Court personnel attitudes towards medication-assisted treatment: a state-wide survey

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Abstract:

Background: Despite its efficacy, medication-assisted treatment (MAT) is rarely available in the criminal justice system, including in problem-solving courts or diversionary settings. Previous studies have demonstrated criminal justice administrators' hostility towards MAT, especially in prisons and jails. Yet, few studies have examined attitudes among court personnel or compared beliefs among different types of personnel. Also, few studies have explored the relationship between MAT education/training and attitudes. Finally, few studies have directly compared attitudes towards methadone, oral buprenorphine, and extended-release naltrexone in the criminal justice system.

Methods: We modified a survey by Matusow et al. (2013) to explore justice professionals' MAT attitudes, including associations with demographic variables, court role, and previous MAT education/training. After piloting the survey, we distributed it to a convenience sample of justice professionals registered for an educational summit held in Indiana in 2018. Data was analyzed using descriptive and inferential statistical methods.

Results: 231 Indiana court employees who had registered for a state MAT educational summit completed the survey prior to the summit, including judges, probation officers, law enforcement personnel, attorneys, probation officers, program directors, counselors, and case managers. Overall, participants had significantly more positive attitudes towards extended-release naltrexone than towards other medications (p value < 0.01). Court employee average attitudes towards methadone were significantly more negative than average attitudes towards oral

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buprenorphine; and average attitudes towards oral buprenorphine were significantly more negative than average attitudes towards extended-release naltrexone (p value < 0.01). Employment as a prosecutor or law enforcement officer was associated with more negative attitudes towards oral buprenorphine and methadone (p value < 0.05). Exposure to previous MAT training was associated with more positive attitudes for all medications (p value < 0.05). Compared to participants with graduate degrees, participants with less education had significantly more negative attitudes towards extended-release naltrexone ($p < 0.05$). Gender, age, rurality, and personal/family recovery history were not associated with differences in attitudes.

Conclusion: As expected, court employees' attitudes significantly differ by medication, with average attitudes towards agonist medications being more negative than attitudes towards extended-release naltrexone. Despite a larger evidence base for the efficacy of methadone and oral buprenorphine, justice personnel may have more positive attitudes towards extended-release naltrexone due to targeted marketing by the pharmaceutical manufacturer, fears about diversion or misuse of agonist medications, and historic criminal justice hostility towards agonist medications. Importantly, previous education/training regarding MAT is associated with more positive attitudes, suggesting that more educational interventions are needed, especially for prosecutors and law enforcement personnel.

Keywords: courts; medication-assisted treatment; opioid use disorder; medications for opioid use disorder; survey; beliefs; attitudes; buprenorphine; methadone; naltrexone; education; training

1. INTRODUCTION

Approximately two million Americans have an opioid use disorder (OUD).[1] Individuals with OUD are at significant risk of opioid overdose, a particularly pressing problem in the U.S. where opioid-related death rates have quadrupled nationally since 2000[2] and contributed to decreased average life expectancy.[2] Individuals with OUD are also overrepresented in the U.S. criminal justice system, with an estimated 24% to 36% of Americans with OUD cycling in or out of jail annually.[3,4]

Evidence-based treatment for OUD includes three medications approved by the Food and Drug Administration: methadone, buprenorphine, and naltrexone (collectively referred to as medication-assisted treatment, or "MAT").[1] Although treatment should be individualized and include behavioral treatment (e.g. mental health therapy), MAT is more effective than behavioral treatment alone,[5] and MAT is associated with significant decreases in opioid overdose rates, opioid misuse rates, criminal activity, and HIV/AIDS incidence.[6–11] At moderate doses, methadone, a full opioid agonist, and buprenorphine, a partial opioid agonist, are considered equivalently effective at preventing opioid misuse and overdose, although some studies have found longer treatment retention rates with methadone.[11,12] Methadone and buprenorphine have a stronger evidence base than does naltrexone, but extended-release naltrexone may be as effective as oral buprenorphine in preventing opioid misuse and overdose for some populations.[13–15] Unlike methadone, which may only be accessed via highly-regulated, stand-alone opioid treatment programs ("methadone clinics"), buprenorphine and naltrexone formulations may be accessed in office-based settings, like physicians' offices. However, to prescribe buprenorphine

[1] We use the term "medication-assisted treatment" throughout the manuscript to refer to methadone, buprenorphine, and naltrexone treatment, both with or without psychosocial treatment methods. However, some scholars use MAT to refer to the combination of these medications with psychosocial treatment methods.

healthcare practitioners must obtain a waiver from the Substance Abuse and Mental Health Services Administration (SAMHSA).[5] Unlike buprenorphine or methadone treatment, naltrexone treatment requires complete detoxification prior to induction, which can be a significant hurdle for many people with OUD[16], especially given the undersupply and cost of inpatient detoxification services in many areas[17]. Additionally, the injectable form of naltrexone is significantly more expensive than methadone and oral buprenorphine, both of which are available in generic formulations[18].

Despite MAT's efficacy, it is significantly underused in U.S. drug courts, jails, and prisons.[19–23] According to one study, among criminal justice system participants referred to OUD treatment, only 5% received a referral for either buprenorphine or methadone treatment[24]. Furthermore, in that study participants who were referred to OUD treatment by problem-solving courts or other diversionary programs (i.e. programs where charges are dropped following successful treatment) were less likely to receive a referral for buprenorphine or methadone than were those who received a referral for OUD treatment from probation, parole, or prison.[24] Reasons for lack of MAT referral in the criminal justice system include negative attitudes towards MAT, such as beliefs that it is ineffective for OUD, has a high potential for misuse or diversion, is difficult to administer, and is costly.[8,20,24–26]

To date, few studies have examined the attitudes towards MAT or referral practices of criminal justice personnel working in court settings (i.e. judges and their staff), with most studies focusing on the attitudes and practices of prison and jail administrators.[20,21,27,28] Yet court personnel influence whether or not an individual who lives in the community but participates in problem-solving courts, pre-trial diversion, or probation may access MAT.[20,29]

A previous study found that court personnel's attitudes towards MAT strongly predict whether participants may access MAT.[20] Specifically, court personnel's attitudes about the following are strong predictors of MAT availability in adult drug courts: MAT efficacy in preventing relapse, MAT effectiveness relative to psychosocial treatments, and MAT use as maintenance for OUD.[20] Therefore, researchers and policy makers need more information about court personnel's attitudes towards MAT and potential influences on these attitudes. Additionally, little is known regarding whether and how previous education and training about MAT influences attitudes towards MAT. Such information could inform policy initiatives to expand MAT access.

The largest study of court personnel's attitudes towards MAT was published by Matusow et al. in 2013, using data obtained in 2010.[20] In a nationally-representative sample of over 100 adult drug court personnel, the study found widespread uncertainty and negative attitudes towards methadone and buprenorphine, with 10% of court staff viewing MAT as a "reward" for criminal behavior.[20] The study also found that up to 50% of adult drug courts nationally prohibited program enrollee use of methadone or buprenorphine for reasons ranging from concerns about efficacy and diversion to cost and lack of providers.[20] In a 2017 report of drug court practices in three states, the organization Physicians for Human Rights stated that non-medical personnel routinely prohibited MAT and made medical decisions best left to medical personnel[30]. In response, the National Association of Drug Court Professionals (NADCP) stated that individuals who are legally prescribed "addiction medication" should be eligible to participate in drug court programs[31]. Moreover, the organization passed a unanimous resolution directing drug courts to "learn the facts about MAT."[31] Additionally, under the Obama Administration, SAMHSA passed a resolution prohibiting federal funding for drug courts that

fail to permit MAT[32]. However, a previous qualitative study of Indiana drug court judges reported that judges felt the policy had limited effect, because they primarily received state and local funding for drug courts[29].

The Matusow et al. study focused exclusively on adult drug court personnel and predated publication of the NADCP standards described above[20,31]. The study did not examine attitudes of personnel in other types of problem-solving courts (e.g., veterans courts and family courts), nor did the study examine attitudes of personnel in non-problem-solving courts (e.g. felony courts and misdemeanor courts.) Problem-solving courts other than adult drug courts have participants with OUD, and these courts can require and monitor treatment for OUD. Data is not available regarding the percentage of other problem-solving courts' participants who have OUD; however, state court system directors, including chief justices, have urged all problem-solving courts to expand OUD treatment interventions in response to the ongoing opioid crisis[33]. Additionally, many non-problem-solving courts have pretrial diversion programs in which people charged with substance use disorder-related crimes may have their charges dropped upon successful completion of substance use disorder treatment[34]. Information about personnel's attitudes in other types of courts would allow researchers and policymakers to design educational initiatives for personnel outside of adult drug courts. Designing education for a broader audience is important given that drug court staff may differ in knowledge and attitudes from staff in other courts.

In addition, the Matusow et al. study did not examine attitudes related to extended-release naltrexone[20], which is an antagonist, meaning it blocks opioid receptors in the brain. In contrast, oral buprenorphine and methadone are agonists, meaning they activate opioid receptors in the brain. Therefore, court personnel concerns related to diversion and misuse may be lower for

extended-release naltrexone. On the other hand, relative to agonist treatments (i.e. methadone and buprenorphine), fewer studies exist assessing extended-release naltrexone's efficacy for OUD; therefore, it is possible that court personnel believe extended-release naltrexone is less efficacious than agonist treatments. Finally, the Matusow et al. study did not examine the relationship between previous MAT education/training and attitudes towards MAT.

Considering the growing opioid overdose problem, a more recent study of MAT attitudes in court settings is critically needed, including settings beyond adult drug courts. To help address this gap, we modified Matusow et al.'s survey[20] and implemented it in Indiana in 2018 with the goal of ascertaining court personnel's attitudes towards methadone, oral buprenorphine, and extended-release naltrexone. Additionally, our study aimed to ascertain any relationship between previous formal MAT education or training in court personnel's professional capacity and attitudes towards MAT. Education could help dispel some of common myths about MAT, such as that it is "just another drug," thereby impacting attitudes towards MAT.

Finally, we aimed to identify associations between demographic variables and attitudes towards MAT. For example, we probed associations between court personnel's gender and attitudes, because a systematic review of gender differences in attitudes towards mental health treatment found that women are more likely to endorse psychosocial conceptions of mental illness and that women tend to view treatment outcomes more favorably[35]. We also aimed to identify any associations between rurality and attitudes, because a previous study has found that fewer SAMHSA-waivered physicians exist in rural areas[36]; and the presence of a SAMHSA-waivered physician may mediate criminal justice personnel's attitudes towards buprenorphine. Additionally, Matusow et al. had previously found that rurality was associated with some negative attitudes towards buprenorphine and methadone[20].

We recruited court personnel who were registered for a statewide MAT education summit for completion of our survey prior to the beginning of the summit. While these results may not be generalizable outside of Indiana, they can inform researchers' and Indiana state policy makers' proposed policies for expanding MAT access in court settings, including informational initiatives about MAT.

2. METHODS & MATERIALS

We modified Matusow et al.'s instrument,[20] creating a brief, anonymous survey to explore court professionals' attitudes towards MAT. The survey was fielded in Indiana in July 2018, and collected information about court professionals' demographics, attitudes towards MAT, and previous MAT education. Prior to launching the survey, we pilot-tested it with three problem-solving court judges in Indiana using a cognitive interviewing process[37,38] and modified questions based on their feedback.

2.1 Participant Recruitment

We recruited a convenience sample from registered participants of the Indiana Statewide Opioid Summit, a July 2018 event sponsored by the Indiana Supreme Court, Indiana Family and Social Services Agency, the Association of Indiana Counties, and Indiana University. The summit topic was "A Medication-Assisted Treatment and Addictions Primer for Justice Professionals." We provided a link to the online survey to summit organizers, who then emailed the link to the 947 individuals registered for the summit. The summit's primary audience were employees in the state court and criminal justice systems, including judges, probation officers, law enforcement officers, health care practitioners, defense attorneys, prosecutors, and others. Participants were not provided an incentive for participation in the survey.

2.2 Data Collected

Role in the court: We collected information from respondents about their role in the court. Respondents could choose from the following options: case manager, defense attorney, Department of Child Services attorney, judge, law enforcement officer, mental health/substance use disorder counselor (bachelor's degree), mental health/substance use disorder counselor (master's degree or higher), physician, probation officer, prosecutor, problem-solving court director, or other. Respondents could also choose not to disclose their role.

Demographics: We collected demographic information from respondents, including age, gender, educational attainment, and whether they were employed in an urban or rural county. While attendees at the summit came from court programs in all 92 Indiana counties, due to justice professionals' concerns about anonymity, we did not attempt to link respondents' responses to specific geographic areas. We also asked whether the respondent or a close family member was in recovery for a substance use disorder. Respondents could also choose not to disclose demographic data.

MAT Attitudes: Our survey included eight statements about each medication (methadone, oral buprenorphine, and extended-release naltrexone), which respondents were asked to rate on a five-point Likert scale that ranged from "strongly disagree" (1) to "strongly agree" (5) (see Tables 2 and 3 for statements about MAT attitudes reported in this article). These questions about MAT attitudes were modified from Matusow et al.'s 2013 survey.[20]

We did not include statements about extended-release buprenorphine formulations (injectable or implantable) given their very recent FDA approvals. We also did not include statements about oral naltrexone, given its limited efficacy due to low adherence rates.[39,40] Respondents could choose not to answer questions about MAT. Even though the Matusow et al.

study used a three-point scale, we used a five-point scale, believing it would better allow us to discriminate between measures.

Previous Education about MAT: We asked respondents, "Have you previously received any formal education or training about medication-assisted treatment in your capacity as a court employee?" Respondents could also choose not to disclose whether they had previously received education or training about MAT.

The survey was implemented in Qualtrics software. The study was approved by the Indiana University Human Subjects Institutional Review Board.

2.3 Analysis

Descriptive statistics were explored to capture the demographic information for survey respondents. Differences between respondents' attitudes towards MAT were explored using bivariate statistics. Analyses of variance (ANOVA) were used to analyze average differences in attitudes across the three MAT treatment categories. T-Tests were used to compare the difference between average attitudes between certain key demographic groups, including gender, rurality, and whether the court personnel had previously received formal MAT education or training. Multivariate linear regression was used to analyze the associations between respondents' demographic characteristics and their attitudes towards MAT treatments. All statistical analyses were conducted using SAS Enterprise Guide 9.4.

Due to a limited number of respondents in some categories of justice professionals, for purposes of analysis we combined the following personnel: judges and problem-solving court program director (due to their leadership roles in court programs); law enforcement officers and prosecutors (due their law enforcement background); and mental health/substance use counselor with a bachelor's degree, mental health/substance use counselor with a master's degree or

higher, case managers, and physicians (due to their health care focus). Probation officers and corrections officials were combined due to their background in corrections. The "other" category included defense attorneys, Department of Children Services attorneys, and respondents who either identified as "other" or did not state their professions. Other groupings of court personnel were explored, and findings were robust to these sensitivity analyses.

For purposes of data analysis and presentation, we reverse coded some of the Likert scale items, a process commonly followed in survey data analysis[41], so that a high value indicates the same type of response (e.g. a positive attitude) to every item. Specifically, for any statements that presented a substance negatively (e.g. "METHADONE does not reduce or block the effects of heroin; 1=strong disagreement and 5=strong agreement), we reverse coded those statements and associated Likert scale items to present the substance positively (e.g. METHADONE reduces or blocks the effects of heroin; 1=strong agreement and 5=strong disagreement). In total, we reverse coded three statements: "SUBSTANCE rewards criminals for being drug users," "SUBSTANCE prolongs addiction," and "SUBSTANCE interferes with one's ability to drive a car."

3. RESULTS

We collected data from 235 justice personnel in Indiana who had registered for the MAT education summit. For purposes of analysis, we excluded data from four respondents who completed the survey after the summit had begun, in case summit participation influenced attitudes. Therefore, our final sample included data from 231 respondents, all of whom provided responses prior to the beginning of the summit.

3.1 Respondent Characteristics

3.1.1 Demographic Data

Approximately half of the respondents disclosed they were female (46%; n=104) and more than one-third disclosed they were male (39%; n=89); the remainder did not disclose their gender. More than half indicated they worked in a rural county (58%; n=134), while a quarter worked in an urban county (25%; n=56), with the remainder not disclosing. One quarter stated that they or a close family member were in recovery from a substance use disorder (21%; n=48); almost three quarters stated that neither they nor a close family member were in recovery (62%; n=143), with a few choosing not to disclose. About half were younger than 50 years old (48%; n=110), more than a third were older than 50 years old (36%; n=84), with the remainder not disclosing their age. More than half of respondents had a graduate degree (50%; n=116); a quarter had a bachelor's degree (25%; n=58); and only 8% (n=20) had neither a bachelor's nor a graduate degree; the remainder did not disclose their education completion.

3.1.2. *Previous Formal MAT Education or Training in Capacity as Court Employee*

Slightly more respondents had received formal MAT education or training in their capacity as a court employee prior to the summit (45%; n=103) as compared to those who had not (40%; n=93), with the remainder choosing not to disclose.

3.1.3. *Professional Role in the Court*

The most common professional roles in the court were "other" (23%; n=55), probation officers (19%; n=44), and judges (18%; n=43). About one-tenth (10%; n=25) were healthcare professionals, such as a mental health SUD/counselor, physician, or case manager. Less common were law enforcement officers (8%; n=18), prosecutors (7%; n=16), defense attorneys (5%, n=11), problem-solving court directors (3%; n=7), and Department of Child Services attorneys (n=3; 1%). A few (4%; n=9) chose not to disclose their role in the court.

3.2 Attitudes towards MAT

Of the 231 respondents who submitted survey responses, 192 respondents answered all questions about MAT attitudes (see Tables 2 and 3 for detailed responses).

Across all questions regarding MAT attitudes, respondents had significantly more negative attitude towards methadone than oral buprenorphine, and significantly more negative attitudes towards oral buprenorphine than extended-release naltrexone. See Tables 2 and 3.

On average, court personnel did not choose a 4 or 5 on the Likert scale (indicating "somewhat agree" or "strongly agree") with positive statements about any of the medications. Average agreement with positive statements about the substances on a scale of 1-5 were as follows: 3.00 for methadone; 3.22 for oral buprenorphine, and 3.82 for extended-release naltrexone.

Sixty-one percent agreed or strongly agreed with the statement "EXTENDED-RELEASE NALTREXONE does not reward criminals for being drug users." In contrast, approximately half (54%) agreed or strongly agreed with the statement "METHADONE does not reward criminals for being drug users," and half (51%) agreed or strongly agreed with the statement "ORAL BUPRENORPHINE does not reward criminals for being drug users."

Forty-eight percent agreed or strongly agreed with the statement "EXTENDED-RELEASE NALTREXONE does not prolong addiction." In contrast, only (27%) agreed or strongly agreed with the statement "BUPRENORPHINE does not prolong addiction," and a quarter (25%) agreed or strongly agreed with the statement "METHADONE does not prolong addiction." See Table 3 for level of agreement with other statements about the medications.

More than half of our sample believed that methadone and buprenorphine prevent relapse (51% for methadone; 59% for buprenorphine;). Almost two-thirds believed that extended-release naltrexone prevents relapse (71%) and should be used to maintain clients with OUD (62%).

More than a third of our sample believed that clients should be maintained on methadone (36%), and more than half (53%) believed that clients should be maintained on buprenorphine.

About a third of our sample believed that methadone is more effective than non-pharmacological approaches to treatment and that buprenorphine is more effective than non-pharmacological approaches (35% and 41%, respectively). Over half (59%) of our sample believed that extended-release naltrexone is more effective than non-pharmacological approaches.

3.3 Bivariate Relationships between Respondents' Attitudes and Other Variables

We compared the average attitudes towards MAT between key demographic groupings (see Table 4). We found that average attitudes did not differ significantly by gender for any MAT treatment ($P > 0.05$). When we explored the bivariate relationship between average attitudes by rurality, we found that respondents that worked in courts in rural counties had significantly more negative attitudes towards MAT than those working in urban areas ($p < 0.05$). Average attitudes were also significantly differed based on whether respondents had received formal MAT education or training prior to the summit in their capacity as a court employee. Average attitudes for methadone were 2.84 on a five-point Likert scale for those without formal MAT education or training compared with 3.15 for those with formal MAT education or training ($p<0.05$). When average attitudes towards oral buprenorphine were compared across these two categories, we found that attitudes were significantly different, with 3.05 for those without previous formal MAT education or training and 3.38 for those with previous formal MAT education or training ($p < 0.05$). Average attitudes were also different for extended-release naltrexone across groups, with 3.49 for those without previous formal MAT education or training and 4.1 for those with formal MAT education or training ($p<0.05$).

3.4 Multivariate Relationships between Respondents' Attitudes and Other Variables

Below we report relationships between respondents' attitudes towards MAT and other variables, including gender, age, educational attainment, whether they had a close family in recovery, rurality, previous formal MAT education or training, and role in the court. See Table 5.

After controlling for the above characteristics, gender was not significantly associated with respondents' attitudes towards any of the medications. Also, after controlling for other variables, rural or urban locations were not significantly associated with attitudes towards any of the medications. When compared to those with graduate education, respondents without graduate education had significantly more negative attitudes towards extended-release naltrexone; this finding was not significant for average attitudes about methadone oral buprenorphine.

Previous formal education or training about MAT in one's capacity as a court employee was significantly associated with more positive attitudes towards all medications. Previous MAT education or training was associated with attitudes towards methadone and oral buprenorphine that were a quarter of a point more positive, and attitudes toward extended-release naltrexone that were nearly half a point more positive.

Roles in the court were explored in the multivariate regression analyses, and law enforcement officers and prosecutors had significantly lower attitudes towards methadone and oral buprenorphine than did other court personnel ($p < 0.05$). No significant differences in attitudes were found towards extended-release naltrexone.

4. DISCUSSION

The goal of our study was to explore attitudes towards MAT among criminal justice professionals working in Indiana courts, including judges, law enforcement officers, probation officers, prosecutors, law enforcement officers, and healthcare providers. We compared attitudes

across different types of professionals and compared attitudes towards different types of OUD medications (methadone, oral buprenorphine, and extended-release naltrexone). We also examined associations between attitudes and previous formal MAT education or training, as well as attitudes and demographic variables. Our survey was based on the survey by Matusow et al.,[20] with the addition of questions about previous formal MAT education or training in the role of court employee and questions about extended-release naltrexone.

As compared to the nationally representative sample in the Matusow et al. study, our sample had more respondents; however, our sample was one of convenience (participants attending an education summit) and limited to Indiana. Additionally, our respondents were registered for a statewide educational summit about MAT, so they may have had more interest in or preexisting knowledge about MAT relative to respondents in Matusow et al.'s sample. Unlike the Matusow et al. study, our sample included personnel working in courts other than adult drug courts (e.g. veterans' courts, family courts, felony courts, misdemeanor courts).

In our sample, some respondents' attitudes were more negative than those expressed by respondents in the Matusow et al. sample. For example, a larger proportion of our sample felt that buprenorphine rewarded criminals (18% versus 10% in the Matusow et al. study). Also, a much larger proportion of our sample believed that buprenorphine prolongs addiction (49% versus 21%) and that methadone prolongs addiction (59% versus 38%). Interestingly, only 7% of respondents in our sample believed that extended-release naltrexone rewarded criminals, and only 13% of respondents in our sample believed that extended-release naltrexone prolongs addiction. Justice personnel may misperceive methadone and oral buprenorphine as "rewards," because the medications are agonists, meaning they activate the opioid receptors in the brain, potentially leading to an experience of euphoria if misused. In contrast, extended-release

naltrexone is an antagonist, meaning it blocks the opioid receptors in the brain. However, the notion that methadone and buprenorphine "reward" individuals mischaracterizes the role of agonist medications, which by activating opioid receptors prevent cravings and withdrawal symptoms despite their potential for misuse.

Even though certain attitudes that respondents in our study expressed were more negative than those in the Matusow et al. study, our sample held more positive attitudes towards the three measures found by Matusow et al. to be predictive of agonist treatment access in adult drug courts.[20] Specifically, our sample had more positive attitudes towards the efficacy of methadone and buprenorphine in relapse prevention, the efficacy of methadone and buprenorphine relative to non-pharmacological approaches, and the appropriateness of client maintenance on methadone and buprenorphine. For example, relative to participants in the Matusow et al. sample, our respondents were approximately three times as likely to state that methadone and buprenorphine are more effective than non-pharmacological approaches to treatment (for methadone, 35% versus 11%; for buprenorphine, 41% versus 16%). Likewise, a larger percentage of respondents in our sample believed that clients should be maintained on methadone (36% versus 31%), and twice as many respondents in our sample believed that clients should be maintained on buprenorphine (53% versus 26%). Finally, a larger percentage of respondents in our sample believed that methadone and buprenorphine prevent relapse (51% versus 44% for methadone; and 59% versus 45% for buprenorphine).

These more positive beliefs in our sample may reflect greater levels of education about MAT in 2018 relative to 2010 (when the Matusow et al. study was fielded) and an increase in policy initiatives to expand MAT, such as a prohibition of SAMHSA funding for drug courts that ban MAT[32]. This interpretation is bolstered by the fact that previous formal MAT education or

training in one's capacity as a court employee was found to be predictive of positive beliefs towards all three medications in our study. Alternatively, court personnel in Indiana (particularly those who attended the educational summit) may have more positive attitudes towards these three measures relative to court personnel nationally.

What is particularly striking about our study is the level of positive attitudes towards extended-release naltrexone as compared to methadone and oral buprenorphine. For example, almost three-quarters of our sample believed that extended-release naltrexone prevented relapse (71%), more than half believed that extended-release naltrexone should be used to maintain clients with OUD (62%); and more than half (59%) believed that extended-release naltrexone is more effective than non-pharmacological approaches. In fact, even though more evidence exists for the efficacy of methadone and oral buprenorphine in decreasing opioid misuse and overdose, our respondents had significantly more positive beliefs about extended-release naltrexone overall.

More positive attitudes towards extended-release naltrexone may be explained by historic hostility towards agonist treatments in the criminal justice system.[8,21,22] Such attitudes may be due to the difficulty of finding trustworthy providers, concerns about misuse or diversion, and lack of belief in the medications' efficacy.[20,29] In contrast, as an antagonist, extended-release naltrexone has no potential for psychotropic effects, and is therefore less likely to be diverted than are agonist medications. Additionally, news reports suggest that the manufacturer of extended-release naltrexone has been targeting advertisements towards drug courts, particularly judges, likely due to knowledge of historic hostility towards agonist treatments in the criminal justice system.[42] It is possible that the manufacturer's marketing activities have been more frequent or intense in Indiana relative to other states. News reports that Alkermes' marketing

efforts disparaged methadone and buprenorphine prompted Senator Kamala Harris to launch an investigation into Alkermes' marketing practices in 2017[43]. However, no peer-reviewed study to date has reviewed the relationship between Alkermes' marketing efforts and court personnel's attitudes. Court personnel may also feel that an opioid-free treatment is more appropriate for clients who have already undergone opioid detoxification (e.g. in jail awaiting trial) as compared to an agonist treatment. Additionally, since methadone may only be provided in opioid treatment programs and oral buprenorphine may only be prescribed by a SAMHSA-waivered provider, respondents may feel that the logistical barriers to criminal justice participants accessing those medications are higher than the barriers to accessing extended-release naltrexone; therefore, respondents may feel that extended-release naltrexone is a better choice for criminal justice participants. Even though Matusow et al. did not include questions about extended-release naltrexone in their study, they did find that logistical barriers (such as too few providers in an area) influenced adult drug court personnel's decisions not to allow MAT[20].

More positive attitudes towards naltrexone may also be explained by distrust of local buprenorphine and methadone providers, because a previous qualitative study of Indiana problem-solving court judges found that judges had greater distrust of methadone providers than oral buprenorphine or extended-release naltrexone providers.[29] In that study, judges felt that methadone providers were either providing overly high dosages or were not properly monitoring participants, both of which amplified judges' fears of methadone diversion and misuse.[29]

We are not surprised that law enforcement personnel held more negative attitudes about oral buprenorphine and methadone relative to other court personnel. The medications' misuse and diversion potential may be particularly salient to professionals who are trained to prevent and respond to crimes. It is possible that law enforcement respondents have previously arrested

people for buprenorphine or methadone misuse and diversion or have witnessed an opioid overdose involving these medications, because law enforcement personnel are among the first responders called during opioid overdoses.

In our sample, less than half of respondents (45%) reported having previously received formal education or training about MAT in the respondent's capacity as a court employee. Importantly, previous MAT education/training was significantly associated with positive attitudes towards all the medications, especially extended-release naltrexone. These results suggest that initiatives to increase MAT access should include education for justice personnel working in court settings, especially since courts are even less likely than other criminal justice institutions to refer individuals for MAT.[44] We did not ask respondents about the method or extent of education received, so we do not know whether such education was obtained from a pharmaceutical company, continuing education course, conference, or independent reading, nor do we know the depth of education provided. For example, it is possible that the previous formal MAT education or training was provided by Alkermes, thus explaining the larger effect of former MAT education or training on attitudes towards extended-release naltrexone than on attitudes towards oral buprenorphine and methadone. Future research should examine the most effective format and provider of MAT education or training for justice personnel.

Our study has several strengths and limitations. We collected information about a range of medications and were thus able to compare attitudes about the three most common forms of MAT, including extended-release naltrexone. By including a wide variety of justice personnel in our sample, we were able to compare beliefs between different types of personnel working in courts. Additionally, by including a question about previous formal MAT education or training in the respondent's capacity as a court employee, we were able to identify any potential

relationships between MAT education or training and attitudes, a previously underexplored topic.

Because we surveyed only justice personnel who were registered for the educational summit, we are limited in our ability to generalize our results to justice personnel who did not register for the summit. Furthermore, since participants knew the summit focused on MAT ahead of time, those participants who completed the survey may be more likely than others to have a preexisting interest in MAT. If this is true, then our results may overstate justice personnel's positive attitudes and understate negative attitudes about MAT relative to attitudes held by the typical justice personnel in Indiana. Future studies should explore justice personnel's attitudes towards MAT across the U.S. to detect any potential differences based on geographic location. Additionally, future studies should examine differences in attitudes based on the type of court in which the respondent is employed.

5. CONCLUSION

Criminal justice personnel in our study working in court settings had significantly more negative attitudes towards methadone than oral buprenorphine, and significantly more negative attitudes towards oral buprenorphine than extended-release naltrexone. This result may be explained by historic hostility towards agonist treatments in the criminal justice system. Previous formal MAT education or training in the respondent's capacity as a court employee was significantly associated with positive beliefs about all medications, especially extended-release naltrexone, suggesting that informational initiatives should target criminal justice professionals in court settings. Law enforcement officers and prosecutors had significantly more negative attitudes towards methadone and oral buprenorphine than did other types of professionals, possibly due to their experiences seeing agonist diversion or misuse. Our results may not be

generalizable to other states; additionally, it is possible that our respondents had more interest in and knowledge about MAT relative to other court personnel, since they were registered for a MAT education summit. Future studies should further examine the type of MAT education that justice personnel receive and the most effective format and provider of such education.

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Table 1. Descriptive Statistics for Court Personnel

Characteristics of Respondents	N	%
Gender: female	104	46%
Gender: male	89	39%
Prefer not to disclose	38	17%
Court: rural Area	133	58%
Court: urban Area	56	25%
Prefer not to disclose	42	19%
Age: 18-29	6	3%
Age: 30-49	104	45%
Age: 50-64	75	32%
Age: 65+	9	4%
Prefer not to disclose	37	16%
Case manager	6	3%
Defense attorney	11	5%
Department of Child Services attorney	3	1%
Judge	43	18%
Law enforcement officer	18	8%
Mental health/SUD counselor - bachelor's Degree	2	1%
Mental health/SUD counselor - master's Degree Higher	15	6%
Other	55	23%
Physician (MD)	2	1%
Probation officer	44	19%
Problem-solving court director/coordinator	7	3%
Prosecutor	16	7%
Prefer not to disclose	9	4%
Associate degree	3	1%
Bachelor's degree	58	25%
Graduate or professional degree	116	50%
High school graduate	1	0%
Some college	6	3%
Some graduate work	8	3%
Trade/technical/vocational training	2	1%
Prefer not to disclose	37	16%
No: You or a close family member are in recovery	143	62%
Yes: You or a close family member are in recovery	48	21%
Prefer not to disclose	40	17%
No previous formal MAT education/training	93	40%

Previous formal MAT education/training	103	45%
Prefer not to disclose	35	15%

MAT=medication-assisted treatment; SUD=substance use disorder

Table 2. Average Attitudes about Medication-Assisted Treatments

Questions about Attitudes	Methadone	Buprenorphine	Vivitrol	Sig. ANOVA
	%	%	%	
SUBSTANCE reduces relapse	3.2	3.46	3.97	p<0.001
SUBSTANCE reduces crime and re-incarceration	2.85	3.03	3.67	p<0.001
SUBSTANCE does not reward criminals for being drug users	3.55	3.54	3.94	p<0.001
SUBSTANCE does not prolong addiction	2.53	2.70	3.58	p<0.001
SUBSTANCE should be used to maintain clients who have OUD	3	3.40	3.88	p<0.001
SUBSTANCE is more effective than non-pharmacological approaches to retaining clients in treatment	3.08	3.25	3.80	p<0.001
SUBSTANCE does not interfere with one's ability to drive a car	2.72	2.99	3.71	p<0.001
SUBSTANCE reduces or blocks the effect of heroin	3.12	3.41	3.98	p<0.001
	Avg =3.00	Avg=3.22	Avg=3.82	

OUD=opioid use disorder

Table 3. Attitudes about Medication-Assisted Treatments

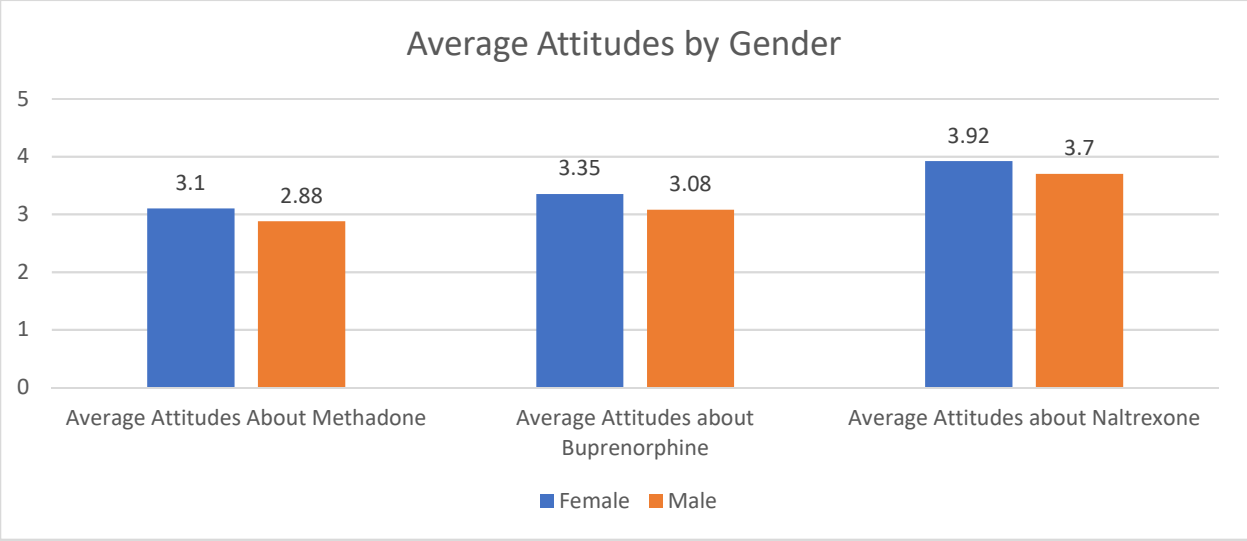
	Methadone				
	SD	D	Neutral/Unsure	A	SA
Methadone reduces relapse	14	16	18	38	13
Methadone reduces crime and re-incarceration	20	20	26	24	10
Methadone does not reward criminals for being drug users	5	17	23	24	30
Methadone does not prolong addiction	26	33	16	14	11
Methadone should be used to maintain clients who have OUD	12	22	30	25	11
Methadone is more effective than non-pharmacological approaches to retaining clients in treatment	8	19	38	26	9
Methadone does not interfere with one's ability to drive a car	15	23	44	12	6
Methadone reduces or blocks the effect of heroin	14	13	34	24	15
	Oral Buprenorphine				
	SD	D	Neutral/Unsure	A	SA
Oral buprenorphine reduces relapse	8	15	18	43	16
Oral buprenorphine reduces crime and re-incarceration	16	18	24	32	11
Oral buprenorphine does not reward criminals for being drug users	4	14	31	25	26
Oral buprenorphine does not prolong addiction	17	32	24	18	9
Oral buprenorphine should be used to maintain clients who have OUD	7	12	28	40	13
Oral buprenorphine is more effective than non-pharmacological approaches to retaining clients in treatment	6	16	38	30	11
Oral buprenorphine does not interfere with one's ability to drive a car	8	21	46	15	11
Oral buprenorphine reduces or blocks the effect of heroin	6	12	35	29	18
	Extended-Release Naltrexone				
	SD	D	Neutral/Unsure	A	SA
	2	5	23	37	34

Extended-release naltrexone reduces crime and re-incarceration	5	4	31	38	22
Extended-release naltrexone does not reward criminals for being drug users	2	5	32	19	42
Extended-release naltrexone does not prolong addiction	4	9	40	21	27
Extended-release naltrexone should be used to maintain clients who have OUD	2	4	32	30	32
Extended-release naltrexone is more effective than non-pharmacological approaches to retaining clients in treatment	2	4	36	32	27
Extended-release naltrexone does not interfere with one's ability to drive a car	1	3	52	12	32
Extended-release naltrexone reduces or blocks the effect of heroin	1	3	34	22	41

SD = Strongly Disagree, D = Somewhat Disagree, A = Somewhat Agree,

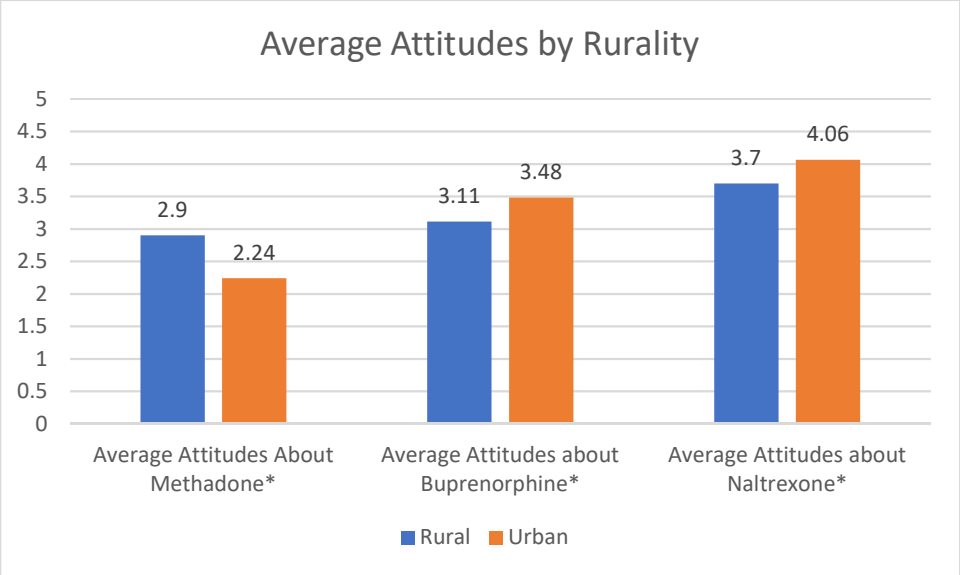
SA=Strongly Agree; OUD=opioid use disorder

Figure 3. Average Attitudes by Gender



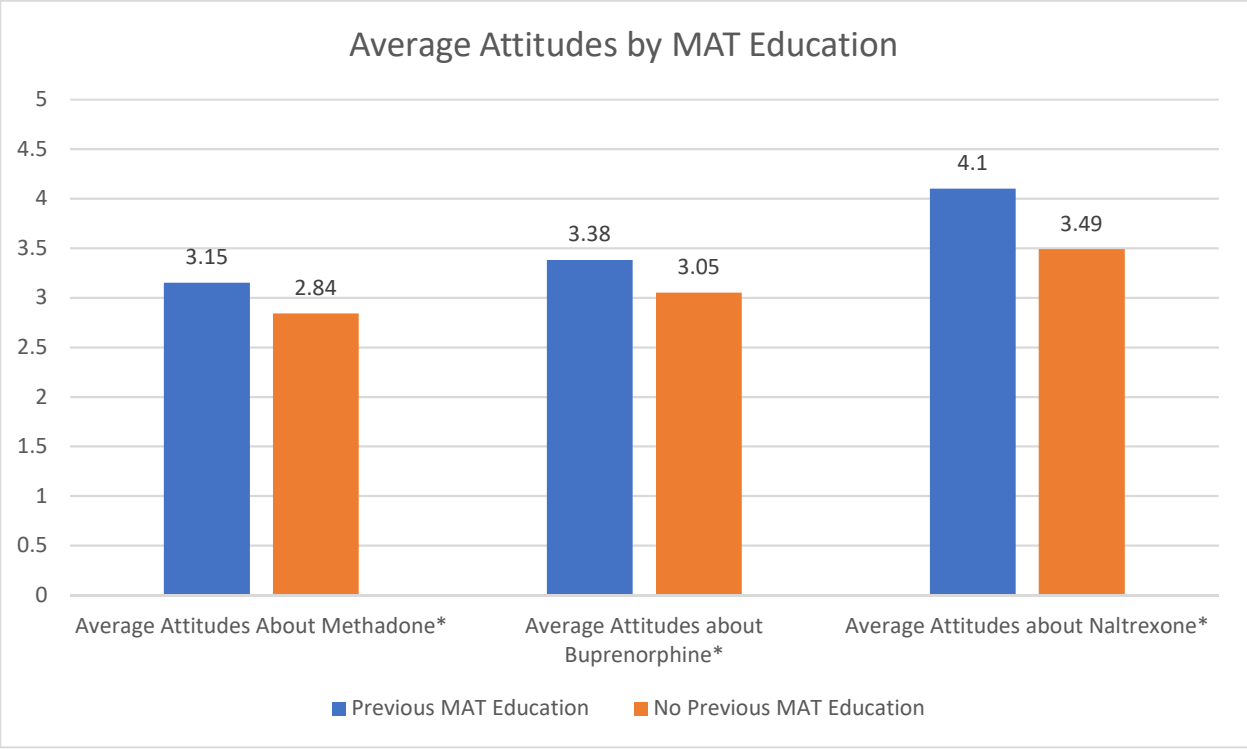
Not significantly different from each other $p < 0.05$

Figure 4. Average Attitudes by Rurality



*significantly different from each other $p < 0.05$

Figure 5. Average Attitudes by Previous Formal MAT Education/Training in Capacity as Court Employee



*significantly different from each other $p < 0.05$
MAT = Medication Assisted Treatment

Table 4. Multivariate Regression Analyses

	Average Attitudes About Methadone		**Average Attitudes about Oral Buprenorphine**		**Average Attitudes about Extended-Release Naltrexone**	
Covariates	**Estimate**	**Sig.**	**Estimate**	**Sig.**	**Estimate**	**Sig.**
Female	-0.06711	0.565	-0.01777	0.8745	0.12436	0.1763
Male	ref		ref		ref	
18-29 Years	ref		ref		ref	
30-49 Years	-0.21601	0.4784	-0.24603	0.4031	-0.04405	0.8541
50-64 Years	-0.25569	0.41	-0.35565	0.2357	-0.08507	0.7273
65+ Years	0.24628	0.5406	-0.02794	0.9426	-0.079	0.8029
Less than a college degree	-0.45953	0.0822	-0.2469	0.3319	**-0.41565**	**0.046***
Bachelor's degree	-0.23724	0.0804	-0.18667	0.1535	**-0.21352**	**0.0458***
Graduate or professional degree	ref		ref		ref	
You or close family member are in recovery	0.13428	0.2978	0.07956	0.5224	0.14787	0.1457
Neither you nor a close family member are in recovery	ref		ref		ref	
Prefer not to disclose if you or close family member are in recovery	-0.61522	0.1465	-0.215	0.5981	-0.17774	0.5929
Urban	ref		ref		ref	
Rural	-0.14224	0.2338	-0.18324	0.1127	**-0.16276**	**0.0841***
No previous formal MAT education/training in capacity as court employee	ref		ref		ref	

Previous formal MAT education/training in capacity as court employee	**0.22763**	**0.0407***	**0.23416**	**0.0293***	**0.45996**	**<.0001***
Corrections	0.28063	0.1652	**0.54809**	**0.0054***	-0.01369	0.9313
Judge	-0.24873	0.1619	-0.06335	0.7114	-0.10608	0.4474
Law Enforcement	**-0.40444**	**0.0418***	**-0.52925**	**0.0061***	-0.04109	0.7915
Other	0.19096	0.2447	0.15189	0.3375	-0.14178	0.2722
Healthcare	ref		ref		ref	

MAT=medication-assisted treatment

*=statistically significant $p < 0.05$