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Organizational factors associated with practitioners' support for treatment of opioid use disorder in the emergency department

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HIGHLIGHTS

- Explored relationships between organizational factors and practitioner support for OUD treatment.
- Nurses were more likely than physicians to support MAT to treat OUDs.
- Nurses had greater bias than physicians towards working with patients using opioids.
- Climate for innovation and practitioners' readiness for change were positively associated with support for MAT to treat OUDs.

ABSTRACT

Background: Despite the significant increase in emergency room visits for opioid overdose, only few emergency departments (ED) have implemented best practices to treat people with opioid use disorders (OUD). Some implementation gaps may be due to practitioner factors; such as support for medication-assisted treatment (MAT) for OUD in the ED. In this study, we explore the relationship between inner setting characteristics of the EDs (e.g., leadership, readiness for change, organizational climate) and practitioner support for OUD treatment and attitudes towards people with OUD.

Methods: We surveyed 241 ED practitioners (e.g., physicians, nurses, social workers) at one of the largest EDs in the United States. We used analysis of variance and chi-square global tests to compare responses from ED practitioners in differing roles. We also conducted five multivariate logistic regressions to explore associations between ED inner setting characteristics and five antecedents of implementation; ED practitioner (1) supports MAT for OUD in the ED, (2) supports best practices to treat OUD, (3) has self-efficacy to treat OUD, (4) has stereotypes of people who use drugs, and (5) has optimism to treat people with OUD.

Results: We found nurses were more likely than physicians to support MAT for OUD in the ED and delivering other best practices to treat OUD. At the same time, nurses had greater bias than physicians against working with patients suffering from OUD. We also found the ED's climate for innovation and practitioners' readiness for change were positively associated with support for MAT for OUD in the ED and using best practices to treat OUD.

Conclusions: Findings suggest that professional roles and some ED inner setting factors play an important role in antecedents of implementation of OUD treatment in the ED. To prepare EDs to effectively respond to the current opioid overdose epidemic, it is critical to further understand the impact of these organizational factors on the implementation of evidence-based OUD treatment practices in the nation.

Abbreviations: CI, Confidence Interval; EBPs, Evidence-based practices; ED, Emergency department; MAT, Medication-assisted treatment; OR, Odds Ratio; OUD, Opioid use disorders; SUD, Substance use disorder

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1. Introduction

The opioid overdose epidemic continues unabated in the United States. On average, 130 Americans die daily from an opioid overdose, which increasingly involves synthetic opioids like illicitly manufactured fentanyl (IMF) (Scholl, Seth, Kariisa, Wilson, & Baldwin, 2019). Overdoses from opioids like oxycodone and hydrocodone have quadrupled since 1999 (Centers for Disease Control and Prevention, 2016), while overdose death rates from IMF increased by 45.2% from 2016 to 2017 alone (Scholl et al., 2019). This overdose epidemic has had a significant impact on emergency departments (ED). Opioid related visits increased 30% from 2016 to 2017 alone (Vivolo-Kantor et al., 2018). Screening and diagnosing opioid-use disorders (OUD), initiating medication-assisted treatment (MAT) for OUD in the ED, and referring people with OUD to treatment are among best practices that EDs can take to respond to the opioid epidemic (SAMHSA, 2017).

The opioid overdose epidemic has seen a differential impact in different regions of the United States. Non-metropolitan areas in the Eastern states of the United States have seen the highest rates of synthetic opioid overdose. Yet, the latest figures show a significant increase in overdose rates in Western states, including California (Scholl et al., 2019).

Large hospitals in metropolitan areas are ideally positioned to respond to the opioid epidemic given their service capacity and resources. However, EDs also face multiple external and internal barriers to implementing best practices to treat OUD (Houry, Haegerich, & Vivolo-Kantor, 2018). Funding and regulation of opioid prescription are critical barriers to deliver OUD treatment in the ED (Houry et al., 2018; Kolodny et al., 2015), whereas previous research suggests that internal organizational factors, like leadership (Aarons & Sommerfeld, 2012) and organizational climate (Aarons, Ehrhart, Farahnak, & Sklar, 2014) affect the implementation of evidence-based practices. Practitioners' attitudes towards the use of best practices (Aarons, 2004; 2006) and towards patients (Burns et al., 2016) also affects implementation of such practices. For instance, research suggests that physicians' attitudes toward people who use opioids (Barry et al., 2010), mistrust of individuals seeking pain medication (Baldacchino, Gilchrist, Fleming, & Bannister, 2010), stigma toward people who use opioids (McCarty, Priest, & Korthuis, 2018), and may pose difficulties to successful treatment of OUD in the ED. Some studies further suggest that physicians feel "stuck" treating patients with OUD and report low self-efficacy in treating addiction more generally (Barry et al., 2010; Spitz et al., 2011). The ED system also faces barriers to prescribing MAT and coordinating with specialty addiction health services to ensure effective follow-through on referrals (Spitz et al., 2011; Kolodny et al., 2015).

This exploratory study focused on the ED internal factors associated with practitioner's support for implementing OUD treatment in the ED. Conducted in one of the largest EDs in the United States, this work can inform ways to address the significant need to care for people with OUD in the ED and to deliver medication-assisted treatment (Bernstein, 2016; D'Onofrio et al., 2015).

1.1. Conceptual framework

Emerging conceptual frameworks that explain the context of implementation of new practices in public sector health care services highlight the importance of addressing outer (i.e., system and inter-organizational) and inner (i.e., intraorganizational) context factors that influence the delivery of evidence-based practices (EBPs; Aarons, Hurlburt, & Horwitz, 2011; Damschroder et al., 2009). The CFIR proposes five major domains that play a role in the implementation of EBPs in health care systems (Damschroder et al., 2009). These domains include the nature of interventions or policy changes (e.g., opioid treatment policies), outer setting (e.g., targeted funding resources, prescription regulation), inner setting (e.g., leadership, organizational climate), individuals involved in implementation (e.g., ED managers, physicians, nurses, social workers), and the implementation strategy (e.g., training and supervision; Damschroder et al., 2009).

As one of the first studies examining the implementation of OUD treatment in ED settings, this exploratory study focused on one of the CFIR domains—the individuals involved in implementation—and their views on their inner setting. Specifically, we examined the association between ED inner setting characteristics and practitioners' attitudes about antecedents of implementation of OUD treatment in the ED. We explored five independent variables representing the inner setting of EDs. These include ED practitioners' 1) readiness for change; 2) openness to innovation; 3) attitudes towards EBPs; 4) perceived psychological safety; and 5) perceptions of the degree of implementation leadership. We tested the relationship between these five inner setting factors and five attitudes of ED practitioners attitudes that may support implementation, such as 1) support MAT for OUD in ED; 2) self-efficacy to treat OUD; 3) support for best practices to treat OUD; 4) endorsement of stereotypes of people who use drugs; and 5) optimism to treat people with OUD). We describe each of these factors below, and their relevance to supporting implementation of OUD treatment in the ED (see Fig. 1).

The extant literature suggests that each inner setting factor we considered in this study plays an important role in the implementation of new practices in healthcare organizations. For instance, individual readiness for, or attitudes toward, change generally is critical for implementing new practices. At the individual level—ED practitioners in this case—whether an individual is supportive or resistant towards change is predictive of whether new practices are adopted (Dunham, Grube, Gardner, Cummings, & Pierce, 1989). Because attitudes have been shown to better predict future behavior than past behavior, it is critical to understand individual attitudes towards change (Ajzen & Fishhein, 1980; Lau & Woodman, 1995; Lamm & Gordon, 2010). Understanding practitioner attitudes towards treating people with OUD in the ED can help identify antecedents of implementation that if addressed may improve the uptake of OUD treatment.

A perceived climate for innovation may also indicate employee openness to new practices or methods (Aarons & Sommerfeld, 2012) and could affect implementation. Employee openness to new strategies put forth by organizations is critical to advancing the success of the business across several domains. This perspective focuses on the notion that employees' skills and ideas will support and strengthen the organization's innovative capacity. In fact, innovation climate is related to employee's positive attitudes towards EBPs, as it is associated with improved organizational outcomes (Aarons & Sommerfeld, 2012). In the context of OUD treatment, promoting a climate for implementing EBPs is critical to support MAT and other best practices for OUD.

Attitudes towards specific EBPs are related to willingness to implement such practices (Aarons et al., 2014; Aarons, 2004). Favorable attitudes towards change, specifically employee attitudes, have been considered an important element in successful implementation outcomes (Aarons, 2003; Lamm & Gordon, 2010; Proctor et al., 2011). Psychological safety is also a key component of organizational capacity and individuals learning to integrate new information and practices (Edmondson, Dillon, & Roloff, 2007). Psychological safety describes personal attitudes of consequences that result from interpersonal risks in workplace situations. Although the pace and structure of large EDs may discourage practitioner initiative or input, an ED's openness to innovation or a team member feeling safe to make suggestions or try new procedures could result in improved outcomes.

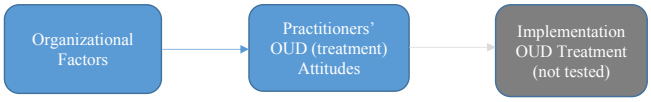

Fig. 1. Organizational factors (inner setting characteristics) and practitioner attitudes towards OUD treatment and opioid users (antecedents of implementation).

Leadership for EBP implementation activates team members to implement targeted practices by enacting behaviors that are proactive, knowledgeable, supportive and perseverant (Aarons et al., 2014). Proactive leadership establishes standards for and removes obstacles to EBP implementation, thereby promoting team engagement and collaboration. Knowledgeable leadership offers competence and a base understanding of the implementation process and the implemented practice, potentially promoting team communication and reflection (Edmondson, 1999; 2002). Supportive leadership recognizes and appreciates employee efforts that may enhance collaboration, promote discussion, and reflection in a safe environment (Edmondson, 2002; Edmonson & Lei, 2014). Finally, perseverant leadership reacts to critical issues, carries on through challenges, and helps team members test solutions (Aarons et al., 2014).

In this paper, we explore the relationship between ED inner setting characteristics (ED readiness for change, climate for innovation, attitudes towards EBPs, team safety, and implementation leadership) and practitioners' support for implementing MAT for OUD treatment and best practices for OUD treatment in the ED. We also explore how these inner setting factors relate to practitioners' self-efficacy to treat OUD and to practitioners' bias towards people who use drugs. We believe that these inner setting characteristics contribute to implementation through practitioners' attitudes towards OUD treatment. These attitudes are considered antecedents of implementation behaviors. As such, our hypotheses are as follows:

Hypothesis 1 – ED inner setting characteristics are associated with increased odds of supporting (a) MAT for OUD treatment in the ED and (b) general best practices for treating OUD in the ED.
Hypothesis 2 – ED inner setting characteristics are associated with increased odds of practitioner self-efficacy to treat OUD.
Hypothesis 3 – ED inner setting characteristics are associated with decreased odds of practitioner (a) using stereotypes of individuals who use drugs and increased odds of (b) optimism to treat people with OUDs.

2. Methods

To test these hypotheses, we collected survey data from December 2016 to August 2017 among ED practitioners at the Los Angeles County – University of Southern California Medical Center (LAC + USC). Our sampling frame included 430 ED practitioners (physicians, nurses, and social workers) at LAC + USC, which has one of the largest EDs in the United States. The PI conducted a feasibility study with ED practitioners during a training event on November 8, 2016, to inform the sampling, recruitment, and data collection approaches. Findings suggested to focus on practitioners who were currently on the roster of active ED staff members to have a realistic response rate. We included ED staff members who were working full- or part-time regardless of job title, professional denomination, or discipline. We recruited participants through an internal e-mail system and personal solicitation during site visits. We collected survey data using the online Qualtrics platform. We provided $5 Starbucks gift cards as an incentive for participation and obtained consent during administration of the survey. Altogether, the sample included 241 respondents, a 56 percent response rate, which is an adequate rate for this setting (Kelleher & Cotter, 2009).

2.1. Measures

Our analysis included five dependent variables and five main independent variables. We describe these variables individually below.

2.1.1. Dependent variables

To reduce issues with skewed distributions and identify the most salient cases, we transformed all measures to dichotomous scales. Our dependent variables were as follows:

Supports medication assisted treatment (MAT) for OUD in ED. To determine the extent to which ED practitioners support initiating MAT for OUD in the ED, we developed and tested a question asking, "Should ED practitioners initiate individuals with chronic opioid abuse issues on medication-assisted treatment during their ER visit? For example, start them on buprenorphine at the ER?" This question had a seven-point Likert scale that ranged from strongly disagree = 0 to strongly agree = 6. We dichotomized this measure making agree = 5 and strongly agree = 6 as equal to 1.

2.1.2. Independent variables (ED inner setting characteristics)

2.1.2.1. Supports general best practices to treat OUD. We adapted three of the five subscales of the Substance Abuse Attitude Survey (SAAS) to focus on OUD. The SAAS is a 50-item scale that measures staff attitudes toward alcohol and drug misuse, with factors on permissiveness, treatment intervention, stereotypes, treatment optimism, and moralism (Chappel, Veach, & Krug, 1985). We relied on three factors: treatment intervention, which we labeled "support best practices to treat OUD"; optimism to treat people with OUD; and stereotypes, which we labeled "stereotypes of drug users." These three scales demonstrated adequate reliability with Cronbach's alphas ranging from 0.65 to 0.88. Our modifications of this scale were also informed by another ED study (Kelleher & Cotter, 2009).

For instance, the treatment intervention practitioners were asked to assess whether they agree with statements such as, "physicians who diagnose OUD early improve the changes of treatment success," "urine drug screening can be an important part of treatment of OUD," and "long-term outpatient treatment is necessary for the treatment of OUD." Each question had a five-point scale with responses disagree, somewhat disagree, neither agree nor disagree, somewhat agree, and agree. Because of the skewed distribution of responses, we averaged all eight items and coded the total score = 1 when coded "somewhat agree" or "agree", and coded the other responses as 0. The Cronbach's alpha for this measure was 0.80.

2.1.2.2. Self-efficacy to treat OUD. Based on existing literature (Kelleher & Cotter, 2009), we developed five items on which practitioners rated their perceived competency in diagnosing, treating, prescribing medication, and planning after-care for patients who abuse opioids. Examples of items were "my estimated success accurately diagnosing OUD; my estimated success accurately prescribing opioids for patients with OUD," with scales from 0 to 30%, 31–60%, 61–90%, and 91–100%. The Cronbach's alpha for this measure was 0.80. We dichotomized this measure due to skewness by averaging all five items and then coding the total score of 91–100% equal to 1.

2.1.2.3. Stereotypes of drug users. We used the SAAS subscale of stereotypes with 10 items. Practitioners were asked whether they agree with such statements as, "persons who use opioids do not respect authority," "marijuana use leads to mental illness," and "recreational drug use precedes drug misuse." Each question has a five-point scale with responses disagree, somewhat disagree, neither agree nor disagree, somewhat agree, and agree. Because of the skewed distribution of responses, we averaged all 10 items and coded the total score = 1 when coded "somewhat agree" or "agree", and other responses as 0. The Cronbach's alpha for this measure was 0.88.

2.1.2.4. Optimism to treat people with OUD. We used the SAAS subscale of treatment optimism with four items. Practitioners were asked whether they agreed with statements such as, "an opioid dependent person who has relapsed several times probably cannot be treated," "most opioid dependent persons are unpleasant to work with as patients," and "an opioid dependent person cannot be helped until he/she has hit 'rock bottom'." Each question had a five-point scale with responses disagree, somewhat disagree, neither agree nor disagree, somewhat agree, and agree. Because of the skewed distribution of

responses, we averaged the four items and coded the total score = 1 when coded "somewhat agree" or "agree", and other responses as 0. The Cronbach's alpha for this measure was 0.65.

2.1.2.5. Attitudes toward change. This measure includes 25 items rating individual responses to change in the workplace (Dunham et al., 1989). Examples of items include, "I look forward to change at work," "I usually resist new ideas," and "I usually benefit from change." Its five-point response scale ranged from "not at all" to "a very great extent." The Cronbach's alpha for this measure was 0.88

2.1.2.6. Climate for innovation. This eight-item measure assesses climate for innovation (Anderson & West, 1998). Examples of items include, "this department is open and responsive to change," and "members of this department provide and share resources to help in the application of new ideas." Responses to this five-point scale ranged from "not at all" to "a very great extent." The Cronbach's alpha for this measure was 0.89.

2.1.2.7. Psychological safety. This seven-item scale examines the extent to which staff members view their social climate as conducive to interpersonal risk (Edmondson et al., 2007). Examples of these items include, "it is safe to take a risk on this team," "it is difficult to ask other members of this team for help," and "no one on this team would deliberately act in a way that undermines my efforts." The Cronbach's alpha for this measure was 0.82.

2.1.2.8. Attitudes toward EBPs. This is a 15-item measure comprised of four subscales which measure employee's attitudes towards EBPs in terms of *openness* (4 items), *requirements* (3 items), *appeal* (4 items) and *divergence* (4 items) toward EBPs (Aarons, 2004). All items were rated on a 5-point Likert scale (1 = *not at all* to 5 = *to a very great extent*). Example of *openness* include items such as, "will follow treatment manual", and "will try therapy/interventions developed by researchers". Examples of *requirements* items include, "Agency required use of EBP" and "State required use of EBP." Examples of *appeal* items include "It makes sense to me", and "colleagues happy with therapy." Examples of *divergence* items include "would not use manualized therapy/interventions" and "know better than researchers how to care for clients." The four items of the *divergence* subscale were reverse-coded to maintain consistency with the other items. Higher scores indicated higher level of ED practitioner support toward EBPs.

2.1.2.9. Implementation leadership scale (ILS). This is a 12-item Likert scale measure assessing staff perceptions of leadership focus on implementation of innovative practices along four subscales: proactive, knowledgeable, supportive, and perseverant leadership (Aarons, Ehrhart, & Farahnak, 2014). Examples of items include, "direct supervisor has developed a plan to facilitate implementation of EBPs," "direct supervisor supports employee efforts to learn more EBPs," and leadership "carries on through the challenges of implementing EBPs." The Cronbach's alpha for this measure was 0.96.

2.2. Analytic approach

To explore relationships among our variables of interest, we conducted analysis of variance and chi-square global tests. We compared responses from ED practitioners across differing roles ED managers, physicians (resident or attending), nurses, or others (social worker, pharmacologist, or lab technician). We also fit five multivariate logistic regression models to the data using in Stata/SE Version 13, one model for each dependent variable: (1) supports MAT for OUD in ED, (2) self-efficacy to treat OUD, (3) supports best practices to treat OUD, (4) stereotypes of drug users, and (5) optimism to treat people with OUD. Results are from single multivariable models, one per outcome, and with all covariates included. Considering the multiple hypotheses testing, we adjusted the significance level from 0.05 to 0.01 to maintain the familywise error rate below 0.05. Most significant relationships (those with P values < 0.05) in our five models have P values below 0.01, so conclusions still hold under a more stringent significance level. Finally, we assumed missing data to be missing at random (Allison, 2002); missing data was limited to 3% in three variables only.

3. Results

3.1. Demographics and outcomes by practitioner role

Demographically, there are two noteworthy distinctions in our sample (see Table 1). First, women are more likely to be in nursing or other positions than in managerial or physician positions (Table 1). Second, Latinos are less likely to be physicians (residents and attending) than in other positions. Managers and nurses supported OUD treatment in the ED more than physicians. At the same time, managers and physicians used stereotypes of people who use drugs less often than nurses. Nurses also reported the lowest optimism in treating people with OUD, while physicians reported the highest.

Table 1
Demographics and Outcomes by Practitioner Role N = 241.

	Manager or Director (N = 11)	Resident/Attending (N = 106)	Nurse/Nurse Assistant (N = 92)	Other (N = 32)	All (N = 241)
Age	40.9 (7.6)	35.8 (9.2)	37.3 (8.3)	39.9 (12.2)	37.2 (9.2)
Female***	5 (45.5%)	47 (47.5%)	69 (75.8%)	24 (77.4%)	147 (62.0%)
Latino***	6 (54.6%)	19 (19.2%)	41 (46.1%)	10 (32.3%)	157 (66.8%)
Years in ED	3.4 (1.8)	3.2 (1.5)	3.0 (1.5)	3.0 (1.1)	3.1 (1.4)
High leadership (Score > 3)	3 (37.5%)	41 (56.9%)	49 (57.0%)	11 (42.3%)	105 (54.1%)
Psychological safety	4.1 (0.5)	4.1 (0.8)	4.1 (0.7)	3.8 (0.7)	4.0 (0.7)
Innovation climate	3.1 (1.2)	3.4 (1.0)	3.2 (0.9)	3.1 (0.9)	3.2 (1.0)
Readiness for change	3.5 (0.4)	3.4 (0.4)	3.5 (0.5)	3.5 (0.5)	2.9 (0.7)
Attitudes towards EBP	3.6 (1.0)	3.4 (0.6)	3.4 (0.6)	3.4 (0.6)	3.4 (0.6)
Requirements	4.0 (1.4)	3.7 (1.1)	3.7 (1.1)	3.8 (1.0)	3.7 (1.1)
Appeal	4.0 (1.2)	4.0 (1.0)	3.9 (0.9)	3.8 (0.8)	3.9 (0.9)
Openness	3.7 (1.3)	3.5 (0.9)	3.6 (0.8)	3.5 (0.9)	3.5 (0.9)
Divergence	2.8 (0.9)	2.6 (0.7)	2.5 (0.6)	2.5 (0.7)	2.5 (0.6)
Supports MAT for OUD in ED*	6 (75%)	20 (31.8%)	41 (48.2%)	9 (37.5%)	76 (42.0%)
Supports best practices to treat OUD	5 (50.0%)	28 (36.8%)	36 (41.4%)	9 (36.0%)	83 (41.9%)
Self-efficacy to treat OUD	5 (55.6%)	25 (32.9%)	40 (46.0%)	13 (52.0%)	79 (39.7%)
Non-stereotypes of drug users**	6 (66.7%)	29 (38.2%)	17 (19.5%)	8 (32.0%)	60 (30.3%)
Optimism to treat opioid users*	4 (44.4%)	38 (50.0%)	23 (26.4%)	11 (44.0%)	76 (38.4%)

Note. ED, Emergency Department, EBP, Evidence based practices, OUD, opioid use disorders.
Mean (SD) or count (percentage) and range Percentages calculated based on non-missing values. *p < 0.05, **p < 0.01, ***p < 0.001.

3.2. Exploration of differences in outcomes by practitioner role

Our exploratory findings suggested differences based on role (Table 2). Relative to ED physicians, nurses (*OR* = 3.201; 95% CI = 1.244, 8.238), and managers (*OR* = 12.793; 95% CI = 1.904, 85.956) were more likely to support initiating MAT for OUD in the ED. Nurses were also more likely to support best practices to treat OUD (*OR* = 2.780; 95% CI = 1.134, 6.817). At the same time, nurses had higher odds of using stereotypes when referring to individuals who use drugs (*OR* = 5.747, 95% CI = 2.020, 16.393), and less optimism about treating individuals with OUD (*OR* = 0.276; 95% CI = 0.114, 0.668; table 3) than physicians.

3.3. Regression models examining relationships between ED inner setting characteristics and practitioner attitudes towards individuals with OUD and OUD treatment in the ED

Findings offer partial support for Hypothesis 1. Some inner setting factors were positively associated with practitioners supporting MAT for OUD in ED and supporting best practices to treat OUD. Practitioners' readiness for change was associated with increased odds of supporting MAT for OUD (*OR* = 7.023; 95% CI = 2.431, 20.285), as well as implementing best practices to treat OUD (*OR* = 2.512; 95% CI = 1.007, 6.264). Climate for innovation was associated with increased odds of supporting best practices to treat OUD (*OR* = 1.974; 95% CI = 1.179, 3.308). At the same time, *requirements* to endorse EBPs (one element of the EBP measure) was associated with decreased odds of supporting MAT for OUD (*OR* = 0.543; 95% CI = 0.325, 0.905).

Findings also offer partial support for Hypothesis 2. *Openness* towards EBPs (another element of the EBP measure) was associated with ED practitioner self-efficacy to treat OUD (*OR* = 2.153; 95% CI = 1.199, 3.866). No other variables were associated with self-efficacy to treat people with OUD in our logistic models.

Finally, findings offer partial support for Hypothesis 3. *Divergence* or disregard for EBPs was associated with optimism to treat people who use opioids (*OR* = 0.417; 95% CI = 0.219, 0.794). No other EBP or inner setting characteristics such as psychological safety, innovation climate, or readiness for change was associated with such optimism. Similarly, no EBP nor other ED characteristics was associated with stereotyping of individuals who use drugs.

4. Discussion

We examined the relationship between the ED inner setting characteristics and antecedents of implementation of OUD treatment in the ED. Drawing from the CFIR model, we focused on the attitudes of the implementers, and the inner setting of the ED as a critical first step toward understanding associations with antecedents, such as best treatment practices for OUD treatment in the ED, practitioner self-efficacy to treat, and bias toward people who use opioids. Our main findings suggest differences based on professional role. For instance, nurses and administrators are more supportive of delivering MAT for OUD in the ED than physicians. Nurses are more likely than physicians to support best practices for addressing OUD in the ED as well. At the same time, nurses were more likely than physicians to have stereotypes about people who use drugs and have less optimism to treat people with OUD. We did not identify other differences across these roles in our data.

Nonetheless, our findings call for further exploration of the differential experiences of physicians and nurses in caring for patients that require OUD treatment. Albeit conjectural, perhaps in their role directly serving patients with OUD, nurses may not see results and feel discouraged about helping people with OUD recover. At the same time, nurses play a critical role in connecting patients with resources and information for recommended care, including specialty SUD treatment. Addressing any source of implicit bias among nurses and other first responders in screening people with OUD would be critical in this ED setting.

Beyond differences across roles, our findings also highlighted the role of ED inner setting factors (e.g., readiness for change and climate for innovation) in supporting implementation of MAT and other best practices in responding to the opioid epidemic. Preparing practitioners for change is critical for implementing new practices in healthcare (Lamm & Gordon, 2010). To do so, ED leaders may want to build their own capacity to be proactive, knowledgeable, supportive, and perseverant (Aarons et al., 2014) during the implementation process. A climate for innovation can also support the use of best practices to treat OUD. To support a climate for innovation, ED leaders should consider promoting openness, creativity and safety with their teams (See Edmondson, 1999) to implement EBPs not previously considered standard of care. ED leaders may use these findings to enhance their current implementation efforts using other approaches (e.g., audit and feedback, train the trainer and using champions) to develop a

Table 2
Relationships between Organizational Factors and Pracitioner Attitudes towards OUD Treatment in the ED.

	Supports MAT for OUD in ED			Supports best practices to treat OUD			Self-efficacy to treat OUD		
	OR	95% CI	*p* value	OR	95% CI	*p* value	OR	95% CI	*p* value
Age	0.962	0.911, 1.016	0.167	1.030	0.976, 1.087	0.282	0.976	0.924, 1.030	0.375
Female	0.596	0.265, 1.339	0.210	1.481	0.677, 3.241	0.325	0.568	0.269, 1.202	0.139
Latino	0.624	0.272, 1.432	0.271	0.761	0.348, 1.663	0.513	0.918	0.431, 1.958	0.795
Years in ED	1.054	0.767, 1.449	0.746	1.020	0.743, 1.401	0.901	1.075	0.790, 1.462	0.647
Role[a]									
Nurse or nurse assistant	3.201*	1.244, 8.238	0.016	2.780*	1.134, 6.817	0.025	2.010	0.846, 4.776	0.114
Manager or director	12.793**	1.904, 85.956	0.009	4.232	0.716, 25.011	0.111	1.606	0.267, 9.672	0.605
Other	1.913	0.515, 7.106	0.333	2.881	0.844, 9.836	0.091	1.445	0.421, 4.961	0.559
High leadership	2.405	0.985, 5.872	0.054	0.504	0.218, 1.167	0.110	0.892	0.402, 1.979	0.778
Psychological safety	1.116	0.652, 1.911	0.689	1.155	0.678, 1.968	0.597	0.783	0.476, 1.287	0.335
Innovation climate	0.984	0.591, 1.640	0.952	1.974**	1.179, 3.308	0.010	0.859	0.521, 1.418	0.553
Readiness for change	7.023***	2.431, 20.285	0.000	2.512*	1.007, 6.264	0.048	0.667	0.276, 1.613	0.369
Attitudes towards EBP									
Requirements	0.543*	0.325, 0.905	0.019	1.147	0.743, 1.771	0.536	0.846	0.551, 1.301	0.447
Appeal	1.814	0.889, 3.705	0.102	0.832	0.444, 1.558	0.566	1.114	0.607, 2.045	0.728
Openness	0.647	0.358, 1.172	0.151	1.216	0.678, 2.183	0.512	2.153**	1.199, 3.866	0.010
Divergence	2.151*	1.107, 4.182	0.024	1.840	0.974, 3.475	0.060	1.500	0.826, 2.723	0.183

Note. ED, Emergency Department, EBP, Evidence based practices, OUD, opioid use disorders.
[a] Resident/Attending as reference OR: odds ratio; SE: standard error; CI: confidence interval *p < 0.05, **p < 0.01, ***p < 0.001.

Table 3
Relationships between Organizational Factors and Practioner Attitudes towards Individuals with Drug Use issues in the ED.

	Stereotypes of drug users			Optimism to treat people with OUD		
	OR	95% CI	*p* value	OR	95% CI	*p* value
Age	0.995	0.935, 1.058	0.879	1.037	0.984, 1.092	0.173
Female	1.005	0.434, 2.320	0.992	0.499	0.232, 1.071	0.074
Latino	0.537	0.222, 1.299	0.157	1.315	0.600, 2.882	0.455
Years in ED	1.550	1.075, 2.237	0.019	0.762	0.556, 1.046	0.092
Role[a]						
Nurse or nurse assistant	5.747	2.020, 16.393	0.001	0.276**	0.114, 0.668	0.004
Manager or director	0.411	0.061, 2.755	0.360	0.447	0.076, 2.631	0.373
Other	3.165	0.874, 11.494	0.079	0.460	0.14, 1.511	0.201
High leadership	0.532	0.193, 1.466	0.222	0.457	0.19, 1.101	0.081
Psychological safety	1.582	0.887, 2.825	0.121	0.947	0.569, 1.575	0.833
Innovation climate	0.847	0.486, 1.475	0.557	1.143	0.716, 1.823	0.575
Readiness for change	0.423	0.159, 1.125	0.085	1.387	0.572, 3.361	0.469
Atitudes towards EBP						
Requirements	0.874	0.540, 1.414	0.583	1.048	0.677, 1.624	0.833
Appeal	0.620	0.305, 1.261	0.187	1.170	0.631, 2.169	0.618
Openness	1.558	0.829, 2.924	0.168	0.968	0.552, 1.696	0.910
Divergence	1.316	0.665, 2.604	0.431	0.417**	0.219, 0.794	0.008

Note. ED, Emergency Department, EBP, Evidence based practices, OUD, opioid use disorders.
[a] Resident/Attending as reference OR: odds ratio; SE: standard error; CI: confidence interval *p < 0.05, **p < 0.01, ***p < 0.001.

supportive implementation context for OUD treatment.

Finally, practitioner's attitudes towards EBPs as a requirement was associated with reduced support for MAT for OUD in the ED, while divergence (i.e., disregard) of EBPs was associated with reduced optimism to treat individuals suffering from OUD. These findings show a consistent relationship: when EBPs are required but not seen by practitioners to be necessary, practitioners may not see the need to implement them. Further understanding how ED practitioners can improve their understanding of OUD as a chronic disease and rely on best practices to treat OUD is critical to increasing access to MAT for OUD and uptake of best practices, and ultimately to improving public health (Cantrill et al., 2012; Houry et al., 2018; Kolodny et al., 2015). This finding suggests that ED leaders may need to first engage ED practitioners in conversations about the best way to respond to the need for MAT among people with OUD, rather than just mandate delivery of treatment.

5. Limitations

Our study findings should be considered within the following limitations. First, our survey data is cross-sectional, which does not allow us to make causal claims. Our findings may be affected by social desirability bias when practitioners report more favorable attitudes than in practice. However, our analysis by professional roles did not reveal significant discrepancies in responses among practitioners. Another important limitation is that factors other than those of the "inner setting" of the ED may affect implementation of MAT, such as outer factors like local and regional policies or reimbursement or payment models. As an exploratory study, we initially focused on the inner setting characteristics of a large ED. But, exploration of the role of outer setting factors, such as policies and payment systems that support the delivery of MAT in EDs is warranted. Another potential concern is having power to identify statistically significant effects. But we mitigated that concern after running a post-hoc power calculation considering the design matrix of our data and coefficients in the model of "Supports MAT for OUD in ED". We simulated the outcome using the same sample size (n = 249) with 500 repetitions. We found that the percentage of times at least one of the three variable of interest (physicians, nurses, social workers) was significant is 91.8%, indicating that we have a power of 0.918. Finally, there are limitations to the study's generalizability. We analyzed a large sample of ED practitioners in a hospital located in a demographically and geographically diverse metropolitan area, hence our findings may be broadly generalizable only to EDs in similarly large metropolitan areas.

6. Conclusion

Our findings suggest that support for OUD treatment and perceived self-efficacy to treat OUD vary by ED practitioner role (e.g., physician, nurse, social worker). Inner setting characteristics of the ED including practitioner readiness for change and climate for innovation are associated with support for MAT for OUD in the ED and general best practices to treat OUD. However, inner setting characteristics are not related to other practitioner implementation factors, such as of self-efficacy, stereotypes, or treatment optimism for people with OUD. Future research should explore in more detail how different roles (physician, nurse, etc.) contribute to the implementation of OUD treatment in the ED and, ultimately, how these factors predict effective OUD treatment in the ED. These findings provide preliminary understanding of some of the organizational factors needed to deliver OUD treatment in EDs in a large metropolis in California. As opioid-related visits continue to increase across the nation (Vivolo-Kantor et al., 2018), the national strategy is to ensure EDs are well prepared to reduce the opioid overdose epidemic (National Institute on Drug Abuse, 2019). Future research should evaluate how ED practitioners' workplace setting and attitudes may improve the quick uptake and impact of OUD treatment in the ED.

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8. Contributors and author agreement/declaration

Drs. Guerrero designed the study and wrote the first draft of the manuscript. Drs. Ober, Khachikian, Valdez and Howard contributed to the literature review and revised the methodology. Drs. Van Deen and Kong conducted the statistical analysis. Drs. Troztsky-Sirr and

Menchine revised and validated the results. All authors contributed to several drafts and approved the final version of the manuscript being submitted.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.addbeh.2019.106197.

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