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Factors affecting willingness to provide buprenorphine treatment

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Abstract

Buprenorphine is an effective long-term opioid agonist treatment. As the only pharmacological treatment for opioid dependence readily available in office-based settings, buprenorphine may facilitate a historic shift in addiction treatment from treatment facilities to general medical practices. Although many patients have benefited from the availability of buprenorphine in the United States, almost half of current prescribers are addiction specialists suggesting that buprenorphine treatment has not yet fully penetrated general practice settings. We examined factors affecting willingness to offer buprenorphine treatment among physicians with different levels of prescribing experience. Based on their prescribing practices, physicians were classified as experienced, novice, or as a nonprescriber and asked to assess the extent to which a list of factors impacted their prescription of buprenorphine. Several factors affected willingness to prescribe buprenorphine for all physicians: staff training; access to counseling and alternate treatment; visit time; buprenorphine availability; and pain medications concerns. Compared with other physicians, experienced prescribers were less concerned about induction logistics and access to expert consultation, clinical guidelines, and mental health services. They were more concerned with reimbursement. These data provide important

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insight into physician concerns about buprenorphine and have implications for practice, education, and policy change that may effectively support widespread adoption of buprenorphine.

Keywords

Buprenorphine; Opioid-related disorders; HIV; Physician's practice patterns; Willingness

1. Introduction

The abuse of opioids, including heroin and prescribed pain medications, continues to be a significant health problem. According to the 2005 National Survey on Drug Use and Health, approximately 379,000 people in the United States used heroin in the previous year, with 166,000 using in the previous month (2006). The nonmedical use of prescribed opioids is even more widespread. In 2003, approximately 4.7 million people in the United States reported current nonmedical use of prescription opioids (Substance Abuse and Mental Health Service Administration [SAMHSA], 2004, 2006, 2008). Use of heroin and other opioids is associated with increased morbidity and mortality and increased risk of social dysfunction, including extended periods of unemployment, criminal activity, homelessness, and incarceration (Friedman et al., 1999; Hser et al., 2001; Robertson et al., 1994).

Long-term opioid agonist treatment has been shown to be greatly beneficial (Fiellin et al., 2004; Laine et al., 2001; O'Connor & Fiellin, 2000); however, it is estimated that only 15% of those needing treatment receive it (Merrill et al., 2002). Research suggests that office-based treatment of opioid dependence with buprenorphine, a partial μ -opioid agonist, has the potential to expand access and utilization of effective drug treatment (Fiellin, O'Connor et al. 2001; Fiellin, Rosenheck et al. 2001; Gossop et al., 1999; Keen et al., 2003; King et al., 2002; Novick & Joseph, 1991; Novick et al., 1994; Rhoades et al., 1998; Weinrich & Stuart, 2000; Wilson et al., 1994). Buprenorphine, which reduces cravings, blocks the effects of opioids, and has limited overdose potential, can be prescribed in office-based settings for the treatment of opioid dependence by physicians who meet the requirements of the Drug Addiction Treatment Act (DATA 2000), including completion of an 8-hour training or certification in addiction medicine and registration with the Drug Enforcement Administration (DEA). Despite evidence of its efficacy and safety (Fiellin & O'Connor, 2002; Fiellin et al., 2002; Gibson et al., 2003; O'Connor et al., 1998; O'Connor & Samet, 1996), initially, office-based buprenorphine treatment was not as quickly adopted by U.S. physicians as anticipated (Knudsen et al., 2006a, 2006b; National Consensus Development Panel, 2003; Join Together, 2003; Stanton et al., 2006).

More recent evidence suggests that uptake has improved over time (Fiellin, 2007). Although there is no central registry of buprenorphine prescriptions in the United States, data from the DEA's Office of Diversion Control suggest that prescriptions of buprenorphine have been rising steadily since its introduction in 2002 (Fiellin, 2007). According to the manufacturer, by the end of 2007, approximately 585,000 patients had received medically supervised detoxification or maintenance treatment with buprenorphine (Renner, 2008), making buprenorphine a significant portion of the opioid treatment provided during this period. Although this number may represent an overestimate, it is clear that utilization of buprenorphine is expanding. However, its expansion has been facilitated through a relative low number of prescribers. In addition, almost half of prescribers are addiction specialists (Fiellin, 2007), suggesting limited uptake in more general medical practices. Despite this historic success, many more people could benefit from buprenorphine if a greater number and wider array of physicians from different specialties were to provide this treatment.

Physician uptake of buprenorphine treatment is not well understood. The limited research that is available has focused on the attitudes of physicians who have not yet prescribed buprenorphine. These studies are informative and suggest a number of important concerns, including adequacy of knowledge and experience; availability of resources and support; issues related to cost and reimbursement; and a perception that opioid-dependent patients are more difficult to care for than other patients (Cunningham et al., 2006; Elliott, 2001; Fiellin et al., 2001, 2003; Godden et al., 1997; Stanton et al., 2006; Sullivan et al., 2006; Sullivan & Fiellin, 2005; Turner et al., 2005; West et al., 2004). The extent to which these perceived barriers are borne out in practice and are tempered by actual experience in prescribing buprenorphine may significantly impact on the diffusion of buprenorphine treatment. However, this has not been fully investigated.

In this article, we examine factors that affect willingness to prescribe buprenorphine by physicians to help explain what might influence the adoption of this new technology by physicians. Everett Rogers' theory about the diffusion of innovation suggests that the diffusion of a new technology is a process that occurs over time, is influenced by conditions that support or inhibit its adoption, and is highly influenced by initial attitudes toward it, particularly by a group of early adopters (Rogers & Everett, 2003). In considering the factors that influence physicians' willingness to adopt buprenorphine, we compare the perceptions of (a) physicians who have received training but have not prescribed buprenorphine, (b) novice prescribers, and (c) experienced prescribers. We hypothesized that increasing experience among early adopters of buprenorphine would ameliorate the barriers perceived by physicians new to buprenorphine treatment.

2. Materials and methods

2.1. Sample

Our analysis draws on combined data from the evaluations of 2 distinct programs designed to support buprenorphine treatment, both coordinated by The New York Academy of Medicine (NYAM) and the Yale University School of Medicine. The Integrated Buprenorphine and HIV Care Evaluation (BHIVES) is an evaluation of 10 programs funded by the Human Resources and Services Administration to integrate buprenorphine treatment into HIV treatment settings, in part by providing training and support to HIV providers new to buprenorphine treatment. The BHIVES evaluation includes surveys of physicians working in the HIV primary care clinics that house the 10 funded programs and, to a lesser extent, other health care and drug treatment settings. The Physician Clinical Support System (PCSS, www.pcass.mentor.org) is a national, SAMHSA-funded project designed to provide support to clinicians who are interested in incorporating buprenorphine treatment for opioid addiction into their practices. PCSS includes the physicians needing and the physicians providing support (mentors); thus, there is a wide range of buprenorphine experience within the initiative.

2.2. Surveys

Physicians involved in either the BHIVES or PCSS projects completed baseline surveys that covered basic demographics and medical training; practice and patient characteristics; substance abuse treatment experience; and buprenorphine knowledge and prescribing experience. Although there were some differences in content and method of administration (BHIVES surveys were completed on hard copy, PCSS surveys were completed online), both surveys included a list of factors hypothesized to affect willingness to prescribe buprenorphine, which was adapted from one of the physician surveys used in the federally mandated Evaluation of the Impact of the DATA Waiver Program (Kissin et al., 2006). Respondents were asked to assess, using a 5-point Likert scale, the extent to which each factor was likely to affect their willingness to prescribe buprenorphine to opioid-dependent patients. The scaled ranged from

1 (*doesn't affect at all*) to 5 (*strongly affects*). Any response greater than 1 indicated the respondent perceived that the factor had some affect on willingness to prescribe.

Both surveys were approved by the NYAM Institutional Review Board. Surveys included in this analysis were completed between July 2005 and April 2006.

2.3. Statistical procedures

Survey respondents were grouped according to experience prescribing buprenorphine: (a) trained nonprescribers ($n = 49$) included respondents who had not yet prescribed buprenorphine but had completed the 8-hour training required for the DEA waiver; (b) novice prescribers ($n = 45$) were physicians who reported having prescribed buprenorphine to 30 or fewer patients; (c) experienced prescribers ($n = 78$) were a combination of BHIVES physicians who reported having prescribed buprenorphine to 50 or more patients and PCSS mentors. The cutoff between novice and experienced prescribers was based on a number of factors. First, we considered the number of inductions and patient experiences that would be needed to gain experience with a spectrum of clinical and logistical issues. Next, we reviewed the distribution of patients receiving buprenorphine from providers in the BHIVES cohort and noted a bimodal distribution with a cluster prescribing to 30 or less and one prescribing to 50 or more patients, which provided a natural cut point. PCSS mentors met our criteria for experienced prescribers based on the selection process to become a mentor, which requires them to have extensive experience prescribing buprenorphine, as well as experience providing education and training to other physicians.

Chi-square analysis was used to examine between-group differences in demographic and practice characteristics. Multivariate analysis of variance (MANOVA) was used to assess the between-group differences in ratings of factors affecting buprenorphine prescribing. Wilks' lambda was used to test the multivariate null hypotheses that ratings on factors did not vary by physician group, maintaining an overall alpha level of $p \leq .05$. Where the Wilks' lambda was significant, post hoc tests for mean differences between the three groups were performed using Tukey B set at alpha $p \leq .05$. A second set of analyses were performed using physician and practice characteristics that were significantly associated with buprenorphine prescription experience as covariates in the multivariate model. Each individual covariate was entered conjointly with the physician experience variable. Both main effects and interactions were tested using MANOVA.

3. Results

3.1. Sample characteristics

In total, 172 surveys were included in the analysis, including 42 from BHIVES and 130 from PCSS. Overall, the sample was predominantly White (77.1%), male (72.9%), and experienced in directly treating patients for addiction (83.8%). Twenty-three percent reported psychiatry as an area of clinical specialization (see Table 1). Compared to the other groups, experienced prescribers were significantly more likely to be certified in addiction medicine ($p \leq .001$), to list addiction medicine as an area of clinical specialization ($p \leq .001$), and to report having more than 3 years experience treating opioid dependence ($p \leq .001$). They were less likely to list HIV medicine as their area of clinical specialization than were other groups (3.8% of experienced compared to 20.0% of novices and 18.4% of trained nonprescribers, $p \leq .001$).

3.2. General perceptions on prescribing buprenorphine

Before evaluating the differences between physicians with varying levels of experience, we examined factors that were perceived to affect willingness to prescribe buprenorphine by physicians across levels of experience. Several factors were rated by all respondents as fairly

strongly affecting willingness to prescribe (any rating above the baseline of 1 indicates that the factor affected willingness to some extent). These included training of clinic staff on buprenorphine (full group mean = 3.42); access to a variety of behavioral health services, such as substance abuse counseling (3.48), mental health services (3.43), and “other supportive services” (3.31); and an effective referral system for alternate drug treatment (3.32). Respondents also noted that adequate time per patient visit (3.40), availability of buprenorphine (3.43), and concerns about patients on chronic pain medications (3.14) were important considerations. Participants across groups agreed that evidence on the effectiveness of buprenorphine (1.46) and preferences for alternate treatments for opioid dependence (1.79) did not substantially affect their willingness to prescribe buprenorphine.

3.3. Impact of physician prescribing experience on treatment perceptions

Although the perceptions of the full sample provide an indication of which factors were the most and least relevant to physicians’ willingness to prescribe buprenorphine overall, an examination of the differences between groups suggests that increasing experience may alleviate a number of concerns relevant to less experienced prescribers (see Fig. 1). As shown in Table 2, Tukey B tests for between-group differences demonstrate that there were statistically significant between-group differences for 14 of the 20 factors included in the survey; for 13 of the 14 factors, the mean score was lowest (i.e., least relevant) for experienced prescribers. Not surprisingly, this group was less concerned than other respondents about induction logistics, access to consultation with a buprenorphine expert, and access to clinical guidelines ($p \leq .001$). Experienced prescribers were also less concerned about access to mental health services than were the other two groups ($p \leq .01$). There were statistically significant differences between experienced providers and nonprescribers for several additional factors, including training of clinic staff, access to substance abuse counseling services, an effective referral system for alternate drug treatment, record-keeping requirements, scope of expertise, level of patient interest, and preference for treatment other than buprenorphine. Novice prescribers demonstrated a middle level of concern for these factors, significantly different from neither experts nor nonprescribers. Experienced prescribers also differed from the other groups with respect to concern about reimbursement. For this factor, however, experts rated it as significantly more important (3.46) than novices (2.78) or nonprescribers (2.65; $p \leq .01$). The only factor that novice prescribers ranked differently than nonprescribers was buprenorphine efficacy, judging it to be less of a concern (1.38 for novice, 1.84 for non-prescribers; $p \leq .01$).

3.4. Effect of physician and practice characteristics

In multivariate analysis, we examined personal characteristics as well as practice characteristics that were significantly associated with buprenorphine prescribing experience, including HIV specialization, addiction medicine specialization, certification in addiction medicine, experience treating addiction, and experience (> 3 years) treating opioid dependence. Physician’s gender (Wilks’ $\lambda = 0.87$; Omnibus $F = 1.64$; $p \leq .050$), ethnicity (Wilks’ $\lambda = 0.64$; Omnibus $F = 1.58$; $p \leq .006$), and HIV clinical specialization (Wilks’ $\lambda = 0.79$; Omnibus $F = 2.89$; $p \leq .000$) showed significant main effects when assessed simultaneously with buprenorphine treatment experience. However, the differences between the three physician groups in how they rated the factors remained significant after inclusion of these covariates in the models and did not fundamentally alter the interpretation of the observed main effects. HIV clinical specialization did interact with buprenorphine experience in ratings of concern around reimbursement; HIV specialists with the same relative experience tended to rate reimbursement as being less of a concern than their non-HIV specialist counterparts. Fisher’s exact test was used to correct for small cell size (<4) when comparing the groups on HIV clinical specialization, and these differences persisted. Ethnicity also interacted with experience relative to induction logistics: African American physicians, regardless of

experience, expressed greater concern about induction than their colleagues, although this finding may be an artifact of the small number of African American physicians in the sample.

4. Discussion

Office-based buprenorphine treatment has the potential to significantly expand access to drug treatment for individuals addicted to opioids and has already reached hundreds of thousands of people needing treatment. Despite this success, uptake by U.S. physicians is not yet commensurate with patient need. Factors affecting physician willingness to prescribe buprenorphine must be better understood so that barriers can be effectively addressed. Data from our physician surveys illustrate that most factors that affect willingness to prescribe buprenorphine are less significant for experienced prescribers than they are for physicians new to buprenorphine treatment, suggesting that experience eases—at least in part—a number of concerns. This finding is consistent with the diffusion of innovation theory. Interestingly, however, the similarities in responses between novice and nonprescribers (as compared to those with more experience) for many factors, including availability of clinical guidelines, access to consultation with an expert provider, and induction logistics, suggest that substantial, rather than minimal, experience is required before concerns are significantly reduced. The prolonged need for guidelines and expert support are not surprising given the limited attention paid to drug addiction and treatment in medical school curricula (Fiellin et al., 2002) and the general discomfort physicians feel when addressing these topics (Friedmann et al., 2001; Saitz et al., 2002). Mentorship and education programs, as well as the dissemination of written and web-based materials, may effectively reduce barriers to buprenorphine uptake and should be available to providers prior to their first buprenorphine induction and as they continue to gain experience with the treatment.

However, our data also suggest that some barriers persist even among experienced prescribers. A number of factors, including those related to access to behavioral health services, such as counseling, mental health services, and supportive services were highly relevant even among experienced providers. Given the historic separation between the medical and behavioral health care systems, as well as general shortages in and inadequate reimbursement for behavioral health care, it is not surprising that access to these services was seen by physicians in our sample as affecting their willingness to provide buprenorphine treatment. Indeed, this finding is consistent with prior studies indicating that access to other services affects doctors' satisfaction with treating opioid dependence (Becker & Fiellin, 2006). Adequate time for the patient visit and availability of buprenorphine were also seen as relevant factors across physician groups. Concerns around availability may suggest the need for expanded coverage by insurance plans, as well as greater outreach and education for pharmacists.

These findings are similar to those found in the Kissin/ WESTAT study (Kissin et al., 2006), where providers also reported challenges in payment/reimbursement, availability of buprenorphine, and availability of counseling services. Dissimilarly, providers in this study were less likely to report concern about induction logistics, DEA involvement, and record keeping. The differences may be explained by the fact that the Kissin/WESTAT data were obtained roughly 1 year following buprenorphine approval and so likely represent the opinions of physicians with relatively limited experience.

Adequate reimbursement for drug-abuse-related office visits was the only factor judged more significant for experienced providers than for those with less experience. Furthermore, experienced providers rated it as more relevant (3.5) than any other factor. Although the extent to which reimbursement concerns impact on the number of buprenorphine patients an individual is able to see in his or her practice cannot be determined from this study, this finding does suggest that new prescribers may underestimate the resource needs of buprenorphine

visits. In addition, this finding reinforces the call for increased insurance coverage for mental health and substance abuse treatment services.

Our data are subject to several limitations. Although the BHIVES and PCSS samples incorporate variation with regard to geography, practice setting, clinical background, and experience, they are not representative of all physicians trained to prescribe buprenorphine, and therefore, generalizations should be made cautiously. The findings are further limited by the fact that they are drawn from two studies with somewhat different participant pools. Although we used statistical tests to correct for small cell size, the findings about African American and HIV specialists should be interpreted cautiously. In addition, although we did control for certain relevant characteristics (including HIV specialty, race, and gender), we were unable to control for other important intervening variables: We either lacked the data or lacked variation across groups (e.g., HIV physicians were likely to fall into the “novice” group; addiction medication physicians were likely to be in the “experienced” group). There are likely to be other important distinctions between the three groups that affect their perceptions of buprenorphine treatment. For example, the most experienced buprenorphine prescribers, as well as the HIV providers, are likely to be based in well-resourced settings with access to services that may not be available in private practice or smaller community-based clinics. Therefore, the finding that, in comparison to other physicians, the most experienced prescribers rated an adequate referral system and access to mental health and supportive services as less significant may reflect their greater access to ancillary services than would be the case for those working in other settings (Saxon & McCarty, 2005) rather than an increased level of comfort gained from experience. As mentioned above, the experienced buprenorphine prescribers were more likely to specialize in addiction medicine; they were also more likely to report providing care for patients with opioid dependence for greater than 3 years. Thus, the greater comfort with buprenorphine prescribing found in the most experienced group may reflect, to a large extent, their greater familiarity and comfort with addiction treatment in general.

Despite these limitations, these data do provide important insight into physician concerns with respect to prescribing buprenorphine and have implications for changes in practice, education, policy, and research that may effectively promote and support more widespread adoption of buprenorphine treatment in the United States. Factors like access to counseling and mental health services, reimbursement, and adequate time with patients, although mediated to some extent by physician experience, remain significant obstacles for all physicians. Such barriers must be addressed at the systems and policy level, including increased linkages and information exchange between medical and behavioral health services and new approaches for financing buprenorphine treatment, with all its necessary components, in office-based settings.

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Fig. 1.
Factors affecting willingness to prescribe buprenorphine.

Table 1

Sample characteristics

Variables	Experienced (n = 78)		Novice (n = 45)		Nonprescribers (n = 49)		Total		χ^2	p
	n	%	n	%	n	%	n	%		
Males	63	81.8	30	68.2	31	63.3	124	72.9	5.90	.052
Ethnicity/Race										
White	61	79.2	36	81.8	34	69.4	131	77.1	9.46	ns
Black	5	6.5	2	4.5	0	0.0	7	4.1		
Latino	3	3.9	3	6.8	6	12.2	12	7.1		
Other	8	10.4	3	6.8	9	18.4	20	11.8		
Certified in addiction medicine										
Yes	65	82.3	9	20.5	8	16.3	82	47.7	70.30	.000
Area of clinical specialization										
Addiction medicine	50	63.3	6	13.3	4	8.2	60	34.7	52.81	.00
Psychiatry	23	29.1	6	13.1	10	20.4	39	22.5	4.27	ns
HIV medicine	3	3.8	9	20.0	9	18.4	21	12.1	9.54	.008
Experience treating addiction										
Yes	77	97.5	41	91.1	27	55.1	145	83.8	42.40	.00
% treating opioid dependence >3 years										
Yes	73	92.4	16	35.6	17	34.7	106	63.9	80.25	.00

Table 2

Factors affecting willingness to prescribe buprenorphine

Factors	Prescribers				Non-prescribers			
	Expert (n = 78)		Novice (n = 45)		Trained (n = 49)			
	M	SD	M	SD	M	SD	M	SD
Training of clinic staff on buprenorphine **	3.1	(0.1)	a	3.4	(0.2)	ab	3.9	(0.2) b
Access to substance abuse counseling **	3.1	(0.2)	a	3.7	(0.2)	ab	3.9	(0.2) b
Access to mental health services ***	3.0	(0.2)	a	3.8	(0.2)	b	3.7	(0.2) b
Adequate time for patient visit	3.3	(0.2)		3.4	(0.2)		3.6	(0.2)
Access to other supportive services *	3.0	(0.2)	a	3.6	(0.2)	b	3.6	(0.2) b
Availability of buprenorphine	3.2	(0.2)		3.5	(0.2)		3.8	(0.2)
Effective referral system for alternate drug treatment *	3.0	(0.2)	a	3.4	(0.2)	ab	3.8	(0.2) a
Patients receiving chronic pain treatment	3.0	(0.2)		3.4	(0.2)		3.1	(0.2)
Availability of clinical guidelines for buprenorphine treatment ***	2.5	(0.2)	a	3.1	(0.2)	b	3.7	(0.2) b
Adequate reimbursement for drug-abuse related office visit **	3.5	(0.2)	a	2.8	(0.2)	b	2.7	(0.2) b
Record keeping requirements **	2.3	(0.2)	a	2.8	(0.2)	ab	3.0	(0.2) b
Access to consultation with an expert prescriber ***	2.0	(0.2)	a	2.8	(0.2)	b	3.0	(0.2) b
Certification requires training and special DEA waiver	2.0	(0.2)		2.2	(0.2)		2.6	(0.2)
Outside the scope of expertise **	1.8	(0.2)	a	2.1	(0.2)	ab	2.6	(0.2) b
Induction logistics are too difficult ***	1.7	(0.2)	a	2.4	(0.2)	b	2.7	(0.2) b
Concern about diversion	2.0	(0.2)		2.2	(0.2)		2.5	(0.2)
Insufficient interest among patients ***	1.7	(0.2)	a	2.1	(0.2)	ab	2.5	(0.2) b
Outside of provider interest	1.9	(0.1)		1.8	(0.2)		2.2	(0.2)
Prefer alternate treatment *	1.6	(0.1)	a	1.8	(0.2)	ab	2.1	(0.2) b
Effectiveness has not been adequately demonstrated ***	1.3	(0.1)	a	1.4	(0.2)	a	1.8	(0.2) b

Note. Between-subject F test. Superscripts indicate similarity and significant between group difference using post hoc Tukey set at $p \leq .05$. Thus, reading across each line, where superscript letters match (a = a or b = b), no significant difference was found between physician groups. Where they differ (a differs from b), there was a statistically significant difference.

* $p \leq .05$.

** $p \leq .01$.

 $.001 \leq p$