Research

Opioid Use Disorder Curricular Content in US-Based Doctor of Pharmacy Programs

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ABSTRACT

Objectives: To characterize the instructional settings, delivery methods, and assessment methods of opioid use disorder (OUD) content in Doctor of Pharmacy (PharmD) programs; assess faculty perceptions of OUD content; and assess faculty perceptions of a shared OUD curriculum.

Methods: This national, cross-sectional, descriptive survey study was designed to characterize OUD content, faculty perceptions, and faculty and institutional demographics. A contact list was developed for accredited, US-based PharmD programs with publicly-accessible online faculty directories (n = 137). Recruitment and telephone survey administration occurred between August and December 2021. Descriptive statistics were computed for all items. Open-ended items were reviewed to identify common themes.

Results: A faculty member from 67 (48.9%) of 137 institutions contacted completed the survey. All programs incorporated OUD content into required coursework. Didactic lectures were the most common delivery method (98.5%). Programs delivered a median of 7.0 h (range, 1.5–33.0) of OUD content in required coursework, with 85.1% achieving the 4-hour minimum for substance use disorder-related content recommended by the American Association of Colleges of Pharmacy. Just over half (56.8%) of faculty agreed or strongly agreed that their students were adequately prepared to provide opioid interventions; however, 50.0% or fewer perceived topics such as prescription interventions, screening and assessment interventions, resource referral interventions, and stigma to be covered adequately. Almost all (97.0%) indicated moderate, high, or extremely high interest in a shared OUD curriculum.

Conclusion: Enhanced OUD education is needed in PharmD programs. A shared OUD curriculum was of interest to faculty and should be explored as a potentially viable solution for addressing this need.

1. Introduction

Over 560,000 Americans died due to an opioid overdose between 1999 and 2020.1 Since the onset of the COVID-19 pandemic, opioid overdose deaths in the United States (US) have reached record highs, with 80,816 deaths in 2021 alone.2 The pandemic has further emphasized the importance of leveraging health professionals to their fullest scope of practice to compensate for workforce shortages, including gaps in opioid misuse and opioid use disorder (OUD) care.3 As noted by the Centers for Disease Control and Prevention, pharmacists are a crucial group of health professionals who serve on the “first line of defense” for OUD.4 For example, pharmacists can provide important interventions such as dispensing naloxone and counseling patients on the safe use of opioids.4,6

Training is essential for preparing pharmacists to provide opioid interventions. Pharmacists who receive addiction-specific training and who have higher confidence are more likely to provide interventions.7–9 Furthermore, proper training for health professionals has been associated with positive patient outcomes.10 Unfortunately, studies have historically shown that nearly one-third of pharmacists report having received no addiction-related education, and as of 2019, only 12 states require pharmacists to complete opioid-, controlled substance-, or pain-related continuing education.7,11,12 Insufficient addiction training and low comfort or confidence are well-documented barriers to pharmacist-provided opioid interventions.13–21

Integrating comprehensive training into Doctor of Pharmacy (PharmD) coursework is a practical approach to enhancing pharmacist...
workforce preparedness for providing patient-centered care to persons experiencing OUD. Since 2016, the American College of Clinical Pharmacy has classified OUD as a tier 1 competency, indicating students should “receive education and training (…) to prepare them to provide collaborative, patient-centered care upon graduation and licensure” without needing additional training.26 Although the American Association of Colleges of Pharmacy (AACP) recommends PharmD programs to provide at least 4 hours of substance use disorder (SUD) education (including OUD content), only 30% of programs achieved this minimum in 2015.27–29 Existing literature describes the number of hours dedicated to SUD content and the year in school in which SUD content is delivered.24–26 However, a robust national assessment is needed to characterize OUD content specifically.

2. Objectives

The objectives of this study were to characterize the instructional settings, delivery methods, and assessment methods of OUD content in PharmD programs; assess faculty perceptions of OUD content; and assess faculty perceptions of a shared OUD curriculum.

3. Methods

The work described herein was conducted with the long-term goal of creating a nationally shared OUD curriculum, with a publicly-accessible suite of learning and assessment tools, to enhance pharmacist-provided opioid interventions. The approach is grounded in Anand and Bärnighausen’s framework, which posits that placing healthcare workers (eg, pharmacists) at the center of a health system is essential to achieving the health system’s goals (eg, opioid-related patient outcomes).27 Specifically, this work evaluates level E1 of the framework by estimating pharmacists’ educational needs.

The target population for this national, cross-sectional, descriptive survey study included 1 faculty member from each accredited, US-based PharmD program (n = 139).26 A list of primary, secondary, and tertiary contacts was developed for each program with a publicly-accessible online faculty directory (n = 137 of 139; 98.5%). Primary contacts largely included faculty members with positions overseeing their institution’s curriculum (eg, Associate Dean of Curriculum and Assessment), and secondary and tertiary contacts included pharmacy practice faculty with evidence of research, clinical, or teaching responsibilities in OUD, SUD, psychiatric pharmacy, or pain management. Email addresses and phone numbers, when available, were gathered for all contacts.

Recruitment, which occurred between August 2021 and December 2021, was conducted through email and telephone outreach. Each targeted faculty member was contacted up to 6 times via email and/or telephone for study enrollment, beginning with primary contacts and progressing to secondary and then tertiary contacts when faculty declined to participate or did not respond after 6 outreach attempts. If faculty members were either not the most appropriate person to complete the survey or were unable to participate, they were asked to recommend another colleague from their institution. After agreeing to participate, faculty members scheduled a time for telephone survey administration. Surveys were administered concurrently during the recruitment period, with each lasting between 15 and 30 minutes, and responses were recorded in REDCap. All respondents were offered a $15 VISA gift card. Study procedures were approved by the Purdue University Human Research Protection Program.

3.1. Survey Development and Administration

Modeled after the Rx for Change: Clinician-Assisted Tobacco Cessation curricular assessments in PharmD programs, a survey was developed to assess OUD content, faculty perceptions, and faculty and institution demographics.29 To ensure item quality and clarity, the survey was pilot-tested with 4 pharmacy faculty members (at 4 different institutions) who had clinical expertise in OUD. Pilot-testing feedback resulted in minor survey modifications. The full survey is available online.30

Respondent and Institutional Demographic Measures: Pharmacy faculty were characterized based on age (years), gender, race, ethnicity, current role, current faculty line and rank, and involvement with OUD content at their institution. Institutions were described based on public vs private and total PharmD program student enrollment (extracted from AACP enrollment data”).

OUD Content Instructional Settings, Delivery Methods, and Assessment Methods Measures: Instructional settings included required and elective coursework, pharmacy skills laboratories, interprofessional education, co-curricular activities (eg, events through student organizations), experiential learning, and “other”. Delivery methods were assessed for both required and elective/co-curricular coursework and included didactic lectures, case studies, required readings, patient-centered counseling (eg, role-playing, standardized patients), simulated interventions (eg, administering naloxone), and “other”. Assessment methods of student knowledge and skills for required coursework included high-stakes, low-stakes, and no formal assessments. The extent of changes in delivery and/or assessment methods as a result of the COVID-19 pandemic were evaluated using a 10-point scale from 0 = no change, 5 = moderate change, and 10 = major change. The number of total hours dedicated to OUD content across all professional years combined were assessed for both required and elective/co-curricular coursework.

Faculty Perceptions of OUD Content Measures: Perceptions of OUD content in required coursework were assessed for 10 specific topic areas. The AACP Curricular Guidelines for Pharmacy: Substance Abuse and Addictive Disease guidelines served as a starting point for the topic areas, which were then revised, based on existing literature and the authors’ expertise, to focus on pharmacist opioid interventions.25 The final 10 topic areas were as follows: addiction principles (eg, biopsychosocial factors, DSM-5 criteria), trauma-informed care principles (eg, recognizing and responding to effects of trauma), epidemiology of opioid use and misuse (eg, trends in licit and illicit opioid use, morbidity and mortality rates), opioid-related laws and legislation (eg, prescribing limits, access to medications for OUD [MOUD] or treatment programs), stigma of opioid misuse and OUD (eg, impact of stigma on patients with OUD, minimizing stigmatizing language), opioid-related harm reduction interventions (eg, naloxone, syringe exchange programs), pharmaceutical interventions (eg, MOUD and their pharmacology and side effects), prescription interventions (eg, identifying “red flags,” using prescription drug monitoring programs), screening and assessment interventions (eg, using tools such as the Opioid Risk Tool [ORT] to identify risk for potential opioid misuse), and resource referral interventions (eg, rehabilitation programs, cognitive behavioral therapy). Perceptions for each topic area were collected on a 5-point scale with 1 = adequately (fully) covered, 2 = inadequately (partially) covered, and 3 = not covered. Faculty were also asked to indicate their agreement on a 5-point Likert scale with 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, and 5 = strongly agree with the following statement: “Overall, I believe students at my institution are adequately prepared to provide patient-centered opioid interventions upon graduation.”

Faculty Perceptions of a Shared OUD Curriculum Measures: Perceptions of the impact of institutional and faculty/student barriers in developing, maintaining, and providing OUD content were collected on a 5-point scale with 1 = very low, 2 = low, 3 = moderate, 4 = high, and 5 = very high. Faculty were asked to describe potential challenges in implementing a shared OUD curriculum at their institution as well as any implementation supports they would find useful. Finally, interest in a shared OUD curriculum was collected on a 5-point scale with 1 = no interest, 2 = low interest, 3 = moderate interest, 4 = high interest, and 5 = extremely high interest.

Descriptive statistics were computed for all survey items using SAS software (version 9.4). Responses to open-ended items were reviewed
independently by the first 4 authors to identify commonalities over a period of 1 week, with email and phone exchanges ongoing. Individual findings were then subsequently discussed as a group to address minor discrepancies and reach an agreement on thematic labels.

4. Results

Of 137 institutions contacted, 67 (48.9%) completed the survey with representation from 37 (74.0%) of the 50 states (Fig. 1); of these, 55.2% were private, 44.8% were public, and the median student enrollment size was 336 (range, 115–1569). Table 1 summarizes respondent demographics.

Faculty reported integrating OUD content in required courses (100%), co-curricular activities (70.1%), pharmacy skills labs (67.2%), elective courses (67.2%), and interprofessional education (55.2%). Additionally, 40.3% of faculty reported offering experiential learning rotations focused primarily on OUD, and 95.5% reported offering rotations encompassing but not focusing on OUD (eg, pain management).

Faculty reported delivering a median of 7.0 h (range, 1.5–33.0 h) of OUD content in required coursework (n = 67) and a median of 10.0 h (range, 1.0–250.0 h) in elective or co-curricular coursework (n = 57) across all professional years combined at their respective institutions. Specifically for required coursework, 85.1% reported providing 4.0 or more hours of OUD content, 11.9% reported providing less than 4.0 h, and 3.0% responded: “I don’t know.”

Fig. 2 depicts the delivery methods of OUD content in required vs elective or co-curricular courses. For “other” educational methods in required (n = 24) and elective or co-curricular coursework (n = 24), respondents indicated using guest speakers or panels (with individuals in recovery from OUD; 29.2% required, 20.8% elective or co-curricular) and flipped classrooms (16.7% required, 12.5% elective or co-curricular). In required coursework, 20.8% of respondents also reported using media (eg, videos, podcasts) whereas in elective or co-curricular coursework, 41.7% of respondents reported using community engagement (eg, attendance at 12-step meetings, community presentations).

To assess students’ OUD knowledge in required coursework, 95.5% of faculty reported using high-stakes assessments (eg, examinations, oral assessments), 85.1% reported using low-stakes assessments (eg, homework, discussions), 3.0% reported using no formal assessment, and 1.5% responded “I don’t know” (responses not mutually exclusive). To evaluate students’ OUD skills in required courses, 79.1% of faculty reported using high-stakes assessments (eg, instructor observations), 47.8% reported using low-stakes assessments (eg, peer assessments, reflective writing), 11.9% reported using no formal assessment, and 3.0% responded “I don’t know” (responses not mutually exclusive).

Faculty indicated minimal changes in delivery and/or assessment methods as a result of the COVID-19 pandemic, reporting an average score of 3.0 out of 10 (SD, 2.6). When asked to describe specific changes made, examples of responses included that no changes were made to the content, that didactic delivery switched from an in-person to virtual format, and that interactive coursework (eg, group activities, community outreach) was minimized or altogether removed.

Fig. 3 highlights faculty perceptions of how adequately OUD content was covered in their institution’s required curriculum. The majority of faculty agreed (47.8%) or strongly agreed (9.0%) that students at their institution were adequately prepared to provide patient-centered opioid interventions upon graduation; 32.8% were neutral, 9.0% disagreed, and 1.5% strongly disagreed. Table 2 presents barriers to developing, maintaining, or providing OUD content.

All respondents expressed interest in having access to a shared OUD curriculum, with most indicating high (34.3%) or extremely high (43.3%) interest; 19.4% expressed moderate interest, 3.0% expressed low interest, and none expressed no interest. When asked about challenges they could face in implementing a shared curriculum at their institution, faculty most commonly cited using a “one-size-fits-all” approach that did not consider institutional differences (eg, content sequencing, delivery methods, time dedicated to content; n = 22, 32.8%) or regional differences (eg, population demographics, culture, laws and regulations, opioid use and overdose trends; n = 12, 17.9%). Some respondents also expressed concerns about a lack of buy-in from
administration or faculty (n = 11, 16.4%) and potential costs for using the curriculum (n = 10, 14.9%). When asked about supports that could help facilitate the implementation of a shared curriculum at their institution, faculty identified a need for interactive support (eg, curriculum liaison, faculty training, faculty workgroups; n = 17, 25.4%) and promotional materials (eg, presentation, talking points) to help gain buy-in for the curriculum (n = 14, 20.9%). Faculty indicated a need to trust in the quality of the shared curriculum, citing updated content or evidence of good student learning outcomes (n = 11, 16.4%). Faculty also desired the curriculum to be flexible (eg, modifiable content, “plug-and-play” modules; n = 9, 13.4%), and include suggestions for where to incorporate content in PharmD programs (n = 8, 11.9%) and learning or assessment activities (n = 7, 10.4%).

5. Discussion

Few studies have evaluated SUD content in US-based PharmD programs, and none have characterized OUD content specifically or faculty perceptions of a shared OUD curriculum. Our findings provide a valuable expansion of the existing literature pertaining to pharmacy student training.

In 2004, a survey of 49 of 91 (54%) US-based PharmD programs estimated that 80% included SUD content, with an average of 2.2 h provided for lecture-based instruction and 0.5 h for case-based instruction.20 In 2015, 75 of 133 (56%) programs were surveyed, and 94% reported including SUD content with an average of 2.7 h provided for didactic instructions.24,25 In our study, 100% of respondents reported incorporating OUD content into required coursework, with a national median of 7.0 h. Only 30% of PharmD programs in 2015 provided the recommended 4.0 or more hours of SUD education, whereas 85.1% met this recommendation in our 2021 study.24,25 Collectively, these findings suggest a trend for increasing prevalence of and time dedicated to OUD or SUD content in PharmD programs.

Despite these increases over time in the number of hours dedicated to OUD content, only 56.8% of faculty agreed or strongly agreed that their students were adequately prepared to provide patient-centered opioid interventions. Given that OUD is a tier 1 competency for PharmD programs, any result less than 100% indicates a need for improved education.22 It is also interesting that the majority of faculty believed their students were well-prepared, yet 50.0% or fewer reported feeling that their institution adequately covered stigma or prescription, screening and assessment, or resource referral interventions in required coursework. These are crucial components of comprehensive OUD education.

For example, stigma is a well-documented barrier to care for persons experiencing mental health conditions, including SUDs. Ahmedani describes 3 “levels” of stigma: social stigma, self-stigma, and health professional stigma.32 Focusing specifically on health professional stigma, a systematic review of 28 international studies concluded that health professionals commonly hold negative attitudes about caring for patients with SUDs, and these attitudes lead to sub-optimal care delivery, diminished patient empowerment, and poorer treatment outcomes.33 These findings emphasize the importance of addressing and mitigating stigma in health provider training; evaluations of elective coursework have shown students’ knowledge, attitudes, and perceptions of SUD can be improved through education.34–36

Additionally, only 50.0%, 36.4%, and 22.7% of faculty perceived prescription, screening and assessment, and resource referral interventions, respectively, to be adequately covered in their institution’s required curriculum. Each of these interventions are encompassed in the list of core competencies to “address substance use in the 21st century” developed by the Association for Multidisciplinary Education and Research in Substance Use and Addiction.37 Our findings suggest that while pharmaceutical interventions are adequately covered in nearly all (91.0%) PharmD programs, “21st century” interventions are not. Moreover, less frequently reported use of high-stakes skills assessments, simulated interventions, and patient-centered counseling activities also indicates a need for further emphasis on hands-on, competency-based learning opportunities.

Collectively, this evidence demonstrates a critical need to enhance OUD education in PharmD programs. Almost 70% of respondents perceived low faculty bandwidth to be a moderate, high, or very high impact barrier to developing or providing OUD content; a shared OUD curriculum would directly address this barrier. Shared curricula are logical and cost-effective approaches to teaching, saving faculty time and resources. Furthermore, 97.0% of faculty in our study expressed moderate, high, or very high interest in a shared OUD curriculum. Examples of shared curricula for pharmacists and other health professionals include tobacco cessation, pharmacogenomics, and cultural competence.38–40 The Rx for Change: Clinician-Assisted Tobacco Cessation shared curriculum, developed in 1999 and maintained for more than 2 decades, has demonstrated long-term reach, effectiveness, adoption, implementation, and maintenance outcomes.41–44
widespread use of *Rx for Change*, coupled with high faculty interest expressed in our study, illustrates the potential for success with a shared OUD curriculum. Strategic overlapping of OUD content with other content areas will be needed to avoid exacerbating curriculum crowding, identified as a moderate, high, or very high-impact barrier by 79.1% of faculty.

Planned next steps to create a shared OUD curriculum include characterizing key stakeholder (eg, multidisciplinary practitioners, patients, and pharmacists) perspectives on pharmacist OUD training, developing curriculum content through an iterative process with select stakeholders, pilot-testing the curriculum in a few PharmD programs before widespread dissemination, and evaluating student learning outcomes.
Table 2: Impact of Barriers in Developing, Maintaining, or Providing OUD Content in Accredited, US-Based Doctor of Pharmacy Programs (n = 67).

<table>
<thead>
<tr>
<th>Item</th>
<th>Mean (SD)</th>
<th>Result, n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Institutional barriers</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Curriculum crowding*</td>
<td>3.7 (1.3)</td>
<td>6 (9.0)</td>
</tr>
<tr>
<td>Limited financial resources</td>
<td>2.3 (1.2)</td>
<td>23 (34.3)</td>
</tr>
<tr>
<td>Limited support from administration</td>
<td>1.6 (0.9)</td>
<td>39 (58.2)</td>
</tr>
<tr>
<td>Low interest or perceived importance from administration</td>
<td>1.6 (0.9)</td>
<td>40 (59.7)</td>
</tr>
<tr>
<td><strong>Faculty and student barriers</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low faculty bandwidth</td>
<td>3.1 (1.2)</td>
<td>7 (10.4)</td>
</tr>
<tr>
<td>Low interest or perceived importance from students</td>
<td>1.7 (0.9)</td>
<td>35 (52.2)</td>
</tr>
<tr>
<td>No faculty with OUD expertise</td>
<td>1.7 (1.0)</td>
<td>40 (59.7)</td>
</tr>
<tr>
<td>Low interest or perceived importance from faculty</td>
<td>1.5 (0.7)</td>
<td>40 (59.7)</td>
</tr>
<tr>
<td>No available guest lecturers or others with OUD expertise</td>
<td>1.5 (0.8)</td>
<td>43 (64.2)</td>
</tr>
<tr>
<td>Limited access to evidence-based OUD resources</td>
<td>1.4 (0.7)</td>
<td>49 (73.1)</td>
</tr>
</tbody>
</table>

Abbreviation: OUD, opioid use disorder.
* Results might not add precisely to 100% due to rounding
† Defined as having many content areas competing for limited time in a curriculum

5.1. Limitations

Despite intensive recruitment efforts and an extended data collection period, our survey response rate was just under 50%. The COVID-19 work overload and faculty burnout and turnover might have contributed to faculty ability or desire to participate. Additionally, the western region of the US had the lowest PharmD program representation and, thus, study findings might not be fully generalizable to OUD content in all PharmD programs.

Faculty perceptions of OUD content are subjective. Respondents might not have had comprehensive knowledge of all OUD content delivered at their institution, which would influence the accuracy of the information provided as well as their perceptions of how adequately certain topics were covered. The authors attempted to mitigate this impact by advising faculty to collect information on their institution’s OUD content before completing the survey. Additionally, faculty perceptions of student preparedness to provide opioid interventions might not be consistent with students’ perceptions of themselves.

6. Conclusion

Despite increases over time in the number of hours dedicated to OUD content in US-based PharmD programs, several important topic areas, including stigma and prescription, screening and assessment, and resource referral interventions, were perceived to be inadequately covered. Enhanced OUD education is needed to prepare the future pharmacist workforce to provide patient-centered opioid interventions. A shared OUD curriculum was of interest to faculty and should be explored further as a potentially viable solution for addressing this need.

CRediT authorship contribution statement

Nichols Molly A.: Conceptualization, Data curation, Formal analysis, Funding acquisition, Methodology, Project administration, Visualization, Writing – original draft, Writing – review & editing.
Hudmon Karen Suchanek: Conceptualization, Formal analysis, Funding acquisition, Methodology, Supervision, Writing – review & editing.
Miller Monica L.: Conceptualization, Funding acquisition, Methodology, Writing – review & editing.
Chao Alexander S.: Formal analysis, Investigation, Writing – original draft, Writing – review & editing.
Snyder Margie E.: Conceptualization, Funding acquisition, Methodology, Supervision, Writing – review & editing.

Declaration of Competing Interest

None declared.

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