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Educating the community about the opioid epidemic and medications for opioid use disorder

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Abstract

Background and Objectives: Despite overwhelming evidence of benefit, medications for opioid use disorder (MOUD) remain stigmatizing and more efforts are needed to educate health care professionals and the general public.

Methods: We developed and evaluated an educational program for graduate students studying health sciences, teaching them to deliver 1 h presentations to the community on the opioid crisis and the usefulness of MOUD.

Results: To date, 120 graduate students have participated in this training experience on substance use disorders and delivered 59 presentations to more than 1065 community members. We found a significant increase in knowledge among students following the training. In addition, although attitudes and beliefs were generally positive at baseline, we also found significant increases in positives attitudes about the treatment of addiction and working with patients with addictions. Almost all students believed the course enhanced their professional expertise and would recommend it to others. We compared our students' baseline knowledge and attitudes to a large sample of other graduate students and did not find significant differences indicating good external validity of our results. Finally, we evaluated change in community members' knowledge and attitudes ($N = 315$) following student presentations and found significant increases in knowledge and positive attitude change toward MOUD.

Discussion and Conclusions: Overall our program was feasible, enjoyable, and effective in meeting its goals of increasing knowledge acquisition and improving attitudes among students and the greater community.

Scientific Significance: Graduate students in health sciences can be trained to successfully teach the public about the opioid crisis and the usefulness of MOUD.

KEYWORDS

opioids, MOUD, Health Professional Education

INTRODUCTION

Drug overdose deaths in the United States have risen to historic levels, with more than 93,331 deaths in 2020, and 700,000 in the last 20 years.[1,2] The federal response has included changing prescriber behavior to use less opioid medications, distributing naloxone to the general public for overdose reversal, and supporting the increased use of medications for opioid use disorder (MOUD[3]). MOUD refers to the use of FDA-approved medications for the maintenance treatment of opioid use disorder and includes methadone, buprenorphine, and naltrexone. There is a wealth of evidence demonstrating the effectiveness of MOUD for the treatment of opioid use disorder including reduced risk for death and improved treatment retention.[4] MOUD also reduces drug use and problematic behaviors associated with opioid use disorder.[4] MOUD is considered the gold standard for treatment of opioid use disorder with some studies finding no additional benefit from adding intensive versus briefer medication management[5] supporting its usefulness as an essential component of treatment.

Despite overwhelming evidence, the use of MOUD remains stigmatizing. Patients, families and health care providers can have negative attitudes and beliefs about MOUD, which may be worse for methadone and buprenorphine treatments that have the potential for misuse.[4,6,7] An abstinence only approach (counseling without medication) is not recommended for opioid use disorder, yet negative attitudes persist even among substance abuse treatment providers and individuals in recovery. Less than half of individuals with opioid use disorder who are eligible, ever receive MOUD.[8,9] Long-term compliance with treatment is poor, with more than half of individuals discontinuing treatment within 6 months, and this contributes to relapse and death.[10,11] Discontinuation of MOUD even after extended treatment periods (18 months) is associated with a high risk for adverse effects including emergency department visits, hospitalizations, and drug overdose.[12]

Major efforts are needed to educate the community about the risks of opioid use disorder and the benefits of MOUD. Most of the currently available public education programs on the opioid crisis are focused on overdose recognition and reversal with intranasal naloxone. This has been part of a major national effort to facilitate the distribution of naloxone to communities; these trainings have been successful in increasing knowledge related to overdose prevention.[13,14] Information about what to do after overdose reversal, such as how to access evidence-based treatments for OUD, is much more scarce, and often not targeting substance users or the public.

Almost no models have emerged that focus on MOUD education directly and target a community audience. We conceptualized a low-cost way to disseminate education about MOUD to communities by engaging graduate students in health care and health sciences at a large university. These student volunteers were provided an intensive training experience on addictions and MOUD with hopes that they could provide a 1 h free educational presentation to community audiences in a variety of settings. By mobilizing a large group of students, we could hope to have a broader reach. The training was set up to be interdisciplinary and interactive, allowing students to practice and make presentations with colleagues from other health care disciplines. The 18 h didactic curriculum included practicing the community presentation on MOUD that was developed for the students to use. They received ongoing mentoring and support and could participate for as long as they were enrolled in school. Students participated as volunteers, although they could apply through their own schools to use the experience for credit. Other initiatives targeting students in health care for opioid education have been much briefer[15,16] or focused on helping them provide brief interventions in the clinical setting, and not on educating others.

The initiative started in 2019 and students named the program RIOT (which stands for Rutgers Interdisciplinary Opioid Trainers). We have trained 120 graduate students and the effort is ongoing. In the first 2 years, 59 presentations were given to more than 1065 members of the community. The program was switched from live in person to live webinar format during the COVID crisis. We developed a plan to evaluate the project impact and collected three types of data in this study: (1) survey data from graduate students who participated in the intensive training experience (RIOT students), (2) survey data from graduate students who did not participate in the intensive training experience (Control Students) and (3) Community members who attended a 1 h presentation given by the RIOT students. This was done to assess the program's effectiveness in both acquiring knowledge of, and changing attitudes about, the opioid crisis and MOUD. These results, as well as adescription of the program and curriculum, are presented below.

METHODS

Course development

We developed an interdisciplinary train-the-trainer program for graduate students at Rutgers University. The curriculum was conducted over six sessions, designed to be 18 h long and focused on eight learning objectives (see Table 1, Items 1–8). Didactic sessions covered topics including diagnostic criteria for substance use disorders and the biology of addiction (2 h), factors leading to the current opioid crisis (2 h), recent epidemiological trends for opioid use disorder in New Jersey and the United States (2 h), signs and symptoms of opioid intoxication and withdrawal (2 h), and the proper use of naloxone and medications for opioid use disorder (MOUD), including detailed review of each FDA-approved medication (3 h). We discussed the stigma surrounding MOUD and the barriers to accessing evidence-based treatment as an overarching theme (2 h). The students were provided training on how to give an effective presentation and had opportunities during the course to practice what they were taught to an audience of peers (about 3 h). There were additional topics on co-occurring disorders and cannabis (2 h),

TABLE 1 Course evaluation

	Percent agreement
Learning objectives (*N* = 108, 12 missing)	
1. I understand the principles and biopsychosocial mechanisms of addiction.	94.4
2. I understand the factors that may have led to the current opioid epidemic, including recent trends for New Jersey and the nation.	98.1
3. I recognize opioid intoxication symptoms as well as withdrawal symptoms.	98.1
4. I know the proper uses of naloxone for overdose reversal.	94.4
5. I am familiar with medication-assisted treatments for opioid use disorders, including being able to differentiate between individual options.	96.3
6. I understand how stigma affects public perception of opioid use disorders and medication-assisted treatment.	100
7. I understand the barriers to treatment for people with opioid use disorder.	97.2
8. I have developed and improved my presentation skills to a public audience.	86.1
Course delivery and student satisfaction (*N* = 108)	
9. Teaching methods were appropriate for subject matter.	100
10. The program was appropriate to my level of education, experience and/or licensure level.	97.2
11. The length of time spent on each topic was appropriate.	91.7
12. This program enhances my professional expertise.	100
13. I would recommend this program to others.	100

to give students a comprehensive education on substance use disorders. The students were encouraged to ask clarifying questions and to share their own personal and professional experiences on the topics presented in each session. They also had opportunities to debate and discuss controversial topics in addiction in anticipation of what might be asked by community audience members.

A PowerPoint presentation was developed with student input; this was a standardized presentation that all students would practice and deliver to community audiences. Each student who completed the educational training practiced the 1 h presentation with one of the two supervising faculty (J. W. and V. C.) to confirm they had mastered the content. Optional additional supervision sessions were held approximately quarterly and updated resource information was continuously provided to students via a listserve and shared online directory.

Student recruitment, training, and evaluation

We recruited graduate students (masters and doctoral level) studying at seven different schools of health care and health sciences at Rutgers University from 2019 to 2020. This included the Robert Wood Johnson Medical School, the Ernest Mario School of Pharmacy, the Graduate School of Biomedical Sciences, the School of Social Work, the School of Public Health, the School of Health Professionals, and the Graduate School of Applied and Professional Psychology. Undergraduates were ineligible to participate. Information about participating was disseminated through emails to students and through meetings with Deans and other academic leadership. The study was approved by the Rutgers, Robert Wood Johnson Medical School Institutional Review Board.

Student knowledge survey

Before participation in the training, each student was asked to complete online assessments including an eight-item student knowledge survey (SKS) that was based on the course content and included questions on the opioid crisis, opioid use disorder and medication-assisted treatments. Scores ranged from 0 (none) to 8 (all) correct.

Student attitude survey

At baseline, students also completed a student attitudes survey that contained 13 questions pertaining to attitudes about substance use disorders and interprofessional education. The survey was constructed with relevant items on general substance use disorders from the Brief Substance Abuse Attitude Survey (SAAS; excluding items that solely focused on specific substances or topics, like alcohol), and a subset of the Student Perceptions of Interprofessional Clinical Education-Revised Instrument (SPICE-R[17,18]). Each item was rated on a 5-point Likert scale (1 = strongly disagree to 5 = strongly agree).

Both the knowledge and attitude surveys were repeated at the completion of the 18-h course. Each participant was given a nonidentifying code to match pre- and posttest responses. No incentives were offered for survey completion.

Student training evaluation

Students additionally completed a student training evaluation at the end of the training which assessed their self-reported learning based on the objectives of the session and solicited feedback about the importance and usefulness of the curriculum. These items were rated on a scale from 1 to 3 (1 = disagree, 2 = undecided, and 3 = agree). Some items allowed for open-ended responses (i.e., What did you like about the program? What would you change about this program?). All open-ended responses were read and initial codes established through discussion by the first and last author (J. W. and K. C.).

Control student recruitment

We also concurrently recruited a sample of graduate students from the same schools, via email announcements, to serve as a control group. These students did not wish to participate in the RIOT program or attend the intensive training program but completed the same baseline knowledge and attitudes assessments (as the RIOT students). Control students were offered an incentive to participate (raffle to win one of five gift cards valued at $100).

Community recruitment, training, and evaluations

We created a website resource to advertise the RIOT program to community groups and provide an online registration process to schedule presentations (www.RURIOT.org). The availability of a free 1 h presentation on the opioid crisis was disseminated via email to county health departments, municipal alliances, prevention coalitions, libraries, and other community organizations. Information about the availability of free presentations was also disseminated through various listserves that connect the university to community organizations as well as with individuals who participated in free naloxone overdose trainings. Students were also encouraged to disseminate the information through their school, social media, or other personal connections. Before going virtual due to the Covid lockdown, presentations were done in person at public spaces including libraries, as well as community and municipal centers.

Participants were asked to complete a brief online questionnaire (less than 5 min to complete) before and after the community presentation that included demographic information (four items), knowledge of opioid use disorder (two items), and attitudes about substance use disorders (two items). Each participant was given a nonidentifying code to match pre- and posttest responses. The questionnaire was kept brief to facilitate online survey participation from community members from their mobile devices before and immediately after the presentation.

Data management and statistics

Data from each survey were compiled and recoded as needed into a master data set. The eight questions of the knowledge survey were scored (correct = 1 and incorrect = 0) to create a sum score for each student ranging from 0 to 8 correct. Pre- and posttest knowledge scores were compared using paired-sample t tests. Means were calculated from attitude questions scores for students and community participants. Means and standard deviations were calculated and compared between control and RIOT groups using independent sample t tests. Paired t tests were used to examine effects of training,w α was set at .05 for knowledge items, and all tests were one-tailed because we predicted improvement in knowledge. A bonferroni correction for multiple comparisons was computed for attitude items and α was set at .0038. All statistical analyses were performed using SPSS version 27.0.

RESULTS

Student participants

RIOT students demographics and knowledge survey

One hundred and fifty-nine students were initially registered and 120 students (Year 1 = 45 and Year 2 = 75) completed the 18-h educational training sessions. The majority of students were from the Robert Wood Johnson Medical School (25, 20.8%), the Ernest Mario School of Pharmacy (33, 27.5%), and the Graduate School of Biomedical Sciences (27, 22.5%), however, there were also students from the School of Social Work (8, 6.7%), the School of Public Health (5, 4.2%), the School of Health Professionals (2, 1.7%), and the Graduate School of Applied and Professional Psychology (3, 2.5%). The majority of student participants identified as female (73.8%) and within the age range of 18–25 (75.5%). No other demographic information was collected from the students.

Mean pretraining scores on the SKS were 3.9 items correct (SD = 1.7). Mean posttest scores were 6.2 correct (SD = 1.9). Paired t tests indicated a statistically significant increase in knowledge after completing the 18 h training, with a mean score increase of 2.3 points ($t = -10.96$, df = 119, $p < .001$). Sixty-six students (55%) went on to complete the individual practice sessions and were cleared to present to a community audience; 55 ultimately did. Some students who attended the educational sessions expressed an interest in community presentations, but were unable to, due to other school obligations or scheduling conflicts. Each student gave an average of 1.6 community presentations but the range was from 0 to 12.

RIOT students attitude survey

Attitudes and beliefs toward OUD and MOUD were generally positive in the RIOT student population at baseline (Table 2). For example, the mean score was 4.3 (out of 5) for the statement "Drug addiction is a treatable illness" and 4.6 for "It is my role as a future healthcare professional to provide prevention or treatment of substance use disorders." Some mean responses were lower at baseline, such as "I have a good general understanding of the overall principles of addiction" ($M = 3.4$) or "Medication is a cost-effective intervention for opioid use disorders" ($M = 3.1$). Despite baseline attitudes being generally positive, the majority of items (9 out of 13) showed a statistically significant improvement (or a decrease in negative attitudes) after training (see Table 2).

RIOT students course evaluation

The eight learning objectives were written as statements to which students could agree, disagree or report they were unsure. Five additional items evaluated the delivery of course material and student satisfaction with the course. Over 94% of 108 students agreed that the course was effective for learning on all eight objectives, with four receiving 100% agreement. All students agreed with the statements that the program enhanced their professional expertise and that they would recommend it to others.

Independent coding for positive codes of open-ended responses had 87% agreement, and disagreements were resolved through discussion leading to 100% agreement. Ninety-eight students gave 125 positive comments regarding the program. Five codes were

TABLE 2 Student attitude survey, $N = 112$

Item Scale: 1 = strongly disagree to 5 = strongly agree	RIOT pre Mean (SD)	RIOT post Mean (SD)	Paired *t* test
1. An alcohol or drug dependent person cannot be helped until he/she has hit rock bottom.	1.5 (0.8)	1.36 (0.7)	NS
2. An alcohol or drug addicted person who has relapsed several times probably cannot be treated.	1.3 (0.4)	1.2 (0.4)	NS
3. Drug addiction is a treatable illness.	4.3 (0.9)	4.6 (0.6)	$t = 3.9$ $df = 111$ $p < .001$
4. Most alcohol and drug-dependent persons are unpleasant to work with as patients.	2.3 (0.9)	1.9 (0.7)	$t = 4.2$ $df = 111$ $p < .001$
5. Medication is a cost-effective intervention for opioid use disorders.	3.1 (1.0)	4.0 (0.9)	$t = 8.2$ $df = 111$ $p < .001$
6. Most substance users are not interested in quitting.	2.0 (0.8)	1.7 (0.5)	$t = 4.4$ $df = 110$ $p < .001$
7. It is my role as a future healthcare professional to provide prevention or treatment of substance use disorders.	4.6 (0.7)	4.8 (0.5)	$t = 3.5$ $df = 111$ $p < .001$
8. Participating in educational experiences with students from another health profession enhances my future ability to work on a professional team.	4.7 (0.6)	4.8 (0.4)	NS
9. All health professional students should be educated to establish collaborative relationships with members of other health professions.	4.7 (0.6)	4.9 (0.4)	NS
10. I have a good general understanding of the overall principles of addiction.	3.4 (0.9)	4.4 (0.6)	$t = 13.0$ $df = 111$ $p < .001$
11. I am confident in my knowledge of opioid use disorders.	2.8 (0.9)	4.3 (0.6)	$t = 16.9$ $df = 109$ $p < .001$
12. I am confident in my public speaking abilities.	3.7 (0.9)	4.2 (0.6)	$t = 6.6$ $df = 111$ $p < .001$
13. I feel confident in my ability today to present information on the opioid crisis and substance use disorders to a community audience.	2.8 (1.2)	4.2 (0.6)	$t = 13.7$ $df = 111$ $p < .001$

created to capture the feedback including the importance of discussion and group participation; interdisciplinary nature of the group; scope, depth, and variety of content taught; timeliness and relevance of topics to the community; and course structure, lecturers and student teachers. The majority (40%) of positive comments were related to the scope, depth, and variety of content taught. For example, the course was felt to be "very in-depth," students endorsed "learning physiological, social and psychological aspects" of opioid crisis and "liked the additional lecture about cannabis." Both categories of discussion/participation and course structure/teachers contributed to the next largest group of comments (20% each) while the final two categories, interprofessional nature and timeliness of course received about 10% of positive comments, such as "open discussion allowed for many students to speak out about their personal experience." This comment summarized the positive way students felt about the experience, "RIOT has increased my ability to be compassionate towards my patients with substance use disorders, increased my ability to talk about their conditions with my team members, and helped me understand my patients better."

Eighty students gave 87 suggestions for improvement of the program. Three categories of feedback included: logistics (e.g., length of program, breaks, time of day); time to practice; and content suggestions. In addition, some students added the comment that they would make no changes (approximately 7%). The initial agreement between J. W. and K. C. was 93% and with discussion improved to 100%. The majority (59%) of comments centered around logistics of the program including the virtual nature of the program, length of evening presentations, and amount of breaks. Another quarter of the comments were related to adding more time for practice time for presenting the materials and slightly less then 10% of feedback related to other content students hoped would be taught or modified.

Control students demographics, knowledge, and attitude survey

Three hundred twenty graduate students from the same schools and programs participated as baseline attitude and knowledge controls but did not complete training. Again the majority of students were from the Robert Wood Johnson Medical School (82, 25.6%), the Ernest Mario School of Pharmacy (97, 30.3%), and the Graduate School of Biomedical Sciences (70, 21.9%), with smaller numbers from the School of Social Work (2, 0.6%), the School of Public Health (17, 5.3%), the School of Health Professionals (12, 3.8%), and the Graduate School of Applied and Professional Psychology (36, 11.3%). Similar to the RIOT students, the majority of control students identified as female (74.1%) and were within the age range of 18–25 (71.6%). The mean knowledge scores were 3.4 (SD = 1.7) which was only slightly lower than the RIOT students ($M = 3.9$) and statistically significant. Baseline attitudes were similar between the groups and no statistical differences were found for any attitude items.

Community participants

Community participants demographics and survey

Seven hundred fifty people who attended student-led seminars completed the baseline survey (a 70.4% response rate). Five hundred ninety-six were considered nonstudents, or community members and of these, 315 completed both pre- and post assessments after attending the presentation. The majority of community participants identified as female (74%) and about half were in the 18–25 age range (47.1%). Twenty percent indicated that someone in their family suffers from an opioid use disorder. There was a significant increase for each item on the knowledge test (see Table 3, Item 1, $X^2 = 33.3$, $df = 1$, $p < .001$; Item 2, $X^2 = 6.9$, $df = 1$, $p < .01$).

There was also a significant increase in agreeing with the statement "Medications are often necessary for successful treatment of opioid use disorders" (mean = 2.4–2.8; $t = 9.3$, $df = 314$, $p < .001$). Participants were asked to rate how their opinions changed regarding MOUD as a result of attending the presentation. More than 80% reported that they felt slightly or much more positive about MOUD as a result of attending the educational session (see Figure 1). One hundred thirty-seven community participants left optional comments on the follow-up survey. The overwhelming majority of comments (111/137, 81%) thanked the

TABLE 3 Community survey pre- and posttraining

	Pre $N = 314$ % correct	Post $N = 315$ % correct
Knowledge 1. Narcan (naloxone) can provoke withdrawal symptoms.	62.4	80.3*
Knowledge 2. Abused prescription opioids are most commonly obtained from—: A. Drug dealers, B. The patient's provider (a single physician), C. Multiple physicians through doctor shopping, D. Internet. E. Forged prescriptions.	31.7	65.7*
Attitudes Scale 1 = strongly disagree to 5 = strongly agree		
Attitude 1. Most substance users are not interested in quitting.	1.4 (0.7)	1.4 (0.7)
Attitude 2. Medications are often necessary for successful treatment of opioid use disorders.	2.4 (0.8)	2.8 (0.6)**

*X^2, $p < .01$.

**Paired t test (one-sided), $p < .001$.

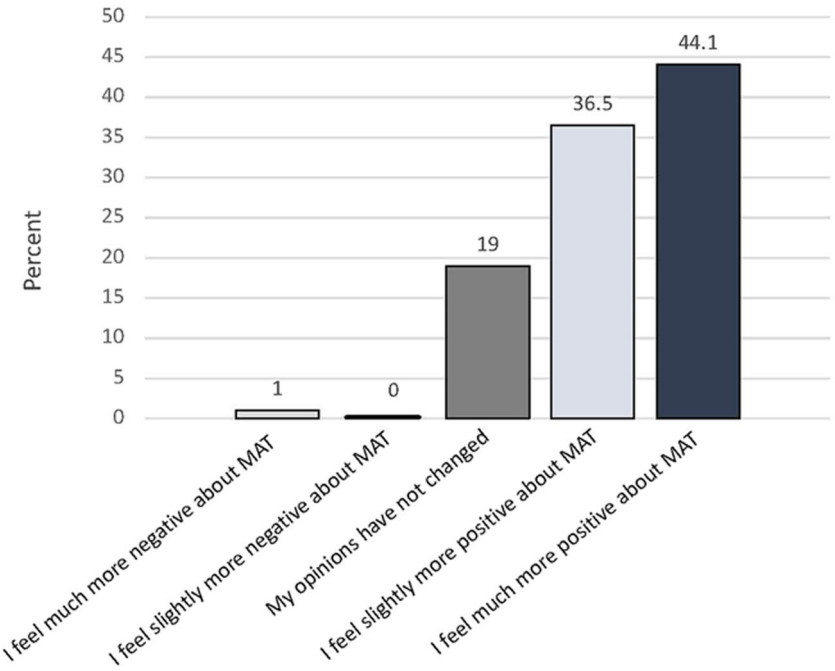

FIGURE 1 Community audience opinions regarding MOUD after RIOT presentation ($N = 315$)

group for a "great" or "informative" presentation although several also commented on the quality and professionalism of the student themselves. Comments included statements like, "I learned a lot more about the opioid pandemic and debunked many of the myths that I heard of" and "Thank you guys for doing this! I always wondered if MOUDs actually 'helped' but now I feel way more reassured about offering them for patients in the future."

DISCUSSION

The program met its goal of disseminating education about MOUD to communities by engaging graduate students in health care and health sciences at a large university. The educational program was successful in increasing knowledge acquisition among students who completed the intensive training. Since these students volunteered to participate, it is not surprising that their baseline attitudes were mostly positive. As a result of training, however, attitudes improved in most areas, including the usefulness of MOUD. Course satisfaction was high and students remarked on how engaging and informative the presentations were. Students felt their understanding of addiction and confidence about public speaking increased. Students were very supportive of the interdisciplinary education experience and felt this would help them further collaborative relationships with other health professionals.

The control students were recruited from the same schools during the same time period. In many ways their baseline knowledge and attitudes are representative of most health care students since this was a group that did not volunteer to be a part of the RIOT program. Their knowledge was only slightly lower at baseline and their attitudes similar to the RIOT students, indicating good external validity of the results, and suggesting that this model could be applied to other settings.

This program also had a significant impact on community members who attended. Students were successful in disseminating information as evidenced by the statistically significant increases in the knowledge items completed by the community participants. Importantly, there was a statistically significant increase in community members who endorsed that medications are often necessary for successful treatment of opioid use disorders. Most felt more positive about MOUD as a result of attending the educational session, which was highly relevant since 20% had a family member with an opioid use disorder. Community response and feedback have been positive overall for hosting student presentations. Many offer praise for the level of knowledge and professionalism of the RIOT students.

Limitations

One limitation to the scope and impact of our program related to student scheduling constraints and the inability of interested students to participate because of the necessary time commitment. Future training programs may consider shortened programming, prerecording self-paced webinars, or incorporation of the training into curriculum materials so that all interested students could gain the training. An additional limitation of our work related to evaluating community participants. Slightly less than 60% of community group participants completed both the pre- and posttest evaluations. To increase participation in the future, a small incentive such as additional educational materials being given once both surveys were completed or raffling a nominal gift card could be offered after survey completion. Additionally, questions were quite limited (two question knowledge assessment) and did not fully assess perceived benefits of MOUD or risks of OUD.

Implications

The results of this study support that educational programs like ours can positively influence students and community members in destigmatizing and increasing knowledge of the opioid epidemic. Students valued hearing personal stories about addiction from community participants, which can also improve attitudes toward patients with OUD.[19] Although it was beyond the scope of this project, it would be interesting to evaluate RIOT students after graduation. They likely benefitted from the educational experience even if ultimately unable to do community presentations. One student commented, "RIOT training has challenged my prejudices towards opioids users and drug addicts. It also taught me to be more compassionate and understanding."

It is imperative that we educate future healthcare professionals how to treat patients with OUD and RIOT is a model that can be implemented at other universities. By allowing students to present their newly attained knowledge to the community and gaining the experience of interacting with people who themselves may be suffering from OUD or personally know someone who is, they are able to go beyond the theoretical aspects of OUD and learn in real-time how the opioid crisis impacts all of us. This program is a way to integrate and connect theoretical knowledge from various disciplines into a product that can be used to benefit the community and improve patient and population outcomes overall.

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CONFLICTS OF INTEREST

The authors declare no conflicts of interest.

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