

## ORIGINAL ARTICLE

# Curricular and clinical approaches to addressing the opioid epidemic: Results from the 2019 ADEA opioid dental school survey

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**Abstract**

**Purpose/objectives:** Dental educators have played a critical role in addressing the opioid public health crisis.

**Methods:** The American Dental Education Association (ADEA) conducted a semi-structured survey with all 66 accredited U.S. dental schools in 2019. The survey was organized into four modules to facilitate response and descriptive statistics and qualitative thematic analyses were performed.

**Results:** Seventy percent of the dental schools consented to participate. Each module varied in response rate: curricular (Module 1, 48%), clinical (Module 2, 47%), implemented curricular/clinical changes (Module 3, 56%), and willingness to participate in future studies (Module 4, 47%). The survey revealed that 87% of respondent dental schools have implemented curricular changes or curricular changes were in process in response to the opioid epidemic. Ninety-three percent of responding schools reported making clinical changes or that clinical changes were in process. Schools reported two factors that most frequently influence changes made: the adoption of state-specific regulations/mandates and the Commission on Dental Accreditation (CODA) Standard 2-24e, which requires competency in prescription practices on substance use disorders. An analysis of the open-ended questions found four overarching themes to curricular changes, in order of frequency: didactic curriculum; integration of opioid epidemic subject matter experts in curricula; Screening, Brief, Intervention, and Referral to Treatment (SBIRT) training; and prescription guidelines. Similarly, four overarching themes were identified for clinical changes: protocol and policy development, Prescription Drug Monitoring Programs (PDMP), faculty and provider education, and prescription guidelines.

**Conclusions:** This research shows that dental educators are working to ensure that new dental professionals gain the necessary competencies in substance abuse, specifically related to opioids, to prevent and minimize prescription drug misuse.

**KEYWORDS**

clinical protocols, curricular protocols, dental schools, opioid epidemic, substance abuse disorder

## 1 | INTRODUCTION

The opioid epidemic continues to be a leading public health crisis in the United States. According to the U.S. Centers for Disease Control and Prevention (CDC), almost 70% of the 67,000 drug overdose deaths in 2018 were related to prescription or illicit opioids.<sup>1</sup>

Prescription opioids contribute to this grim outlook. More than 232,000 Americans died from an overdose involving prescription opioids between 1999 and 2018.<sup>2</sup> Estimates from the Substance Abuse and Mental Health Services Administration's (SAMHSA) National Survey on Drug Use and Health indicate that ~20.3 million people aged 12 years and older had an opioid use disorder in 2018.<sup>3</sup> Early indications from the first half of 2020 show that the COVID-19 pandemic is accelerating the opioid epidemic.<sup>4</sup>

U.S. patients are more likely to be prescribed opioids than patients in other countries.<sup>5</sup> Dentists have been identified as one of the leading prescribers of opioids,<sup>6</sup> specifically for patients undergoing third molar extractions and operative procedures.<sup>7</sup> One study concluded that 68% of all surgical dental visits resulted in the prescription of opioids from 2010 to 2015.<sup>8</sup> When compared to other dentists across the globe, a 2016 cross-sectional study in England concluded that the number of opioid prescriptions written by U.S. dentists was 37 times greater than their English counterparts.<sup>9</sup>

As the opioid epidemic soars, health professions educators have taken comprehensive approaches to improve students' knowledge and skills to curb prescription misuse. A study conducted among health professional students from medicine, nursing, pharmacy, social work, and physical therapy demonstrated that educational workshops comprised of patient panels, naloxone training, and patient simulations received high levels of satisfaction and increased students' level of awareness to combat the opioid epidemic.<sup>10</sup> However, standard review of substance abuse curricula across the health professions have not been fully explored. In response to this, leaders from the Commonwealth of Massachusetts convened a group of elected officials, medical and dental school faculty and administrators, and societies to develop ten core competencies and educational strategies that enhance the training of medical and dental students and teach safe and effective opioid prescribing practices.<sup>11,12</sup>

Academic dental institutions have underscored the importance of implementing curricular and clinical changes, and protocols and procedures, that reduce the number of opioid prescriptions and improve prescription guidelines within their school-based clinics. Furthermore, in 2017, the Commission on Dental Accreditation (CODA), which sets the accrediting standards for all dental education programs, instituted Standard 2-24e, which states

that "At a minimum, graduates must be competent in providing oral health care within the scope of general dentistry, as defined by the school, including local anesthesia, pain and anxiety control, including consideration of the impact of prescribing practices and substance use disorder."<sup>13</sup> A 2009 study among U.S. and Canadian dental schools found that 94% of responding schools reported addressing substance abuse and prescription drug misuse in their curriculum by various instruction modalities, such as lectures, small groups, independent study, and community-based extramural settings.<sup>14</sup> Lecture-based instruction was the prominent method of delivery in all 4 years of dental school. The mean total time in contact hours dedicated to prescription drug misuse was higher among second- and fourth-year dental students at 2.33 and 1.93 hours, respectively.<sup>14</sup>

Dental schools in the U.S. have also identified opportunities to engage faculty and students in ongoing efforts to tackle the opioid crisis. For example, the University of Minnesota School of Dentistry, Department of Oral and Maxillofacial Surgery (U of M SOD-OMS), documented a significant decrease in opioid prescriptions (>46%) in the management of acute pain following implementation of an evidence-based opioid prescribing policy.<sup>15</sup> The same study found a decrease in opioid prescriptions, and in the average number of opioid tablets per prescription, over a 1-year period in the Periodontics, General Practice Residence, Comprehensive Care, Prosthodontics, and Endodontics clinics.<sup>15</sup> In a follow-up study, the authors at U of M SOD-OMS further concluded that a prescribing policy resulted in a 51.3% reduction in prescribed morphine milligram equivalents after third molar extractions.<sup>16</sup> Another example is the University of Pennsylvania School of Dental Medicine (Penn Dental Medicine). In August 2018, the school hosted a meeting with students and manufacturers on the science and application of naloxone, a Food and Drug Administration approved medication that may reverse the adverse effects of opioids, such as heroin, morphine, and oxycodone.<sup>17</sup> Penn Dental Medicine stated a commitment to ensure its dental and postdoctoral students and faculty are trained to administer naloxone to reverse the effects of opioid overdose.

The purpose of this study is to examine the changes in curriculum and clinical protocols implemented by U.S. dental schools to address the opioid epidemic. Most of the research conducted on curricular and clinical protocol changes at U.S. dental schools in response to the opioid epidemic has been done at the school level. This is the first research study examining this topic nationally, across U.S. dental schools. This article presents the results of the mixed-methods analysis. The research delves into the curricular and school-based clinical changes, factors associated with these changes, and implemented curricular/

clinical educational changes at U.S. dental schools. The article concludes with a discussion of the results, limitations of this research, and future direction for research.

## 2 | METHODS

### 2.1 | ADEA survey

This research analyzes the data collected through a survey conducted by the American Dental Education Association (ADEA) in 2019. This survey was reviewed and granted exempt status by IntegReview, an independent ethical review/institutional review board. To establish survey instrument authenticity, a structured survey questionnaire was developed and field tested with ADEA staff and dental school faculty. Prior to survey dissemination, invitations to participate in the study were sent to the 66 U.S. dental school deans. The survey was structured in four modules: curricular (Module 1), clinical (Module 2), implemented curricular/clinical changes (Module 3), and willingness to participate in future studies (Module 4). Deans were asked to identify key faculty within their institutions (e.g., Associate Dean of Curriculum, Associate Dean of Clinics, Clinic Directors, Program Chairs, etc.) to respond to each of the four modules. The survey was disseminated through Qualtrics via a populated email distribution list to each of the faculty identified by the deans. To amplify survey response, the survey instrument was administered in two cohorts from January to March 2019. A series of three email reminders were sent to each cohort over the data collection period.

The response rates varied by survey module and by the questions in each module. The survey was designed so certain questions were mandatory, adding to the variation in response rate. Overall, 70% ( $n = 46$ ) of the dental schools consented to participate in the survey, with 56% of the responding dental schools representing public institutions, 37% private institutions, and 6% private/public mixed institutions. Given that the survey modules may have been completed by various faculty at the dental schools, each module varied in response rate: curricular (Module 1, 48%), clinical (Module 2, 47%), implemented curricular/clinical changes (Module 3, 56%), and willingness to participate in future studies (Module 4, 47%). The purpose of Module 4 was to collect information on participants who were willing to participate in future ADEA studies related to the opioid epidemic. Eighty-three percent of the responding dental schools were interested in participating in future opioid and dental education studies.

### 2.2 | Analysis methodology

A mixed-methods analytical approach was conducted for this descriptive study. Summary statistics and frequencies for open and closed questions were run in SAS 9.4 (SAS Institute, Inc., Cary, NC, USA) and Qualtrics analytics. The frequencies for questions where participants could select more than one option are calculated based on the total number of options. Open-ended responses were extracted in SAS 9.4 and imported into NVivo 10.1 (NVivo 10.1, QSR International) for thematic analyses. Thematic analyses were employed for Modules 1-3.

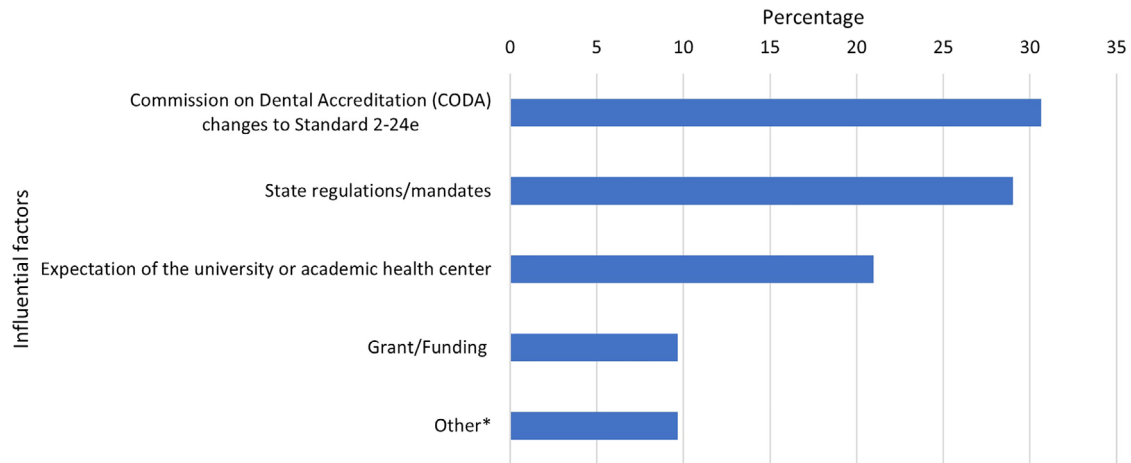
## 3 | RESULTS

### 3.1 | Curricular approaches to address the opioid epidemic

#### 3.1.1 | Curricular changes

Most of the respondent U.S. dental schools implemented several changes in response to the opioid epidemic. About half of all accredited U.S. dental schools responded to questions on curricular changes to tackle the opioid crisis. Out of these respondents, 34% of dental institutions were geographically located in the southern region of the U.S., followed by 25% in the Northeast and West, and 15% in the Midwest. At the time of the 2019 ADEA opioid survey, the large majority (87%) of the responding dental schools reported they implemented curricular changes in response to the opioid epidemic or changes were currently in process (Table 1). A smaller percentage of responding schools (12%) mentioned no current curricular changes; however, there is no indication whether they had a need for any changes in their curriculum.

Most of the responding dental schools follow multiple policies on didactic instruction on pain management protocols/guidelines. Almost three quarters of responding schools reported dedicating > 10 hours of didactic instruction to substance abuse disorders. The vast majority of respondents follow state-specific policies and regulations (96%), American Dental Association's Opioid Policy (78%), and pain management protocols/guidelines or policies set forth by the CDC's *Guidelines for Prescribing Opioids for Chronic Pain* (68%) (Table 1). Additionally, responders mentioned CODA Standard 2-24e (30%) and state regulations and mandates (29%) as the top two influential factors to implementing curricular changes within their dental schools (Figure 1). This study did not ask participants to describe in detail the state regulations and policies.



**FIGURE 1** Influential factors for curricular changes at U.S. dental schools, as of March 2019. Source: ADEA 2019 opioid survey, January-March 2019. \*Other influential changes include faculty and administration support, assembly, of and recommendations from curricular committee

### 3.2 | Implemented curricular changes

The 2019 ADEA opioid survey collected contextual information from dental schools on innovative approaches to curricular changes in response to the opioid public health crisis. Four themes were identified: didactic curriculum; integration of opioid epidemic subject matter experts in curricula; Screening, Brief, Intervention and Referral to Treatment (SBIRT); and prescription guidelines.

#### 3.2.1 | Didactic curriculum

In addition to dedicating hours in lecture-based instruction, dental schools also enhanced their curriculum through case-based methodologies, ensuring students were competent in prescription guidelines, pain management, substance abuse and addiction, and the utility of prescription drug monitoring programs (PDMP). One school noted that “in addition to lectures, we utilize case-based methods to help deliver the content in a way that helps students translate the information into practice.” Some dental schools reported the development of new courses that integrate the basic biomedical sciences and clinical dentistry with special issues in patient care, in which the topics of opioid addiction, physiology of pain, and behavioral methods of pain management are covered extensively. Furthermore, schools reported that didactic learning through interprofessional education can help increase awareness and promote commitment among health professions students to address the topic of substance abuse and addiction in their predoctoral studies.

#### 3.2.2 | Integration of opioid epidemic subject matter experts in curricula

Given the magnitude of the opioid epidemic, dental schools sought external subject matter expertise to provide guidance on curriculum enhancement. Schools indicated organizing special educational sessions in which students listened to guest speakers and panelists talk about their experiences with substance abuse in healthcare settings. Other initiatives include collaborations with local and state government health entities to develop plans for training predoctoral students, residents, faculty, and external preceptors. A “faculty member (who works with the state) and I offered a series of lunchtime lectures about the opioid epidemic and state mandate requirements.”

#### 3.2.3 | Screening, Brief, Intervention, and Referral to Treatment program

The Screening, Brief, Intervention and Referral to Treatment (SBIRT)<sup>18</sup> is an evidence-based program and routine healthcare service that provides the delivery of intervention and treatment to people with substance abuse disorder and identifies patients at-risk. Academic dental institutions have introduced SBIRT techniques primarily in the first and second years of the dental school curriculum that includes motivational interviewing and appropriate narcotic prescribing: “Our second-year students receive 2 hours of lecture on SBIRT in their social and behavioral health course... We provide very detail[ed] SBIRT training.” Some dental schools also reported receiving federal grants from SAMHSA and the

**TABLE 1** Curricular changes at U.S. dental schools, as of March 2019 (N = 32)<sup>a</sup>

	Percentage % (n)
<b>Implementation of curricular changes in response to the opioid epidemic (n = 32)</b>	
Yes	59 (19)
No	12 (4)
Change in process	28 (9)
<b>Didactic hours dedicate toward topics related to substance abuse disorders (n = 29)</b>	
4-6	17 (5)
7-9	10 (3)
10-12	38 (11)
13-15	10 (3)
>15	24 (7)
<b>Didactic instruction on pain management protocols/guidelines or policies<sup>a</sup> (n = 28)</b>	
<b>Centers for Disease Control and Prevention (CDC) guidelines for prescribing opioids for chronic pain</b>	
Yes	67 (19)
No	32 (9)
<b>American Dental Association's Opioid Policy (statement on the use of opioids in the treatment of dental pain and limited prescription)</b>	
Yes	78 (22)
No	21 (6)
<b>State-specific policies (regulations, guidelines, e.g., Board of Dentistry)</b>	
Yes	96 (27)
No	3 (1)
<b>Changes in curricular subject areas in response to the opioid epidemic</b>	
<b>Substance abuse/substance abuse disorder/addiction (n = 29)</b>	
Yes	65 (19)
No	34 (10)
<b>Safe prescribing practices (n = 28)</b>	
Yes	78 (22)
No	21 (6)
<b>Pharmacologic and non-pharmacologic treatment of pain (n = 29)</b>	
Yes	58 (17)
No	41 (12)
<b>Management of acute pain (n = 29)</b>	
Yes	65 (19)
No	34 (10)

Source: ADEA 2019 opioid survey, January-March 2019.

<sup>a</sup>Percentages may not add up to 100% due to rounding.

Health Resources and Services Administration to improve the delivery of SBIRT as part of the curriculum.

### 3.2.4 | Prescription guidelines

The modification of prescription guidelines is integral to limiting the number of narcotic prescriptions. Student instruction on substance abuse and safe prescribing practices extends from lecture-based discussions to a deep understanding of electronic data systems. Additionally, both faculty and students play an important role in adhering to recommendations on opioid prescription guidelines for pain management. Changing the prescribing culture for both students and faculty was often mentioned as a key change in didactic curricula. Specifically, dental schools stated that to reduce prescription frequency of opioids, a change in prescribing philosophy also needed to change. A school reported that “students consistently learn safe prescribing practices and pain management at case presentations throughout their curricula,” and 78% of the responding dental schools reported changes in the curricular subject of safe prescribing practices (Table 1).

During their pharmacological training, students are taught about the appropriateness of prescribing non-opioid analgesics versus narcotics. Additionally, 58% of the respondent U.S. dental schools reported changes in the curricular subject area of pharmacologic and non-pharmacologic treatment of pain in response to the opioid epidemic (Table 1). Coupled with state and school-specific mandates, “non-opioid analgesic as the first drug of choice [is recommended] for management of acute dental pain... and when we use narcotics, it's prescribed in small doses and used with other medications as a supplement or recovery dose only.” One school also stated running specific reports on patients who may likely be prescribed opioids to cross-check with the state-specific PDMP and assess the best treatment plan for acute pain.

## 3.3 | Clinical approaches to address the opioid epidemic

### 3.3.1 | Clinical protocol changes

Most of the respondent U.S. dental schools implemented changes to their clinical approaches in response to the opioid epidemic. About half of all accredited U.S. dental schools (n = 31) responded to questions on clinical changes to address the opioid epidemic. At the time of the 2019 ADEA opioid survey, most of the reporting dental schools (93%) indicated completing clinical changes in response to the opioid epidemic or that clinical changes

**TABLE 2** Clinical changes in U.S. dental schools, as of March 2019 (N = 31)

	Percentage % (n)
<b>Implementation of clinical changes in response to the opioid epidemic</b>	
Yes, changes are complete	61 (19)
No, not yet, but changes are needed	3 (1)
No, changes are not needed	3 (1)
Change is in process	32 (10)
<b>Statement describing the scope of clinical changes (n = 29)</b>	
Protocols/policies changed or will change in all school-based clinics	93 (27)
Protocols/policies in some, but not in all school-based clinics	6 (2)
<b>Clinical protocols require PDMP to be checked (n = 31)</b>	
Always	70 (22)
Sometimes	22 (7)
Never	6 (2)
<b>Documented reduction in the prescribing of opioids in school-based clinics (n = 29)</b>	
Yes	44 (13)
No	27 (8)
Do not know	27 (8)

Source: ADEA 2019 opioid survey, January-March 2019.

were in process (Table 2). These changes would apply to all school-based clinics for 93% of the responding schools.

Dental schools reported several clinical protocol policies in place that address substance abuse. Most of the responding dental schools (93%) described having clinical protocols that require them to check the PDMP when prescribing opioids or other narcotics. Thirteen schools (45%) documented a reduction in the prescription of opioids in school-based clinics. Clinical protocols, such as educating patients and parents on pain management, screening patients for substance abuse or risk, and policies limiting the number of opioid doses prescribed, were in place (Figure 2). As with the curricular module, state regulations/mandates and CODA changes to Standard 2-24e were deemed as the top 2 influential factors to implementing clinical changes within the respondent dental schools (Figure 3).

### 3.4 | Implemented clinical changes

Like the curricular module, the 2019 ADEA opioid survey collected contextual information on innovative approaches and best practices to clinical changes. Four themes were identified: protocol and policy development,

PDMPs, faculty and provider education, and prescription guidelines.

#### 3.4.1 | Protocol and policy development

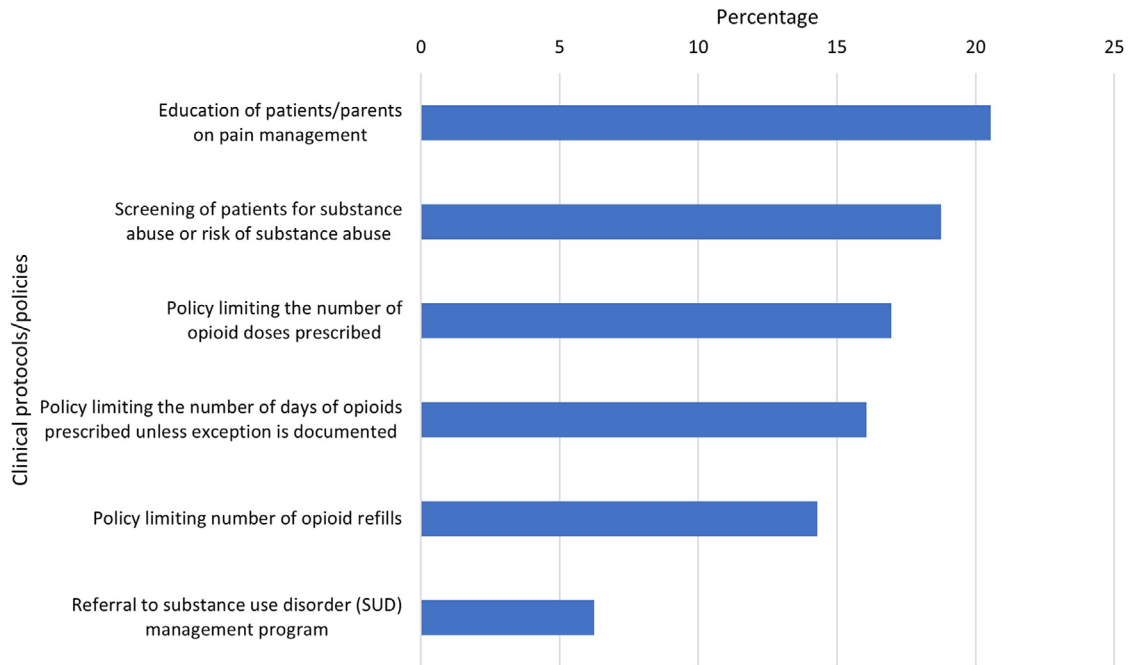
Institutional policy changes allowed dental schools to provide a comprehensive approach to minimizing opioid prescriptions and identify alternative methods for acute pain management. In early 2018, one dental school implemented a comprehensive safe prescription policy, while another dental school reported enhancement to their prescription electronic platform to enable better tracking of prescriptions. Moreover, one school “developed an institutional Dental Pain Management Protocol that minimizes the use of opioids for pain management, provides recommendations on the number of opioid tablets, and includes education on the opioid epidemic and pain management.”

#### 3.4.2 | Prescription drug monitoring programs

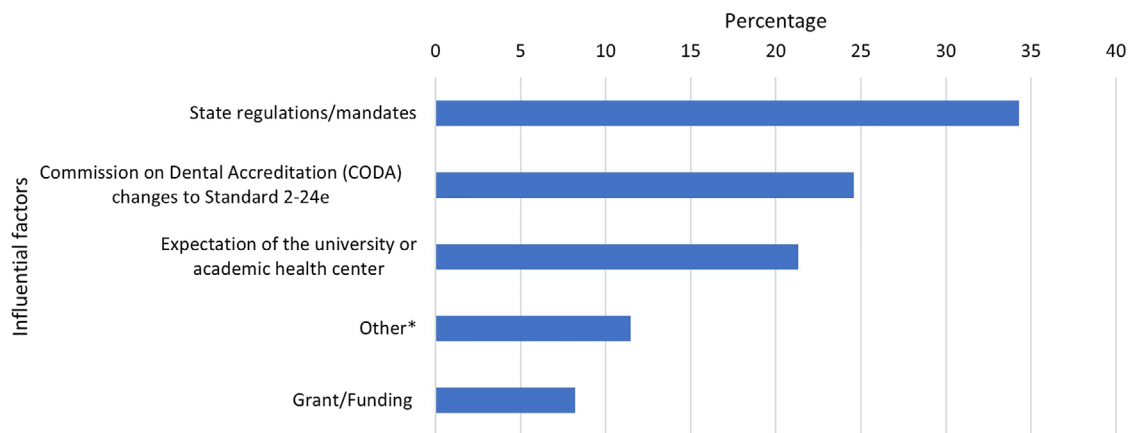
PDMPs have become ubiquitous in the United States. As of 2019, 49 out of 50 states require the use of PDMPs.<sup>19</sup> Due to these state mandates, dental schools described checking the state-specific PDMP to determine whether an opioid prescription is appropriate prior to prescribing. For example, one school describes that “all narcotic prescriptions require the student signing on to our state drug monitoring program with faculty.” Another school stated that, “per state law, PDMP must be checked, the risk form is completed in the patient record and we have an extensive consent that must be completed, initialed, and signed by patient.”

#### 3.4.3 | Faculty and provider education

Dental schools have expressed the importance of continued education on opioids and prescription misuse by faculty, staff, and the student body. Of note, “all faculty are mandated to take a continuing education course in substance abuse recognition and best practices in pain control every two years.” Furthermore, “educating providers and students/residents in proper prescribing protocols for opioids” is of utmost importance and “dentists are required to have a minimum of 2 hours of continuing education concerning the opioid epidemic, prescribing, and treating patients with controlled substances.” In addition, faculty and students “are trained with the help of case workers on substance abuse disorder” and how to manage these patients appropriately.



**FIGURE 2** Clinical protocols/policies at U.S. dental schools that address substance abuse, as of March 2019. Source: ADEA 2019 opioid survey, January-March 2019



**FIGURE 3** Influential factors for clinical protocol changes at U.S. dental schools, as of March 2019. Source: ADEA 2019 opioid survey, January-March 2019. \*Other influential changes include: magnitude of the opioid epidemic in state

### 3.4.4 | Prescription guidelines

In addition to teaching prescribing guidelines in the classroom, respondents reported adhering to electronic prescribing and to prescription policies within their clinics. “We are using only [electronic prescription software] to write and send prescriptions electronically,” and “all clinical narcotic prescriptions, if needed, are limited to 5 days or less.” Adhering to prescription guidelines and school-based clinic policies ensures that both faculty and students provide optimal care to at-risk patients.

## 4 | DISCUSSION

This descriptive study adds to the body of evidence of substance use disorder education in the health professions,<sup>20,21</sup> and more specifically in dental education. As indicated in the findings of this study, a significant number of U.S. dental schools have implemented curricular and clinical changes in response to the opioid epidemic. Some also indicated reductions in opioid prescribing in their clinics. This finding is in line with the results of a study conducted at the Harvard School of

Dental Medicine, which indicated a reduction in prescribing opioid analgesics from 18% to 7% between 2010 and 2017 at their school-based clinic.<sup>22</sup> Furthermore, a retrospective study of electronic health records from 2013 to 2018 at the University of Kentucky College of Dentistry showed that regulations and mandates were associated with reduction in opioid prescriptions.<sup>23</sup> These are the same influential factors that were identified in this study as associated with the implementation of curricular and clinical changes.

The operability of PDMPs armed dental education with an additional tool to identify patients at risk for substance abuse. As shown by this study, PDMPs are routinely checked as part of the treatment process and, therefore, can offer an opportunity to integrate two electronic systems that work collectively to reduce opioid prescription misuse. The integration of PDMPs into electronic health records has become a widely accepted policy solution to the opioid epidemic.<sup>24,25</sup> Electronic health records and other systems may offer a unique opportunity to integrate state-specific PDMPs into this practice management system.

There are several limitations in this study. The findings of this study reflect the situation at about half of accredited U.S. dental schools. The curricular results were provided by more public dental schools and dental schools located in the southern region of the United States than other parts of the country. Clinical results reflect a higher percentage of responses from public institutions located in the Northeast, South, and West regions of the United States. A higher participation rate of schools across survey modules would provide a more complete picture. While the study examined the factors associated with curricular and clinical changes, it does not provide a causal analysis of these factors and the identified changes. This research identified a number of approaches applicable to curricular and clinical methods to curtailing the opioid epidemic. However, it does not evaluate the success of these changes. Furthermore, the approaches described in this study are not generalizable across all dental schools and should be used as illustrative takeaways for others in dental education.

## 5 | CONCLUSIONS

Dental education plays an important role in teaching competency on substance abuse as students transition to practicing dentists. This study examines the curricular and clinical changes achieved by U.S. dental schools to curb the opioid epidemic. The implications of this study indicate that a significant number of U.S. dental schools had, at the time of the survey, already undertaken changes to their curriculum and clinical protocols to prepare the future dental workforce to combat this epidemic. It also indicates several common themes across the changes enacted by U.S.

dental schools. While a descriptive study, this research is a stepping stone toward further research on an important topic for dental education. More research is necessary to ascertain the success of the changes implemented by U.S. dental schools and the factors causing these results.

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## FINANCIAL DISCLOSURE

The authors of this study report no financial, economic, or professional conflicts of interest that may have influenced the design and execution of this study.

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