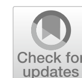
Academic Psychiatry (2023) 47:152–158
https://doi.org/10.1007/s40596-022-01737-7

EMPIRICAL REPORT



Transformative Learning and Critical Consciousness: A Model for Preclerkship Medical School Substance Use Disorder Education

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Received: 3 July 2022 / Accepted: 28 November 2022 / Published online: 16 December 2022
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Abstract
Objective Preparing medical students to provide compassionate person-centered care for people with substance use disorders (SUD) requires a re-envisioning of preclerkship SUD education to allow for discussions on stigma, social determinants of health, systemic racism, and healthcare inequities. The authors created a curricular thread that fosters the development of preclerkship medical students' critical consciousness through discussion, personal reflection, and inclusion of lived experiences.
Methods The authors used transformative learning theories to design and implement this thread in the 2021–2022 academic year in the Duke University School of Medicine preclerkship curriculum. Content included lectures, person-centered workshops, case-based learning, motivational interviewing of a standardized patient, and an opioid overdose simulation. Community advocates and people with SUD and an interdisciplinary faculty were involved in the thread design and delivery and modeled their lived experiences. Students wrote a 500-word critical reflection essay that examined their personal beliefs in the context of providing care for people with SUD.
Results One hundred and twenty-two students submitted essays and 30 (25%) essays were randomly selected for a qualitative analysis. Seven major themes emerged: race/racism, systemic barriers, bias and stigma, personal growth/transformation, language or word usage, future plans for advocacy, and existing poor outcomes. Students were able to link material with prior knowledge and experiences, and their attitudes towards advocacy and goals for future practice were positively influenced.
Conclusion By aligning the thread design with the principals of transformative learning, students developed their critical consciousness toward people with SUD and cultivated a holistic understanding of SUD.

Keywords Opioid · Alcohol · Addiction · Preclinical · Mezirow

Reports from the American Medical Association and Centers for Disease Control and Prevention acknowledge the grim reality of a nation struggling with substance use disorders (SUD): increasing opioid overdose deaths; soaring rates of alcohol, fentanyl, and methamphetamine use; inequities in SUD care; and people dying alone unable to obtain treatment [1, 2]. Mortality rates have decreased in 16 of the 17 highest income countries since 2010 except in the USA [3]. The mortality rate in the USA has increased in working-age adults due to drug and alcohol use, with social determinants of health leading to socioeconomic, racial, and ethnic inequities in death and disease burden [3]. A tremendous surge in opioid overdose deaths, particularly during the COVID-19 pandemic, has been observed in Black and Hispanic communities. Unfortunately, people with SUD from these communities have been largely overlooked by public policy and treatment initiatives regarding the opioid crisis [4]. In response, the American Medical Association (AMA) Substance Use and Pain Care Task Force proposed recommendations for improving overall care with an emphasis on reducing stigma and eliminating care inequities for communities that have been oppressed, historically under-resourced, or marginalized [5].

Preparing medical students to address this crisis requires a re-envisioning of preclerkship SUD education in schools of medicine. Preclerkship education has traditionally focused largely on "what" foundational knowledge students

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needed—neurobiology, diagnosis, and pharmacology of SUD—and may be detached from the "how, why, or who" of clinical care and from an understanding of social issues that lead to inequitable care [6–8]. Addressing the tacit realities that people with SUD experience requires an intentional reconfiguring of curricular time to allow for experiential learning and student engagement in discussions on stigma, resource availability, systemic racism, and healthcare inequities. This process requires learning experiences beyond knowledge transfer within the conventional faculty-student dyad to include lived experiences and involvement of community advocates and people with SUD in content design and delivery.

To resolve the disconnect between medical education and the healthcare needs of people with SUD, we propose a model of preclerkship medical SUD education that redefines *what* students need to learn, *how* content should be delivered, *why* a holistic understanding of SUD is needed to optimize compassionate care, and *who* should be involved in teaching. At Duke University School of Medicine (DUSOM), we developed a curricular thread directed toward these aims. Students should be able to establish a global understanding of SUD; assess their bias toward people with SUD; recognize the impact of stigma and social determinants of health affecting SUD care; and understand the impact of systemic racism on drug policy and incarceration rates.

Our purpose is to foster medical students' critical consciousness—an authentic awareness of issues that affect people with SUD that is evolved from their preexisting biases and liberated from others' negative preconceptions. We intend to nurture students' development of their critical consciousness through a process of self-reflection and active learning, connection of the individual learner to the broader context of SUD, and accountability for advocacy through the inclusion of the voices and lived experiences of community advocates and people with SUD.

Methods

Study author AM championed the creation and implementation of our SUD thread. Kern's six-step approach to curriculum development was used to establish a general and targeted needs assessment and to provide a general framework for building our course [9]. Key review articles on SUD education in medical schools were appraised for current practices, areas of deficiency, and recommendations for future directions [6, 10–12]. An audit of SUD education in the first-year medical school curriculum at DUSOM was conducted and revealed areas for improvement in course design, content coverage and delivery, and assessment. From the literature interrogation and curriculum review, a robust holistic course was designed and presented to medical school leadership and relevant curricular committees for their feedback and support. Barriers to implementation were identified and resolved and a community of practice (as described below) was established. The SUD thread was included in the first-year curriculum because it expanded the behavioral sciences and heightened the relevance of social determinants of health content. Study author AM, who is course co-director for the *Foundations of Patient Care II* (FPC II) course, in which the SUD thread was embedded, rearranged and revised content to accommodate the SUD thread and partnered with other course directors and content experts to extend students' learning to concurrent courses and course activities within the FPC II course.

Educational Theories

We used two educational theories to design, execute, and assess our thread: transformative learning informed by Mezirow [13] and Freire [14] and community of practice by Lave and Wenger [15].

Mezirow and Freire's Transformative Learning Theories

Transformative learning is an adult learning theory that describes how learning can lead to shifts in perspective to create "habits of mind" or new ways of being in the world. Jack Mezirow, a sociologist, is known as the founder of transformative learning. Mezirow suggests transformative learning begins with a disorienting dilemma and is followed by a series of 10 phases, culminating in a shift in perspective when students integrate the new idea into their thinking and actions [13]. Students examine preexisting values and beliefs through a process of critical reflection and presentation of new ideas and perspectives. Through communicative learning and metacognitive reasoning, students share and reflect on their viewpoints as they learn from others and monitor and adjust their thinking, judgments, and behaviors.

Paolo Freire, an educator and philosopher, is one of the leaders of critical pedagogy. Freire's work with transformative learning focuses on the democratization of education through students' active participation in the learning experience and on the development of "conscientization" that generates awareness of their own perceptions, others' perspectives, and society's social, political, and economic realities [14]. According to Freire, education should include problem-based exercises that incorporate the voices and lived experiences of everyone involved. Education must include the "others" being discussed in the scenario to create collaborative and actionable learning. Freire's focus on dialogical exchange is central to initiating learning, which is followed with action and reflection. This process has the protentional to not only create

individual change, but also connects the student to the broader context of social justice.

Lave and Wenger's Community of Practice

Jean Lave, a cognitive anthropologist, and Etienne Wenger, an educational theorist, pioneered situated learning theory and the concept of community of practice. A community of practice is a collective, social learning process in which individuals possessing a common interest, set of problems, or passion for a specific topic collaborate to share ideas and experiences, learn from one another, deepen their expertise, and innovate [15]. Three necessary components of a community of practice are a shared domain that members are committed to developing; a community that allows members to interact and engage in shared activities and build relationships; and a practice that requires members to have a shared repertoire [16].

Curricular Thread Description

The SUD curricular thread was part of the 2021–2022 academic year in the DUSOM first-year medical school preclerkship curriculum; the first year is followed by a second year of core clerkships and clinical care. DUSOM has approximately 122 first-year medical students. The SUD thread was embedded within the 21-week FPC II course in the spring semester. The FPC II course serves as a bridge between biomedical sciences and clinical education and prepares students for the clinical learning environment. The FPC II course is part of the patient-first curriculum, which uses the patient's story as the primary medium for achieving clinically oriented learning objectives.

Our thread included cognitive, affective, and psychomotor learning domains with all activities mapped to the learning objectives [17]. Community advocates, people with SUD, and an interdisciplinary faculty were involved in the design and implementation of our thread and modeled their lived experiences. Learning activities are described in Table 1. All content related to stigma, social determinants of health, and systemic racism were vetted through the DUSOM student interest group in SUD and the DUSOM Health Professions Education Anti-Racism Task Force.

Students engaged in their learning through a mixture of synchronous and asynchronous activities that included live lectures, lecture recordings, case-based learning, person-centered workshops, a motivational interview of a standardized patient with a nicotine use disorder, and an opioid overdose simulation exercise. Students learned about motivational interviewing and practiced it with standardized patients in a concurrent course focused on clinical skill development.

Assessment

As part of our thread, students were required to write a 500-word critical reflection essay that examined their personal belief system in the context of providing care for people with SUD. The essay was designed to serve as a metareflective exercise of their learning. Students were given the following essay prompt: "Reflecting back on your learning and participation in the substance use disorder thread, please respond to the question using both prompts in your essay. In responding to the prompts, please describe any changes in your perspective or attitudes, any challenges you encountered to your preexisting beliefs, any insights gained, and how learning will influence your future interactions with people with SUD as a physician." The reflection question was "How has your perspective on [two prompts] changed as a result of taking this thread?" The two prompts were "bias and stigma that people with SUD encounter when accessing healthcare" and "healthcare disparities, social determinants of health, and racism in drug laws experienced by people with SUD." This question was written to address multiple levels of the socio-ecological model of SUD [18]. The reflection question and prompts were vetted by members of our community of practice with experience in transformative learning and narrative medicine.

The Reflection, Evaluation for Learners' Enhanced Competencies Tool (REFLECT) rubric was discussed with the students prior to the essay assignment [19]. Study author AM discussed the level of critical reflection for the six criteria on the REFLECT rubric and shared examples, provided by the source manuscript, to model reflective writing. Links to the REFLECT rubric and examples of writing were provided to the students and they submitted their essays through their learning management system. Student essays were due within 2 weeks following completion of learning activities (lectures, person-centered workshops, and a team-based exercise) that addressed stigma, social determinants of health, healthcare inequities, and systematic racism in drug policy and incarceration, and long-term recovery.

We selected 30 of 122 essays for qualitative analysis. Study author AM compiled, deidentified, and assigned each essay a number (numbered 1 to 122). A random number generator identified 30 numbers between 1 and 122. The selected essays were sent to study authors SM and PM who performed a thematic analysis. Study authors SM and PM are trained in narrative medicine, a branch of the medical humanities focused on close reading and textual analysis to understand the clinical encounter. Study author SM is a faculty member at DUSOM but was not directly involved in the SUD thread, and PM is a faculty member at an external

Table 1 Substance use disorder curricular thread class activities[a]

Class activity	Description	Additional notes
6 lectures	• Specific substance use disorder (SUD): symptom presentation, diagnosis, pharmacology, and nonpharmacological interventions	• Given by faculty from community of practice • In person and approximately 50 min in length • Video recorded and archived on learning management system (LMS) • Attendance optional
6 lectures	• Biopsychosocial aspects of SUD, social determinants of health (SDOH), healthcare inequities, and systematic racism in drug policy	• Given by community advocates and people with SUD • In person and approximately 50 min in length • Video recorded and archived on LMS • Attendance mandatory for the lectures on healthcare inequities and systematic racism in drug policy
2 person-centered workshops	• Topics: long-term SUD recovery and long-term pain management and stigma • Focus: person-first language, addressing bias, stigma, racism, and SDOH, building patient connections, patients' interaction with healthcare, and advocacy	• Led by individuals in long-term pain management and SUD recovery with discussion facilitated by clinician experts from our community of practice • In person • Video recorded and archived on LMS • Attendance mandatory
1 team-based learning exercise	• Case topic: opioid intoxication, withdrawal and use disorder, and pain management • Focus: incorporated elements from lectures including screening, diagnosis, treatment, bias, stigma, SDOH, community care resource availability, behavioral change counseling, and person-first language	• Developed by members of our community of practice • Team-based exercise. In person and 2.5 h in length • Students worked in small groups (around 7 students/group) for 1.5 h, then in a large group facilitated discussion for 1.5 h led by clinician experts from our community of practice • Clinicians role modeled collaborative approach to care • The large group discussion was video recorded and archived LMS • Attendance was mandatory
Simulation exercise of an opioid overdose	• Prior to simulation exercise, students were provided with a prereading document on clinical toxicology • In simulated scenario, students worked with healthcare team members to assess and manage a simulated patient in an acute crisis following an opioid overdose	• Led by emergency medicine (EM) physicians • Script developed by EM physicians with consultation from members of interdisciplinary community of practice • Laerdal SimMan 3G Manikins and Laerdal LLEAP software were used to manipulate the vitals and mannerisms to produce a high-fidelity experience • In person and 15 min in length • Attendance was mandatory • Students worked in groups of six students per group, observed by EM physician • Following the exercise, the EM physician facilitated a 30-min debrief with each small group
Motivational interview of a standardized patient[b]	• Counseling: each student counseled one standardized patient following a smoking cessation script • Standardized patients (SP) provided students feedback on counseling • Debrief of the counseling experience in small groups with faculty • Student self-and peer assessment	• Case script developed by directors from the clinical skill development course with consultation from members of our interdisciplinary community of practice • Counseling sessions occurred over Zoom on a single day • Each group of 4 students completed a 20-min counseling session with SP • SP were recruited from a pool of commonly used SP at Duke University School of Medicine and selected based on their ability to provide quality actionable feedback • SP provided immediate verbal feedback to each student during a 10-min post-interview debrief • Counseling sessions were video recorded • Each student performed a self-assessment using video recording with an assessment rubric developed by the course directors from the clinical skill development course • Each student assessed a classmate's counseling session using video recording using the same assessment rubric • Students participated in a faculty-led debrief session that occurred during a separate class

[a]All activities were supported through funds provided by the Duke University School of Medicine as part of first-year curriculum

[b]Occurred in a concurrent course focused on clinical skills development

health sciences university in the USA. As a standard setting practice, they initially reviewed five essays together, and the remaining 25 essays were reviewed and coded independently. Through iterative discussions, they developed a codebook, which was independently applied to all the remaining essays.

The Duke University Institutional Review Board determined our project was exempted educational research. The IRB did not require informed consent for our randomized qualitative analysis of deidentified essays. We adhered to the Standards for Reporting Qualitative Research [20].

Results

From the 30 randomly chosen essays for our qualitative analysis, seven major themes were identified: race/racism, systemic barriers, bias and stigma, personal growth/transformation, language or word usage, future plans for advocacy, and existing poor outcomes. Within these themes, the most common subthemes were the racist underpinnings of drug laws, cultural and social determinants of health, structural bias, factors in accessing healthcare, factors outside of the individual's control, and a solidified interest in policy and advocacy as a physician.

Fourteen (46.7%) of the selected 30 essays summarized content using factual statements (e.g., biology of withdrawal symptoms, specifics of drug laws), and 13 (43.3%) used critical reflection to explore or reinterrogate prior biases/assumptions. A small minority ($n = 3$, 10%) felt they had already internalized the information, either through undergraduate coursework or personal experiences. Two of these students expressed disappointment that their classmates were unfamiliar with SUD-related stigma, and one suggested that knowledge of social determinants of health should be a pre-medical school requirement for entry into medical school.

Of the 13 essays that achieved a higher level of critical reflection, there was a strong emphasis on racism and other structural barriers, and an accompanying request for resources to inform patient advocacy. One class session, led by individuals in long-term SUD recovery from a community substance recovery program, was mentioned by multiple students as particularly valuable to students' learning. One student recalled how they previously thought of people with SUD as a "lost cause"; however, after hearing from individuals in long-term recovery, this student reexamined "the achievability of lifetime recovery."

Students also recalled instances where they had witnessed—and in some cases participated in—discriminatory behavior toward people with SUD, which evoked feelings of shame and guilt ("I admittedly was ashamed of my family, many of whom struggle with opioid and other substance use disorders") and a desire to act differently in the future ("It is impossible to be an ally to my patients if I do not understand their lived experience and their perception of how they are viewed in the medical environment"). Several essays referenced the perpetuation of bias and stigma through both "ambient chatter" in the healthcare setting and formal clinical documentation in the medical record.

Discussion

We designed our thread as a model for preclerkship SUD education redefining *what* medical students needed to learn, *who* should be involved in teaching, *how* content should be delivered, and *why* a holistic understanding is needed. By deliberately developing our thread to align with the principals of transformative learning theory and supporting it with our community of practice, we fostered the maturation of students' critical consciousness toward people with SUD. We set the ethos of continual transformative learning by exposing students to content and presenters that provided a comprehensive compassionate understanding of SUD and challenged them to examine their current attitudes. Through a reflection exercise, students discerned how thread elements affected their initial attitudes.

Analysis of students' essays revealed that our thread generated an awareness of social issues that negatively impact people with SUD. Students were able to link material with their prior knowledge and experiences (both personal and professional), and our thread produced a positive influence on their attitudes for advocacy and on goals for future practice. Thread activities crossed all three learning domains in Bloom's taxonomy. Self-reflection, which is part of the affective domain of Bloom's taxonomy, requires students to integrate and compare personal and professional values in service of future outcomes, in this case, caring for people with SUD. While some students from our random selection of essays focused their writing on cognitive knowledge, this diversity of responses may reflect the variety of pre-medical exposure to people with SUD.

For some students, our SUD thread was their first introduction to this complex biopsychosocial phenomenon, while for others, the material recapitulated learning from their undergraduate courses or lived experiences. We agree with one student's recommendation that learning of social determinants of health should be considered a pre-medical school requirement. This point is important given the emphasis placed on social sciences, cultural competency, and healthcare disparities in standard 7 of the Liaison Committee on Medical Education's accreditation standards [21]. Our thread aligns with recommendations in standard 7 for preparing students for contemporary medical practice.

Qualitative research of medical students' reflective writing found negative attitudes toward people with SUD

prior to authentic interactions and the use of metonymy—referring to patients by their diseases and a form of stigmatizing language—when describing them [22–25]. Articles by Camp et al. [22] and by Clark et al. [23] revealed that metonymy was rarely found in their review of 802 reflective essays written by medical students during their clerkships; however, it was widely encountered in essays describing patients with SUD, 27 out of the 60 total instances of metonymy. Patients were often referred to either by the substance they used (e.g., alcoholic) or by negative terms (e.g., addict, drug abuser, or drug seeker). The authors reported that students reverted to metonymy due to finding these interactions ethically or interpersonally difficult or anxiety-provoking and were more likely to jump to a conclusion about these patients based on how they perceived medical professionals would judge them. The identification of metonymy can serve as an opportunity for educators to teach medical students about person-first language, the complex nature of SUD, and the use of self-reflection to address personal bias.

Articles by Kastenholz and Gaurava [24] and by Balasanova et al. [25] examined medical students' reflective writing on attending Alcoholics Anonymous meetings during their psychiatry clerkship. Compared to their previous beliefs and behaviors, medical students demonstrated a reduction in stigmatizing attitudes, greater comfort working with these individuals, increased flexibility of thinking, and identified empathy, honesty, and openness as crucial components of recovery. These studies found that having medical students interact with people with SUD humanizes them and generates an appreciation in students for patients' struggles and successes with this complex and chronic disease. Balasanova et al. found that younger students—25 years of age and younger compared to students 26 and older—were more likely to recognize the complexity and diversity of SUD, indicate a greater intent to practically apply what they learned with greater compassion, and be receptive to broadening their ways of thinking [25].

Our study adds to this research by examining medical students' reflective writing for their attitudes toward people with SUD and exploring how those attitudes may affect the care they provide to this patient population. Our thread design implicitly addressed the use of metonymy and stigma by using person-first language, modeling compassionate attitudes and behaviors, involving people with SUD and community advocates, acknowledging social issues that negatively affect the care people with SUD receive, and engaging students in active learning and reflection. We agree that early and frequent exposure of medical students to people with SUD has the potential to humanize these individuals and generate greater empathy in students toward this patient population. The findings from Balasanova et al. support our implementation of the SUD thread during students' first year of medical school to target the youngest learners; previous research included students in their clerkships [25]. By doing so, we hope to have set the stage for medical students to approach their clerkships with a decreased sense of bias and instilled in them an eagerness and ability to address stigma especially given the insidiousness of the hidden curriculum.

We drew on Mezirow's transformative learning theory to establish a learning environment that exposed students to disorienting dilemmas; facilitated the processing of their preexisting attitudes and beliefs through active listening, questioning, and discussion; cultivated learning and perspectives through reintegration; and examined biases through critical reflection. Freire's educational learning theory was utilized to develop students' critical consciousness through creation of a communal learning environment of clinicians, community advocates, and people with SUD that placed equal value on lived experiences as on scientific content. We used a co-intentional approach to encourage all participants to share their thoughts and experiences and to grow together through the learning experience. In keeping with transformative learning theory, we engaged students in a continuous dynamic process of learning, discussion, reflection, and recreation to develop students' autonomy of thought in recognizing the disruptive forces that can influence patients' care, to liberate them from previous ways of seeing people with SUD, and to be advocates for change. Lave and Wengers' framework was a valuable guide for forming our community of practice.

We randomly chose 30 essays (25% of the total essays submitted), which provided a good representation of students' responses and a manageable number of essays to read, code, and report on, while still achieving data saturation. Because the essays were read and coded anonymously, we cannot comment on the impact that students' prior experiences (e.g., undergraduate study, personal demographics) had on their receptiveness to and analysis of content. Furthermore, we opted not to triangulate our findings with additional methodologies, such as focus groups, because some student essays expressed feelings of shame evoked by the sensitive nature of the course content. The social desirability bias, wherein students provide responses they think the instructor wishes to hear, may have influenced some of the essays. We attempted to minimize social desirability bias by having the essays coded by individuals who were not instructors in the thread. These findings are from a single cohort of medical students from one institution.

Future directions are to read all essays, review the findings with our community of practice to discuss changes for the next academic year, develop a follow-up assessment of learner attitudes following completion of their first clerkship year to determine sustainability, and explore ways to incorporate additional opportunities for critical reflection in the first-year medical school curriculum.

By aligning our thread with the principals of transformative learning, students developed their critical consciousness toward people with SUD and cultivated a holistic understanding of their lived experiences. Our study adds to existing research by developing a comprehensive SUD thread for preclerkship medical students, having them write a critical reflection essay addressing prompts aligned with the socio-ecological model of SUD, and exploring how those attitudes affect future care and advocacy.

Declarations

Disclosures On behalf of all authors, the corresponding author states that there is no conflict of interest.

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