases, each with a different research aim and core mixed-methods design (Figure 1). Specifically: Phase (1) formative evaluation (pre-implementation) – to identify site-specific contextual factors that might affect implementation of TTTF to tailor the program to fit local contexts; (Phase 2) program implementation – to assess the delivery and uptake of TTTF components within CBHCs; and (Phase 3) summative evaluation (post-implementation) – to evaluate program outcomes and characterize processes influencing program RE-AIM components. RE-AIM was selected as a guiding framework because it was developed to translate behavioral interventions into sustainable practice.[48] RE-AIM objectives for TTTF were defined by the project team (and are discussed more fully later in this work). Mixed methods allowed for full application of the RE-AIM model, providing the in-depth understanding of contextual and multilevel factors influencing implementation, required to understand and to explain reasons for outcomes on our objectives.[41] Phases were interactive, with each phase building upon prior findings, and multiphase combination *timing* (when each method is implemented) was used, involving sequential and iterative quantitative and qualitative data collection and analyses over the 3 phases.[47]
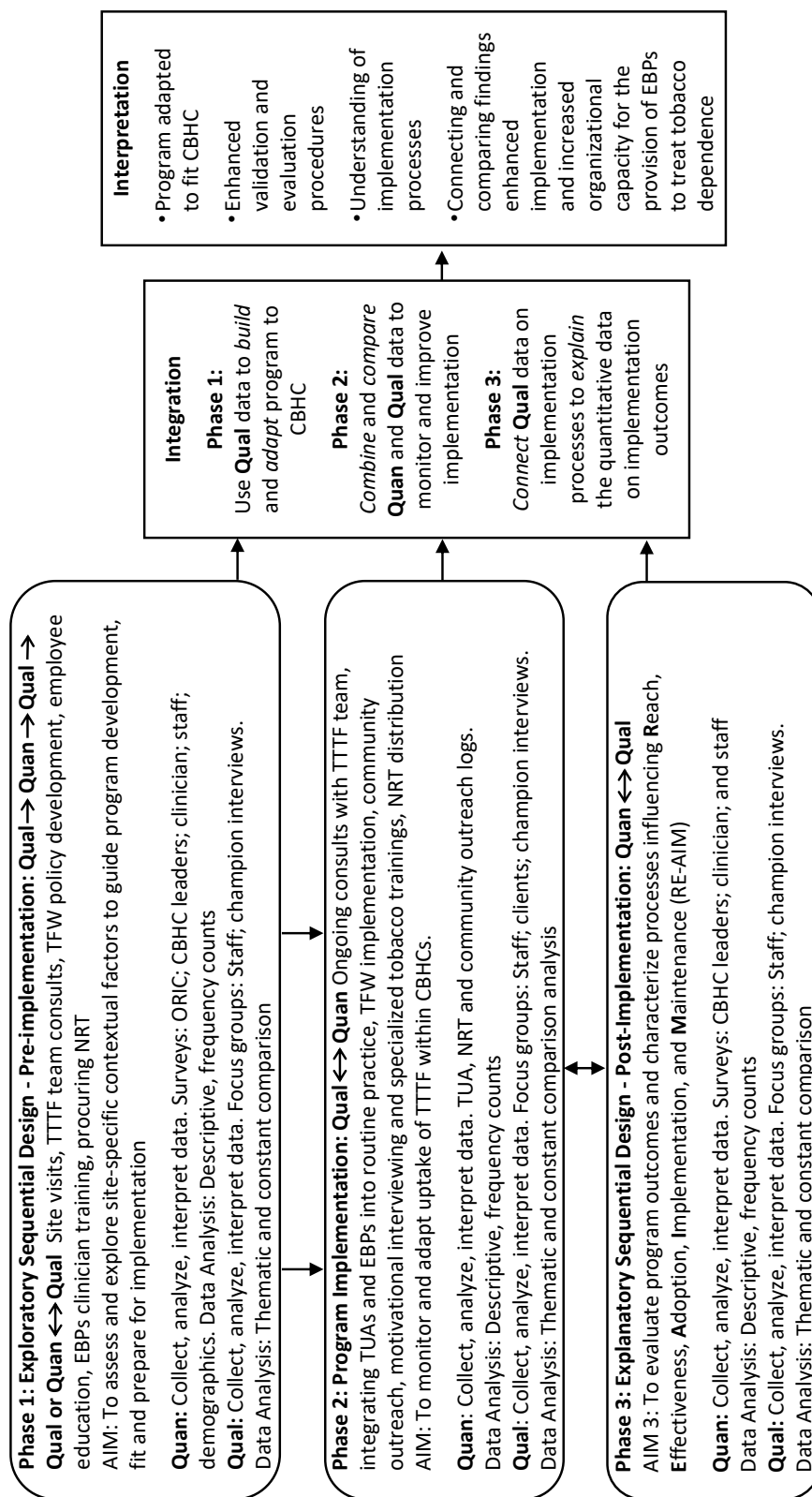
Participants and Setting

Participation was open to any interested CBHCs in Texas that had not implemented the program previously. Our partner/subcontractor, Integral Care, recruited CBHCs through targeted mailings to ~20 CEOs assessing interest. Three CBHCs indicated interest, provided consent for participation, and enrolled; one withdrew mid-course due to competing organizational priorities. This article focuses on the 2 remaining CBHCs. CBHC1 was in a large urban area and comprised 2 individual clinics annually serving 10,247 unique clients (213,498 contacts) through residential and outpatient services, with 302 full-time staff (68% providing direct clinical care), serving one county, where 40%-60% of clients smoke. CBHC2 was in a mixed urban and rural area, spanning 25,000 square miles, comprising 15 clinics providing residential and outpatient services, annually serving 6538 unique clients (339,158 contacts), with 256 full-time staff (80% providing direct clinical care), serving 30 counties, where 20%-40% of clients smoke. In this study, staff includes clinicians, those who provide direct client services, and general employees, those who do not have contact with clients. Employee refers to general employees only.

Intervention: Taking Texas Tobacco-Free

Previously described in detail,[30,32,49-51] TTTF is a multicomponent, comprehensive, and sustainable TFW program that is implemented through an academic-community partnership. TTTF entails adoption of various EBPs in tobacco cessation;[2,9] key components include policy implementation and enforcement, integration of tobacco use assessments (TUAs) into routine practice, provision of tobacco cessation services (eg, behavioral counseling, NRT), evidence-based employee and specialized clinician training on treating tobacco dependence, and community outreach (Figure 2). Program components target CBHCs as organizations, with stakeholders including their staff and clients. Goals include challenging misperceptions regarding BHC's tobacco dependence, encouraging program buy-in and integration into local settings to reduce tobacco use and second-hand smoke exposure, and ultimately, preventing tobacco-related cancers and other diseases. TTTF was designed to increase organizational capacity for change by affecting clinician behavior regarding the provision of EBPs for treating tobacco use, because the delivery of evidence-based interventions has proven effective in increasing quit attempts and cessation among clients.[9] Therefore, TTTF's success is measured through RE-AIM targets that are primarily focused on CBHC, staff, and clinician-focused outcomes as opposed to clients' smoking cessation,
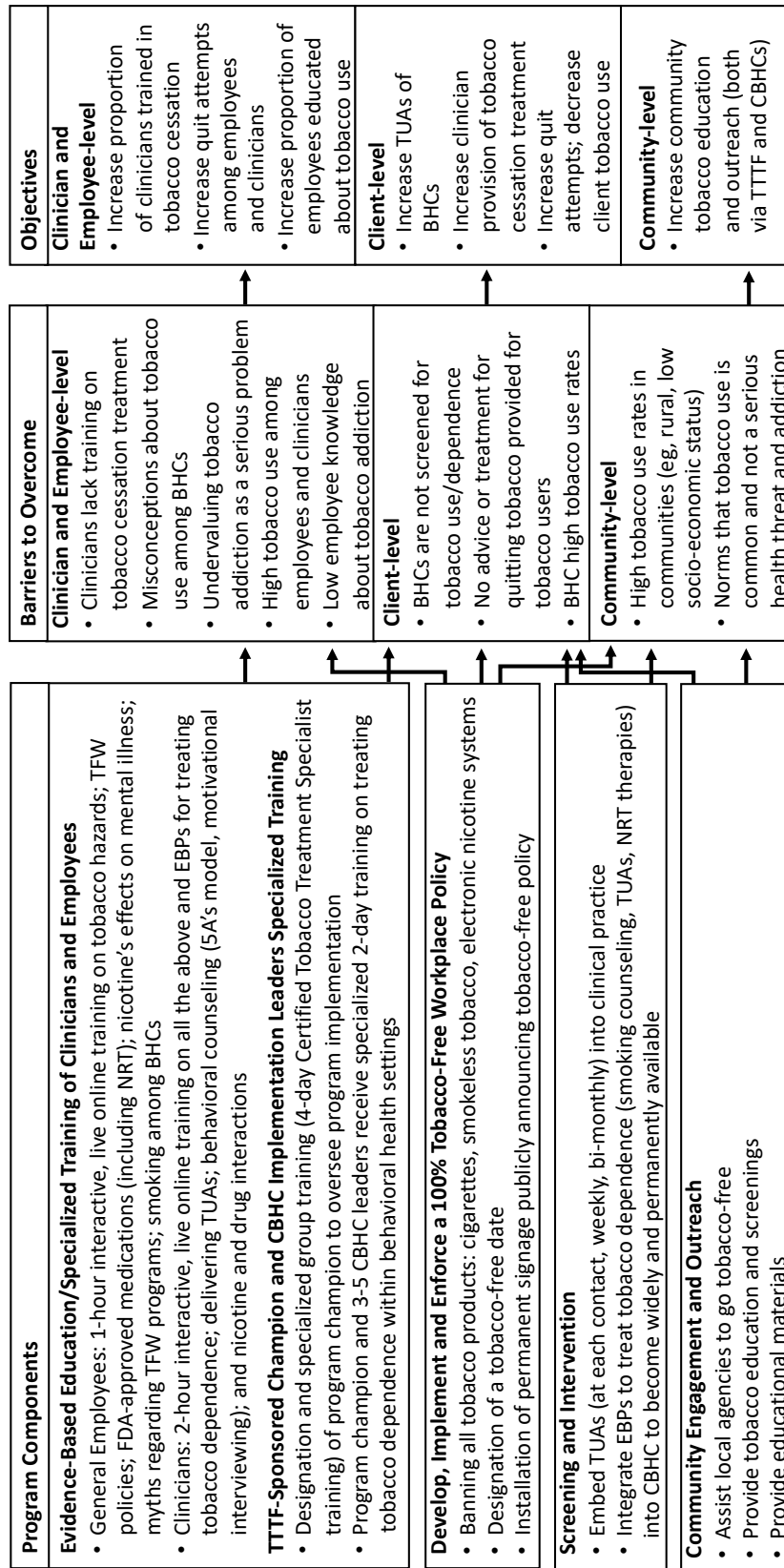
Figure 1
Taking Texas Tobacco-Free Mixed Methods Program Development and Evaluation Design

Phase 1: Exploratory Sequential Design - Pre-implementation: Qual → Quan → Qual →
Qual or Quan ↔ Qual Site visits, TTTF team consults, TFW policy development, employee education, EBPs clinician training, procuring NRT
AIM: To assess and explore site-specific contextual factors to guide program development, fit and prepare for implementation

Quan: Collect, analyze, interpret data. Surveys: ORIC; CBHC leaders; clinician; staff; demographics. Data Analysis: Descriptive, frequency counts
Qual: Collect, analyze, interpret data. Focus groups: Staff; champion interviews.
Data Analysis: Thematic and constant comparison

Phase 2: Program Implementation: Qual ↔ Quan Ongoing consults with TTTF team, integrating TUAs and EBPs into routine practice, TFW implementation, community outreach, motivational interviewing and specialized tobacco trainings, NRT distribution
AIM: To monitor and adapt uptake of TTTF within CBHCs.

Quan: Collect, analyze, interpret data. TUA, NRT and community outreach logs.
Data Analysis: Descriptive, frequency counts
Qual: Collect, analyze, interpret data. Focus groups: Staff; clients; champion interviews.
Data Analysis: Thematic and constant comparison analysis

Phase 3: Explanatory Sequential Design - Post-Implementation: Quan ↔ Qual
AIM 3: To evaluate program outcomes and characterize processes influencing **R**each, **E**ffectiveness, **A**doption, **I**mplementation, and **M**aintenance (RE-AIM)

Quan: Collect, analyze, interpret data. Surveys: CBHC leaders; clinician; and staff
Data Analysis: Descriptive, frequency counts
Qual: Collect, analyze, interpret data. Focus groups: Staff; champion interviews.
Data Analysis: Thematic and constant comparison

Integration
Phase 1:
Use **Qual** data to *build* and *adapt* program to CBHC

Phase 2:
Combine and *compare* **Quan** and **Qual** data to monitor and improve implementation

Phase 3:
Connect **Qual** data on implementation processes to *explain* the quantitative data on implementation outcomes

Interpretation
• Program adapted to fit CBHC
• Enhanced validation and evaluation procedures
• Understanding of implementation processes
• Connecting and comparing findings enhanced implementation and increased organizational capacity for the provision of EBPs to treat tobacco dependence

Note.
Quan = quantitative strand; **Qual** = Qualitative strand; → = **followed by** (sequential); ↔ = **recursive, interactive**; **TFW** = tobacco-free workplace; **EBPs** = evidence-based practices; **NRT** = nicotine replacement therapy, **ORIC** = **O**rganizational **R**eadiness to **I**mplement **C**hange; **TUAs** = tobacco use assessments; **CBHCs** = community behavioral health centers. **Staff** = clinicians, managers, general employees. **Champion** = volunteer clinician or manager staff overseeing program implementation.

Figure 2
Taking Texas Tobacco-Free (TTTF) Components, Barriers Addressed, and Objectives

Program Components

Evidence-Based Education/Specialized Training of Clinicians and Employees
- General Employees: 1-hour interactive, live online training on tobacco hazards; TFW policies; FDA-approved medications (including NRT); nicotine's effects on mental illness; myths regarding TFW programs; smoking among BHCs
- Clinicians: 2-hour interactive, live online training on all the above and EBPs for treating tobacco dependence; delivering TUAs; behavioral counseling (5A's model, motivational interviewing); and nicotine and drug interactions

TTTF-Sponsored Champion and CBHC Implementation Leaders Specialized Training
- Designation and specialized group training (4-day Certified Tobacco Treatment Specialist training) of program champion to oversee program implementation
- Program champion and 3-5 CBHC leaders receive specialized 2-day training on treating tobacco dependence within behavioral health settings

Develop, Implement and Enforce a 100% Tobacco-Free Workplace Policy
- Banning all tobacco products: cigarettes, smokeless tobacco, electronic nicotine systems
- Designation of a tobacco-free date
- Installation of permanent signage publicly announcing tobacco-free policy

Screening and Intervention
- Embed TUAs (at each contact, weekly, bi-monthly) into clinical practice
- Integrate EBPs to treat tobacco dependence (smoking counseling, TUAs, NRT therapies) into CBHC to become widely and permanently available

Community Engagement and Outreach
- Assist local agencies to go tobacco-free
- Provide tobacco education and screenings
- Provide educational materials

Barriers to Overcome

Clinician and Employee-level
- Clinicians lack training on tobacco cessation treatment
- Misconceptions about tobacco use among BHCs
- Undervaluing tobacco addiction as a serious problem
- High tobacco use among employees and clinicians
- Low employee knowledge about tobacco addiction

Client-level
- BHCs are not screened for tobacco use/dependence
- No advice or treatment for quitting tobacco provided for tobacco users
- BHC high tobacco use rates

Community-level
- High tobacco use rates in communities (eg, rural, low socio-economic status)
- Norms that tobacco use is common and not a serious health threat and addiction

Objectives

Clinician and Employee-level
- Increase proportion of clinicians trained in tobacco cessation
- Increase quit attempts among employees and clinicians
- Increase proportion of employees educated about tobacco use

Client-level
- Increase TUAs of BHCs
- Increase clinician provision of tobacco cessation treatment
- Increase quit attempts; decrease client tobacco use

Community-level
- Increase community tobacco education and outreach (both via TTTF and CBHCs)

Note.
TFW = tobacco-free workplace; NRT = nicotine replacement therapy; EBPs = evidence-based practices; TUAs = tobacco use assessments; BHCs = behavioral health clients. Program champion = volunteer clinician or managerial staff overseeing program implementation; CBHC = community behavioral health center.

reduced morbidity, etc (cf, [52,53]). Additionally, client-level data were not collected to avoid risking CBHC and clinician non-participation through further stressing an already under-resourced system.

Data Collection

We used a pre/post design with additional data collected quarterly, reporting monthly activities, during and after the active implementation phase to monitor program delivery and implementation. Research aims guided the development of qualitative semi-structured interview guides by study phase, which were tested and refined according to participants' responses in the field.[54] Data collection instruments and evaluation of respondents/participants are described in Table 1 according to phase below.

Phase 1: Formative Evaluation

The initial step in adopting TTTF was preparing for program implementation through developing each CBHC's 100% TFW policy that included electronic nicotine delivery systems, training clinicians and champions in treating tobacco dependence, educating employees about tobacco hazards, integrating EBPs in tobacco cessation into clinical practice,[2,9] and tailoring materials to CBHC's needs. While TTTF team members consulted with CBHC leadership on policy drafting, we encouraged CBHCs to confer with their members and community in developing their own TFW policy. Each CBHC designated one program "champion" – a volunteer clinician or managerial staff, not additionally compensated – to oversee program implementation and maintenance according to a recommended timeline,[49] and to facilitate and steward successful organizational change.[55,56] TTTF team members provided guidance and practical advice throughout program implementation.

Quantitative data included pre-implementation CBHC leader, clinician, and staff (all staff – clinicians, general employees, managers) baseline surveys. The CBHC leader survey included questions on the CBHC demographics (eg, number of staff) and the Organizational Readiness to Implement Change (ORIC)[57] scale that assessed organizational characteristics and needs regarding knowledge, skills, practice, and readiness to implement change. Qualitative data included pre-implementation staff

focus groups, site visits, and champion interviews. Analysis of quantitative data informed sample selection for the pre-implementation focus groups. We purposively selected a heterogeneous sample for the focus groups, selecting participants who had expressed apprehension of TTTF to hear and address their concerns.

Phase 2: Program Implementation

The active implementation phase entailed adoption of various EBPs in tobacco cessation,[2,9] (Figure 2). TUAs are an empirically based method to increase quit attempts,[2] which consisted of documenting current, and history of, tobacco use, prior quit attempts and methods used, NRT use, and clients' readiness to quit. Clinicians facilitated smoking cessation groups using a validated and effective smoking curriculum, developed specifically for BHCs.[58,59] TTTF sponsored specialized trainings, including program champions' attendance at a 4-day Certified Tobacco Treatment Specialist training, and program champions' and 3-5 CBHC clinic leaders' attendance at a 2-day training in treating tobacco dependence in behavioral health settings. TTTF staff delivered an 8-hour motivational interviewing training to participating CBHCs, as guidelines indicate the most successful evidence-based interventions combine the delivery of behavioral and pharmacological support.[9,60] In accordance with best practices, this combined therapy approach attends to clients' needs whether they are ready for smoking cessation or require motivational treatments to quit in the future.[9,24] Community outreach focused on expanding and sustaining community TFW programs to address high tobacco use rates among this population, via CBHC and TTTF-initiated efforts including health fairs, educational presentations, social media communications, and resources on our website.

Quantitative data included CBHC quarterly reports submitted by champions – during the 12 months of active implementation and 6 months post-implementation – documenting TUAs administered and quantities and types of CBHC-purchased NRT distributed to staff and clients, and descriptions of monthly community outreach events. To facilitate documentation of client tobacco use, centers were asked to integrate TUAs into the electronic health record. Establishing use of

Table 1
Aims, Methods, Data Collection and Analysis According to Phase

Phase/Design/Timing	Type and Description of Data Collection and Analysis
Phase 1: Pre-implementation Formative Evaluation Aim: to identify CBHC traits, readiness to implement change and site-specific contextual factors to develop program Timing: Baseline: months 1-6, pre-implementation	**Quantitative: Descriptive analysis; all surveys are multiple choice** *Organizational Readiness to Implement Change (ORIC)* (N = 23): 5 subscales, 24 items measuring: •change valence •efficacy toward change •change commitment •skills needed for change •resources *Demographics form*: • annual and unique client contacts • types of services • full-time staff *CBHC leader survey* (N = 23): 27 items •current quitting tobacco services • attitudes re: TFW programs •implementation challenges •tobacco prevalence among staff *Clinician survey* (N = 198): 27 items •tobacco use knowledge and training •current tobacco EBPs *Staff survey* (N = 386): 25 items: •personal tobacco history •quit attempts •tobacco training **Qualitative: Purposeful, heterogeneous sampling; thematic and constant comparison analysis** *Participant observation*: (4) initial meetings and site visits; and (6) program champion interviews *Staff focus groups*: (2; N = 23): •center traits •views re: TFW programs; program facilitator/barriers
Phase 2: Program Implementation: Aim: to adapt, implement, monitor TTTF in CBHCs Timing: months 6-12	**Quantitative: Descriptive analysis** *Monthly TUA, NRT, community outreach logs*: •TUAs done (N = 12) •NRT distributed •community outreach events **Qualitative: Purposeful, heterogeneous sampling; thematic and constant comparison analysis** *Participant observation:* (4) periodic site visits; and (6) program champion interviews *Client focus groups*: (1; N = 5): •past or current smoking •clinic quit services offered •quit enablers *Staff focus groups*: (2; N = 20): •implementation facilitators/barriers •program needs and alterations
Phase 3: Summative Evaluation: Aim: evaluate program outcomes and explain processes impacting RE-AIM dimensions Timing: 2-6 months, post-implementation	**Quantitative: Descriptive analysis** *Repeat of: CBHC leader survey* (N = 23); *clinician survey* (N = 188); *and staff survey* (N = 324) **Qualitative: Purposeful, heterogeneous sampling; thematic and constant comparison analysis** *Participant observation:* (2) periodic site visits, and (4) program champion interviews *Staff focus groups*: (2; N = 18): •EBP integration effectiveness •implementation processes •improvements needed

Note.
CBHC = community behavioral health center; TFW = tobacco-free workplace; TUA = tobacco use assessment; NRT = nicotine replacement therapy; EBP = evidence-based practice; TTTF = Taking Texas Tobacco-Free. Program champion = volunteer clinician or managerial staff overseeing program implementation. Qualitative sample = 7 focus groups (N = 76); champion interviews (N = 16); 8 site visits; Total N = 92 participants.

these audit and monitoring methods are recognized as enhancing program success and sustainability.[15] Quarterly reports served 2 functions: (1) the on-going monitoring of program component delivery, allowing team members to intervene and suggest potential adjustments to these processes; and (2) providing summative evaluation data. Various qualitative methods – mid-implementation staff, and separately, client, focus groups, and site visits, and champion interviews – were used to engage

program partners collaboratively, examine and understand implementation processes and challenges in greater depth, and make program adjustments as needed.

Phase 3: Summative Evaluation

The summative evaluation phase consisted of CBHCs' ongoing implementation of program components. Post-implementation, we administered all surveys (CBHC leader, clinician, and staff), continued monitoring implementation through quarterly TUA and NRT logs for 6 months post-implementation, and conducted staff focus groups, site visits, and champion interviews. All qualitative methods focused on examining and understanding how and why results were obtained for program outcomes.

Formal assessment of RE-AIM outcomes relative to objectives were incorporated into Phase 3. Reach included increases over baseline in employee and clinician exposure to education and training, respectively, and community outreach. Effectiveness included TFW policy enforcement, increases in staff acceptability of the policies, and decreases in staff smoking rates. Adoption included increased EBP provision by clinicians, TUAs delivered, and self-reported compliance with the TFW policy. Implementation included fidelity to the TTTF *Implementation Guide*, ie, delivery of the 5 key program components, distribution of provided dissemination materials, and the provision of champion-led clinic trainings on tobacco treatment. Maintenance included the establishment of sustainable systems for TUAs and NRT distribution, NRT sustainability over time, and continuing education provision. Data to assess outcomes was gathered largely from surveys and quarterly reports, and supplemented by qualitative findings.

Data Analysis

Quantitative. Descriptive statistics, including mean and standard deviation (SD) and percent, were provided for continuous and categorical variables of interest, respectively. Pre- and post-survey data were unmatched at the respondent level; thus, their distribution between pre- and post-implementation were examined using chi-square tests and independent t-tests for continuous and categorical variables of interest, respectively. All respondents were included in the analyses, but missing

information was excluded from analysis if they did not respond to corresponding survey items. Quantitative data were analyzed using SAS (SAS, version 9.4, 2013). Alpha was set at .05. There was 80% power to detect small to large effects ($0.12 < w < 0.46$; $0.19 < d < 0.74$) with an alpha of .05 and the wide range of sample sizes of 23 to 386 among our administered surveys.

Qualitative. Focus groups (lasting 60-120 minutes), and champion interviews (lasting 30-45 minutes), were conducted using interview guides (available upon request from corresponding author), all were transcribed verbatim, uploaded to Atlas.ti8 (Atlas.ti, version 8.4, 2019) and analyzed with all other qualitative data to facilitate data management. Purposeful, heterogeneous sampling was used to collect a wide-range of perspectives regarding research questions.[61] Qualitative data were coded inductively from themes drawn from the data as well as deductively, according to the RE-AIM dimensions specified by investigators for this project. Three team members trained in qualitative research independently coded initial transcripts to develop a coding frame. Coding discrepancies were discussed and reconciled until a final coding frame was agreed upon and reapplied to all transcripts.[54] Coding and analysis proceeded iteratively across each stage of data collection. Constant comparison of data was used to refine themes, avoid redundancy, ensure fittingness of themes, and check accurate accounting of the data set.[62] Analyst triangulation was used to ensure congruence and credibility of findings.[61] As Table 1 indicates, there were 92 participants in qualitative procedures.

Mixed methods integration. Various types of integration were used to mix the quantitative and qualitative data, aligned with the different core mixed-methods designs and aims of each study phase. In phase 1 (formative evaluation), the qualitative data was used to *build* and *adapt* intervention features to the local context. In phase 2 (program implementation and monitoring) qualitative and quantitative data were *compared* and *connected* to make ongoing program adjustments that facilitated successful implementation. In phase 3 (program evaluation) qualitative and quantitative data from phases 1-3 were *connected*; ie, qualitative data on the implementation processes was used to *explain* the quantitative outcomes.[63]

RESULTS
Phase 1

Scores on the ORIC subscales for both CBHCs showed a high degree of readiness to implement change, while CBHC leader (N = 23) and clinician (N =198) survey results indicated high commitment and need for change (Table 2). Staff survey results (N = 386) indicated a 9.82% pre-implementation smoking rate.

Qualitative findings were used to adapt the program to individual centers through development of: (1) program materials, ie, posters representing center clients regarding age (young people/teens), special populations (smokeless tobacco-users, pregnant women); ethnicity and language (eg, Vietnamese); and (2) additional resources tailored to special populations (eg, pregnant women, women with infants and young children). Materials included educational brochures providing guidance and specific recommendations on EBPs for treating tobacco dependence within these specialized subpopulations. These intervention adaptations enhanced the delivery, reach, and implementation of TTTF.

Qualitative analysis of 2 staff focus groups with 23 participants, 4 site visits, and 6 champion interviews showed most CBHC staff were onboard with becoming tobacco-free; however, some, particularly smokers, were apprehensive regarding program implementation, suggesting that staff apprehension was primary and greater than that of clients:

"I anticipate a struggle with staff here who may be struggling with the new policy and then conveying that to consumers. 'You can do this [stop smoking] when I'm not sure I can do this'…I think the staff is going to be harder…I think our clients will follow what our staff does, for the most part, if we set a good example."
(Program director, smoker, CBHC2)

Other concerns regarding program implementation included perceived violation of staff and clients' rights to smoke, and staff's expectations that client resistance would manifest as violent behavior, as well as attrition, due to becoming tobacco-free:

"Our staff's concern would be behaviors from our consumers that we're going to try to prevent smok-

ing. They're going to act out and then they're going to hurt us."
(Nursing director, CBHC1)

However, generally, staff expressed confidence that once implementation had started, staff and clients would accept the program:

"They'll bicker about it first, but then everyone'll get on board."
(Clinician, CBHC2)

Phase 2

TUA and NRT quarterly logs (N = 12) indicated implementation of each of these program initiatives. Both CBHCs were dispensing NRT to clients at about the same rates, ~4 boxes of patches monthly. Staff at CBHC2 used 2 packages of gum and one box of patches quarterly; no staff at CBHC1 requested NRT. CBHC2 monthly logs show a slight decline in TUAs conducted during implementation (September: 812; October: 585; November: 483); however, CBHC1 saw a 26.42% decline (September: 1200; October: 1690; November: 883) in TUAs conducted following initial implementation. Qualitative findings revealed CBHC1 physicians were conducting TUAs and were protesting that time constraints kept them from completing these assessments. At CBHC2, clinicians conducted TUAs which did not decrease considerably over time. Thus, comparing and connecting quantitative and qualitative results explained how this program delivery decision at CBHC1 hindered implementation of TUAs. *"The prescribers do them* [TUAs]…*the issue we've had is doctors not having the time of really being able to go over them in depth."* (Clinician, CBHC1). Once CBHC1 shifted TUA administration to non-physician clinicians, numbers increased (December: 1446; January: 1764; February: 1615).

Two focus groups with staff (20 participants), one with 5 clients (only CBHC1 granted us permission to interview clients), 4 site visits and 6 champion interviews revealed limitations to program delivery and implementation by CBHC. At CBHC1, clients and clinicians reported a need to tailor educational materials, which TTTF staff complied with, to fit clients' advanced readiness to change,

Table 2
Pre-implementation Survey Results on Readiness to Change

Measure	Results
Organizational Readiness to Implement Change (ORIC) (5 subscales and total)	scale of 1 (*disagree*) – 5 (*agree*), higher scores indicate greater commitment to change
• ORIC Commitment (to implement change)	Mean = 4.0 (SD = 0.78)
• ORIC Valence (of change)	Mean = 4.6 (SD = 0.53)
• ORIC Efficacy (toward change)	Mean = 4.0 (SD = 0.86)
• ORIC Knowledge (of requirements for change)	Mean = 3.5 (SD = 1.16)
• ORIC Resources (needed to implement change)	Mean = 3.7 (SD = 0.94)
• ORIC Total	Mean = 4.0 (SD = 0.73)
CBHC leader survey	
• Existing TFW policy	• 1 clinic (4.35%) had a TFW policy that included e-cigarettes; • 4 clinics (17.39%) regularly conducted and noted TUAs within clinical records; • 1 clinic (4.35%) routinely provided tobacco cessation services for clients wanting to quit; • 14 clinics (61%) had no existing TFW policy and did not provide TUAs or any cessation services
Commitment to TFW policy at baseline	• 90% of staff (40% agree, 50% somewhat agree) were committed to implementing this policy change
Clinician survey	• Only 25% of clinicians were providing TUAs pre-implementation

Note.
SD = Standard deviation; CBHC = community behavioral health center; TFW = tobacco-free workplace; TUAs = tobacco use assessments.

and challenges of not offering after-hours smoking cessation groups. Implementation at CBHC2 was hindered initially by not distributing NRT to staff along with clients, which was soon corrected. Furthermore, CBHC2 did not offer any smoking cessation groups. Results from the qualitative and quantitative data collection during implementation were connected to build and adjust program strategies and materials, address implementation challenges and understand processes to further enhance program implementation and sustainability.

Phase 3

Table 3 details post-implementation surveys results (CBHC leader, N = 23; clinician, N = 188; and staff, N = 324), evaluating program implementation over baseline according to how each RE-AIM dimension was measured within this study, and qualitative and mixed methods findings on each dimension. Analysis of qualitative data (4 site visits, 6 champion interviews, and 2 staff focus groups with 18 participants) produced 5 themes guided by the RE-AIM framework (Table 4).

Reach. There was a significant increase in the percentage of clinicians trained in evidence-based tobacco cessation interventions and staff educated on tobacco use hazards from pre-to post-implementation. Likewise, there was an increase over baseline (= 0) in community outreach via CBHC and TTTF-initiated educational professional presentations, community health fairs, and tracking of respective social media and website visits (Table 3). Qualitatively, the tobacco training was valued by clinicians as vital to treating tobacco dependence and increasing buy-in, and by employees as essential to implementing policy change. Staff also reported community support of tobacco-free envi-

Table 3
Comparing Quantitative, Qualitative and Mixed Methods Results on RE-AIM Dimensions

RE-AIM dimension	Quantitative Results	Qualitative Findings: Themes	Connecting Qualitative and Quantitative Findings
***Reach*-measured via increases over baseline in:** (1) percentage of clinicians trained in tobacco interventions (2) percentage of employees trained in basic tobacco education (3) number of community education/outreach events and people reached	**Significant increases over baseline:** (1) Clinicians: 9% trained on assessing client tobacco use (pre) to 80% (post); 7% on pharmacotherapy use (pre) to 65% (post); 10% on nicotine effects on psychiatric meds (pre) to 63% (post); 7% on use of behavioral therapies to treat tobacco (pre) to 65% (post), 11% on hazards of smoking for BHCs to 84% (post); all ps < .01 (2) Employees: 34.6% trained (pre) to 88.2% trained (post); (x^2 = 195.77, df = 1, p < .01) (3) Community: 973 professionals, and 85,754 people reached (health fairs, social media, website as of May 2018)	**Factors related to Reach – Categories:** (1) Clinician and employee views on tobacco training (supported implementation) (2) Community attitudes towards TFW programs (supported implementation)	**Qualitative findings support quantitative results:** (1) Illustrating how clinicians and employees valued the tobacco training as essential to implementing change (2) Indicating acceptability of TFW within the greater community
***Effectiveness*-assessed via increases over baseline in:** (1) establishment of enforced and comprehensive TFW policies in both CBHCs (2) increases in the self-reported acceptability of TFW programs (3) significant decreases over baseline in the proportion of CBHCs' staff smoking rates	**Significant changes over baseline:** (1) Both CBHCs successfully established a 100% TFW policy; pre-implementation only 4.17% of center leaders reported CBHC enforced a TFW policy offering quitting tobacco services to clients (2) No significant changes in TFW program acceptability were seen pre/post; staff confidence to sustain program (95.24%) motivation (80.00%), and determination (85.71%) were high pre-implementation (3) No significant decreases, 9.82% (pre) to 10.19% (post) in staff smoking rate (x^2 = 6.79, df = 3, p = .079)	**Factors related to Effectiveness-Categories:** (1) Questioning or supporting myths about TFW policy (2) Staff attitudes on TFW programs (supported or barred implementation) (3) Staff experiences of quitting (varied by CBHC)	**CBHC qualitative findings differed from quantitative:** (1) CBHC2 enforced policy consistently, no staff or client policy violations reported; CBHC1 policy inconsistently enforced due to fear of client violence (2) CBHC2 overcame TFW program misconceptions, CBHC1 did not (3) CBHC2: 1 staff quit, 2 reduced smoking due to TTTF; CBHC1: no staff reduced smoking or quit
***Adoption*-assessed via significant increases over baseline in:** (1) the proportion of clinicians providing EBPs (2) the number of TUAs conducted during and post-implementation (3) self-reported compliance with TFW policy consistent practices	**Significant increases post-implementation over baseline:** (1) Clinician EBPs provision (x^2 = 22.7, df = 1, p < .01); specifically, behavioral counseling (x^2 = 6.69, df = 1, p = .010); NRT (x^2 = 31.98, df = 1, p < .01); but not for non-nicotine medications provision (x^2 = 2.87, df = 1, p = .090) (2) TUAs rose from 0 (pre) to 13,659 (post) (12,377 unduplicated) (3) TFW policy compliance by 92% staff	**Factors related to Adoption– Categories:** (1) Contextual factors impacting uptake (staff attitudes as barriers or enablers) (2) Practices compliant with TFW policy (3) Staff views of tobacco cessation interventions	**Qualitative findings applied to facilitate and adapt TTTF uptake:** (1) Identified implementation barriers and facilitators (2) Noted practicing of novel strategies to reduce client tobacco use (3) Adjusted delivery of initiatives during active implementation phase
***Implementation*-assessed via self-reported program fidelity in:** (1) number of passive dissemination materials distributed (2) number of champion-led trainings (3) self-reported consistency with *Implementation Guide* components – the 5 key program components	**Post-implementation:** (1) Passive dissemination materials were distributed as intended (675 posters, 2650 rack cards) (2) There were no champion-led trainings held at the clinics (though there was training, led by other staff) (3) Both champions reported high fidelity to the *Implementation Guide* components, which was defined as following 86%-100% suggested implementation steps	**Factors related to Implementation– Categories:** (1) Tailoring materials/ strategies (2) Champion initiative (3) Program fidelity (inconsistent policy enforcement by CBHC)	**Qualitative findings used to fit TTTF to CBHC and note areas needing improvement:** (1) Development of various site-specific program materials and strategies (2) Champions effectively lead implementation, but neither initiated center trainings (3) Variations in policy enforcement by CBHC
***Maintenance*-establishing systems within CBHCs to:** (1) monitor and document TUA provision (2) obtain and distribute NRT to clients and staff (3) incorporate tobacco education into the new staff orientations and annual trainings	**Systems established within CBHCs:** (1) TUA monitoring system in place: 13,659 TUAs delivered, 12,377 unduplicated (2) NRT distribution system in place (CBHC purchased 89.5 boxes of patches, 10 boxes of gum, 41 boxes of lozenges that were distributed to clients and staff) (3) Trainings in place: 48% of clinic leaders reported implementing tobacco-free training into new staff orientation and 26% into annual training requirements	**Factors related to Maintenance – Categories:** (1) Functional delivery systems (2) Attitudes towards sustaining program initiatives (3) Integration into organizational culture	**Qualitative findings were used to improve delivery and assess sustainability:** (1) Delivery of TUAs was modified in CBHC1 (2) Clinicians valued TUAs and NRT as effective quit tools; CBHC2 spread NRT delivery to staff also (3) TTTF integration into center varied by CBHC

Note.
p = p-value; x² = chi-square; TTTF = Taking Texas Tobacco-Free; TFW = tobacco-free workplace; CBHC = community behavioral health center; BHCs = behavioral health clients; EBPs = evidence-based practices; NRT = nicotine replacement therapy; TUAs = tobacco use assessments. Staff = clinicians, managers and general employees.

ronments, which facilitated TFW program implementation at CBHCs.

Effectiveness. Quantitative results indicated full implementation of TFW policies in both participat-

ing CBHCs – at baseline neither CBHC had an existing TFW policy – leading them to become 100% TFWs, protecting thousands of staff, clients and visitors from second-hand smoke. Although participating CBHCs established TFW policies, staff focus group participants reported policy enforcement variations between the 2 CBHCs. Championed by their CEO, CBHC2 enforced the policy with clients and reported no violations among staff. During focus groups, CBHC1 staff repeatedly reported not enforcing the policy among clients due to fear of provoking violent behavior. Neither CBHC reported increases in client violent behavior, post-implementation. It is notable that these qualitative findings conflict with post-implementation survey data indicating adoption and *enforcement* of 100% TFW policies in both CBHCs. Additionally, through enforcing their TFW policy and program, CBHC2 staff reported policy integration into their workplace culture. CBHC1 staff reported that they should not be burdened with policy enforcement, signaling their reticence to accept and adopt the program fully. These findings were more in line with quantitative results indicating a failure to achieve increases in self-reported acceptability of TFW programs among employees as Table 3 details, though acceptability was generally high at pre-implementation. Likewise, no significant decreases were seen in employee smoking rates (9.82% pre to 10.19% post; x^2 = 6.79, df = 3, p = .079). No staff reported quitting smoking at CBHC1. At CBHC2, one staff member reported quitting smoking because of TFW policy implementation during a focus group, and 2 others reported cutting down on smoking. However, it may be notable that staff quit attempts doubled from 4.89 pre-implementation to 10.42 post-implementation (t = -11.38; p = .18).

Adoption. Increases in TUAs conducted and EBPs provided over baseline were achieved in most areas with the exception of provision of non-nicotine medications for cessation to clients (Table 3). At baseline, neither CBHC provided any tobacco cessation services or resources. By the post-implementation assessment, 13,659 (12,377 unduplicated) TUAs had been conducted. Additionally, diverse CBHC-purchased NRT products (140.5 boxes) were distributed to clients and staff, indicating people were making quit attempts. Moreover, self-reported TFW compliance was high among staff, at 92%. Qualitatively, staff attitudes towards enforcing the TFW policy served as both an implementation barrier and a facilitator. At CBHC1, staff apprehensions served as a barrier to full program implementation, and at CBHC2, staff program support facilitated becoming tobacco-free. Clinicians at both CBHCs were enthusiastic about providing novel EBPs for tobacco cessation to clients and reported their effectiveness in helping clients manage smoking. Likewise, clients reported the effectiveness of smoking cessation groups in quitting smoking:

> *"And I've got these mints [NRT] which, you know, they really, really work…But without the group support, I wouldn't have been able to do it."*
> (Sandy, Client, CBHC1)

Although not explicitly part of the RE-AIM program goals as we defined them, 2 out of the 3 participants (66.66%) reported quitting smoking within one of the smoking cessation groups at CBHC1. Clinicians of other groups reported that many clients had reduced their smoking significantly. Clinicians reported compliance with implementing TFW policy consistent practices, eg, TUAs; described as a vital step in helping clients in quitting smoking.

Implementation. Each CBHC was successful in implementing major TTTF components as intended via self-report of high fidelity to the step-by-step TTTF *Implementation Guide* and the distribution of passive dissemination materials to clients (Table 3). Qualitatively, staff reported the *Implementation Guide* was useful in steering implementation efforts. Unfortunately, program champions reported they had not initiated any internal tobacco cessation trainings.

Regarding implementation requests, clients suggested adjustments to the smoking group curriculum, to reflect individuals in the preparation or action stage of change,[64] rather than pre-contemplation:

> *"It's [curriculum] geared towards smokers who haven't made the decision to stop smoking…but we have already made the decision to quit and that's why we signed up for the group."*
> (Rick, Client, CBHC1)

Table 4
Themes: Factors Related to Program Reach, Effectiveness, Adoption, Implementation and Maintenance

Theme and categories	Context	Participant Quotes
Factors related to Reach Categories: (1) Staff's views on training (2) Community attitudes towards TFW programs	Staff's views on tobacco training, and community attitudes toward tobacco supported TTTF and positively impacted reach	• (1) The training we received was fantastic, and getting it to staff prior to the implementation date, it really brings people onboard. When you have your center saying 'We're behind you, we're going to help you, provide you with the tools you need to help you quit smoking…I think it really shows the staff as individuals that, 'Okay, these guys really, truly care for me as something other than a warm body working.' *(Program Director, CBHC2)* • (2) My experience of [city] is that it's a very health-conscious community…I think there's a cultural shift here towards healthy living. A lot of people are into healthy eating, healthy living, so that makes it easier. *(Intervention Director, CBHC1)*)
Factors related to Effectiveness Categories: (1) Questioning or supporting myths/ fears about TFW programs (2) Staff attitudes towards TFW program (3) Staff experiences of quitting	Attitudes re: myths about TFW programs can aid or hinder program adoption Staff acceptance of TTTF facilitated program success TTTF helped staff to quit/ manage tobacco	• (1) But there were a lot of things people predicted would happen that didn't happen… that people would be smoking at respite or in the group homes. Most of the fears that we feared, we had no reason to fear. I mean it went so well. *(CEO, CBHC2)* • (1) That's one of my fears of going to someone who's already having a really bad day and setting them off and having a crisis situation or an aggressive situation...I'm not going to risk myself to tell him to stop smoking, personally…I don't know anyone else who does. *(Clinician CBHC1)* • (2) I can't see where there would be any barriers coming forward to sustain it [tobacco-free program]… because everybody has bought into it, because it *IS* policy. It's part of (CBHC2) now and I believe that everybody has accepted that...This is *our* environment for (CBHC2) now. *(Program Director, CBHC2)* • (3) Because we're going to a non-smoking campus I thought, I got to quit smoking. If I'm not going to smoke at work when I'm stressed out I might as well just quit. I've got to plan my smoke breaks off campus and go somewhere where I can smoke and that's just too complicated! I don't need to smoke that bad! *(Clinician CBHC2)*
Factors related to Adoption Categories: (1) Contextual factors affecting uptake (facilitators/barriers) (2) Practices compliant with policy (3) Clinician views of tobacco cessation interventions	Site-specific contextual factors can either hinder or aid program uptake Clinicians reported using novel practices compliant with TFW policy Clinicians reported benefits of using tobacco interventions	• (1) The facilitator's going to be to a large degree the staff that smoke, I know this is hard but, staff to client – 'I'm going through this too.' So, the facilitator to the largest degree is the staff. *(Program Director, smoker, CBHC2)* • (1) The support staff aren't trained in mental health so they don't say something when they're out there [smoking] and we don't say something. So, even though we want to be smoke free, I don't feel like it's being addressed or enforced. [Barrier] *(Clinician CBHC1)* • (2) Introducing mindfulness and those relaxed breathing skills…they really appreciated that and delaying the first cigarette too. A client told me, 'If I can delay that first one, just for one hour I'm not going to smoke, and then OK, just for another hour, I'm not going to smoke, then I can get to lunch [smoke-free].' *(Clinician CBHC1)* • (3) I think the best thing we've done so far is implementing the [tobacco] assessment… We're asking the question now. It's not just 'Are you smoking?' It's 'Do you want to quit?' We're also giving them the opportunity and providing that assistance to quit if they request it. *(Program Manager, CBHC2)*
Factors related to Implementation Categories: (1) Tailoring material/ strategies (2) Champion-initiated trainings (3) Program fidelity (consistent with Implementation Guide and website)	Staff tailored program materials Champion's work load, and confidence limited TTTF implementation Staff reported implementing key components, using website	• (1) My clients, I go to their homes because they're 0 through 3 [years old]. If there is a pamphlet that we could give parents about it [smoking] …because the client is the baby who's in danger. So, we need to offer assistance to the parents who are putting the baby in that environment. *(Early childhood intervention specialist, CBHC2)* • (1) [Clients] were really interested in how addiction affects the brain… what was most impactful to them was connecting with each other, having the common ground of being able to support each other. *(Clinician CBHC1)* • (2) I don't feel prepared to lead staff trainings…and don't really have the time to set them up and keep them going. *(Champion, CBHC2)* • (3) There was some withdrawal symptoms on the website that were really useful to give clients to take with them…there's a column for withdrawal symptoms and then another for coping skills. So, you're going to be angry, you're going to be irritable and here are some skills that you can use for those. *Clinician CBHC1*
Factors related to Maintenance Categories: (1) Functional delivery systems (2) Attitudes towards sustaining program initiatives (3) Integration into organizational culture	Enabling uptake via adjustments to key initiatives delivery While aware of challenges to sustaining TFW program, staff valued initiatives To varying degrees, changes occurred in CBHC culture	• (1) The prescribers do them [TUAs]. Every time [clients] see a prescriber, they do an assessment with them…the issue we've had is the doctors, and not having the time of really being able to go over it more in depth. *(Clinician CBHC1)* • (2) The only thing I can foresee from a management point is just as we continue to grow and change we're going to have to be mindful not to forget and let it [TTTF] drop. So, I think we'll have to be continuously proactive on how we're going to keep this awareness fresh and keep these services available. *(CBHC1)* • (2) When you're interacting with a patient, instead of just saying 'Do you smoke? Yes, no, how much?' You go on to say: 'Do you want some assistance quitting?' And we weren't doing that. We were just 'Do you smoke?' Check, check…And so we never knew whether they wanted help to quit or not….You got to take it to the next step….that is *so* important. *(CEO, CBHC2)* • (3) It's a change in the culture and that's the whole point of the program is to change the culture and how we see things and what the new normal is. Smoking has been the normal and this process is changing all of that. *(Program Manager, CBHC2)*

Note.
TTTF = Taking Texas Tobacco-Free; TFW = tobacco-free workplace; CBHC = community behavioral health center; TUAs = tobacco use assessments.

Table 5
Benefits of Applying Mixed Methods to Adapt and Evaluate Program Implementation

Phase 1: Pre-implementation: Implementation Strategies:
• Translational formative evaluation process
• Preparing organization for implementation (facilitated by TTTF team's ongoing provision of guidance and practical advice) via:
  ○ Educating employees and training clinicians in EBPs in treating tobacco dependence
  ○ Designation and specialized training of program champions to steer implementation
  ○ Developing and establishing TFW policy
	• Formative evaluation and training of staff successfully prepared CBHCs to become tobacco-free and shape program strategies/materials to their needs
	• Qualitative methods involved key stakeholders in developing program materials tailored to their needs and special populations (eg, Vietnamese, pregnant women), enhancing program buy-in, delivery, reach, and facilitating uptake
	• Quantitative data informed selection of diverse focus group sample
	• Quantitative results support the effectiveness - and qualitative the value - of trainings as key to overcoming barriers/biases and implementing change
	• Periodic interviews with program champions facilitated TFW policy and program implementation

Phase 2: Program Implementation: Implementation Strategies: • Monitor, adapt, and implement EBPs • Implementation/integration of EBPs into routine practice and data collection to monitor their use • Additional specialized tobacco treatment trainings	• Monitoring and adjusting program strategies enhanced program implementation • Comparing monthly logs of numbers of TUAs conducted with staff focus groups identified a barrier to CBHC1 TUA delivery. Adjustment resulted in increases in the conducting of this key component • Findings from client focus groups were used to adapt group smoking curriculum to clients' needs and stage of change • Via staff focus groups, NRT was extended to staff as well as clients • Facilitators/barriers: Client and staff focus groups findings identified the value of providing smoking cessation groups (66% of attendees quit smoking), and the barriers to doing so (after-hours scheduling)
Phase 3: Post-implementation: Implementation Strategies: • Identifying and establishing systems for sustainability • Enhancing program implementation via data-driven improvements	• Qualitative data identified facilitators/barriers to establishing sustainability • (1) conducting TUAs; (2) CBHC variation in TFW policy enforcement due to staff attitudes and organizational leadership; (3) explained discrepancy between quantitative and qualitative results on TFW policy enforcement • Identified champions' need for extra training to lead and incorporate tobacco education into new staff orientations and annual trainings • Identified factors facilitating integration into organizational culture (ie, differential staff buy-in, lack or support of CBHC leadership)

Note.
EBPs = evidence-based practices; TFW = tobacco-free workplace; CBHC = community behavioral health center; TUAs = tobacco use assessments, NRT = nicotine replacement therapy; TTTF = Taking Texas Tobacco-Free.

Clients also requested more group, rather than individual, smoking cessation materials and information on the neurobiology of nicotine addiction. We added these resources to the project website to address requests and improve implementation.

Maintenance. Systems for monitoring and documenting TUA provision and NRT distribution were established, and modified where needed, to operate efficiently within each CBHC, meeting TTTF maintenance objectives (Table 3). NRT was obtained past the active implementation period, with more than 140 boxes distributed to staff and clients during TTTF's monitoring period. Additionally, about half of the 17 participating clinics provided tobacco education for new staff, and a quarter did so within annual trainings.

Qualitative data indicate staff's general attitudes towards ongoing program maintenance between the 2 CBHCs varied. At CBHC1, the tobacco-free program was seen as having been implemented and forgotten about; rather than integrated into center culture. At CBHC2, staff reported integrating the program and program maintenance into the center to become part of organizational culture. Both

CBHCs valued NRT as essential to helping their clients manage or quit smoking.

Contribution of Mixed Methods across Phases for Evaluation

Table 5 summarizes the benefits of our mixed-methods approach to adapt, implement, and evaluate TTTF within the targeted CBHCs.

Program Weaknesses

Areas in which program implementation were weak included: (1) lack of significant decrease over baseline in staff tobacco smoking rates; and (2) lack of sustainability initiatives by champions, including ongoing training provision and continued smoking cessation groups. Challenges reported by champions to providing in-house trainings included competing organizational duties and lacking confidence to lead such trainings. It also seems that trainings were being offered by other personnel annually and in new employee trainings, which may have been seen as precluding the need for champions to also do so throughout the year.

DISCUSSION

Our findings demonstrate that whereas implementation of program components varied within and between CBHCs, TTTF's implementation was largely successful. Both CBHCs delivered evidence-based tobacco cessation interventions, integrated TUAs into routine practice, increased exposure to tobacco training among clinicians and employees, and dispensed NRT to clients and staff. Although both CBHCs reported adopting a 100% TFW policy, comparison of quantitative and qualitative data indicate inconsistent policy implementation and *enforcement* between the 2 agencies. While CBHC2 adopted and enforced a 100% TFW policy, qualitative findings from staff focus groups indicated CBHC1 staff inconsistently enforced the policy out of fear of provoking violent behavior from clients. Policy adoption without policy enforcement is limited, and this represents an area of improvement for CBHC1. Likewise, a focus on improving staff quit rates and engaging program champions in the provision of ongoing training will need to be a future focus for both CBHCs, and should be considered in the implementa-

tion of TTTF in similar settings.

As researchers have noted, clinician misconceptions regarding treating tobacco dependence within CBHCs serve as the strongest organizational barrier to successful implementation of tobacco cessation programs.[25-27] In applying the TTTF training on treating tobacco dependence among BHCs, CBHC2 staff overcame their initial misconceptions and fears regarding addressing smoking among their clients to integrate TTTF faithfully into their organization. The overcoming of this fundamental barrier served as a catalyst allowing CBHC2 staff and leadership to incorporate effective clinician training on EBP's to treat tobacco dependence, value tobacco addiction as a serious problem, and establish and enforce tobacco-free policies – thus addressing the most commonly cited implementation barriers to tobacco cessation programs within CBHCs.[2,11,21-24] Whereas at CBHC1, staff attitudes and misapprehensions regarding smoking and their BHCs persisted without change, resulting in partial program adoption due to lack of policy enforcement. Although TTTF team members continually attempted to correct these misconceptions by providing research evidence and prior program experience to the contrary, these erroneous beliefs continued unabated among CBHC1 staff. Qualitative data indicate the difference between attitudes at each CBHC towards TFW policy enforcement was largely influenced by program support, or lack thereof, of center leaders. The CEO of CBHC2 actively championed and remained abreast of program implementation, whereas CBHC1 center leadership adopted a hands-off approach, delegating implementation exclusively to managerial staff. Our findings are consistent with various studies citing the critical importance of support and direction from organizational leaders to successful program implementation.[65-67]

Qualitative data from clinicians and clients at CBHC1 indicate greater success in clients quitting smoking than at CBHC2. Differences in client quit rates at each CBHC may likely be attributed to the provision, or lack, of smoking cessation groups; proven effective in helping BHC's to quit as part of comprehensive tobacco-free programs.[24,59,60] Although CBHC1 only held one series of smoking cessation groups, clinicians and clients reported that in one group, 2 out of the 3

group members (66.66%) quit smoking with support from peers and NRT. CBHC2 did not provide any smoking cessation groups. At CBHC1, clinicians were enthusiastic, engaged and supportive in assisting clients in the smoking cessation groups, and clients attributed their success in quitting to this group support. Although clinicians at both CBHCs valued the provision of smoking cessation groups, their main obstacle was organizational, as neither operated in the evening nor offered after-hours services, when clients were available for evening sessions.

Our findings on each of our individual program components is consistent with prior research supporting the effectiveness of TFW policies in reducing tobacco use,[68,69] TUAs in increasing quit attempts,[2] EBPs in treating tobacco dependence,[9,70] and increasing cessation services provided by training clinicians on treating tobacco dependence.[23,71] Moreover, as a comprehensive organization-wide TFW program, TTTF's multicomponent model proved effective in addressing the many challenges influencing successful program implementation,[24,29] and affecting organizational change. Implementation scientists have stressed the importance of differentiating between core *intervention* components, and core *implementation* components, ie, the core implementation drivers required to implement intervention components, such as coaching or training.[72]

Employing a mixed-methods design allowed key program stakeholders to participate collaboratively via qualitative methods to shape core intervention components to their needs, and researchers to understand context-specific implementation facilitators, barriers, and processes at individual CBHCs. Improving systems, organizational and community fit of intervention components enhanced core implementation components and addressed implementation challenges more effectively. Use of mixed methods also facilitated implementation by providing information on which intervention components were successfully adopted (or not), by whom, and why (or why not), expanding our understanding of what core implementation components need further development.

Identified areas of weakness in program implementation on the RE-AIM dimensions included: (1) absence of champion-initiated trainings, ie,

implementation; (2) inability to provide routine smoking cessation groups, ie, adoption; and (3) continuing tobacco education – challenges integrating tobacco education into new staff orientation and training, ie, maintenance. Although these components are on the clinician, systems, and organizational levels, the organization primarily determines them, as ultimately, they are due to prioritization of resources. Following implementation, both CBHC1 and CBHC2 were sent a comprehensive report of their respective implementation process and outcomes, which included concrete recommendations for program improvement and sustainability over time.

Whereas champions' stewardship was vital in overseeing and organizing program implementation and maintenance efforts, neither took the next step to initiate any trainings at their CBHCs. Other studies support the importance of champions in leading successful implementation.[73] Champions reported competing duties and demands on their time and uncertainty in their ability to lead such trainings, as the main obstacles to providing in-house trainings. As both program champions reported similar challenges to providing and leading continuing tobacco education efforts, this indicates an area needing improvement in the TTTF program, ie, greater support and resources, such as train-the-trainer courses, to meet this implementation goal to ensure sustainability. A subsequent TTTF project is focused on providing program champions with the additional resources needed to transition from being managers to leaders of organizational change to remedy this gap.

Limitations

Some focus group participants may have had a stake in over-reporting program success. To diminish the potential for social desirability bias in the qualitative data, we intentionally included program sympathizers and detractors to capture a more accurate picture of implementation, inquired about – and encouraged participants to share – negative and positive experiences, and used varied qualitative data collection methods, triangulating across data sources to ensure rigor.[54,74] Given the central role of context to successful implementation and the attention placed on this factor within this study, findings are not necessarily applicable to

other settings and populations. Our aim, however, was not generalizability of findings; rather, to the contrary, we sought to demonstrate and describe how we identified and responded to the needs of individual centers to enhance program fit and implementation. Neglecting to recognize context as primary in implementation studies has been cited as a significant limitation.[75,76] Limitations for quantitative data included that not all surveyed stakeholders participated in data collection, despite solicitation, and inability to match pre-and post-data at participant-level, which was enacted so that respondents would be non-identifiable and thus potentially more likely to provide honest responses. Also, as previously mentioned, quantitative data on quit attempts among clients (eg, from medical records) was not collected for comparison to qualitative reports. To address this limitation, our future studies will seek to collect client-level data regarding smoking cessation. Although CBHCs established systems for program maintenance and we provided pertinent recommendations, collection of long-term data on sustainability by TTTF personnel was not feasible beyond the funding period.

Conclusions

Implementation of TTTF at both CBHCs increased organizational capacity in the provision of EBPs to treat tobacco use and dependence through successfully meeting the majority of our RE-AIM targets. Adopting a mixed-methods approach enhanced TTTF program implementation, which allowed us to conduct a formative evaluation process to adapt implementation strategies to local contexts, evaluate program outcomes, and characterize processes influencing program implementation in 2 CBHCs (17 clinics). Mixing methods also involved program adopters and recipients as collaborators who directly influenced implementation by shaping core interventions to their individual context and needs, facilitating uptake. Collaboration with key stakeholders was vital to enhancing program buy-in, adapting delivery systems, program content and materials, and ensuring maintenance; furthermore, it alerted us to needed improvements in core implementation components. Our findings suggest that successful implementation of multilevel, evidence-based tobacco interventions requires an in-depth understanding of the implementation

culture at the level of the clinician, client, organization, and community, to address barriers and support facilitators.

Findings contribute to the development of flexible strategies and tailored interventions responsive to real-world conditions in diverse settings, which are better equipped to address implementation barriers. The need to address tobacco dependence among BHCs is imperative. This evaluation of the TTTF program presents a successful model for the implementation of an effective and sustainable evidence-based, TFW program in community organizations interested in becoming tobacco-free, and provides a model for mixed methods processes in similar settings.

Human Subjects Approval Statement

This study was approved by the Institutional Review Board of the University of Houston (Study: 16541-EX (8506), approved, 07/13/2016; additional modifications approved 08/19/16). All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. All participants provided oral or written consent prior to participation in this study.

Conflict of Interest Disclosure Statement

All authors have no competing interests to declare. This article is available at: https://www.researchsquare.com/article/rs-18558/v2 as a withdrawn preprint. The authors declare this article has not been published, nor is under publication, elsewhere.

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