Evaluating attitudes among healthcare graduate students following interprofessional education on opioid use disorder

Chrissa Karagiannis*, BS, Julia Liang, BS, Susan St. Pierre, DO, Carinne Brody, DrPH and Christina Kinnevey, MD

Abstract

Context: Provider-enacted stigma is a barrier for people with substance use disorder (SUD) who interface with the healthcare system, and it has been shown to lead to worse healthcare outcomes. This has given urgency to the need for stigma reduction interventions such as education- and contact-based approaches. The positive effect of interprofessional education (IPE) in reducing graduate health students’ stigmatizing attitudes on opioids has been examined before, and we contribute to the existing literature by examining the attitudes across the following four health disciplines—osteopathic medicine, physician assistant (PA) studies and public health, pharmacy, and nursing—following a single half-day IPE event focused on opioid use disorder (OUD).

Objectives: We aimed to determine whether attitudes could be affected by the IPE event by assessing attitudes utilizing an adapted version of the Alcohol and Alcohol Problems Perceptions Questionnaire (AAPPQ) before and after the IPE event.

Methods: A total of 647 students across the four previously mentioned health disciplines participated in the IPE event. Attitudes were compared between the pre/post groups utilizing unpaired t tests, and a summative “all-attitudes” score was generated, with higher scores being associated with improved attitudes toward individuals with an OUD. Linear regression was performed controlling for program type, gender, and previous OUD exposure (personal, professional, and education).

Results: We found that the pre/post summative attitudes scores improved an average of 2.81 units (SD 0.87, p=0.001, CI 1.09–4.52) for the entire cohort of graduate health students (56.9 vs. 66.6, p<0.0001) and for all attitudinal subscales (role adequacy, role legitimacy, role support, task-specific self-esteem, and work satisfaction). Students from PA programs had significantly higher attitude scores than other programs, and there were differences in degree type on attitude scores, with an average decrease of 1.89 units in attitude scores (SE 0.38, p<0.0001, CI −2.64 to −1.16). We found that students with previous exposure to OUD had higher pre-IPE event scores than those without, and knowing someone impacted by an SUD was a significant predictor of increased attitude scores, by an average of 3.82 units (SE 0.27, p<0.0001, CI 3.49–4.16). However, students without previous exposure to OUD had equal attitude scores post event to those who had previous exposure to OUD through education, personal experience, or training.

Conclusions: Our findings suggest that an IPE intervention and panel discussion may improve attitudes toward people with OUD in healthcare trainees, which is consistent with previous research that shows the beneficial effect of education and contact in reducing stigma. Degree type and knowing someone who has been impacted by an SUD are also significant predictors of attitude scores. IPE events are useful in targeting a public health issue by encouraging collaboration between different health professionals at early stages of their training, and preclinical educational efforts can affect therapeutic attitudes.

Keywords: interprofessional education; medical education; opioid use disorder; stigma reduction; substance use disorder

Over the past 10 years, the opioid crisis has garnered attention as a public health emergency, spurring recommendations for action on the federal and state levels [1]. Despite laws lowering the supply and demand of opioids as well as reducing their associated harm, opioid-related deaths have increased, especially during the COVID-19

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pandemic [2]. According to the CDC, there was a significant increase in opioid-related overdose deaths from 47,600 in 2017 to 80,311 in 2021 [3]. Despite the elimination of the DEA X-waiver (a regulatory barrier in prescribing buprenorphine for opioid use disorder [OUD]) in late 2022, there remain significant challenges including the training of providers in Substance Use Treatment Services (SUTS) and the expansion of services [4]. Stigma is a significant barrier to treatment access, as shown by Hooker et al. [5] in a recent randomized controlled trial (RCT), wherein they noted that primary care clinicians with greater stigma had lower intentions to prescribe buprenorphine even without waiver requirements.

The concept of stigma has been shaped by Goffman [6] and refers to the marginalization of individuals perceived to possess a socially undesirable characteristic, causing them to be unjustly rejected. It has been extensively studied in the realm of mental illness [7] with more recent applications to substance use disorder (SUD) [8–11]. A systematic review by van Boekel et al. [12] showed that health professionals express negative attitudes toward patients with SUD, having lower regard, less motivation, and feelings of dissatisfaction when working with this patient population, predicated on the view that this group was potentially violent, manipulative, or poorly motivated. Yang et al. [13] created an opioid stigma scale that identifies four key opioid-related stereotypes of people who misused opioids, including having low entrustability, being to blame for their problems, having low motivation, and being dangerous. The importance of considering attitudes and its effect on healthcare outcomes has been shown in the mental health literature [14], and it has also prompted the development of scales such as the Alcohol and Alcohol Problems Perceptions Questionnaire (AAPPPQ), which was initially designed by Cartwright et al. in 1978 [15] to assess therapeutic attitudes toward treating individuals with alcohol use disorder (AUD) and was later validated as a Drug and Drug Problems Perception Questionnaire (DDPPO) [16].

These scales can help guide interventions surrounding stigma, for which education and contact-based approaches have been shown to be critical [9, 17]. McGinty and Barry [18] highlight the principles that can guide stigma reduction campaigns including the use of person-first language, an emphasis on solutions, and the use of narratives emphasizing societal rather than individual causes of SUD. In one of the first systematic reviews of stigma reduction interventions, Livingston et al. [18] show that education can improve comfort in working with pregnant women who utilize substances [19, 20], but this increased comfort was not always paired with an improvement in attitudes toward SUD, or toward SUD in pregnant women [21]. Silins et al. [22] similarly showed decreased discomfort in working with patients with AUD but not heroin use disorder, which also points to a need for continued honing of stigma reduction efforts. A more recent systematic review by Bielenberg et al. [23] illustrates that successful interventions to reduce stigma can take on various formats including online education, in-person education, in-person exposure with substance users, or some combination of the three. This was corroborated by Mort et al. [24] during an assessment of educational interventions for reducing stigma among osteopathic medical students. Regardless of the format, exposure to individuals suffering from SUD was more likely to generate sustained changes in attitudes than education alone [24–27]. Mort et al. [28] also showed that osteopathic medical students’ personal and clinical experiences impacted their desire to treat patients with OUD. Research from Khenti et al. [29] similarly shows that attitudes toward substance users improve with exposure within healthcare settings.

Lukowitsky et al. [30] showed that trainees across different healthcare disciplines had more positive regard and attitudes toward working with patients utilizing substances following training in Screening, Brief Intervention and Referral to Treatment (SBIRT) in SUD, which was also corroborated by Scudder et al. [31], who showed the effectiveness of SBIRT in nonphysician health professions including physical therapy, occupational therapy, nursing, counseling, and physician assisting. This is vital, because a large portion of the healthcare workforce is composed of nonphysician healthcare professionals who are just as likely to encounter and be able to intervene in SUD. Consistent with osteopathic principles of caring for the whole person, it is important that clinicians of different disciplines work together, especially because SUD treatment is best delivered by teams of healthcare professionals. In preparation for this, interprofessional curricula on SUD have been developed. A scoping review by Muzyk et al. [32] on interprofessional SUD educational interventions found that interprofessional interventions improved knowledge, skills, and attitudes in various health professional students, and included three studies that specifically focused on opioids [32–34]. Brooks et al. [33] found that health professional students had increased awareness of the opioid epidemic (43.2 %) and better appreciated the interprofessional approach to managing OUD (36.4 %). Mitchell et al. [35] showed how interprofessional education (IPE) improved role security in dental hygienists, which is an important component of therapeutic commitment.

This study aims to uncover baseline attitudes and effectiveness of IPE surrounding OUD in four health professional schools located in Touro University California: within the schools of osteopathic medicine, joint physician assistant (PA) studies/public health, pharmacy, and nursing.
This study examines attitudes of graduate health professional students before and after the administration of an IPE event based on educational content adapted from Washington State University conducted over Zoom. We also ascertained the effect of student exposure with OUD on attitudes and assessed changes before and after the interprofessional event.

**Methods**

**Ethical approval**

Our survey, “Assessment of Healthcare Graduate Students on Perceptions of Substance Use and Bias Towards Substance Users” (IRB Application # M-1420), was evaluated for IRB approval and provided exemption status by the Touro University California Institutional Review Board (TUC IRB), based on considerations provided by the Office for Human Research Protections (OHRR) under Code of Federal Regulations (CFR) Title 45 Part 46.101.

**Funding**

This study was funded as part of grant number FH-000056; Substance Abuse and Mental Health Services Administration (SAMHSA) Expansion of Practitioner Education.

**Informed consent**

Informed consent was obtained prior to administration of the Qualtrics survey through Canvas software. Participants received an informed consent statement describing the purpose of the study, potential risks and benefits of completing the survey, resources for the university’s counseling services, and a statement that individuals may withdraw consent for participation at any time. Participants were provided assurances of confidentiality and removal of all identifiable data by primary investigators before analysis. Participants were informed of an optional raffle for a $25 electronic gift card, upon which they would provide their email addresses in order to be contacted if they won. Participants who said ‘I agree’ continued to survey questions; those who answered ‘I disagree’ were directed to an end-of-survey screen.

**Enrollment and participation, inclusion/exclusion criteria**

Survey respondents were recruited from participants of the IPE event on Opioid Use Disorders, taking place on August 24, 2020 and April 2021.

Eligible respondents were actively enrolled students at Touro University California participating in the IPE event and in the following programs: the College of Osteopathic Medicine; the Master of Science in Physician Assistant Studies-Masters in Public Health (MSPAS-MPH); the PharmD; the Masters of Science in Nursing; and the Doctorate in Nursing. Excluded participants included inactive or previously enrolled students and nonstudent faculty.

Participants were asked a series of questions to demonstrate eligibility. Ineligible respondents were automatically taken to the end of the survey.

**Interprofessional education event on opioid use disorder**

The IPE Event on Opioid Use Disorder was developed in part from the Washington State University Interprofessional Team-based Opioid Education program compliant with their Creative Commons license for use. A sample agenda of the Interprofessional Event Curriculum schedule is provided in the appendices (Appendix 2). Students were divided into interprofessional groups consisting of four or 5 students from different professions per team. Student participants engaged in a large group discussion with experts in addiction medicine before being divided into their small groups to cover a case study adapted from the Washington State University curriculum. Case study exercises included an assessment of multiple screening and management/treatment tools for OUD. Students then returned to a large group for further discussion and reflection. The interprofessional event ended with a panel Q&A with patients experiencing OUD who were in recovery. A full description of the interprofessional event can be found in the appendices. The event was virtual and the discussion occurred in breakout rooms.

**Data collection**

Data were obtained from participants via Qualtrics in Canvas. Prior to analysis, faculty investigators deidentified the data set, including name/email/student ID numbers. The collected information included two surveys (pre/post event) separated into three categories: eligibility, demographics, and attitudes questions. Because investigators were interested in the attitudes of individuals depending on demographic characteristics, data were collected on the age and gender of the respondents.

**Survey**

Respondents were administered two surveys, one before and one after the interprofessional event (Appendix 1). Pre/post survey development involved a literature review and standard practices for survey design. Demographic characteristics included Program, Graduation Year, and Gender. Demographic questions included: Q1, “Have you worked in a healthcare setting that had patients who were utilizing substances and/or diagnosed with a substance use disorder?”; Q2, “Has someone you know ever been impacted by a substance abuse disorder?”; and Q3, “Do you have prior education in substance use disorders?”

At the time of survey development (2020), the authors did not find a survey addressing attitudes toward opioid users, so we administered an adapted version of the AAPPQ (Appendix 2) that assesses the following parameters: role adequacy, role legitimacy, role support, motivation, task-specific self-esteem, and work satisfaction as components of therapeutic attitudes [15]. Subscales from the original AAPPQ were adapted from the two broad concepts of role security, which is the security one feels about working with patients who have alcohol problems (split into role adequacy and role legitimacy), and therapeutic commitment, split into three components (motivation, work satisfaction, and task-specific self-esteem). Role support was later added into the AAPPQ [36].
We selected and adapted 8 of the original 30 questions (AAPQ questions 1, 7, 8, 15, 18, 19, 20, and 28). Because the original AAPQ was intended for individuals working in substance use treatments services and was not well adapted to healthcare graduate students who may have had no previous exposure to individuals with OUD, we added three nonvalidated questions assessing the parameters of role support and task-specific self-esteem (denoted NV in Appendix 2). Questions were modified to replace “alcohol use” with “opioid use” and shortened for clarity. Responses were recorded on a Likert scale from 0 to 10 (0 Strongly Disagree, 10 Strongly Agree), with an increase in scores from pre-IPE to post-IPE event correlating with an improvement in attitudes. The survey was piloted for clarity and qualitative suggestions by eight healthcare graduate students. Of note, two of the questions in the motivation subscale were negatively worded. The full survey can be found in the appendices (Appendix 1).

Statistical methods and analysis

The data were imported into STATA/IC 16.1 [37]. Bivariate analysis was performed to examine the distribution of demographic characteristics between pre/post groups utilizing chi-square to compare dichotomous and categorical variables and t tests to compare continuous variables. Because study design utilized deidentiﬁed survey data, attitude scores were compared between pre/post groups utilizing unpaired t tests. A linear regression was performed controlling for program type, gender, and previous OUD exposure (personal, professional, and educational). A summative “all-attitudes” score was created. “All-attitudes” scores were compared between meaningful subgroups (graduation year, gender, TUC program, and exposure to substance use through personal, professional, or educational means). Exposure to substance use through the three areas (personal, professional, and educational) was examined utilizing unpaired t tests to compare within pre/post groups and linear regression to compare across pre/post groups. Attitudinal subscales were created by adding up the related attitudes items, and unpaired t tests were utilized to show differences between attitude subscale scores between the pre/post groups. Signiﬁcance was denoted at p<0.05.

Results

Participation rates

A total of 647 students participated in the IPE event: 335 students in August 2020 and 312 students in April 2021. A total of 369 (57.0 % of participants) completed the pre-IPE survey, and 248 (38.3 % of participants) completed the post-IPE event survey.

Demographic characteristics

There were similarities in the number of respondents across demographic characteristics, except by academic program type. Greater than half of the students had some previous exposure to SUD in the professional setting (36.6 % with exposure and 43.4 % without exposure). The split was relatively even among students who had previous personal exposure to SUD (49.3 % with exposure and 50.7 % without exposure). More students did not start with previous SUD education (64.3 %) as opposed to those who had (35.8 %) (Table 1).

All-attitude summative scores

Among all respondents (n=608), there was a significant increase in the summative all-attitude scores from pre-IPE (56.9, SD 0.73) to post-IPE event (66.6, SD 0.86, p<0.001, Table 2). The scores of individual questions 1–5 and 8–11 significantly increased post-IPE (Table 2). The pre/post variable, which captures the main effects of the training, shows a positive relationship with the dependent variable, all-attitude scores. There was an average pre to post increase of
Table 2: Individual attitude questions about opioid use by pre and post groups.

<table>
<thead>
<tr>
<th>Opioid use attitude questions</th>
<th>Pre n=360</th>
<th>Post n=235</th>
<th>p-Value</th>
<th>Attitudinal category</th>
</tr>
</thead>
<tbody>
<tr>
<td>All attitudes summative score (questions 1–11)</td>
<td>56.9 (0.73)</td>
<td>66.6 (0.86)</td>
<td>&lt;0.0001</td>
<td>Role adequacy</td>
</tr>
<tr>
<td>1. I have a working knowledge of opioids and opioid-related problems</td>
<td>4.8 (0.13)</td>
<td>6.7 (0.13)</td>
<td>&lt;0.0001</td>
<td>Role adequacy</td>
</tr>
<tr>
<td>2. I can appropriately advise my patients about opioid use and its effects</td>
<td>4.4 (0.13)</td>
<td>6.6 (0.13)</td>
<td>&lt;0.0001</td>
<td>Role legitimacy</td>
</tr>
<tr>
<td>3. I have a clear idea of my responsibilities in helping patients with opioid use disorder</td>
<td>5.3 (0.14)</td>
<td>7.1 (0.12)</td>
<td>&lt;0.0001</td>
<td>Role support</td>
</tr>
<tr>
<td>4. There are adequate resources for health professionals to treat a patient with opioid use disorder</td>
<td>5.6 (0.13)</td>
<td>6.3 (0.13)</td>
<td>&lt;0.0001</td>
<td>Role support</td>
</tr>
<tr>
<td>5. There are adequate resources for patients suffering from opioid use disorder</td>
<td>5.2 (0.12)</td>
<td>6.1 (0.14)</td>
<td>&lt;0.0001</td>
<td>Role support</td>
</tr>
<tr>
<td>6. I am interested in the nature of opioid-related problems and the responses that can be made to them</td>
<td>7.4 (0.12)</td>
<td>7.5 (0.12)</td>
<td>0.862</td>
<td>Motivation</td>
</tr>
<tr>
<td>7. I feel there is little I can do to help patients with opioid use disorder</td>
<td>2.7 (0.12)</td>
<td>2.9 (0.16)</td>
<td>0.288</td>
<td></td>
</tr>
<tr>
<td>8. Pessimism is the most realistic attitude to take toward patients with opioid use disorder</td>
<td>1.9 (0.11)</td>
<td>2.2 (0.16)</td>
<td>0.071</td>
<td></td>
</tr>
<tr>
<td>9. In general, it is rewarding to work with patients with opioid use disorder</td>
<td>6.3 (0.11)</td>
<td>6.8 (0.13)</td>
<td>0.0025</td>
<td>Work satisfaction</td>
</tr>
<tr>
<td>10. I am able to work with patients with opioid use disorder as well as others</td>
<td>6.2 (0.13)</td>
<td>6.8 (0.13)</td>
<td>0.0009*</td>
<td>Task-specific self-esteem</td>
</tr>
<tr>
<td>11. I am confident that I would respond supportively to a patient approaching me with opioid use disorder</td>
<td>7.1 (0.12)</td>
<td>7.5 (0.13)</td>
<td>0.05</td>
<td></td>
</tr>
</tbody>
</table>

aSignificant at p<.05; p values here represent differences pre- to post-IPE scores for individual questions. Parenthesis denote the standard deviation.

Table 3: Linear regression for all attitudes.

<table>
<thead>
<tr>
<th>Coefficient</th>
<th>Std error (SE)</th>
<th>p-Value</th>
<th>95 % CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Training pre/post</td>
<td>2.81</td>
<td>0.87</td>
<td>0.001*</td>
</tr>
<tr>
<td>Degree type</td>
<td>-1.89</td>
<td>0.38</td>
<td>&lt;0.0001b</td>
</tr>
<tr>
<td>Knows someone who has been impacted by substance use disorder</td>
<td>3.82</td>
<td>0.27</td>
<td>&lt;0.0001b</td>
</tr>
</tbody>
</table>

Significant at p<.05. *p<.01, †p<.001. The pre/post variable that captures the main effects of the training shows a positive relationship with the dependent variable (all attitude scores). Going from pre to post means that there is an average increase of 2.81 units in attitude scores. This relationship is statistically significant (p value of .001*). The degree type variable shows a negative relationship with the dependent variable. For each change in degree type, there is an average decrease of 1.89 units in attitude scores. This relationship is highly statistically significant (p value of <.0001b). This can be explained by the lack of significant changes in students who are in the PA program. Knowing someone who has been impacted by substance use disorder has a positive relationship with attitude scores. If an individual knows someone who has been impacted by substance use disorder, there is an average increase of 3.82 units in attitude scores. This relationship is highly statistically significant (p value of <.0001b). CI, confidence interval; PA, physician assistant.

2.81 units in attitude scores. This relationship is statistically significant (SE 0.87, p=0.001, CI 1.09–4.52) (Table 3), implying that the IPE event is a predictor of improvement in attitudes when controlled for other variables.

All-attitude scores by demographic, by prior exposure, and by subscales

There were statistically significant improvements in summative all-attitude scores among Program, Graduation Year, and Gender (not shown). One exception was students from the MSPAS/MPH program, which did not see a significant change in summative attitudes in the post (p=0.162, Table 4). Due to a small and unbalanced sample size pre (n=14) and post (n=4) event, the nursing cohort resulted in nonsignificant change in attitudes.

For each change in degree type, there is a negative relationship and an average decrease of 1.89 units in attitude scores. This relationship is highly statistically significant (SE 0.38, p<0.0001, CI -2.64 to -1.16) and can be explained by the lack of significant changes in student who are in the PA program (Table 3).

Comparing those who had exposure to substance use, whether it be professional, personal, or educational, to those who did not, all-attitude scores were significantly different in the pre, but not significantly different in the post. Students who had SUD exposure had higher pre-IPE event attitudes, but after training, the scores between exposed and unexposed students were statistically the same (Figure 1).

Knowing someone who has been impacted by an SUD has a positive relationship with attitude scores (Table 3). If an individual knows someone who has been impacted by an SUD, there is an average increase of 3.82 units in attitude
scores. This relationship is highly statistically significant (SE 0.27, p<0.0001, CI 3.49–4.16). Gender, graduation year, past work in SUD, and past education in SUD were included in the original model but were shown to be nonsignificant and were removed when fitting the final model (not shown).

Overall, these results suggest that pre/post (main effects), degree type, and knowing someone who has been impacted by an SUD are significant predictors of attitude scores, and the model seems to fit the data well, based on the low p values and the narrow confidence intervals.

Aggregate scores by all subscales for role adequacy (pre 9.2 SD 0.25, post 13.3 SD 0.23, p<0.001), role legitimacy (pre 5.3 SD 0.14, post 7.1 SD 0.12, p<0.001), role support (pre 10.9 SD 0.22, post 12.5 SD 0.27, p<0.0001), task-specific self-esteem (pre 13.3 SD 0.21, post 14.3 SD 0.23, p=0.003), motivation (pre 18.3 SD 0.24, post 19.4 SD 0.33, p=0.0057), and work satisfaction (pre 6.8 SD 0.11, post 6.8 SD 0.13, p=0.0025) increased from pre-IPE to post-IPE event (p<0.05, Table 5), which measure for varying levels of desire based on the broad concepts of role security, therapeutic commitment, and perceived role support, all of which point to increased attitudes.

Table 4: Summative attitudinal scores, attitudes scores by program.

<table>
<thead>
<tr>
<th>Exposure questions</th>
<th>Pre n=360</th>
<th>Post n=235</th>
<th>Overall p-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>All attitudes</td>
<td>56.9 (0.73)</td>
<td>66.6 (0.86)</td>
<td>p&lt;0.0001*</td>
</tr>
<tr>
<td>Program</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PharmD (n=157)</td>
<td>60.4 (1.0)</td>
<td>70.5 (1.4)</td>
<td>p=0.001</td>
</tr>
<tr>
<td>MS nursing (n=18)</td>
<td>67.5 (3.6)</td>
<td>73.3 (5.2)</td>
<td>p=0.445</td>
</tr>
<tr>
<td>COM (n=306)</td>
<td>52.2 (1.0)</td>
<td>64.7 (1.1)</td>
<td>p&lt;0.001</td>
</tr>
<tr>
<td>MSPAS/MPH (n=98)</td>
<td>61.8 (2.0)</td>
<td>66.6 (2.6)</td>
<td>p=0.162</td>
</tr>
</tbody>
</table>

*Significant at p<.05. Scores represented the total scores of all respondents pre- and post-IPE event. Parentheses represent the standard deviation.

COM, College of Medicine; IPE, interprofessional education; MS, Master of Science; MSPAS/MPH, Master of Science in Physician Assistant Studies-Masters in Public Health.

Table 5: Attitudinal groups by pre and post groups.

<table>
<thead>
<tr>
<th></th>
<th>Pre n=360</th>
<th>Post n=235</th>
<th>p-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Role adequacy</td>
<td>9.2 (0.25)</td>
<td>13.3 (0.23)</td>
<td>p=0.0001*</td>
</tr>
<tr>
<td>Role legitimacy</td>
<td>5.3 (0.14)</td>
<td>7.1 (0.12)</td>
<td>p=0.0001*</td>
</tr>
<tr>
<td>Role support</td>
<td>10.9 (0.22)</td>
<td>12.5 (0.27)</td>
<td>p=0.0001*</td>
</tr>
<tr>
<td>Motivation</td>
<td>18.3 (0.24)</td>
<td>19.4 (0.33)</td>
<td>p=0.0057*</td>
</tr>
<tr>
<td>Work satisfaction</td>
<td>6.3 (0.11)</td>
<td>6.8 (0.13)</td>
<td>p=0.0025*</td>
</tr>
<tr>
<td>Task-specific self-esteem</td>
<td>13.3 (0.21)</td>
<td>14.3 (0.23)</td>
<td>p=0.003*</td>
</tr>
</tbody>
</table>

*Significant at p<.05. Scores represented the total scores of attitudinal groups pre- and post-IPE event. Parentheses represent the standard deviation. IPE, interprofessional education.

Figure 1: All-attitude scores for participants with previous exposure by pre/post groups. *Significant at p<0.05; larger values represent averaged attitudinal scores. Values in parentheses indicate a standard deviation from average scores. p Values represent statistical differences between the respondents who answered “yes” and those who answered “no” in the pre-IPE and post-IPE event surveys, respectively.
Discussion

Our results show that the IPE intervention may improve the overall attitudes of graduate healthcare students toward OUD regardless of professional, educational, or personal exposure. As expected, individuals with previous exposure to OUD had higher attitudinal scores than respondents who did not before the IPE, which is consistent with the idea that education and exposure improve attitudes and reduces stigma [9, 17, 29]. However, only individuals who knew someone impacted by an SUD was a positive predictor of higher attitudes scores. More surprisingly, by the time the IPE was over, those who had previous OUD exposure and those who did not had roughly similar attitudes toward OUD, suggesting that IPE events may have an ‘equalizing’ effect on attitudes among healthcare graduate students.

One of the potential benefits of an interprofessional approach is that students across different healthcare disciplines can discuss their respective roles in treating a patient with OUD [32–34], which can be expected to improve role legitimacy. Exposure to students in other health professions and sharing resources can enhance role adequacy and role support, and role support has been shown to be particularly important in improving attitudes [15, 36]. Finally, sharing personal stories by panelists with a history of OUD can improve motivation on providing care, which is an important target in stigma reduction curricula [17] and may have been an important stigma reduction measure in this interprofessional event. Improved attitudes, measured via the factors of role legitimacy, role adequacy, role support, motivation, task-specific self-esteem, and work satisfaction, would be expected to improve therapeutic attitudes [15] to addressing OUD, and improving attitudes are a first step in improving healthcare outcomes [14].

We found significant improvement in all six attitudinal subscales following the IPE event. Students in our study already started with high interest, ranking 7.4 on a scale of 0–10 and low in fatalism/pessimism (2.7 and 1.9 respectively). Notably, respondents from the MSPAS/MPH program did not show a significant improvement in attitudes following the IPE event, and degree type was shown to be a negative predictor in overall attitudes scores. Survey studies found that clinical students who get public health training tend to feel more confident addressing the social determinants of health, such as substance use, with their patients, which could explain the subdued effect of the IPE event in this student cohort and the impact of the degree program on attitudes [38].

Osteopathic medicine is an important part of the development of SUD prevention and treatment protocols, perhaps best exemplified by Wyatt et al. [39] in his early emphasis on curriculum for OUD education for osteopathic medical schools and the role of the osteopathic physician in addiction medicine. Additionally, work by Lande et al. [40] has outlined solutions for incorporation of addiction education within medical school curriculum and its positive impact on the attitudes of students toward substance users. Osteopathic principles emphasize the importance of the mind, body, and spirit perspective in treating patients, and this is especially relevant in the context of individuals diagnosed with an SUD, in whom stigma has a substantial burden on outcomes of treatment. Educational initiatives that address stigma, such as this interprofessional intervention, fit well into the osteopathic philosophy and could be further explored in addressing stigma reduction within the addiction medicine sphere.

There were limitations in this study. For one, the survey was administered at different points in time among the first and second IPE events, potentially adding additional confounding variables between to the two cohorts. The survey was not validated, and the data were collected from a single institution. The study design was created to deidentify survey respondents, which made us unable to conduct a paired t-test, the preferred statistical analysis for a survey study, limiting best-practice analysis of examining changes in attitudes among matched participants. Positive attitudes may have been impacted by social desirability bias. The survey response was low among IPE event participants, which diminishes the extrapolation of findings to all students in the IPE event. A lack of control cohort also limits extrapolation of findings.

Future directions may include incorporating more experiences with persons with OUD into the IPE curriculum, lengthening the timeline of the study to assess how attitudes may shift throughout the course of health graduate students’ training, and assessing more than just student attitudes. Additional research with a control cohort would be helpful to determine the effectiveness of this intervention. This may include assessing knowledge or examining the real-world impact of such attitude/stigma interventions. The strengths of this curriculum include considering OUD through both a disease lens as well as a biopsychosocial model by including facts about medication-assisted treatment (MAT), screening tools for depression and OUD, as well as incorporating personal stories via panel discussants. Although we show that education can have an equalizing effect on attitudes, it would be worthwhile to also consider strategies to improve motivation.
Conclusions

Administration of IPE on OUD may improve therapeutic attitudes among graduate health professional students. Our findings contribute to the existing literature on the benefits of exposure to substance use curriculum, which can result in more positive attitudes towards individuals with OUD, and may ultimately improve healthcare outcomes. This research is unique in that it describes attitudes toward opioid users among multiple graduate health students, including osteopathic medical students, and assesses IPE as an intervention to improve attitudes. Future directions for osteopathic institutions may include incorporating interprofessional OUD education among both preclinical students and within clinical rotations, and tracking changes in attitudes toward substance users with added curriculum.

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Research ethics: This study was evaluated for IRB approval and provided exemption status by the Touro University California Institutional Review Board (TUC IRB), based on considerations provided by the Office for Human Research Protections (OHRP) under Code of Federal Regulations (CFR) Title 45 Part 46.101.

Informed consent: Informed consent was obtained via electronic form prior to survey administration.

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Data availability: The raw data can be obtained on request from the corresponding author.

References


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