Oregon Health & Science University
School of Medicine

Scholarly Projects Final Report

Title *(Must match poster title; include key words in the title to improve electronic search capabilities.)*

Effects of Implementing an Interactive Substance Use Disorders Workshop on a Family Medicine Clerkship

Student Investigator's Name

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Date of Submission *(mm/dd/yyyy)*

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Project Course *(Indicate whether the project was conducted in the Scholarly Projects Curriculum; Physician Scientist Experience; Combined Degree Program [MD/MPH, MD/PhD]; or other course.)*

Scholarly Projects Curriculum

Co-Investigators *(Names, departments; institution if not OHSU)*

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Mentor's Name

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Family Medicine

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Concentration Lead's Name

David Buckley

Project/Research Question

Are fourth year medical students prepared to care for substance use disorder patients upon entering residency?

Type of Project *(Best description of your project; e.g., research study, quality improvement project, engineering project, etc.)*

Curriculum Assessment

Key words *(4-10 words describing key aspects of your project)*

Substance use disorder education, residency preparedness, medical school curriculum

Meeting Presentations

If your project was presented at a meeting besides the OHSU Capstone, please provide the meeting(s) name, location, date, and presentation format below (poster vs. podium presentation or other).

N/A

Publications *(Abstract, article, other)*

If your project was published, please provide reference(s) below in JAMA style.

Cantone RE, Hanneman NS, Chan MG, Rdesinski R. Effects of Implementing an Interactive Substance Use Disorders Workshop on a Family Medicine Clerkship. Fam Med. 2021;53(4):295-299. https://doi.org/10.22454/FamMed.2021.399314.

Submission to Archive

Final reports will be archived in a central library to benefit other students and colleagues. Describe any restrictions below (e.g., hold until publication of article on a specific date).

None

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Next Steps
What are possible next steps that would build upon the results of this project? Could any data or tools resulting from the project have the potential to be used to answer new research questions by future medical students?

The workshop methods could be applied at other medical schools to assess if there are similar results. Further studies focusing on whether the workshop vs primary care exposure during clinical rotations has more impact on SUD bias/residency preparedness. Larger scale workshops could improve power of results.

Please follow the link below and complete the archival process for your Project in addition to submitting your final report.

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Student's Signature/Date *(Electronic signatures on this form are acceptable.)*
This report describes work that I conducted in the Scholarly Projects Curriculum or alternative academic program at the OHSU School of Medicine. By typing my signature below, I attest to its authenticity and originality and agree to submit it to the Archive.

X _____

Student's full name

Mentor's Approval *(Signature/date)*

Rebecca Cantone, MD 3/9/22

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Report*: Information in the report should be consistent with the poster, but could include additional material. Insert text in the following sections targeting 1500-3000 words overall; include key figures and tables. Use Calibri 11-point font, single spaced and 1-inch margin; follow JAMA style conventions as detailed in the full instructions.*

Introduction *(≥250 words)*

In 2014, 20.2 million adults in the United States had a substance use disorder (SUD) and only 7.5% received treatment.[1] Gaps in treatment remained in 2018[2] and overdose deaths are increasing.[3] Negative attitudes toward patients with SUD contribute to this gap[4,5] and create barriers for physicians to obtain skills to improve these inequities.[6] These biases are formed early in life, reinforced by social stereotypes, prevalent amongst health care workers, and linked to care inequities.[7-9] As medical students harbor biases[9] from past experiences, students agree SUDs should be addressed in medical education.[10] While this knowledge may increase with medical training, poor confidence and negative attitudes remain in practice.[11-12] More than 50% of patients report that their primary care provider did not address their substance use,[10] showing skills deficits and creating an opportunity for family medicine (FM) educators to use their broad lens to improve care.

Calling attention to one's bias and taking active steps to individuate treatment is a strategy to improve inequities,[7,9] and curricula to reframe SUD as a medical disease are needed. Lack of faculty expertise, time, or requirements from accrediting organizations[13] limit access to this training, even though such workshops can improve attendees' knowledge, attitudes, skills, and confidence toward the care of patients with SUD.[6,13-18] We therefore hypothesized that an FM clerkship workshop for medical students to reframe SUD as a treatable medical disease would improve their self-reported knowledge, skills, and attitudes towards this care. If such an improvement can occur this could potentially increase feelings of preparedness around caring for patients with SUD upon entering residency.

Methods *(≥250 words)*

The SUD workshop was designed as one of many weekly didactics during a required 4-week FM clerkship at a Pacific Northwest medical school. Faculty physicians with experience in SUD treatment and education developed the curriculum utilizing a flipped-classroom model to engage learners in a patient-centered approach to practice history taking, focus on SUD as a treatable medical diagnosis, address stigma, and understand recommendations for treatment in primary care (Table 1).

The study included 295 medical students enrolled in one FM clerkship between January 2018 and December 2019, and received institutional review board approval. Student demographics were not collected to maintain anonymity to the clerkship director; however, the student body has an average age of 26 years, is over 50% female-identifying, and over 80% have Oregon residency or heritage.[19]

We selected the 20-question, 7-point Likert scale Drug and Drug Problems Questionnaire (DDPPQ) as it was more patient-centered than other validated scales, despite some outdated terms.[20-22] To preserve validity, language was not altered. We gave students this questionnaire (Table 2) at clerkship orientation, and again after the workshop (3 weeks later) in person or via email. We paired surveys by unique identifiers to observe changes via a pretest-posttest study design. To account for different starting scores due to prior experiences, we reported changes instead of the discrete number on the Likert scale. We reverse-scored items 13, 15, 16, and 17. We discarded surveys that could not be paired due to nonmatching identifiers or lack of both surveys. We compared differences in pre- and postscores using a one-sided Wilcoxon Signed Rank Sum test using SAS 9.4 software (SAS Institute Inc, Cary, NC) to observe if there was a positive shift in scores, defined as a change in the DDPPQ Likert scale in a direction of more positive self-reported knowledge, skills or attitudes.

Table 1: SUD Workshop Curriculum

Objective	Activity	Learning Points	Flipped Classroom?
Define SUDs	Review diagnostic criteria	• Focus on the treatable, medical disease	Yes—DSM previously reviewed by learners
Perform a comprehensive SUD history	Discuss barriers to obtaining a good history and reasons people seek care	• Avoid use of terms like "illicit" and "do you use any drugs" to focus on normalizing "what substances do you use?" • Discuss stigma and lack of resources available as limitation to seeking care and/or minimizing reported use of substances	Yes—Student driven based on prior communications workshops, faculty facilitates
Practice focused histories based on substance	Students volunteer what they would ask for each substance separately, including alcohol, tobacco, methamphetamines, and opioids	• Discuss harm reduction and patient-centered terms • Less focus on other stimulants as less common in this state compared to methamphetamines • Less emphasis on marijuana due to legalization in our state, but discussed later in workshop	Yes—Students review what they have seen in practice
Discuss physical exam findings	Students mention what they have seen or read about as signs of possible substance use	• Address signs of intoxication or withdrawal for multiple different substances, mental status exam, screenings for substance use and mood, physical signs of injection use	Yes—Students review pathophysiology
Define recommended workup	Interactive discussion of tests to order at visits where patient or provider notes SUD	• Discuss patient centered discussion for urine drug screening, infectious disease screening and echocardiogram based on type of use, consideration of liver function.	No—new information for most students
Discuss how to treat alcohol and tobacco use disorder	Students volunteer what they know	• Discuss quit lines, counseling/behavioral strategies, motivational interviewing. • Nicotine: nicotine replacement, varenicline, bupropion • Alcohol: naltrexone, acamprosate, gabapentin, topiramate, disulfuram, benzodiazepines	Yes—review prior teaching and practice experiences
Discuss medications to treat opioid use disorder	Students discuss methadone and buprenorphine and learn about naltrexone and naloxone	• Recommend naloxone for any patient using any type of opioid • Discuss differences in pharmacology and accessibility of buprenorphine and methadone, with emphasis that FM providers can prescribe buprenorphine in primary care if trained • Discuss oral and injectable naltrexone • Discuss initiation and maintenance medication, use in chronic pain, use in pregnancy, and treatment planning	No—instructor delivers new information
Discuss behavioral interventions for SUD	Discuss substances with no current medical treatment options	• Acknowledge withdrawal and tapering options	No—instructor leads

Abbreviations: SUD, substance use disorder; DSM, Diagnostic and Statistical Manual of Mental Disorders, FM, family medicine.

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Results *(≥500 words)*

During the study, 210 students attended the workshop and 118 paired surveys were included in the analysis. Mean scores for each questionnaire item were calculated and the pre-workshop mean scores were compared to the post-workshop mean scores. An increase in mean score from pre-workshop to post-workshop survey indicated an improvement in the particular attitude being assessed on that individual item. There were statistically significant improvements on all items (Table 2). Q1 – "I feel I have a working knowledge of drugs and drug related problems" (1.2 increase), Q3 – "I feel I know enough about the physical effects of drug use to carry out my role when working with drug users (1.4 increase), Q4 – "I feel I know enough about the psychological effects of drugs to carry out my role when working with drug users" (1.4 increase), Q5 – "I feel I know enough about the factors which put people at risk of developing drug problems to carry out my role when working with drug users" (1.2 increase), Q8 – "I feel I have the right to ask patients/clients questions about their drug use when necessary (1.1 increase), Q9 – "I feel I have the right to ask a patient for any information that is relevant to their drug problems" (1.3 increase), Q11 – "If I felt the need when working with drug users I could easily find someone who would help me clarify my professional responsibilities" (1.1 increase), Q12 – "If I felt the need I could easily find someone who would be able to help me formulate the best approach to a drug user" (1.4 increase), Q14 – "I feel I am able to work with drug users as well as other client groups" (1.1 increase), Q18 – "In general, one can get satisfaction from working with drug users" (0.6 increase), Q19 – "In general, it is rewarding to work with drug users" (0.5 increase), and Q20 – "In general, I feel I can understand drug users" (0.9 increase). Items 13 and 15-17 were reversed thus an increase in score on these items indicates a decrease in agreement with these statements. Q13R – "I feel that there is little I can do to help drug users" (0.8 increase), Q15R – "All in all I am in inclined to feel I am a failure with drug users" (0.7 increase), Q16R – "In general, I have less respect for drug users than for most other patients/clients I work with" (0.4 increase), Q17R – "I often feel uncomfortable when working with drug users" (0.7 increase). The largest improvements were seen on the following items: Q2— "I feel I know enough about the causes of drug problems to carry out my role when working with drug users" (1.8 increase), Q6— "I feel I know how to counsel drug users over the long-term" (2.1 increase), Q7— "I feel I can appropriately advise my patients/clients about drugs and their effects" (1.7 increase), and Q10— "If I felt the need when working with drug users I could easily find someone with whom I could discuss any personal difficulties that I might encounter" (1.5 increase).

Table 2: Comparing Mean Difference by Survey Item by Group, 7-point Likert Scale (R=Reverse Scoring)

Survey Item*	Pre Mean (SD) N=118	Post Mean (SD) N=118	Mean Difference (SD)	S Score	*P* Value
Q1 - I feel I have a working knowledge of drugs and drug related problems.	4.4 (1.2)	5.6 (0.7)	1.2 (1.1)	1,806.0	<.0001
Q2 - I feel I know enough about the causes of drug problems to carry out my role when working with drug users.	3.5 (1.3)	5.2 (0.9)	1.8 (1.1)	2,710.5	<.0001
Q3 - I feel I know enough about the physical effects of drug use to carry out my role when working with drug users.	3.8 (1.3)	5.2 (0.8)	1.4 (1.1)	2,254.5	<.0001
Q4 - I feel I know enough about the psychological effects of drugs to carry out my role when working with drug users.	3.8 (1.4)	5.2 (0.9)	1.4 (1.2)	2,079.0	<.0001
Q5 - I feel I know enough about the factors which put people at risk of developing drug problems to carry out my role when working with drug users.	4.2 (1.3)	5.4 (1.0)	1.2 (1.3)	1,851.5	<.0001
Q6 - I feel I know how to counsel drug users over the long-term.	2.6 (1.2)	4.8 (1.1)	2.1 (1.4)	2,717.0	<.0001
Q7 - I feel I can appropriately advise my patients/clients about drugs and their effects.	3.4 (1.2)	5.1 (1.0)	1.7 (1.2)	2,665.0	<.0001
Q8 - I feel I have the right to ask patients/clients questions about their drug use when necessary.	5.0 (1.2)	6.1 (0.9)	1.1 (1.2)	1,665.0	<.0001
Q9 - I feel I have the right to ask a patient for any information that is relevant to their drug problems.	4.8 (1.2)	6.1 (0.9)	1.3 (1.3)	1,947.5	<.0001
Q10 - If I felt the need when working with drug users I could easily find someone with whom I could discuss any personal difficulties that I might encounter.	4.4 (1.3)	5.9 (1.1)	1.5 (1.4)	2,171.0	<.0001
Q11 - If I felt the need when working with drug users I could easily find someone who would help me clarify my professional responsibilities.	4.6 (1.2)	5.8 (1.1)	1.1 (1.3)	1,785.5	<.0001
Q12 - If I felt the need I could easily find someone who would be able to help me formulate the best approach to a drug user.	4.4 (1.2)	5.8 (1.1)	1.4 (1.3)	2,047.0	<.0001
Q13R - I feel that there is little I can do to help drug users.	5.1 (1.2)	5.9 (1.0)	0.8 (1.2)	1,285.0	<.0001
Q14 - I feel I am able to work with drug users as well as other client groups.	4.4 (1.4)	5.4 (1.2)	1.1 (1.4)	1,401.5	<.0001
Q15R - All in all I am inclined to feel I am a failure with drug users.	5.1 (1.0)	5.8 (1.0)	0.7 (1.2)	1,190.0	<.0001
Q16R - In general, I have less respect for drug users than for most other patients/clients I work with.	5.7 (1.2)	6.2 (1.0)	0.4 (0.9)	564.5	<.0001
Q17R - I often feel uncomfortable when working with drug users.	4.7 (1.4)	5.4 (1.3)	0.7 (1.5)	1,011.5	<.0001
Q18 - In general, one can get satisfaction from working with drug users.	5.3 (1.0)	5.9 (0.9)	0.6 (0.9)	928.5	<.0001
Q19 - In general, it is rewarding to work with drug users.	5.0 (1.0)	5.5 (1.1)	0.5 (1.0)	937.0	<.0001
Q20 - In general, I feel I can understand drug users.	4.4 (1.1)	5.2 (1.1)	0.9 (1.1)	1,476.5	<.0001

*Source: Watson H, Maclaren W, Kerr S. Staff attitudes towards working with drug users: development of the Drug Problems Perceptions Questionnaire. Addiction. 2007;102(2):206–15.

Discussion *(≥500 words)*

This study finds that teaching SUD as a treatable, medical disease is associated with improvements in self-reported knowledge, skills and attitudes in FM clerkship medical students, and that a short intervention can be associated with positive change. The curriculum focuses on patient-centered, destigmatized, primary care treatment that may explain the distinct improvements in questions 2, 6, 7, and 10. The improvements

suggest that following a focused SUD workshop, fourth year medical students may feel more prepared to care for SUD patients upon entering residency. These increased feelings of preparedness may help decrease treatment gaps as students form their professional identities and enter practice more willing and confident in providing care to this specific patient population.

Observing high-quality patient care from family physicians treating SUDs and interacting with patients during the FM clerkship may also have changed these reported attitudes, though practice styles vary greatly in clerkship sites. Repeating this study with a larger control group would help elucidate if there is additional positive change associated with attending the workshop, versus completing the clerkship alone. Additional studies on clerkship practice style and this influence on medical student preparedness for caring for students with SUD could also help expand on whether or not the workshop or the treatment of SUD in the primary care setting has stronger influence on SUD bias and confidence in skills. For example, other institutions may not have primary care family physicians specifically trained in treating SUDs which could make a clerkship less effective compared to sites that do have physicians with this background. The workshop could also be applied to alternative clerkship rotations to see if there are any changes in outcomes when it is provided in a non-primary care setting.

This study included only one institution's FM curriculum and is thus limited in generalizability, but the intervention can be adopted by other programs. Our student demographics may not reflect other populations, so further studies are needed. The didactic years curriculum at this institution may also not reflect the didactic years curriculum at other institutions. This may contribute to various baseline knowledge of SUD prior to entering clerkships which may affect workshop outcomes at differing institutions. If the workshop is applied to other institutions the didactic years curriculum should thus be taken into consideration when analyzing results. Over 100 fewer surveys were collected than students participated in the workshop. As surveys were optional it must be taken into consideration why some students chose not to complete one or both surveys. There may be a response bias as participants with strong positive or negative experiences may be more likely to complete surveys, which may sway the results. Further studies with a larger sample size could improve this limitation. Although not part of this study, follow-up surveys later in training could assist in learning if these changes persist. Additionally, as we did not test for knowledge gain and measured self-reported perceptions, measuring knowledge specifically may improve understanding of these interventions. More work should be done to continue to understand the most optimal training for SUDs to reduce barriers for the future medical workforce.

As knowledge of SUD as a public health crisis grows, more and more students desire training in this area as we will care for patients with SUD regardless of specialty choice. In discussing my project with peers, it became evident that students are seeking knowledge in SUD treatment and agree that improvements could be made both in didactic years and clinical years. Students want to feel equipped to provide care to this patient population when entering residency, just as they want to provide adequate care for any other illness. Incorporating this workshop into other clinical rotations to show how SUD patients fall into each specialty could further prepare students for caring for this patient population in their particular specialty. It is important to take this student feedback into consideration when designing both didactic and clinical curriculum in order to properly prepare students for healthcare in the current setting which includes a large patient population suffering from SUD but not receiving treatment.

Conclusions *(2-3 summary sentences)*

SUD are a public health crisis and insufficient training during medical school may contribute to gaps in treatment of this patient population. Our SUD workshop during the required FM clerkship showed an improvement in student self-reported knowledge, skills, and attitudes around SUD patients and SUD treatment. The improvements seen in this workshop may help fourth year medical students feel more prepared to provide care to SUD patients upon entering residency.

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