Published in final edited form as:

J Subst Abuse Treat. 2014 ; 47(5): 314–320. doi:10.1016/j.jsat.2014.06.007.

Understanding Counselors' Implementation of Tobacco Cessation Services with Patients

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Abstract

This study aimed to understand substance use disorder counselors' implementation of evidencebased tobacco cessation services (TCS) with their patients who smoke. Drawing from an established adoption of innovations framework, we investigated the association between counselors' perceptions of the availability of TCS (both pharmacotherapies and behavioral treatments) in their treatment program and the implementation of TCS (both pharmacotherapies and behavioral treatments) with their patients who smoke and whether this association is moderated by the strength of an organization's climate for implementation and the fit of the innovation with users' values. Data were collected in 2010 from 682 counselors working in 239 treatment programs across the U.S. that offer evidence-based TCS. Mixed-effect models showed that perceived availability of TCS was related with greater TCS implementation. This relationship was moderated by several indicators of climate for implementation but not by the fit of the innovation with users' values.

Keywords

addiction treatment; adoption research; evidence-based practices; implementation research; smoking cessation

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1. Introduction

Although perceptions exist that quitting tobacco use may hinder abstinence from alcohol and other drugs (Weinberger, Reutenauer, Vessicchio, & George, 2008), studies indicate that tobacco cessation (TC) raises the likelihood of sustaining sobriety (Baca & Yahne, 2009). Further, research suggests that nicotine has an effect on the brain such that it promotes nicotine cravings (D'Souza & Markou, 2011) and the chance of addiction to other drugs (Fagen, Mitchum, Vezina, & McGehee, 2007). Nicotine also decreases the recovery of brain structure and cognitive improvements after achieving sobriety in alcohol dependent individuals (Yeh, Gazdzinski, Durazzo, Sjostrand, & Meyerhoff, 2007).

With studies also illustrating tobacco use rates between 65%-85% among individuals with substance use disorders (SUDs) (Guydish et al., 2011) but also interest in quitting smoking (Clarke, Stein, McGarry, & Gogineni, 2001), it is important to examine both the adoption of tobacco cessation services (TCS) in SUD treatment programs and factors that increase the implementation of these services by the frontline professionals (i.e., counselors) who deliver treatments. The purpose of the current study is to understand SUD counselors' implementation of evidence-based practices (EBPs) for TC with their patients who smoke when they work in treatment programs that offer TCS.

1.1. Importance of TC for Patients in SUD Treatment

Individuals seeking treatment for SUDs tend to smoke more cigarettes and are more nicotine dependent than individuals in the general population (Substance Abuse and Mental Health Services Administration [SAMHSA], 2011). The well-documented and serious public health consequences resulting from cigarette smoking led to the development of a variety of evidence-based TC treatments that are recommended for SUD patients. First, there is strong support for nine pharmacological treatments including nicotine replacement therapy (NRT) (patch, gum, lozenge, inhaler, spray), bupropion, varenicline, nortriptyline, and clonidine (Abrams et al., 2003; Fiore et al., 2008). Second, behavioral treatments including individual and group counseling for TC also have a strong empirical basis (Abrams et al., 2003; Fiore et al., 2008). Like pharmacological treatments, "more counseling is better," both in terms of the type of behavioral intervention and the duration of the intervention (Fiore et al., 2008). Despite these efforts, availability and use of EBPs for TC in SUD treatment is not extensive (Eby & Laschober, 2013; Knudsen & Studts, 2011; Laschober & Eby, 2013).

1.2. Understanding Counselors' Implementation of TCS

Klein and Sorra's (1996) theoretical model of the innovation implementation process was used to guide the current study. According to Klein and Sorra (1996), when organizations adopt innovations it is essential to gain members' committed use of the innovation in order for implementation to occur and be sustained. The mere adoption of an innovation does not automatically translate into implementation effectiveness although adoption has to occur prior to implementation. This is consistent with Rogers' (2003) work on the adoption of innovations and Fixsen et al.'s (2005) comprehensive review of the implementation of EBPs.

Hypothesis 1: There will be a positive relationship between perceived availability of evidence-based TCS (pharmacotherapies and behavioral treatments) and counselor implementation of evidence-based TCS (pharmacotherapies and behavioral treatments).

Klein and Sorra's (1996) model identifies several factors that may increase the likelihood that counselors implement TCS when they are adopted by their organization. These factors include climate for implementation and fit of the innovation with users' values. Climate for implementation refers to the extent to which organizational policies, practices, and characteristics support innovation use. Fit of the innovation with users' values refers to the degree to which the use of the innovation is aligned with employees' personal values and beliefs (Klein & Sorra, 1996).

Climate for implementation—One reason that counselors may not implement available EBPs for TC is that they do not possess the necessary skills and training to treat patient smoking behavior (e.g., Guydish, Passalacqua, Tajima, & Manser, 2007). This is a real possibility in SUD treatment given the varied professional backgrounds of counselors, lack of national accreditation and licensing standards in the field, limited on-the-job training, and high turnover among counselors (Eby, Burk, & Maher, 2010; Eby & Rothrauff-Laschober, 2012; Kerwin, Walker-Smith, & Kirby, 2006; Laschober & Eby, 2013; McLellan, Carise, & Kleber, 2003).

Hypothesis 2: The positive relationship between perceived availability of evidence-based TCS (pharmacotherapies and behavioral treatments) and counselor implementation of evidence-based TCS (pharmacotherapies and behavioral treatments) with patients who smoke will be stronger among counselors reporting higher TC-related skills.

Climate for implementation is also related to the incentives that are available to support innovation use (Klein & Sorra, 1996). Such incentives are reinforcing to employees and send signals as to what is supported, valued, and expected within the organization. One important incentive for SUD counselors to implement TCS with their patients may be their perceptions of management support for and openness to the use of EBPs. This speculation is supported by research demonstrating that supervisor support is positively related to employee implementation of organizational change (e.g., Eby, George, & Brown, 2013; Klein, Conn, & Sorra, 2001).

Hypothesis 3: The positive relationship between perceived availability of evidence-based TCS (pharmacotherapies and behavioral treatments) and counselor implementation of evidence-based TCS (pharmacotherapies and behavioral treatments) with patients who smoke will be stronger among counselors reporting greater perceived management support for using EBPs.

Finally, Klein and Sorra (1996) point out that in order for innovations to be implemented, employee workplace obstacles to innovation use must be removed. One of the primary obstacles to implementation that counselors are likely to experience is inadequate time due to high caseloads, heavy paperwork requirements, and limited personnel (Broome, Knight, Edwards, & Flynn, 2009; McLellan et al., 2003). This is likely to be a particular challenge

with TCS because patients enter treatment not to quit tobacco but to deal with addictions to alcohol and other drugs.

Hypothesis 4: The positive relationship between perceived availability of evidence-based TCS (pharmacotherapies and behavioral treatments) and counselor implementation of evidence-based TCS (pharmacotherapies and behavioral treatments) with patients who smoke will be stronger among counselors perceiving fewer obstacles to implementation.

Fit of the innovation with users' values—Motivation to use an organizational innovation is likely to be related to employees' personal values regarding the innovation and its use (Klein & Sorra, 1996). Previous research finds that counselors vary in their attitudes toward innovations, the use of EBPs in general (Ball et al., 2002; Forman, Bovasso, & Woody, 2001), and TC EBPs more specifically (Fuller et al., 2007; Guydish et al., 2007). This may be linked to erroneous beliefs that patients are not interested in TC (Richter & Arnsten, 2006) or that TC can compromise the successful treatment of other SUDs (Prochaska, Delucchi, & Hall, 2004).

Hypothesis 5: The positive relationship between perceived availability of evidence-based TCS (pharmacotherapies and behavioral treatments) and counselor implementation of evidence-based TCS (pharmacotherapies and behavioral treatments) with patients who smoke will be stronger among counselors reporting a stronger fit of the innovation with their own values.

2. MATERIALS AND METHODS

2.1. Study Design and Sample

The data for this study came from counselors working in randomly sampled SUD treatment programs that participated in the Managing Effective Relationships in Treatment Services (MERITS III) project in 2010. MERITS III is a National Institute on Drug Abuse (NIDA) funded project that examines the effect that SUD treatment program processes and management practices have on the adoption, implementation, and sustainability of TCS in SUD treatment programs. All procedures were approved by the University of Georgia Institutional Review Board. Detailed information on the sampling frame has been published previously (Muilenburg, Laschober, & Eby, 2014).

The 2010 Substance Abuse and Mental Health Services Administration (SAMHSA) National Directory provided the sampling frame for selecting treatment programs and included 11,153 SUD treatment programs. SAMHSA requires programs to be licensed, certified, or otherwise approved for inclusion in the Directory by their State Substance Abuse Agencies. Treatment programs were located across the U.S. and included Federal, State, local government, and private facilities. To be eligible for participation in MERITS III, treatment programs had to provide SUD counseling services in a community setting. Programs that offered only methadone maintenance, Veterans Administration (VA) programs, DUI educational programs, those listed as Halfway Houses, and only offered detoxification were not eligible for participation.

A random number generator was used to randomly select treatment programs for potential participation. A brief screening phone call identified eligible treatment programs. Research assistants called eligible treatment programs to obtain a sample of programs where the program administrator agreed to participate in the study. Of the 1,599 eligible treatment programs that could be contacted, 1,006 program administrators completed a survey (62.91% basic response rate). If program administrators indicated that they offered TCS ($N = 267$), they were asked to provide a list of all counselors who worked in their program.

Counselors were contacted via e-mail and invited to either participate in an online survey or complete a paper-and-pencil survey through the mail. Of the 2,005 eligible counselors identified by the program administrators, 1,044 completed a survey ($N = 880$ online, $N = 164$ mail; 52.07% response rate). Relevantly we note that SUD counselor and organizational characteristics of the current sample are in general comparable to studies conducted using large nationally representative samples (e.g., Knudsen, Boyd, & Studts, 2010; Knudsen, Muilenburg, & Eby, 2013; Olmstead, Johnson, Roman, & Sindelar, 2005) (results are available upon request from the first author). Thus, we can be cautiously but reasonably certain that non-response bias is not likely to be a major threat to validity. Because of the focus on counselor implementation of TCS in the current study, only counselors who answered that they had experienced at least 10 patients who smoked cigarettes were included in the data analysis. This resulted in a final sample of 682 counselors who worked in 239 treatment programs (see Table 1 for counselor and program characteristics). Counselors were paid \$50 for completing a survey.

2.2. Measures

The independent variables of *perceived availability of TC pharmacotherapies* and *perceived availability of TC behavioral treatments* were measured by asking counselors to review a list of possible TCS and indicate whether or not (0 = *no*, 1 = *yes*) each of these treatments was currently available in their treatment program. Availability of TC pharmacotherapies included the nine currently recommended treatments (nicotine gum, patch, lozenge, nasal spray, inhaler; bupropion-SR, varenicline, nortriptyline, and clonidine) (Abrams et al., 2003; Fiore et al., 2008). The availability of TC pharmacotherapies treatment scale was created by summing the number of *yes* responses to the nine items.

Availability of TC behavioral treatments included 16 items including at admission... implement 5As in general, ask if patient currently smokes, advise patient to quit smoking, assess patient willingness to quit, assist patient in quitting, schedule smoking cessation follow-up contact; provide self-help materials, offer individual counseling that focuses on social support, provide individual counseling that focuses on problem solving skills/training, have four or more individual counseling sessions available, offer group counseling, provide telephone counseling/quitline support, have additional community resource referrals, and use specific motivational interviewing (Abrams et al., 2003; Fiore et al., 2008). The availability of TC behavioral treatment scale was created by summing the number of *yes* responses to the 16 items.

The two dependent variables were counselors' self-reported *implementation of TC pharmacotherapies* and *implementation of TC behavioral treatments* with their patients who

smoke. Counselors were first asked whether they had experienced at least 10 patients who smoke cigarettes in their treatment program. If they had such experience, they were asked to specify with how many of their last 10 patients (0-10 scale) they used (implemented) each of the nine TC pharmacotherapies and each of the 16 TC behavioral treatments that they indicated were available at their treatment program. The implementation of TC pharmacotherapies scale was created by calculating the mean across the nine pharmacotherapy items ($\alpha = .81$). The implementation of TC behavioral treatments was created by calculating the mean across the 16 behavioral treatment items ($\alpha = .90$).

Four moderators were examined. *Counselor TC-related skills* were measured with 3 items. This included the number of hours of training received in the last year in the treatment of TC among individuals seeking treatment for co-occurring SUDs, the extent to which formal educational training included coursework related to treatment of nicotine dependence (0 = *no extent*, 1 = *some extent*, 2 = *great extent*), and the extent of knowledge about EBTs for TC (0 = *no extent*, 1 = *some extent*, 2 = *great extent*). Due to differences in response options, the three items were standardized prior to creating a summed score, with higher scores indicating greater counselor skills.

*Perceived management support for using EBP*s was measured with Aarons' (2004) 4-item management openness to the use of EBP scale. The items asked counselors to report the extent to which, "Management encourages counselors to use new types of therapy/interventions ... (1) to help their patients, (2) even if they have to follow a treatment manual, (3) developed by researchers, and (4) even if it were different from what the program was used to doing." Responses were recorded on a Likert-type scale ranging from 1 = *strongly disagree* to 5 = *strongly agree*, with higher scores indicating greater perceived management support ($\alpha = .87$).

Absence of TC-related obstacles was measured with Cammann, Finchman, Jenkins, and Klesh's (1979) 3-item (lack of) role overload measure (e.g., "The amount of work I am asked to do is fair."). Responses were recorded on a Likert-type scale ranging from 1 = *strongly disagree* to 5 = *strongly agree* ($\alpha = .74$).

Fit of the innovation with users' values was measured with a 2-item modified version of Walsh et al.'s (2005) scale that assessed attitudes toward TC treatment. Items include, "The provision of a comprehensive range of smoking cessation interventions should be an integral function of this treatment program" and "Smoking cessation counseling is as important as counseling about other drugs for patients in this treatment program." Responses were recorded on a Likert-type scale ranging from 1 = *strongly disagree* to 5 = *strongly agree* ($\alpha = .72$).

Counselor characteristics—Counselors also provided background information regarding their gender (0 = *male*, 1 = *female*), highest level of education (0 = *less than a master's degree*, 1 = *master's degree or higher*), licensure or certification as a SUD professional (0 = *no*, 1 = *yes*), age in years, tenure in their current job in years, tenure as SUD counselor in years, and annual income in dollars.

Treatment program characteristics—Program administrators reported on the percentage of clinicians (counselors and clinical supervisors) who smoke (0%-100%), the percentage of patients in their treatment program who smoke (0%-100%), the treatment program size (the number of full-time employees on the pay-roll), whether their program is non-profit or for-profit (0 = *for profit*, 1 = *non-profit*), whether their program is affiliated with a hospital (0 = *no affiliation*, 1 = *affiliation*), and the level of care their programs offer (1 = *inpatient only*, 2 = *outpatient only*, 3 = *mix of inpatient and outpatient*).

Control variables—We considered various counselor and program level control variables for inclusion in the analyses based on previous studies finding a relationship with TCS delivery in SUD treatment programs (e.g., Eby & Laschober, 2013; Friedmann, Jiang, & Richter, 2008; Guydish et al., 2007; Knudsen & Studts, 2011; Ziedonis, Guydish, Williams, Steinberg, & Foulds, 2006). Variables considered were the percentage of counselors who smoke, the percentage of patients who smoke, program profit status, program hospital-affiliation, level of care, treatment program size, and whether the counselor is a current smoker. Only variables that were significantly correlated ($p < .05$) with the implementation of TC pharmacotherapies or TC behavioral treatments in preliminary correlational analyses (not shown) were included as controls in the mixed-effects models. These included the percentage of patients who smoke, program size, hospital-affiliation, and counselor current smoking status.

2.3. Data Analyses

Descriptive statistics were run to examine the demographic characteristics of the counselors and their treatment programs. The hypotheses were tested using hierarchical mixed-effects models due to the nesting (counselors being nested within treatment programs) and multilevel structure of the data (counselor-level and program-level data). Calculation of the intraclass correlation coefficients (ICCs) showed that 39.35% of the variance for the implementation of TC pharmacotherapies and 32.63% of the variance for the implementation of TC behavioral treatments was explained by within treatment program nesting. These ICCs indicate a large amount of nesting and the need for mixed-effects models over ordinary least squares multiple regression models.

Prior to running the mixed-effects models, the independent variables and moderators were centered at the mean to decrease multicollinearity concerns. The dependent variables were standardized to allow for a visual comparison whether there are differences in the strength of the coefficients regarding the perceived availability and implementation of TCS. The models were run separately for each of the two dependent variables (implementation of TC pharmacotherapies and implementation of TC behavioral treatments) and in four models (see Tables 2 and 3). The control variables were entered in Model 1. The independent variable was added in Model 2 (either perceived availability of TC pharmacotherapies when the DV was implementation of TC pharmacotherapies or perceived availability of TC behavioral treatments when the DV was implementation of TC behavioral treatments). The moderators were added in Model 3, and the interaction terms were added in Model 4. Data were analyzed using SAS 9.3.

3. RESULTS

3.1. Descriptive Statistics

As shown in Table 1, counselors reported a mean of 1.82 pharmacotherapies availability (on a 0-9 scale), 9.03 behavioral treatment availability (on a 0-16 scale), 0.61 pharmacotherapies implementation (on a 0-10 scale), and 4.43 behavioral treatment implementation (on a scale of 0-10). Also shown in Table 1 is that according to counselor reports, the majority were licensed or certified SUD professionals (73.08%), female (67.89%), and held at least a master's degree (51.62%). About 20.82% of counselors were current smokers. The average counselor was 44.34 years old, had 7.72 years of experience as an SUD counselor, 5.60 years of experience working in their current job, and reported an annual income of \$38,032. Program administrators reported that an average of 71.98% patients and 15.85% clinicians in their program smoked. The average program had 24.94 full-time employees. Also, 79.92% were non-profit programs, 53.56% were accredited, and 23.01% of programs were affiliated with a hospital. Level of care was also diverse with 48.12% offering only outpatient, 26.36% offering only inpatient, and 25.52% offering a mixture of in- and outpatient care.

3.2. Relationship between Perceived Availability and Implementation of TC Pharmacotherapies and Moderators of the Relationship

As shown in Table 2, Model 2, there was a significant positive relationship between perceived availability of TC pharmacotherapies and implementation of TC pharmacotherapies with patients who smoke ($B = .16$). Model 3 also illustrates a positive main effect of counselor TC-related skills on the implementation of TC pharmacotherapies ($B = .08$). Model 4 provides the results of hypothesis testing. Both counselor TC-related skills and perceived management support for EBPs significantly moderated the relationship between the perceived availability and implementation of TC pharmacotherapies ($B = .01$ and $.06$, respectively). Examination of the interaction graphs (see Figures 1 and 2) illustrate that, as expected, the positive relationship between availability and implementation of pharmacotherapies was stronger for counselors with higher TC-related skills (Hypothesis 1) and stronger for counselors reporting greater perceived management support for EBPs (Hypothesis 2). Neither Hypothesis 3 (absence of obstacles) nor Hypothesis 4 (fit of the innovation with users' values) was supported. Of the four control variables, only hospital-affiliation was consistently significantly related to implementation of pharmacotherapies.

3.3. Relationship between Perceived Availability and Implementation of TC Behavioral Treatments and Moderators of the Relationship

Model 2 in Table 3 indicates that there was a significant positive relationship between availability of TC behavioral treatments and implementation of TC behavioral treatments with patients who smoke ($B = .20$). Model 3 also demonstrates that two of the four moderator variables had a significant main effect: counselor TC-related skills and perceived management support for using EBPs were significantly positively related to implementation of TC behavioral treatments ($B = .03$ and $.07$, respectively). Model 4 provides the results of hypothesis testing. The only significant moderator effect involved perceived management support for using EBPs. Examination of the interaction graph (see Figure 3) showed that the

positive relationship between the perceived availability and implementation of behavioral treatments was stronger for counselors who reported greater perceived management support for using EBPs ($B = .02$). As such, for behavioral treatments, only Hypothesis 2 was supported. Of the four control variables, only hospital-affiliation was consistently significantly related to implementation of pharmacotherapies.

4. DISCUSSION

The present study aimed to understand counselors' implementation of evidence-based TCS, including pharmacotherapies and behavioral treatments, with their patients who smoke cigarettes. Four main conclusions can be drawn from the findings. First, perceived availability of both types of evidence-based TCS (pharmacotherapies and behavioral treatments) is positively related to their respective implementation, although the effect sizes are small. Second, several indicators of climate for implementation are found to moderate the relationship between perceived availability and implementation of TCS. Third, the pattern of moderating effects varies somewhat between TC pharmacotherapies and TC behavioral treatments implementation. Finally, fit of innovation with users' values is not a significant moderator of either type of TCS implementation.

4.1. Relationship between Perceived Availability and Implementation of TCS

Perhaps not surprisingly, we find that counselors are significantly more likely to implement TCS when they perceive greater availability of both TC pharmacotherapies and TC behavioral treatments in the treatment program. However, these associations are small ($B = .16$ for pharmacotherapies and $B = .20$ for behavioral treatments) and together with the finding of overall low to moderate availability of TCS suggest that other variables besides perceived availability predict the decision to provide TCS to patients who smoke. This is consistent with the theoretical suggestions made by Klein and Sorra (1996), namely that the mere adoption of TCS by treatment programs does not automatically mean that TCS are actually used by counselors. The results of this study are important for SUD treatment because they suggest that counselors have considerable discretion in terms of choosing to provide TCS to patients who smoke. Moreover, the weak effects for the implementation of TCS suggest that an important avenue for future research is better understanding the factors that predict counselor implementation of TCS.

Considering that a major goal of SUD research is the successful implementation of new practices in the field (Ginexi & Hilton, 2006) and the public health concerns regarding high smoking rates among SUD patients (Guydish et al., 2011), our finding of a significant positive relationship between TC availability and use of TCS with patients who smoke has practical implications. For instance, it seems advisable to clearly communicate to counselors about available pharmacotherapies and behavioral treatments for TC in their treatment programs to promote the use of evidence-based TCS. Management also should be encouraged to share information and perhaps consult with counselors about the types of TC pharmacotherapies and TC behavioral treatments the program is considering adopting in order to improve TCS delivery.

4.2. Moderators of the Relationship between Perceived Availability and Implementation of TCS

Although we find that perceived availability predicts implementation of both pharmacotherapies and behavioral treatments for TC, several indicators of climate for implementation moderate these main effects. For both TC pharmacotherapies and TC behavioral treatments, perceived management support for using EBPs strengthens the positive relationship between perceived availability and implementation. Previous research has confirmed the importance of manager support regarding the implementation of organizational change (e.g., Klein et al., 2001) including in SUD treatment contexts (Eby et al., 2013). Our findings extend this research to TCS in SUD treatment. In terms of practical implications, this suggests that TC interventions need to target both managers and counselors. When managers are on board, counselors may be more likely to implement TCS.

We also find that counselor TC-related skills moderate the relationship between the perceived availability and implementation of TC pharmacotherapies but not the perceived availability and implementation of TC behavioral treatments. Counselors often lack formal education in the treatment of tobacco dependence (Eby & Rothrauff-Laschober, 2012; Laschober & Eby, 2013), and in particular, licensing and credentialing standards often do not include TC treatment (Kerwin et al., 2006; McLellan et al., 2003; Ziedonis et al., 2006). Additionally, counselors cannot prescribe medication, however, they are the front-line people who guide patients through the many different available pharmacotherapies.

Thus, our findings suggest that additional training and education may be needed to increase counselors' TC-related skills to make them more comfortable using pharmacotherapies with patients who want to quit smoking. It should also be noted that although TC-related skills moderate the availability-implementation relationship for behavioral treatments, a main effect of skills is found for implementation. This means that counselor TC-related skills are still important to develop alongside efforts to implement behavioral EBPs for smoking.

Interestingly, neither the absence of obstacles nor fit of the innovation with users' values moderate the association between perceived availability and implementation of TCS. This runs counter to Klein and Sorra's (1996) theoretical model and may be explained by the unique context of SUD treatment. In particular, SUD treatment is characterized by higher than average staff turnover, lower than average salaries, lack of uniform education and training standards for counselors, high rates of recovery status among counselors, and stigma surrounding the profession (e.g., Curtis & Eby, 2010; Laschober, Eby, & Sauer, 2012; Livingston, Milne, Fang, & Amari, 2012). It may also be that counselors are more used to the heavy workloads and role overload associated with their jobs than those in other occupations. Likewise, due to high prevalence of counselors who are personally in recovery (Curtis & Eby, 2012), fit of the innovation with users' values may be less important to consider in the context of the implementation of innovations.

4.3. Limitations and Conclusions

Limitations of this study need to be considered when interpreting the findings beyond the current sample. We relied on counselor reports rather than researcher-generated

observational data regarding the availability and implementation of TCS. This was due to our interest in understanding counselor perceptions and the theoretical model underlying both the current study and the larger project that examined the adoption, implementation, and sustainability of TCS. Nonetheless, counselors may over- or under-report the types of TC pharmacotherapies and TC behavioral treatments that they perceive to be available at their treatment program as well as their actual use with patients who smoke. Future research might consider comparison studies between counselor reports, program administrator reports, and actual inventory reports of what is available and implemented in treatment programs.

Although the data from the larger project were collected from randomly sampled treatment programs, they were limited to community-based settings and excluded some settings like prison-based programs, methadone maintenance only programs, VA programs, DUI educational programs, Halfway Houses, and detoxification only programs. It will be important to better understand whether the adoption and implementation processes of TCS in these settings differ because of varying patient populations, treatment focuses, and organizational, managerial, and clinician characteristics.

Additionally, for this study treatment programs were limited to those offering TCS, reducing the sample size and perhaps raising questions about generalizability. As noted earlier, characteristics of counselors and treatment programs in our study were comparable to characteristics of counselors and treatment programs participating in other large nationally random samples (e.g., Knudsen et al., 2010, 2013; Olmstead et al., 2005). These findings suggest limited concern over (non)response bias and reasonable confidence that our findings may generalize to other, similar SUD treatment programs.

Despite these limitations, the current study makes a significant contribution to the SUD treatment field by adding to the understanding of counselor implementation of TCS (both pharmacotherapies and behavioral treatments) with patients who smoke cigarettes. Our findings indicate that perceived TCS availability is related with greater TCS implementation. The positive relationship is moderated by varying climate for implementation indicators but not by fit of the innovation with users' values. These findings suggest that interventions aimed at promoting the implementation of TCS should focus on raising counselors' awareness of the types of TC pharmacotherapies and TC behavioral treatments that are available at their treatment program, promoting counselors' perceptions of their managers' support for using EBPs, and encouraging TC-related education and training.

Acknowledgments

This study was supported by Award Number R01 DA028188 from the National Institute on Drug Abuse (NIDA) awarded to Jessica L. Mulienburg and Lillian T. Eby (multiple principal investigators). The content is solely the responsibility of the authors and does not necessarily represent the official views of the NIDA or the National Institutes of Health.

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Highlights

- We investigate availability and implementation of tobacco cessation services (TCS).
- Perceived availability of TCS was related with greater TCS implementation.
- This relationship was moderated by several indicators of climate for implementation.

Figure 1.
Clinician Skills as Moderator between Perceived Availability and Implementation of TC Pharmacotherapies

Figure 2.
Management Support for Using EBPs as Moderator between Perceived Availability and Implementation of TC Pharmacotherapies

Figure 3.
Management Support for Using EBPs as Moderator between Perceived Availability and Implementation of TC Behavioral Treatments

Table 1

Descriptive Statistics

	<i>f</i> or <i>M</i>	% or <i>SD</i>
Tobacco Cessation Services Availability and Implementation (<i>f</i> , %)		
Perceived Pharmacotherapies Availability	1.82	2.28
Perceived Behavioral Treatments Availability	9.03	4.02
Pharmacotherapies Implementation	0.61	1.08
Behavioral Treatments Implementation	4.43	2.72
Counselor Characteristics (<i>N</i> = 682)		
Licensed or certified SUD professional (<i>f</i> , %)	494	73.08
Female (<i>f</i> , %)	461	67.89
Master's degree or higher (<i>f</i> , %)	349	51.62
Current smoker (<i>f</i> , %)	142	20.82
Age/years (<i>M</i> , <i>SD</i>)	44.34	12.46
Tenure as SUD counselor/years (<i>M</i> , <i>SD</i>)	7.72	7.03
Tenure in current job/years (<i>M</i> , <i>SD</i>)	5.60	5.60
Annual income/\$1,000 (<i>M</i> , <i>SD</i>)	38.032	27.424
Program Characteristics (<i>N</i> = 239)		
Percentage of patients who smoke (<i>M</i> , <i>SD</i>)	71.98	21.78
Percentage of clinicians who smoke (<i>M</i> , <i>SD</i>)	15.85	21.11
Number of full-time employees (<i>M</i> , <i>SD</i>)	24.94	43.99
Non-profit (<i>f</i> , %)	191	79.92
Accredited (<i>f</i> , %)	128	53.56
Level of care (<i>f</i> , %)		
Outpatient only	115	48.12
Inpatient only	63	26.36
Mix of inpatient and outpatient	61	25.52
Hospital-affiliation (<i>f</i> , %)	55	23.01

Table 2

Hierarchical Mixed-Effects Models Results: Relationship between Perceived Availability and Implementation of Tobacco Cessation Pharmacotherapies and Moderators of the Relationship

	Model 1		Model 2		Model 3		Model 4	
	B	SE	B	SE	B	SE	B	SE
% patients smoke	.00	.00	.00	.00	.00	.00	.00	.00
FT staff	.00	.00	.00	.00	.00	.00	.00	.00
Hospital-affiliation	.38**	.13	.27*	.11	.30**	.11	.32**	.11
Counselor smokes	-.04	.09	-.03	.08	-.02	.08	-.02	.08
Perceived availability of pharmacotherapies			.16***	.02	.14***	.02	.13***	.02
Counselor TC-related skills					.08***	.02	.08***	.02
Perceived management support for using EBP's					.02	.04	.04	.04
Absence of obstacles					.02	.04	.03	.04
Fit of innovation with users' values					.06	.04	.07	.04
Availability × counselor TC-related skills							.01*	.01
Availability × management support for using EBP's							.06**	.02
Availability × absence of obstacles							.03	.02
Availability × fit of innovation with users' values							.01	.02
-2 Res Log Likelihood	1761.3		1690.9		1676.3		1686.0	

* $p < .05$;

** $p < .01$;

*** $p < .001$.

Table 3

Hierarchical Mixed-Effects Models Results: Relationship between Perceived Availability and Implementation of Tobacco Cessation Behavioral Treatments and Moderators of the Relationship

	Model 1		Model 2		Model 3		Model 4	
	B	SE	B	SE	B	SE	B	SE
% patients smoke	.00	.00	.00	.00	.00	.00	.00	.00
FT staff	.00	.00	-.00	.00	-.00	.00	-.00	.00
Hospital-affiliation	.14	.13	.09	.06	.10	.06	.11	.06
Counselor smokes	-.11	.09	-.04	.06	-.04	.06	-.05	.06
Perceived availability of behavioral treatments			.20***	.01	.18***	.01	.19***	.01
Counselor TC-related skills					.03**	.01	.02*	.01
Perceived management support for using EBPs					.07*	.03	.08*	.03
Absence of obstacles					-.02	.03	-.01	.03
Fit of innovation with users' values					.05	.03	.05	.03
Availability × counselor TC-related skills							.00	.00
Availability × management support for using EBPs							.02**	.01
Availability × absence of obstacles							.00	.01
Availability × fit of innovation with users' values							.01	.01
-2 Res Log Likelihood	1793.1		1194.1		1196.6		1218.2	

* $p < .05$;

** $p < .01$;

*** $p < .001$.