1-5-2024

Expansion of Osteopathic Medicine Practitioner Education on Substance Use Disorders

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Recommended Citation

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Brief Report

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Expansion of osteopathic medicine practitioner education on substance use disorders

Abstract

Context: Medical school graduates are generally not well prepared to treat patients with substance use disorders (SUDs), even though opioid overdose deaths in the United States have increased in recent years. When it comes to training in SUDs, osteopathic medicine lags far behind allopathic medicine. It was only in 2019 that the American Osteopathic Association approved Board Certification in Addiction Medicine to help combat the opioid epidemic. Few articles have been published in the literature pertaining to substance use education for osteopathic students and trainees.

Objectives: The goal of this study was to expand the education of osteopathic medical students and primary care residents in SUDs and measure the effect that education had on the attitudes and knowledge of student and residents about SUDs.

Methods: This study collected anonymous data in the form of a voluntary online survey from third- and fourth-year students at an osteopathic medical school and family medicine residents. The survey was completed by 115 students and 29 family medicine residents. Participants completed a pretest survey and then participated in the Physician Undergraduate and Resident Substance Use Education (PURSUE) curriculum developed by the researchers. This consisted of three online modules covering Screening, Brief Intervention, and Referral to Treatment (SBIRT), substance use assessments, and treatment of SUDs. Upon conclusion of the training modules, medical student participants then completed a posttest survey to assess for any changes in knowledge and attitude. Participants also answered questions related to clinical case scenarios involving patients at varying risk levels who were assessed utilizing SBIRT.

Results: Students and residents who participated in the training demonstrated an increase in their average scores between the pretest and posttest, indicating effectiveness in learning from the modules. The overall increase in average scores on the pretest and posttest was 6.5 %, which was determined to be statistically significant (p<0.01). Interestingly, participants who reported growing up in underprivileged circumstances performed worse than those participants who reported not growing up in underprivileged circumstances.

Conclusions: The results of our project support the need and benefit of incorporating educational modules on this topic area within medical school curriculums and residency training. Expanding the number of healthcare workers proficient in providing this type of care in these types of settings will improve the quality of and access to medical care in some of our highest-need populations.

Keywords: alcohol use disorder; medical education; opioid use disorder; substance use disorder

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Every medical student graduates with knowledge and skills to treat conditions such as heart disease and diabetes. Unfortunately, not all of them are prepared to treat substance use disorders (SUDs). This is the current educational standard, even though opioid overdose deaths in the United States have continued to increase in recent years [1]. Individuals who have survived an opioid overdose have to search for physicians to provide life-saving medication-assisted treatments because physicians are not trained in medical schools to prescribe buprenorphine, nor does a

standardized curriculum exist to train students in the treatment of SUDs. The Drug Addiction Treatment Act (DATA) of 2000 created training programs to help address this medical education disparity, but uptake by the osteopathic profession has been slow [2]. Approximately 50,000 practitioners in the United States were authorized to treat opioid dependency with buprenorphine as of 2022. Of those who indicated their suffix (e.g., MD, DO, PA, NP, and so on) on the Substance Abuse and Mental Health Services Administration (SAMHSA) Buprenorphine Practitioner Locator website (approximately 40,000), only 2,933 indicated that they were osteopathic physicians (DOs) [3]. Because there are 141,759 osteopathic physicians in the United States, this would indicate that just over 2 % of those practicing osteopathic physicians participated in buprenorphine prescribing.

With such a small number of osteopathic physicians listed in the report [3], one could imagine that osteopathic medical schools could benefit from expanded SUD training. While all specialties can benefit from further training, primary care can serve as a great resource for substance use education and patient training in harm reduction. Of all practicing osteopathic physicians, 57 % practice in primary care [4], which would seem like a missed opportunity for appropriate education in osteopathic medical training. In 2023, the Mainstreaming Addiction Treatment Act was signed into law, removing the waiver previously required for buprenorphine prescribing and allowing all providers with a standard controlled medication license to prescribe buprenorphine for opioid use disorder [5]. The goal of this law is to reduce barriers to prescribing and lead to an expansion of SUD treatment. It should be noted that training in buprenorphine treatment is not the only indicator of practitioner comfort with SUD treatment because other treatment modalities exist. Research has also shown that a lack of knowledge of naloxone use exists among providers, as indicated by Winograd et al. [6], who surveyed prescribing providers about their knowledge and concerns of naloxone. This knowledge gap has been specifically apparent in primary care, as evidenced by the Winograd et al. [6] study as well as a similar study by Binswanger et al. [7], which utilized focus groups to assess provider and staff knowledge and perceptions of naloxone.

When it comes to training in SUDs, osteopathic medicine lags far behind allopathic medicine. It was only in 2019 that the American Osteopathic Association approved Board Certification in Addiction Medicine to help combat the opioid epidemic [8]. Few articles have been published in the literature pertaining to substance use education for osteopathic trainees [9–11]. Studies conducted among allopathic medical students and residents have shown that curricular changes to include opioid overdose prevention and response training can improve knowledge and attitudes among trainees in this topic [12, 13]. Naloxone education and opioid harm reduction education also has been shown to be effective in Doctor of Pharmacy students [14]. The importance of this training is highlighted by research showing that incoming medical students may possess a stigma and lack of knowledge of SUDs [15]. Implementing a harm reduction education component to the medical school curriculum could be beneficial to improving medical student attitudes toward patient opioid overdoses [16].

Although there has been work to develop a standardized curriculum for medical students, a standardized curriculum does not exist for allopathic or osteopathic schools [10, 17]. As curricula are developed and education is expanded, it should be noted that research has shown no difference in outcomes when comparing online training to in-person training, so this may make implementing curricular changes easier because there can be increased flexibility with design [18]. The goal of this study was to expand the education of osteopathic medical students in SUDs and measure the effect that education had on students' attitudes and knowledge of SUDs.

Methods

This IRB-approved study (Rowan University School of Osteopathic Medicine Institutional Review Board; PRO-2021-395) collected anonymous data in the form of an online survey (Appendix A) from third- and fourth-year students at Rowan University School of Osteopathic Medicine as well as Family Medicine residents from Rowan School of Medicine. Family Medicine residents were selected to participate, in addition to students, because primary care provides a setting in which patients can seek guidance and treatment for their condition. Students and residents were invited through email to participate, and their participation was voluntary. Surveys were distributed via Qualtrics. The survey was sent to approximately 400 students and 16 Family Medicine residents; 115 students and 29 residents completed the survey. Invitations were first sent out from August 2021 to October 2021 and again August 2022 to September 2022. Email reminders were sent every 2 weeks during those time frames.

Once participants accepted the email invitation, they completed a pretest survey evaluating their knowledge and attitudes regarding SUD topics. They then participated in the Physician Undergraduate and Resident Substance Use Education (PURSUE) curriculum developed by the researchers. This consisted of three online modules covering Screening, Brief Intervention, and Referral to Treatment (SBIRT), substance use assessments, and treatment of SUDs. Each module focused on a different level of intervention (primary, secondary, and tertiary) based on the severity level of substance use. Each module included actual patient testimonials in video or audio format to support the effect of physician intervention on the individual's engagement in substance use treatment. Testimonials were acquired through a partnership with a local substance use rehabilitation program, and the patients were asked to provide a testimonial voluntarily. No identifying information of the patients was included in the audio or video testimonials, and signed consent was acquired from each volunteer. Upon conclusion of the

training modules, medical student participants then completed a post-test survey to assess for any changes in knowledge and attitude. Participants also answered questions related to clinical case scenarios involving patients at varying risk levels who were assessed utilizing SBIRT. The training videos were embedded within the Qualtrics survey (Appendix A) containing both the pretest and posttest questions. In this way, answers from pretests and posttests could be tracked while maintaining anonymity.

The SBIRT survey (Appendix A) included 10 questions on the basic understanding of treating patients with SUD. The questions were based on different intervention strategies tackled in the training modules. These 10 questions were asked at the beginning of the modules and then again at the end, once students had watched the training modules. The test scores in the pretest and posttest surveys were then compared utilizing Ordinary Least Squares regression analysis. The model included demographic and socioeconomic variables of students. Other than these variables, the survey also collected information on their year of graduation, veteran status, and indicator variable for underprivileged background. We utilized these as other control variables. The regression equation is as follows:

$$(\text{Post - Test Average})i = \beta 0 + \beta 1 \, (\text{Pre - Test Average})I + \beta 2 \, Xi \\ + \beta 3 \, (\text{Underprivileged})i + dYear + \mu i.$$

Here the dependent variable is the posttest average of ith student, calculated utilizing the knowledge questions on the postsurvey. Our coefficient of interest is β1, which shows the increase in the posttest average score as the pretest scores go up by a point. We have included the indicator variable for underprivileged background, in which X is the vector of all demographic and socioeconomic variables. The variable Year is a control variable for the year of the survey, in which 1 represents year 1 of the survey and 0 represents year 2. μi is the error term.

Besides the regression analysis, students were also asked to rate statements based on their level of agreement. Almost 87.2 % (n=125) of the students who took the survey agreed that they had a better understanding of the challenges faced by people suffering from SUD as a result of this program. This shows that the training module was well received by the students. In addition, 89.7 % (n=130) of the students who took the survey agreed that the training module met its learning objectives.

Results

Participant demographics

Participants in our project included osteopathic medical students across four classes of students and primary care residents from two different residency programs. The medical students and primary care residents participated in the modules over the course of 2 years while the project was being implemented. In the data, 81 participants identified as female, followed by 62 identifying as male and 1 respondent selected other. The participants identified their race as: 73 White; 55 Asian; 5 Black; 4 more than one race; and 7 no response. Nine respondents identified with Hispanic ethnicity. Participants also identified their community of upbringing as: 99 Suburban; 27 Urban; and 13 Rural.

Table 1: Summary statistics.

Main variables of interest	Percentage in the data (144) years 2021–2022
Year of graduation	Class of 2023: 47
	Class of 2024: 72
	Class of 2025: 10
	Class of 2026: 15
Residents	29
Gender	Male: 62
	Female: 81
	Other: 1
Race	Asian: 55
	Black and African American: 5
	White: 73
	More than 1 race: 4
	Race not reported: 7
Ethnicity	Hispanic: 9
In which type of community did you grow up?	Rural: 13
	Urban: 27
	Suburban: 99
Reported 'Yes' to questions about underprivileged/poor socioeconomic background	63
Intend to work in primary care setting	67
Intend to work in underserved area	132
I intend/plan/would like to be involved in providing care for alcohol or SUD patients	83
Personally know somebody suffering from SUD	67.33

SUD, substance use disorder.

In addition, 63 students reported having an underprivileged or poor socioeconomic background. When asked about their intention to work in primary care settings, 67 participants stated that they intended to do so. Additionally, 132 participants indicated that they intend to work in underserved areas, with 83 stating that they intend to care for patients with alcohol and SUDs. A summary of these statistics can be found in Table 1.

Inclusion of race

The variables included in the survey were done so with careful consideration of the factors that may be important to study for variation in these scores. Black and African American was a separate category under race, whereas ethnicity was a separate question from Race. Respondents were given a choice of refusing to answer the race question. The reason for collecting race and gender-related information is because it is imperative to study racial and gender differences in determining if there are differences in:

Table 2: Regression results from the survey data.

Dependent variable: posttest average		F (12, 100)	11.88
		Prob>F	0.0000
		R-Squared	0.5393
Variable	Coefficient	Robust standard error	p-Value
Pretest average	0.65122[a]	0.0629851	0.000
Female	−0.32024	0.3382213	0.346
Underprivileged background	−0.92522[a]	0.2840488	0.002
Age	0.08971	0.3579708	0.803
Ethnicity	−0.55675	0.5359807	0.301
Intention to work in primary care	−0.40465	0.3637439	0.269
Intention to work in MUA	0.76309[b]	0.369367	0.041
Know someone suffering from SUD	−0.074649	0.1940654	0.701
Constant	2.7039[c]	1.497916	0.074

[a]$P<0.01$, [b]$P<0.05$, [c]$P<0.1$. Some additional control variables have not been included in the table: Year of Graduation and Degree Completed. They are all statistically insignificant. MUA, medically underserved area; SUD, substance use disorder.

(A) overall response rates based on these parameters; (B) understanding any difference in outcome that may appear to be race related but could be explained away by other socioeconomic variables such as underprivileged background, and so on; and (C) knowing that, if there still exists any racial and gender differences in outcome, we have to understand the reason behind these differences. These differences may arise due to a lack of diversity, equity, and inclusion initiatives from the institution or something external. Understanding these differences will help us in addressing any institutional-level problems that may exist.

Knowledge and outcomes

Students and residents who participated in the training demonstrated an increase in their average scores between the pretest and posttest, indicating effectiveness in learning from the modules (Table 2). The overall increase in average scores on the pretest and posttest was 6.5 %, and this was determined to be statistically significant (p<0.01). Participants who reported growing up in underprivileged circumstances performed worse than those participants who reported not growing up in underprivileged circumstances. This outcome provides guidance to educators and researchers when disseminating education and training on this topic to learners from underprivileged backgrounds. Age, gender, ethnicity, and other demographics did not demonstrate a significant outcome, thus supporting that these factors did not have an impact on learning abilities

among participants for these modules. Finally, the model is a good fit as the F statistic is greater than 11.88. This means that the variables utilized in our regression analysis explains the dependent variable very well.

Discussion

The outcomes of our project demonstrate the significant effectiveness of our online modules as an efficient tool in disseminating critical information to those at the forefront of applying these learnings to patient care. The development of the virtual curriculum modules is something that will be sustained and utilized throughout the school of osteopathic medicine and within graduate medical education (residency). This virtual format allows for flexibility in its application during the academic year and can provide an ongoing resource for learners to return to needing review of the materials. This curriculum is broadly applicable and could be modified to fit continuing medical education needs for physicians in practice.

The training modules received the feedback that participant intention to practice in medically underserved areas (MUAs) has increased as a result of this training (40.38 %), participants have a greater understanding of the challenges faced by people suffering from SUD (86.6 %), and participants reported that they will utilize the information shared in the modules training within their practice as a physician/future physician (86.6 %).

Limitations

The main limitation of this study was sample size. A larger study would likely garner more information to help aid in any curricular changes that could arise from these findings. An issue related to the smaller-than-expected sample size was the voluntary nature of the study. Given the positive findings here, if curricular changes were to be made to include this education, this could increase the completion rate. Future research could pair this education longitudinally with students who participate in pain/addiction medicine clinical rotations as well to measure the impact that this education has in the preclinical years. Other limitations include participants self-reporting their thoughts rather than observing participants' treatment approaches in the clinical setting. Additionally, the pretest and posttest design carries with it some inherent flaws that could have been avoided utilizing a randomized trial. Future research could utilize randomization to confirm our findings.

Conclusions

The results of our project support the need and benefit of incorporating educational modules on this topic area within medical school curriculums and residency training. As demonstrated, a high percentage of medical students and residents reported interest and intent to work in under-served areas and provide care to patients with alcohol and/or SUDs, thus making early education and training for these learners an invaluable resource to themselves and their future patients. Expanding the number of healthcare workers proficient in providing this care in these types of settings will improve the quality of and access to medical care in some of our highest-need populations.

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