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Barriers to the implementation of medication-assisted treatment for substance use disorders: The importance of funding policies and medical infrastructure

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Abstract

Despite growing interest in the use of evidence-based treatment practices, adoption of pharmacotherapies for treating substance use disorders (SUDs) remains modest. Using data from telephone interviews with 250 administrators of publicly funded SUD treatment programs, this study estimated a model of adoption of medication assisted treatment (MAT) for SUDs and examined the relative importance of regulatory, cultural, medical resource, patient-level, and funding barriers to MAT implementation. MAT-adopting programs had significantly greater medical resources, as measured by the employment of physicians and nurses, than non-adopting programs. Administrators of non-adopting programs were asked to rate the importance of 18 barriers to MAT implementation. The most strongly endorsed barriers were regulatory prohibitions due to the program's lack of medical staff, funding barriers to implementing MAT, and lack of access to medical personnel with expertise in delivering MAT. Barriers related to insufficient information about MAT and unsupportive staff attitudes were not widely endorsed. These findings suggest that efforts to promote the implementation of MAT that are inattentive to funding barriers and weaknesses in medical infrastructure may achieve sub-optimal results.

Keywords

medication-assisted treatment; treatment of substance use disorders; barriers to implementation

1. Introduction

Improving the quality of substance abuse treatment through the implementation of evidence-based treatment practices (EBPs) has increasingly been the focus of federal and state agencies as well as private foundations. For example, the National Institute on Drug Abuse

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(NIDA) has sought to increase the adoption of EBPs through its Clinical Trials Network, which aims to conduct multi-site clinical trials and expand the use of EBPs in real-world community treatment settings (Hanson et al., 2002). The Center for Substance Abuse Treatment (CSAT), part of the Substance Abuse and Mental Health Services Administration (SAMHSA), has developed Addiction Technology Transfer Centers (ATTCs) to disseminate information and provide technical assistance to treatment providers about EBPs (McCarty, et al., 2006). NIDA and SAMHSA have partnered to develop web-based “Blending Products” to disseminate information about how providers can use EBPs in their agencies (NIDA/SAMHSA, 2008). In addition to these federal efforts, the Robert Wood Johnson Foundation’s Advancing Recovery initiative has brought together state agencies and treatment providers to increase the implementation of EBPs (Capoccia et al., 2007).

Pharmacotherapies for the treatment of substance use disorders (SUDs) are EBPs that improve clinical outcomes when combined with psychosocial therapeutic interventions (Power et al., 2005). There have been sizeable public and private investments in research devoted to expanding the range of available pharmacotherapies (Vocci & Ling, 2005). Since 2002, three pharmacotherapies have gained Food and Drug Administration (FDA) approval for the treatment of SUDs. These medications are buprenorphine (Suboxone® or Subutex®) for opioid dependence, acamprosate (Campral®) for alcohol dependence, and an extended-release injectable formulation of naltrexone (Vivitrol®) for alcohol or opioid dependence. These medications, as well as disulfiram (Antabuse®) for alcohol dependence, tablet naltrexone (ReVia®) for alcohol or opioid dependence, and methadone for opioid dependence, are the current pharmacological EBPs available as medication-assisted treatment (MAT) for SUDs.

These pharmacological treatments have the potential to improve clinical outcomes for individuals and to reduce the negative impact of substance abuse on families and communities. However, a crucial linkage between developing effective medications and achieving these improvements for individuals and communities is the adoption and implementation of these EBPs by treatment programs. Recent health services research has documented the limited adoption of MAT by SUD treatment organizations, particularly in programs heavily reliant on governmental sources of funding (Ducharme et al., 2006; Knudsen et al., 2007a; Knudsen et al., 2007b; Knudsen et al., 2006). This low rate of adoption means that individuals treated by publicly funded programs face a significant disparity in access to EBPs relative to individuals receiving care in the privately financed system and is suggestive of a “two-tiered system” (Rodgers & Barnett, 2000; Wheeler & Nahra, 2000). Given that the majority of SUD treatment services are delivered by such publicly funded agencies (Cartwright & Solano, 2003; Chiqui et al., 2008; Heinrich & Fournier, 2004; Mark et al. 2005), understanding the barriers to medication adoption in this sector is critical.

Understanding the barriers to medication adoption, particularly the intertwined issues of organizational resources and public policy, is critical to increasing access to MAT and maximizing gains in health. Yet few studies have compared the relative importance of organizational resource and policy barriers to perceived cultural barriers within treatment organizations. Such cultural barriers may include staff resistance to the use of medication-assisted treatment (MAT), a lack of perceived effectiveness of MAT, and lack of knowledge about how to implement MAT within their treatment setting. Furthermore, little is known about how patient characteristics may be related to organizational decisions regarding the implementation of MAT. For example, programs may perceive that their patients are uninterested in MAT as a treatment option, too medically fragile for MAT to be clinically appropriate, or unable to pay out-of-pocket for MAT.

In previous work, we explored the relative importance of barriers to the adoption of pharmacotherapies in publicly funded treatment programs by examining eight reasons for non-adoption of SUD medications (Knudsen et al., 2010). Programs most strongly endorsed barriers related to availability of medical staff and state regulations prohibiting prescription of medications. Cultural factors, such as counselor resistance to MAT, perceptions of clinical ineffectiveness, and lack of information about medications, were less frequently endorsed by program administrators as important reasons for non-adoption.

As an extension of this work, we expanded our measurement of barriers to implementation during follow-up data collection with the same cohort of publicly funded treatment programs. These new measures included barriers related to funding policies, lack of access to medical personnel with expertise in implementing MAT, and patient-level barriers, such as lack of patient demand and inability to pay. By expanding the range of barriers, these new data can better identify the most salient barriers to the implementation of MAT from the perspective of administrators of non-adopting programs. Such findings have relevance for policymakers. For example, if cultural barriers are identified as problematic, policies might devote resources to greater dissemination of information and enhanced training opportunities. However, if resource barriers are more salient, such a finding would point to the need for policy changes in the financing of substance abuse treatment.

The present study considers three research questions related to the adoption and implementation of MAT in publicly funded SUD treatment programs. First, to what extent have these treatment programs adopted SUD medications? Second, is SUD medication adoption associated with organizational characteristics and medical resources? Finally, among non-adopting programs, what is the relative importance of regulatory, funding, medical resource, cultural, and patient-level factors in self-reported reasons for not implementing MAT?

2. Data and methods

2.1. Sample of publicly funded treatment programs

The current study is based on follow-up data collection conducted with a previously established US sample of publicly funded SUD treatment centers. In 2004–2006, a nationally representative sample of 318 publicly funded substance abuse treatment centers were recruited to participate in the National Treatment Center Study (Knudsen et al., 2010). This random sample was established through a two-stage sampling design that first randomly selected US counties, and then randomly selected programs within those sampled counties. Organizations were identified using the SAMHSA's national directory, directories provided by single state agencies, yellow pages listings, and EAP referral directories.

These randomly selected organizations were screened for eligibility by telephone. Treatment organizations were eligible for the baseline study if they met three criteria. First, all programs were required to be open to the public (i.e., not Veterans Health Administration or corrections-based programs). Second, programs were required to offer a minimum level of addiction treatment at least equivalent to structured outpatient programming (Mee-Lee et al. 1996), which excluded counselors in private practice, detoxification-only facilities, halfway houses and transitional living facilities, DUI and driver education programs, and facilities exclusively offering methadone maintenance services. Finally, programs either had received at least half of their past-year revenues from government block grants/contracts or indicated that at least half of their patients' expected source of primary payment was from allocated public funds (i.e. block grants and contracts, but not public insurance). Face-to-face interviews were conducted in 2002–2004 with administrators of these 318 treatment organizations, yielding a response rate of 80%. This cohort of 318 treatment programs

served as the sample for the current study, which was conducted from August 2009 to June 2010.

2.2. Data collection

Data were collected for the current study in three stages. First, trained interviewers attempted to contact the 318 treatment programs previously interviewed to establish whether they were still open and delivering substance abuse treatment. This telephone screening procedure revealed that 27 organizations (8.5%) had closed, either by ceasing operations completely or by no longer offering substance abuse treatment. Second, the remaining 291 treatment centers were mailed a survey packet containing the research instrument, a study description letter, two informed consent forms, an honorarium payment form, and a postage paid envelope. Non-respondents were mailed a second survey packet if they did not respond within six weeks. Finally, non-responding programs were contacted by telephone in order to recruit them into the study. Verbal consent was obtained prior to the telephone interview. It is important to note that these telephone interviews used the same research instrument that had been previously mailed, resulting in a consistent dataset. Responding administrators received a \$50 donation to their center. This research design was approved by the Institutional Review Boards (IRBs) of the University of Georgia and the University of Kentucky.

Data were obtained from 250 of the 291 programs still open at the time of the current study (85.9%). Just 9 administrators actively refused to participate (3.1%) and 32 administrators were unable to be contacted after repeated attempts (11.0%). To consider whether participating programs were significantly different from those that had closed ($n = 27$) or did not participate ($n = 42$), we used data from the 2004–2006 interviews as correlates in a series of bivariate multinomial logistic regression models in which participating programs were the reference category (results not shown). We examined a set of organizational characteristics as covariates, which were selected based on our previous work on medication adoption (Knudsen et al., 2010). Relative to participating programs, refusing and closed treatment centers did not differ by medication adoption, hospital status, accreditation, levels of care, availability of detoxification, primary treatment model, staffing, reliance on Medicaid or other public funding, or reliance on pharmaceutical representatives, federal agencies, or state substance abuse authorities for information about innovations. The only significant difference at $p < .05$ was that government-owned programs were more likely than privately-owned programs to have closed, relative to the odds of participating in the follow-up interview (relative risk ratio, $RRR = 3.28$, 95% $CI = 1.44 - 7.46$, $p < .01$).

2.3. Measures

The research instrument gathered data on structural and staffing characteristics, current use of substance abuse treatment medications, and barriers to implementation among those programs not currently offering any SUD treatment medications. Structural characteristics included government ownership (1 = government owned, 0 = privately owned), location in a healthcare setting (1 = program located within a hospital or community mental health center, 0 = freestanding), accreditation (1 = accredited by external organization; 0 = not accredited), availability of medically supervised detoxification (1 = offers detoxification, 0 = does not offer), and levels of care (outpatient-only, inpatient/residential-only, or mixture of outpatient and inpatient/residential). Staffing measures included number of counselors, physicians, and nurses employed by the center (i.e., on the payroll) and employed as contractors.

Medication adoption was defined as the prescription or dispensing of at least one medication for the treatment of substance use disorders (SUDs) and was based on two items. First, administrators indicated whether the center prescribed or dispensed any medications for the

treatment of substance abuse or psychiatric conditions. If the administrator responded affirmatively, s/he was asked whether the program only offered psychiatric medications, only offered SUD medications, or offered medications for both conditions. In this study, we compared programs that had adopted at least one SUD medication to non-adopting programs.

Programs that prescribed only psychiatric medications but offered no SUD medications were considered non-adopters in these comparative analyses. Programs that did not offer any medications for the treatment of SUDs were asked about the relative importance of eighteen barriers to the implementation of MAT. Key domains include regulatory, medical resource, cultural, patient-level, and funding barriers. The first item about regulations prohibiting prescribing medications due to lack of medical staff was not assessed for programs that prescribed medications for psychiatric conditions but not SUDs ($n = 28$). A four-point Likert scale was used for each item (0 = not at all important, 1 = somewhat important, 2 = important, 3 = very important).

2.3. Analytic Strategy

Data analyses were conducted in three stages. First, we compared the organizational characteristics of programs that had adopted SUD medications to non-adopters using chi-square tests and t -tests, depending on the level of measurement. Second, we estimated a multivariate logistic regression model of SUD medication adoption on organizational and staffing characteristics. Finally, we examined eighteen barriers to the adoption of SUD medications among non-adopters, reporting the percentage of programs identifying each barrier as “important” or “very important.” Based on an exploratory factor analysis (not shown), we created mean scales for four categories of barriers and then examined differences in magnitude for these scales and the remaining single-item barriers using t -tests.

3. Results

In this sample of publicly funded treatment organizations, 37.0% of centers had adopted at least one medication for the treatment of SUDs. The most commonly adopted SUD medication was buprenorphine (24.4%), followed by acamprosate (18.6%), tablet naltrexone (17.2%), and disulfiram (15.9%). The least commonly adopted medications were injectable naltrexone (9.0%) and methadone (9.4%). The mean number of medications adopted was 0.91 ($SD = 1.58$). In the 242 programs providing complete data on all six medications, about 9.5% had adopted just one medication, 8.3% offered two medications, 5.4% used three medications, and 10.3% had adopted four or more medications for the treatment of SUDs.

Descriptive statistics regarding structural and staffing characteristics for the full sample appear in Table 1. Bivariate comparisons between adopters and non-adopters on structural and staffing characteristics revealed that these two types of programs were significantly different on most dimensions. Medication adopters were significantly more likely than non-adopters to be government-owned and located within a healthcare setting, such as a hospital or community mental health center. Adopters were also more likely to be accredited by an external organization, such as the Joint Commission or CARF. A much higher percentage of medication adopters offered detoxification services, and adopters were less likely than non-adopters to be outpatient-only facilities. Programs offering MAT were significantly larger in terms of the numbers of counselors on staff, physicians (on staff or contract), and nurses (on staff or contract).

A multivariate logistic regression model of MAT adoption appears in Table 2. Several of the differences identified at the bivariate level remained significant in the multivariate model. The odds of MAT adoption were 2.6 times greater in accredited programs compared to non-

accredited programs, net of other variables in the model. The availability of medically-supervised detoxification was strongly associated with the odds of adopting MAT, such that programs offering detoxification were nearly 5 times more likely than programs without detoxification services to have adopted at least one SUD medication. Three of the four measures of medical staffing were positively associated with the odds of MAT adoption. Each additional physician on staff was associated with a doubling of the odds that programs were medication adopters, after controlling for other characteristics. The number of contracted physicians was also positively associated with MAT adoption. Although the number of nurses on contract was not significantly associated with adoption, there was a significant positive association between the number of nurses on staff and MAT adoption.

Given that the majority of programs were not adopters of SUD medications, the subset of non-adopting programs were asked to rate the importance of 18 barriers to implementing MAT. Table 3 presents the percentages of programs indicating that each barrier was “important” or “very important.” Among the programs that neither offered SUD nor psychiatric medications, nearly 80% indicated that the absence of medical personnel meant that state regulations prohibited the program from implementing MAT. A related barrier strongly endorsed by non-adopting programs was lack to access to physicians and nurses who had specific expertise in delivering MAT. Barriers related to funding mechanisms were also strongly endorsed, with 60–70% of non-adopters stating that their primary funders would not pay for the costs of purchasing medications, laboratory tests, and physician time. Furthermore, the majority of non-adopters indicated that patients were unable to pay out-of-pocket for MAT. Barriers related to organizational culture were less frequently endorsed. Less than one-third of programs indicated that they lacked information about how to implement MAT, and less than 25% indicated that a lack of clinical evidence about MAT’s effectiveness was an important barrier. Similarly, less than one in four programs cited lack of counselor support, lack of patient interest, and the perception that MAT substitutes one drug for another as important reasons for non-implementation.

Based on an exploratory factor analysis (not shown), we constructed four mean scales which encompassed the domains of funding, lack of access to experienced medical personnel, patients’ co-occurring conditions, and organizational culture. These scales had acceptable levels of reliability as seen in Table 3, with Cronbach’s alpha or inter-item correlations (for the two-item scales) exceeding .75. The items about regulatory barriers did not load on a single factor, so they were left as single item indicators. For illustrative purposes, the last column of Table 3 presents the descriptive statistics of these barriers in descending order. Comparisons of these means using *t*-tests indicated several significant differences in the relative importance of these barriers. The mean of the most strongly endorsed barrier—regulations prohibiting implementation of MAT due to lack of medical personnel—was significantly greater than the next largest scale of funding barriers ($t(112) = 2.78, p < .01$) and the remaining barriers (all $p < .001$). The means for the funding scale and the medical staffing scale were not statistically different, suggesting that these barriers were of equivalent magnitude. However, the means for both funding barriers ($t(127) = 3.53, p < .001$) and medical staffing barriers ($t(127) = 2.30, p < .05$) were statistically greater than the item measuring regulatory barriers based on the levels of care offered by the program. The difference between the mean for this type of regulatory barrier and the mean for the scale about patients’ co-occurring conditions was also statistically significant ($t(127) = 4.62, p < .001$). The means for the scales measuring patients’ co-occurring conditions and organizational culture were statistically equivalent. Finally, the least endorsed indicator—state-level prohibition of MAT—was significantly lower than the mean of the organizational culture scale ($t(127) = 4.95, p < .001$).

4. Discussion/Lessons Learned

Our examination of medication adoption in a large sample of publicly funded treatment programs reveals that fewer than 40% of programs offer at least one medication for treatment substance use disorders (SUDs), confirming that many patients served by the publicly funded treatment system still lack access to medication-assisted treatment (MAT). We found that adopters and non-adopters of SUD medications were considerably different in terms of organizational characteristics, particularly with regard to medical staff. Consistent with prior research, MAT-adopting programs were more likely at the bivariate-level to be embedded in a healthcare setting and had greater access to both physicians and nurses (Knudsen et al., 2006; Knudsen et al., 2007b). In the multivariate model, the difference based on location in a healthcare setting was no longer significant. It should be noted that programs in healthcare settings employed significantly more physicians and nurses on staff, which were both associated with medication adoption.

Indeed, non-adopting programs were highly likely to cite lack of access to medical personnel as a key barrier to implementing medications. Specifically, state regulations prohibiting the use of medications in programs without medical staff and lack of access to medical personnel with expertise in implementing MAT were highly salient barriers. This latter finding suggests that greater MAT-specific training for physicians and nurses currently employed in the substance abuse treatment field is needed. Additional research is needed to understand why some programs with medical personnel still do not offer SUD medications. It also points to the need for greater integration of information about treating SUDs into the education that future physicians and nurses. There is ample evidence that most medical education programs provide only modest training about treating SUDs, although there has been some improvement in recent years (Miller, Sheppard, Colenda, & Magen, 2001; Polydorou, Gunderson, & Levin, 2008; Stimmel, Cohen, Colliver, & Swartz, 2000). Furthermore, the substance abuse treatment field must find ways to attract and retain nurses and physicians with specialty training in implementing MAT. These workforce-related issues will likely require additional funding as well as incentives for medical personnel to obtain specialty training. Additional changes are required to address funding policies that fail to reimburse physician time and other MAT-related services, which were also cited as a major barrier to implementation.

An additional contribution of this research is its assessment of a broader range of barriers to MAT implementation. Our findings reveal that intra-organizational barriers, such as cultural norms, information dissemination, and perceptions of clinical effectiveness, were not critical barriers to adoption. To some extent, this study suggests that considerable inroads have been made with regard to the acceptability of MAT. However, it also implies that strategies emphasizing the dissemination of information about MAT may have only a modest impact on implementation since such barriers are not widely endorsed. We also found that patient-level barriers were not viewed as important reasons for non-adoption of SUD medications, with the exception of patients' inability to pay for medications.

Our sample consisted of programs that rely heavily on governmental funding, so the major importance ascribed to medical resource and funding barriers suggests that public policies need to be better aligned with the implementation of MAT. At a time when local and state governments are facing economic crises, such changes may be particularly difficult. However, some directions for policy changes may include the creation of new billing codes for MAT-related services, changes in reimbursement for medication related services on the part of Medicaid, and re-allocating portions of existing substance abuse treatment budgets to cover MAT. Each state has a unique system for allocating public funds to substance abuse treatment, so it is unlikely that a single strategy can overcome barriers related to access to

medical staff and funding in all states (Heinrich & Hill, 2008; Levit et al., 2008; McAuliffe & Dunn, 2004).

Recent research indicates that addressing these types of system-level barriers may yield greater implementation of MAT. A promising initiative is the Advancing Recovery project, which has brought together state officials and treatment providers in 12 states to promote the implementation of evidence-based treatment practices, including SUD medications (Evans et al., 2007; McCarty et al., 2009; www.advancingrecovery.net). As state-provider partnerships attempted to implement SUD medications, numerous funding barriers were revealed, including lack of Medicaid coverage for medications as well as state contracts that did not include reimbursement for the costs of purchasing medications and related services (e.g., physician time, lab tests). The partnerships were successful in overcoming these funding barriers to varying degrees. State officials and providers worked together to redirect existing state funds to assist with the costs of medications, expand state contracts to include MAT, develop billing mechanisms for physician time and medications, and formalize relationships with the state pharmacy to receive SUD medications. Providers also worked with state Medicaid officials to change the Medicaid formulary to include medications. These findings are promising, but it has yet to be seen whether these changes are sustainable over time, particularly in the context of ever tightening state budgets (Roman & McCarty, 2009). In another example of research focused on systems change, NIDA is supporting a multi-site study that will examine whether a strategic planning-based intervention can improve linkages between criminal justice agencies and community-based providers to increase access to MAT (Friedmann et al., in press).

Several limitations of the present study should be noted. First, this sample is representative of the publicly funded treatment sector, which is just one segment of the US treatment system. While representative of the largest sector, our findings may not generalize to the privately funded treatment system, the Veterans Administration system, and programs located within correctional facilities. Second, our research relied on self-report measures from program administrators, which may be subject to social desirability and recall bias. Although these data represent a follow-up to a previously established sample, changes in the response categories for our measures of barriers mean that direct comparisons to our prior work should be made with caution. There may be other substantial barriers to MAT implementation that we did not measure, which is an additional limitation.

Overall, our findings suggest that federal and state initiatives aimed at promoting the widespread implementation of medications in SUD treatment programs are being undercut by the lack of medical infrastructure in treatment programs and by funding policies that are unsupportive of the implementation of MAT. While these data suggest that publicly funded treatment programs have overcome many of the cultural barriers to implementing SUD medications, efforts to train the counseling workforce and disseminate information about MAT are unlikely to lead to implementation until the issues of medical personnel and funding policies are addressed. Future research should continue to monitor the availability of SUD medications over time, particularly given the implementation of recent federal policy changes embedded within the Wellstone-Domenici Parity Act and the Affordable Care Act. It is unclear how these policy changes will impact the publicly financed treatment sector or how this sector may adapt to the changing health care environment, suggesting that ongoing longitudinal research is warranted.

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Biographies

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Amanda J. Abraham, Ph.D., is an Assistant Research Scientist in the Center for Behavioral Health and Human Services Delivery at the University of Georgia. She also serves as the Assistant Director of the National Treatment Center Study, a family of national research studies that examine innovation adoption, management practices, and service delivery in US substance abuse treatment programs. Her work focuses on the diffusion, adoption, and implementation of innovative treatment practices in substance abuse treatment programs as well as counselor perceptions of innovations and the influence of state policy on the delivery of treatment services.

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Table 1

Descriptive statistics of publicly funded substance abuse treatment centers and comparison by adoption of at least one SUD treatment medication

Variable	Overall Sample % (N) or Mean (SD)	Adopters of SUD Medications ^a % (N) or Mean (SD)	Non-Adopters of SUD Medications % (N) or Mean (SD)
<i>Ownership</i> **			
Government-owned	17.3% (43)	26.7% (24)	12.2% (19)
Not government-owned	82.7% (205)	73.3% (66)	87.8% (137)
<i>Located in a healthcare facility</i> ***			
Located in a hospital or community mental health center	17.8% (44)	30.8% (28)	10.3% (16)
Freestanding treatment program	82.3% (205)	69.2% (63)	89.7% (140)
<i>Accreditation</i> ***			
Accredited by external organization	51.2% (126)	66.7% (60)	41.6% (64)
Not accredited	48.8% (120)	33.3% (30)	58.4% (90)
<i>Detoxification services</i> ***			
Offers medically-supervised detoxification	19.9% (49)	44.9% (40)	5.2% (8)
Does not offer detoxification	80.1% (197)	55.1% (49)	94.8% (147)
<i>Levels of care</i> **			
Outpatient-only	46.6% (116)	35.2% (32)	53.2% (83)
Inpatient/residential-only	17.7% (44)	16.5% (15)	18.6% (29)
Mixture of outpatient and inpatient/residential	35.7% (89)	48.3% (44)	28.2% (44)
<i>Number of counselors on staff</i> ***	12.10 (19.20)	17.79 (28.46)	8.72 (9.53)
<i>Number of counselors on contract</i>	1.19 (2.38)	1.35 (2.60)	1.10 (2.26)
<i>Number of physicians on staff</i> ***	0.44 (0.81)	0.88 (1.05)	0.19 (0.48)
<i>Number of physicians on contract</i> ***	0.86 (1.19)	1.36 (1.57)	0.58 (0.79)
<i>Number of nurses on staff</i> ***	1.57 (3.76)	3.70 (5.42)	0.33 (1.23)
<i>Number of nurses on contract</i> *	0.50 (2.58)	1.05 (4.15)	0.20 (0.81)

^a Chi-square tests and t-tests were used to compare adopters and non-adopters, depending on the level of measurement.

* p<.05,

** p<.01,

*** p<.001 (two-tailed tests)

Table 2

Multivariate logistic regression model of adoption of any SUD medications on organizational and staffing characteristics

Variable	Odds Ratio (95% CI)
Government-owned (vs. privately owned)	1.41 (0.51–3.88)
Located in healthcare facility (vs. freestanding)	1.51 (0.57–3.99)
Accredited by external organization (vs. not accredited)	2.67 (1.24–5.79)*
Offers medically-supervised detoxification (vs. no detoxification services)	4.87 (1.62–14.62)**
Levels of care	
Outpatient-only	Reference
Inpatient/residential-only	0.91 (0.26–3.16)
Mixture of outpatient and inpatient/residential	1.56 (0.66–3.68)
Number of counselors on staff	1.02 (0.99–1.06)
Number of counselors on contract	1.04 (0.89–1.23)
Number of physicians on staff	2.05 (1.10–3.82)*
Number of physicians on contract	1.74 (1.12–2.71)*
Number of nurses on staff	1.48 (1.13–1.94)**
Number of nurses on contract	1.23 (0.80–1.90)

Table 3

Barriers to the implementation of medications in non-adopting SUD treatment programs

Barrier	% Programs Choosing "Important" or "Very Important" (N) ^a	Cronbach's α	Scale/Item Mean (SD)
State regulations prohibit us from prescribing medications because our program lacks medical staff.	78.7% (96) ^b	---	2.24 (1.16)
Our primary sources of funding will not reimburse the physician time needed to implement medications.	62.1% (87)	.89 ^c	1.85 (1.10)
Our primary sources of funding will not pay for the laboratory tests needed to implement medications.	60.3% (85)		
Our primary sources of funding will not pay for the costs of purchasing medications.	70.9% (100)		
Our patients cannot afford to pay for substance abuse treatment medications.	65.5% (95)		
We lack access to physicians with expertise in prescribing medications to treat substance abuse.	59.9% (88)	.88	1.66 (1.17)
We lack the nurses or other medical staff with expertise in implementing medications to treat substance abuse.	58.2% (85)		
State regulations prohibit us from prescribing medications because of the levels of care that we offer.	48.3% (71)	---	1.33 (1.32)
Too many of our patients have medical conditions that would make these medications clinically inappropriate for them.	30.2% (42)	.79	0.84 (0.83)
Too many of our patients have psychological conditions that would make these medications clinically inappropriate for them.	31.2% (44)		
Medications for treating substance abuse are inconsistent with this center's treatment philosophy.	29.91% (43)	.83	0.77 (0.71)
There is not enough of evidence that substance abuse treatment medications are clinically effective.	23.1% (33)		
There are better alternatives to using medications as part of substance abuse treatment.	37.7% (55)		
We have not received adequate information about how to implement substance abuse treatment medications.	29.7% (43)		
Using medications to treat addiction is substituting one drug for another.	21.9% (32)		
Our counselors do not support the use of medication-assisted treatment.	19.9% (29)		
Our patients are not interested in using medications as part of their substance abuse treatment plans.	23.8% (34)		
State regulations prohibit the use of medications to treat substance abuse in this state.	11.4% (16)	---	0.38 (0.83)

^a Frequency data reflect available data for each item.^b Programs that prescribed psychiatric medications, but not medications for substance use disorders, were not asked this item resulting in a sample size of 122 programs.^c Reliability statistics, means, and standard deviations are presented for the subset of programs providing complete data on the following 17 barriers (n = 128).