Organizational Factors as Predictors of Tobacco Cessation Pharmacotherapy Adoption in Addiction Treatment Programs

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Objectives: This study investigated 3 organizational factors (ie, counseling staff clinical skills, absence of treatment program obstacles, and policy-related incentives) as predictors of tobacco cessation pharmacotherapy (TCP) adoption (comprised of the 9 available TCPs) in addiction treatment programs using the innovation implementation effectiveness framework.

Methods: Data were obtained in 2010 from a random sample of 1006 addiction treatment program administrators located across the United States using structured telephone interviews.

Results: According to program administrator reports, TCP is adopted in approximately 30% of treatment programs. Negative binomial regression results show that fewer treatment program obstacles and more policy-related incentives are related to greater adoption of TCP. Counter to prediction, clinical skills are unrelated to TCP adoption.

Conclusions: Our findings suggest that organizational factors, on the basis of established theoretical frameworks, merit further examination as facilitators of the adoption of diverse TCP in addiction treatment programs.

Key Words: co-occurring disorders, pharmacotherapy, smoking treatment, substance abuse, tobacco cessation

(Addict Med 2014;8: 59–65)

Rates of tobacco use among individuals seeking addiction treatment are high, ranging from 65% to 87% (for a review of the literature, see Guydish et al., 2011). Individuals suffering from addictions start tobacco use earlier, are heavier tobacco users, and experience more difficulties with tobacco cessation than other adults (Breslau et al., 1996; Hays et al., 1999; Richter et al., 2002). Furthermore, individuals with addictions are more likely to die from tobacco-related diseases than from other addiction-related diseases (Hurt et al., 1996).

In an effort to promote tobacco cessation in various health care settings, including addiction treatment, the Public Health Service issued guidelines for using a variety of evidence-based practices including counseling and tobacco cessation pharmacotherapy (TCP) (Fiore et al., 2008), the latter being the focus of this study.

Despite tobacco cessation promotions, few addiction treatment programs offer TCP (Fuller et al., 2007; Friedmann et al., 2008; Rothrauff and Eby, 2010) although 44% to 80% of patients express an interest in tobacco cessation during addiction treatment (Ellingstad et al., 1999; Clarke et al., 2001; Rohsow and Eby, 2003). In addition, findings indicate that when integrated into other addiction treatment, tobacco cessation has no unfavorable effects on treatment outcomes. In fact, it is associated with a lowered risk of alcohol and drug relapse, greater abstinence from alcohol and other drugs, and decreased alcohol consumption (for a review of the literature, see Kalman et al., 2010). Thus, it is recommended that tobacco cessation be integrated into addiction treatment (Fiore et al., 2008). As such, it is important to identify factors that hinder or promote the adoption of tobacco cessation services.

This study aims to contribute to the addiction treatment literature on TCP adoption in a number of areas. Existing research on TCP adoption is often limited by the selection of study variables that are not explicitly tied to any theoretical frameworks (eg, Friedmann et al., 2008; Rothrauff and Eby, 2010; Knudsen and Studts, 2011), the inclusion of a limited number of TCPs (eg, Knudsen and Studts 2011; Hunt et al., 2012), and nonrandom samples (eg, Rothrauff and Eby, 2010; Hunt et al., 2012). To overcome these limitations, we adopt Klein and Sorra’s (1996) innovation implementation effectiveness framework to examine 3 organizational factors (ie, counseling staff clinical skills, absence of program obstacles, and policy-related incentives) as predictors of TCP adoption (composed of the currently 9 available TCPs) in a large random sample of addiction treatment programs.
THEORETICAL FRAMEWORK FOR EXAMINING ORGANIZATIONAL FACTORS AS PREDICTORS OF TCP ADOPTION

We draw on key elements of Klein and Sorra’s (1996) theoretical framework of innovation implementation effectiveness to investigate organizational factors as predictors of TCP adoption in addiction treatment programs. This model is well established in the organizational science literature and has been used to understand the adoption and implementation of a wide range of phenomena (eg, Dong et al., 2008; Choi and Chang, 2009; Mohaghegh and Mosleh, 2009; Schoenwald et al., 2009; Nembhard et al., 2009; Weiner et al., 2009). The framework suggests that the strength of an organization’s climate for innovation is one of the main factors that influence the extent to which an innovation is first adopted, then implemented, and eventually sustained over time.

Climate for innovations consists of 3 indicators including employee skills related to the innovation (eg, clinician education, licensure, and certification), absence of organizational obstacles for innovation adoption (eg, profit status, hospital-based status, and level of care), and policy-related incentives that support the adoption of the innovation (eg, tobacco-free environment and reimbursement for tobacco cessation services). We take a unique approach in this study by using formative measurement to create 3 aggregate organizational factors, each of which is composed of numerous theoretically relevant individual measures that cause or lead to the resultant factor (MacCallum and Brown, 1993; Diamantopoulos and Winkhofer, 2001). This approach provides a more comprehensive view and discussion of each organizational factor that may predict the adoption of TCP.

Although previous addiction studies have generally not used formative measurement to create the 3 organizational factors, there is support for a relationship between individual measures and the adoption of evidence-based practices. For example, counseling staff clinical skills such as higher level of education, greater tenure in the addiction field, and more training have been shown to be associated with greater adoption of pharmacotherapy (not specific to TCP) (eg, Knudsen et al., 2005; Rieckmann et al., 2011). Moreover, although counseling staff are not allowed to prescribe pharmacotherapy, they are the front-line people who are in direct contact with patients, educate them about available evidence-based practices (including TCP), and develop patient treatment plans (Powell and Brodsky, 2004). As such, it seems likely that clinical skills may predict TCP adoption.

Hypothesis 1: Addiction treatment programs with greater clinical skills have greater TCP adoption than programs with lower clinical skills.

Consistent with Klein and Sorra’s (1996) theoretical model, several studies have also identified various predictors of TCP adoption that represent the absence of program obstacles. These include hospital affiliation and hospital-based treatment (eg, Friedmann et al., 2008; Knudsen and Studts, 2011), availability of mental health services (eg, Friedmann et al., 2008), nonprofit status (eg, Richter et al., 2004; Friedmann et al., 2008), offering nonoutpatient care (eg, Knudsen and Studts, 2011), and prevalence of smoking among clinicians (Ziedonis et al., 2006; Guydish et al., 2007). In the absence of program obstacles, there may be greater awareness of healthy behaviors, tobacco-free environments, and access to prescription pharmacotherapy. This may increase the necessity for, and availability of, TCPs.

Hypothesis 2: Addiction treatment programs with a greater absence of program obstacles have greater TCP adoption than programs with a lower absence of program obstacles.

Klein and Sorra (1996) also discuss the importance of policy-related incentives in the adoption of innovations. In addiction treatment, an arguably important incentive is reimbursement for the provision of tobacco cessation-related services. Treatment providers often have limited financial resources, and tobacco cessation is frequently not a standalone billable service (Ziedonis et al., 2006). Thus, the ability to bill for tobacco cessation services is likely a facilitator of TCP adoption, particularly in the present situation of cost-containment and health care reform (Morgenstern et al., 2001).

Hypothesis 3: Addiction treatment programs with greater policy-related incentives have greater TCP adoption than programs with lower policy-related incentives.

TCP AND TCP ADOPTION IN ADDICTION TREATMENT PROGRAMS

Considering the serious and often long-lasting public health consequences as a result of tobacco use, a number of TCPs have been developed and recommended for patients with addictions (Fiore et al., 2008). The Public Health Service identified 7 U.S. Food and Drug Administration–approved first-line TCPs for improved long-term abstinence from tobacco products including 5 types of nicotine replacement therapy (NRT) (gum, inhaler, lozenge, nasal spray, and patch), bupropion, and varenicline. In addition, there are 2 second-line TCPs available—clonidine and nortriptyline—that are efficacious for tobacco cessation treatment, particularly for patients who cannot use first-line TCP (Fiore et al., 2008).

Compared with placebo, each of the 7 front-line TCPs is associated with an approximately twofold increase in the likelihood of successful tobacco cessation (Fiore et al., 2008). However, because each pharmacotherapy has some unique contraindications, precautions, and side effects, there is no single best pharmacotherapy for tobacco cessation treatment. Therefore, addiction treatment programs should make available as many TCPs as possible to meet patient needs and preferences (Brigham et al., 2007; Fiore et al., 2008).

Previous studies on the availability of TCP in addiction treatment programs found low adoption, which is similar to findings in other mental health treatment settings (eg, Ratschen et al., 2009). However, there are several limitations associated with existing research in addiction treatment contexts. On the basis of data from only 8 purposively sampled treatment programs in the Midwest, Hunt and colleagues (2012) illustrated that only one treatment program offered NRT (defined as patch and gum; no other TCPs were investigated). Knudsen and Studts (2011), using a large sample of treatment program administrators and a 4-year longitudinal design, discovered that 38% of addiction treatment programs offered NRT (defined as patch and gum) at the beginning of the study. However, only
34% of programs continued to offer NRT at the end of the study. No other types of TCP were examined.

In outpatient-only treatment programs, Friedmann et al. (2008) examined a greater range of TCPs including NRT (defined as “patch, gum, etc”) and “bupropion or other antidepressant therapy” (not further defined). They found that only 16% of the 85 programs surveyed adopted TCP, of which 25 offered “bupropion or other antidepressant therapy,” 27 offered NRT only, and 28 offered both “bupropion or other antidepressant therapy” and NRT. Furthermore, Rothrauff and Eby (2010) examined all 9 available TCPs using a large national but nonrandom sample of counselors regarding their knowledge of the availability of TCP in their treatment programs. They found that 27% reported the availability of NRT (patch, gum, lozenge, nasal spray, and inhaler), 16% thought that varenicline was available, and 11% believed that their program offered bupropion.

METHODS

Study Design

Data for this study were obtained from the first year of the Managing Effective Relationships in Treatment Services (MERITS III) project, which was conducted by researchers affiliated with the University of Georgia. The MERITS III is a longitudinal project started in 2010 and funded by the National Institute for Drug Abuse for the purpose of examining the impact that treatment program processes and management practices have on the adoption, implementation, and sustainability of tobacco cessation services in addiction treatment programs. All procedures were approved by the University of Georgia’s institutional review board.

Addiction treatment programs listed in the Substance Abuse and Mental Health Services Administration directory in 2010 provided the sampling frame for the study. The Substance Abuse and Mental Health Services Administration directory includes programs that cover the full spectrum of addiction treatment, ranging from outpatient-only to long-term residential care. Eligible treatment programs had to provide addiction counseling services in a community-based setting. Prison-based programs, Veteran’s Health Administration programs, military-based programs, driving-under-the-influence educational programs, and those offering only detoxification services were excluded.

Data for this study were collected in 2010 from 1006 addiction treatment programs across the United States. Structured telephone interviews were conducted by trained research assistants who contacted each program administrator, most of whom held the job title of Director (64.31%), Manager or Supervisor (15.41%), and Owner/President/VP/CEO (8.35%). The interview took approximately 30 minutes to complete. Treatment programs received $150 for each completed interview. Of the 1599 eligible treatment programs that we were able to contact, 1006 program administrators completed a survey, resulting in a basic response rate of 62.91% (for information on the calculation of basic response rates in phone surveys, please see Gripp et al., 1994).

Sample

Program administrator reports indicated that 61.51% worked in a non-hospital-based outpatient program, 27.15% in a non-hospital-based residential/inpatient/detox program, 5.27% in a methadone maintenance/opioid program, 3.44% in a hospital-based outpatient program, and 2.63% in a hospital-based residential/inpatient/detox program. Furthermore, 57.93% of programs offered outpatient-only treatment, 20.74% residential-only treatment, and 21.34% both outpatient and residential treatment. Almost half of the programs were accredited (48.2%). Programs employed a mean of 2.29 (standard deviation [SD] = 3.17) clinical supervisors and 9.27 (SD = 12.93) counselors. An average of 70.47% (SD = 20.93) of patients in their program smoked.

Measures

TCP Adoption

Program administrators answered questions about the availability of 9 TCPs at their treatment program that are recommended by the Public Health Service—nicotine patch, gum, lozenge, nasal spray, and inhaler, bupropion, varenicline, clonidine, and nortriptyline (Fiore et al., 2008). Response options were 0 = no and 1 = yes. The TCP adoption measure was created by summing the number of yes responses to the 9 questions.

Organizational Factors

Counseling staff clinical skills, absence of treatment program obstacles, and policy-related incentives are conceptualized as formative measures, which are composed of numerous theoretically relevant individual measures that cause or lead to the resultant composite organizational factor (MacCallum and Brown, 1993; Diamantopoulos and Winklhofer, 2001). Formative measurement assumes that if any one of these measures increases, the resultant factor increases. With formative measurement, there is no assumption of homogeneity of item content across individual measures that comprise the resultant factor and no assumption that individual measures “hang together” in a factor analysis, are correlated, or demonstrate internal consistency (Bollen 1984; Bollen and Lennox, 1991; MacKenzie et al., 2005). Thus, although Cronbach α and correlation ranges among the individual measures are reported for the formative measures, there is no expectation of internal consistency or correlation among individual measures (Bollen and Lennox, 1991). Rather, each individual measure is viewed as contributing to the aggregate organizational factor. Each formative measure was selected before data collection with the intent of creating organizational factors.

The formative measure of clinical skills was assessed with 5 items. This included program administrator reports of the percentage of counseling staff in their program that are currently (1) licensed, (2) certified, (3) holding at least a bachelor’s degree, (4) holding a master’s degree or higher, and (5) the percentage of their total workforce (eg, counselors, clinical supervisors, admissions personnel, nurses, social workers, and psychologists) that has an educational background in medicine, public health, psychology, or a related field. Responses to each item ranged from 0% to 100%.
The measure was created by calculating the mean across these 5 items (α = 0.55; correlations ranged from 0.04 to 0.65).

The formative measure of absence of treatment program obstacles was measured with 7 items. Program administrators reported whether their program (1) was affiliated with a hospital or other medical facility, (2) was hospital-based, (3) offered mental health care services, (4) provided medical services, (5) operated as a nonprofit entity, (6) offered a nonoutpatient level of care, and (7) the percentage of clinicians who smoke. Response options for the first 6 items were 0 = no and 1 = yes. Response options for the last item ranged from 0% to 100%. The absence of treatment program obstacles measure was created in 3 steps because of the differences in response options between the first 6 items and the last item. First, the number of yes responses to the first 6 items was summed and then standardized. Second, the percentage of clinicians who smoke was reverse scored and then standardized. Third, both submeasures were summed to create the absence of treatment program obstacles measure (α = 0.75; correlations ranged from 0.01 to 0.55).

The formative measure of policy-related incentives was assessed with 10 items. Program administrators answered 4 questions regarding the extent to which tobacco cessation services were reimbursable in their program (Likert-type responses ranged from 1 = not at all to 4 = a great extent) including (1) counselor time spent providing individually based tobacco cessation services, (2) counselor time spent providing group-based tobacco cessation treatment, (3) pharmacological interventions for tobacco cessation (e.g., bupropion and nicotine patch), (4) and other financial resources exist within their treatment program to support tobacco cessation (e.g., availability of training opportunities for staff on tobacco cessation treatment). Program administrators also answered 6 questions pertaining to smoking policies in their treatment programs (responses were 0 = false and 1 = true) and included no smoking is allowed indoors for (5) patients, (6) staff, and (7) visitors, and no smoking is allowed outdoors for (8) patients, (9) staff, and (10) visitors. The policy-related incentives measure was created in 3 steps because of the differences in response options between the first 4 and remaining 6 questions. First, the submeasure with the first 4 questions was calculated by summing the mean across the 4 items, and then the submeasure was standardized. Second, the submeasure with the 6 questions was created by summing the number of true responses, and then the submeasure was standardized. Third, both submeasures were summed to create the policy-related incentives measure (α = 0.50; correlations ranged from 0.00 to 0.87).

Control Variable

We controlled for the percentage of patients seeking addiction treatment in their program who smoke, because previous research has shown a positive association between the percentage of patients who smoke and the availability of TCP (Friedmann et al., 2008). Responses ranged from 0% to 100%.

Data Analyses

Descriptive statistics were computed to examine the TCP adoption (see Table 1). Correlations among study variables appear in Table 2. Examination of Table 2 and additional statistical tests did not indicate any concerns regarding multicollinearity. Negative binomial regression was used to address the study hypotheses (see Table 3).

RESULTS

TCP Adoption

As indicated in Table 1, the average number of TCP adopted is 0.99 (SD = 1.93). More specifically, 70.42% of treatment programs do not offer any TCP; 6% to 7% adopted 1 to 3 TCPs; 3% to 4% adopted 4 to 5 TCPs; and around 1% or less of treatment programs offered 6 to 9 different TCPs. The most commonly adopted TCP is the nicotine patch, which is offered in approximately 1 out of 4 treatment programs (24.23%). Other TCP that are adopted by at least 10% of treatment programs include nicotine gum (17.56%), bupropion (16.40%), varenicline (12.55%), and nicotine lozenge (10.55%). The TCPs adopted by even fewer treatment programs are clonidine (6.77%), nortriptyline (5.11%), nicotine inhaler (3.71%), and nicotine nasal spray (2.92%).

Correlations Among Study Variables

Table 2 shows that TCP adoption is significantly positively related with clinical skills, absence of treatment program obstacles, and policy-related incentives. In addition, significant positive relationships exist between clinical skills and both absence of treatment program obstacles and policy-related incentives and between policy-related incentives and absence of treatment program obstacles. The control variable—percentage of patients who smoke—is significantly negatively related with clinical skills and absence of treatment program obstacles.

<table>
<thead>
<tr>
<th>TABLE 1. Tobacco Cessation Pharmacotherapy (TCP) Adoption</th>
</tr>
</thead>
<tbody>
<tr>
<td>TCP adoption—M, SD</td>
</tr>
<tr>
<td>0 TCP</td>
</tr>
<tr>
<td>1 TCP</td>
</tr>
<tr>
<td>2 TCP</td>
</tr>
<tr>
<td>3 TCP</td>
</tr>
<tr>
<td>4 TCP</td>
</tr>
<tr>
<td>5 TCP</td>
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<tr>
<td>6 TCP</td>
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<tr>
<td>7 TCP</td>
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<tr>
<td>8 TCP</td>
</tr>
<tr>
<td>9 TCP</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Number of individual TCP adopted</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Nicotine patch</td>
<td>243</td>
</tr>
<tr>
<td>Nicotine gum</td>
<td>176</td>
</tr>
<tr>
<td>Bupropion</td>
<td>164</td>
</tr>
<tr>
<td>Varenicline</td>
<td>125</td>
</tr>
<tr>
<td>Nicotine lozenge</td>
<td>105</td>
</tr>
<tr>
<td>Clonidine</td>
<td>67</td>
</tr>
<tr>
<td>Nortriptyline</td>
<td>50</td>
</tr>
<tr>
<td>Nicotine inhaler</td>
<td>37</td>
</tr>
<tr>
<td>Nicotine nasal spray</td>
<td>29</td>
</tr>
</tbody>
</table>

M, mean; SD, standard deviation; TCP, tobacco cessation pharmacotherapy.
Organizational Factors as Predictors of TCP Adoption

Results in Table 3 indicate that hypothesis 1 is not supported—addiction treatment programs with greater clinical skills do not have greater TCP adoption than programs with lower clinical skills. In contrast, hypothesis 2 and hypothesis 3 are supported. Addiction treatment programs with a greater absence of treatment program obstacles and greater policy-related incentives have greater TCP adoption than programs with a lower absence of treatment program obstacles and programs with lower policy-related incentives. The control variable is not significantly related with the adoption of TCP.

**DISCUSSION**

This study adds to the addiction literature in several ways. Unlike previous research, this study used a large random sample of addiction treatment programs located across the United States to examine 3 organizational factors (counseling staff clinical skills, absence of treatment program obstacles, and policy-related incentives) as predictors of TCP adoption (including all 9 available TCPs). The 3 predictors were selected on the basis of key elements from Klein and Sorra’s (1996) innovation implementation effectiveness framework. Findings show that certain organizational factors are significantly related to TCP adoption, although TCP adoption is generally low.

Organizational Factors as Predictors of TCP Adoption

Findings from our study provide support that new ways of creating organizational factors on the basis of theoretical frameworks outside of addiction treatment are useful for examining their relationship to TCP adoption. Treatment programs with fewer treatment program obstacles and greater policy-related incentives report greater TCP adoption. These findings are consistent with prior addiction research on the basis of nonrandom samples that has examined adoption of TCP and individual measures related to the absence of treatment program obstacles (eg, Richter et al., 2004; Friedmann et al., 2008; Rothrauff and Eby, 2010) and a review of the literature that discussed barriers related to the reimbursement (policy-related incentives) of tobacco cessation treatment (Ziedonis et al., 2006).

However, despite theoretical support (Klein and Sorra, 1996) and prior empirical findings on individual characteristics (eg, Knudsen et al., 2005; Rieckmann et al., 2011), we did not find that greater clinical skills are related to greater TCP adoption. One explanation for the lack of support for clinical skills may be that we did not ask specifically about clinical skills related to tobacco dependence. As such, rather than abandon this line of research completely, future research should examine more specific clinical skills such as training received on TCP, knowledge of the risks associated with tobacco use, knowledge of tobacco cessation modalities and effectiveness, and knowledge of tobacco pharmacotherapy.

**Low TCP Adoption**

Although this is the first study to examine the adoption of the full range of recommended TCP for the treatment of tobacco dependence (Fiore et al., 2008) using a random sample of addiction treatment program administrators, we find similarly low TCP adoption compared with prior studies (eg, Friedmann et al., 2008; Rothrauff and Eby, 2010; Knudsen

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**TABLE 2.** Description of and Correlations Among Organizational Factors as Predictors of Tobacco Cessation Pharmacotherapy (TCP) Adoption (N = 1006)

<table>
<thead>
<tr>
<th>Variable</th>
<th>M</th>
<th>SD</th>
<th>Min–Max</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. TCP adoption</td>
<td>0.99</td>
<td>1.93</td>
<td>0 to 9</td>
<td>−</td>
<td>0.08*</td>
<td>0.38†</td>
<td>0.22†</td>
<td>0.00</td>
</tr>
<tr>
<td>2. Counseling staff clinical skills</td>
<td>60.39</td>
<td>20.78</td>
<td>0 to 100</td>
<td>−</td>
<td>0.09†</td>
<td>0.28‡</td>
<td>−0.19‡</td>
<td></td>
</tr>
<tr>
<td>3. Absence of treatment program obstacles§</td>
<td>0.5</td>
<td>1.56</td>
<td>−3.06 to −4.64</td>
<td>−</td>
<td>−</td>
<td>0.24†</td>
<td>0.01</td>
<td></td>
</tr>
<tr>
<td>4. Policy-related incentives§</td>
<td>0.16</td>
<td>1.46</td>
<td>−4.49 to −4.74</td>
<td>−</td>
<td>−</td>
<td>−0.13†</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Percentage of patients smoking</td>
<td>70.47</td>
<td>20.93</td>
<td>0 to 100</td>
<td>−</td>
<td>−</td>
<td>−</td>
<td>−</td>
<td></td>
</tr>
</tbody>
</table>

*P < 0.05; †P < 0.001; ‡P < 0.01.

M, mean; SD, standard deviation; TCP, tobacco cessation pharmacotherapy.

**TABLE 3.** Negative Binomial Regression Results: Organizational Factors as Predictors of Tobacco Cessation Pharmacotherapy (TCP) Adoption*

<table>
<thead>
<tr>
<th>B</th>
<th>SE (CL)</th>
<th>Wald χ²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Counseling staff clinical skills</td>
<td>0.00</td>
<td>0.00 (−0.00 to 0.01)</td>
</tr>
<tr>
<td>Absence of treatment program obstacles§</td>
<td>0.42</td>
<td>0.05 (0.33 to 0.52)</td>
</tr>
<tr>
<td>Policy-related incentives§</td>
<td>0.16</td>
<td>0.05 (0.06 to 0.26)</td>
</tr>
<tr>
<td>Percentage of patients smoking (control variable)</td>
<td>0.00</td>
<td>0.00 (−0.00 to 0.01)</td>
</tr>
<tr>
<td>Pearson χ²</td>
<td>1064.35</td>
<td></td>
</tr>
<tr>
<td>df</td>
<td>977</td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>982</td>
<td></td>
</tr>
</tbody>
</table>

*CL = Wald 95% confidence limits.
†Standardized measures.
‡P < 0.001; §P < 0.01.
CL, confidence limits; SE, standard error.
and Studts, 2011; Hunt et al., 2012). TCP adoption of any kind is not extensive in our study, occurring in only one third of addiction treatment programs. The TCPs most popular, yet adopted in less than one quarter of programs, are the nicotine patch, nicotine gum, and bupropion. These 3 “preferred” TCPs coincide with the generally limited TCP examined in previous studies using nonrandom samples that also found low availability of NRT (eg, Knudsen and Studts, 2011; Hunt et al., 2012) and bupropion (eg, Friedmann et al., 2008; Rothrauff and Eby, 2010).

Our findings further highlight the research to practice gap in the addiction treatment field (eg, Hansen et al., 2002; Roman et al., 2010) considering that of the 9 recommended TCPs, an average of 1 TCP is made available in addiction treatment programs across the country. The low adoption raises the concern that patients may not have adequate access to TCPs that are approved by the Food and Drug Administration, recommended as treatment options for better tobacco cessation outcomes, and most appropriate for or preferred by patients (eg, Brigham et al., 2007; Fiore et al., 2008). This is an overlooked chance within the addiction treatment field because patients are interested in quitting smoking (Ellingstad et al., 1999; Clarke et al., 2001; Rohsadow et al., 2003), and tobacco cessation treatment is associated with better overall addiction treatment outcomes (Fiore et al., 2008; Baca and Yahne, 2009; Kalman et al., 2010).

CONCLUSIONS

Additional research is needed to provide more answers to why there is a lack of TCP adoption in addiction treatment programs. For example, qualitative studies, open-ended survey questions, and follow-up prompts will allow program administrators and other staff to elaborate on their TCP adoption experiences, decision making, and provide different insights into the TCP adoption process. Future research should also pay special attention to explicitly drawing on theoretical frameworks to support the selection of study variables to predict TCP adoption. Theories can come from the addiction treatment field and other disciplines such as mental health, nursing, business, administration, organizational psychology, or sociology. Testing different theoretical frameworks will provide new perspectives on factors that explain the (lack of) adoption of TCP. Findings can then be used to better understand barriers and facilitators of TCP adoption and develop interventions to improve the adoption of TCP.

One limitation of our study was the cross-sectional design that allows us to examine organizational factors as predictors of TCP adoption at one point in time. This design does not allow us to make inferences about causal relationships among variables (eg, policy-related incentives affect or influence TCP adoption) or changes in the TCP adoption over time (eg, treatment programs with a greater absence of obstacles increase their TCP adoption over time). Longitudinal data are needed to investigate the changes and predictors of changes in TCP adoption. This is especially important because some studies found longitudinal changes in the adoption, implementation, and sustainability of TCP (eg, Knudsen and Studts, 2011).

A further limitation is the selection of the variables regarding the clinical skills measure. As discussed earlier, it is possible that the nonsignificant relationship between TCP adoption and clinical skills is a function of the more general measures that were used to create the formative counseling staff clinical skills measure. In addition to evaluating more diverse clinical skills, future research should examine whether tobacco status at admission and subsequent treatment planning are related to the adoption of TCP. These variables could not be considered in our study and are also acknowledged as limitations.

Another limitation is the use of structured telephone interviews with addiction treatment program administrators. As such, we are able to answer our specific hypotheses about TCP adoption in relationship to organizational factors. However, we are unable to answer other questions that arise from the current findings such as treatment programs’ preferences for one TCP over another TCP and reasons for low TCP adoption. Answers to these questions are of utmost importance to the addiction treatment field, considering the high prevalence of smoking among patients in treatment (Guydish et al., 2011), the known health consequences associated with tobacco use (U.S. Department of Health and Human Services, 2004), and the benefits of providing tobacco cessation alongside other addiction treatment (Kalman et al., 2010).

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Adoption of Tobacco Cessation Pharmacotherapy


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