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Impact of a Preclinical Elective on Medical Student Attitudes Toward People With Substance Use Disorders

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Abstract

Background and Objectives: As the opioid epidemic continues in the United States, neonatal opioid withdrawal syndrome (NOWS) prevalence is rising. Research has shown positive outcomes from protocols to assess and treat infants with NOWS. A medical student preclinical elective was created to teach students about NOWS, substance use disorders (SUDs), social services, and trauma-informed care. This involved didactics, hospital volunteer experience, and reflection essays. Our study aimed to determine the impact of the course on medical student attitudes and beliefs toward people with SUDs.

Methods: Enrolled preclinical medical students completed a pre- and postcourse survey, an adapted 22 question version of the Drug and Drug Problems Perceptions Questionnaire (DDPPQ). We analyzed results through a Wilcoxon signed ranked test and we performed a thematic analysis on students' reflective essays.

Results: Twenty students completed the course during the study, with a 95% survey response rate. Survey results showed a statistically significant change between pre- and postcourse responses for seven of the 22 questions, showing positive changes in self-perceived knowledge, respect, and ability to find help. Reflective essays identified major themes of professional identity formation, interdisciplinary values, patient/family perspectives, empathy, and increased knowledge and confidence.

Conclusions: Implementing an elective that combines didactics and volunteer experiences can improve medical students' self-reported perceptions of people with SUD and interest in primary care and addiction medicine, a key to continued handling of the opioid epidemic.

Introduction

Neonatal opioid withdrawal syndrome (NOWS) has become more common as the rate of opioid use in pregnant people more than doubled from 2010 to 2017. [1,2] Stigma from medical providers toward patients who use substances negatively impacts health care outcomes, particularly in pregnant people with limited prenatal care.[3,4] Previous studies have shown that few trainees felt their training on substance use disorders (SUD) and trauma-informed care is adequate to deliver high-quality care to dyads affected by SUD.[5] Barriers include the

lack of physician role models and limited educational time, [6,7] but even brief curricular interventions have improved student attitudes. [8-11]

One NOWS protocol with nonpharmacologic therapies and a simplified approach to assessing infants, called "Eat, Sleep, Console" (ESC), can positively affect outcomes. Compared to Finnegan scoring, ESC dramatically reduces both the proportion of infants treated with morphine and the average length of stay, without increasing readmission rates or adverse events. [12-15] The shift from older protocols created an opportunity to educate medical students to provide better patient-centered care.

This pass-fail, preclinical elective combines five 1-hour didactics with case-based teaching, an interdisciplinary panel, and volunteer clinical experiences. The elective was started in January 2019. Students complete this optional course alongside the required preclinical 18-month curriculum. The course was created by resident and attending physicians in pediatrics, family medicine (FM), and addiction medicine, as well as maternity care nurses and medical students. Didactics, delivered across 3 months, covered NOWS physiology and treatment, standard newborn soothing techniques, trauma-informed care, and medication treatment for opioid use disorder in pregnancy. The panel, comprised of inpatient social workers, a certified drug and alcohol counselor (CADC), and a doula, discussed relevant social services. Students were required to serve at least two 2-hour volunteer shifts per month for 6 months, to assist nurses and parents with soothing techniques and ESC care for NOWS in the Neonatal Intensive Care Unit (NICU), mother-baby unit, and inpatient pediatric units. Finally, students wrote a 400-600 word reflective essay at the completion of the course on anything they learned that surprised them or changed their perspectives, meaningful interactions during volunteer shifts, and what (if any) experiences with SUD or maternal infant care they would like to pursue in their future.

We hypothesized that education and interprofessional exposure to NOWS would positively impact the perceived knowledge, attitudes, and beliefs of students toward people with SUD. This would augment earlier evidence by adding a multimodal analysis and interdisciplinary focus. [16]

Methods

After obtaining institutional review board exemption, we conducted a mixed methods analysis for the first two cohorts (n=20). At their first and last course sessions, students filled out a survey (Table 1), adapted from the validated Drug and Drug Problems Perceptions Questionnaire (DDPPQ). The 20-item Likert scale questionnaire was designed to measure attitudes of professionals who work with people who use substances.[17] Three questions were removed and five were added on student career goal intent to fit the scope of the elective (see Appendix 1). We analyzed responses through a Wilcoxon signed rank test using a Holm-Bonferroni correction for multiple comparisons.

A team of seven reviewers involved in the course conducted an inductive qualitative analysis on the 10 essays from the first term to identify recurring themes, which were then organized into a code set applied to the second term's 10 essays and to survey items, to analyze response trends.

Results

Of the 20 participants, there was a 95% paired survey completion rate. The qualitative analysis identified several major themes: perspective, professional identity formation, knowledge, confidence, empathy, gratitude, and interprofessionalism (Table 2).

The quantitative analysis revealed a statistically significant difference in seven survey items, shifting toward more positive perceptions and attitudes (Table 1). These included improved self-perceived knowledge and ability to find help for patient care, and increased respect for patients.

Finally, the combined analysis showed a subset of students who indicated lower confidence *after* the course in their ability to work with this population. Compared with students who had neutral or positive changes in their confidence, this group wrote more in their essays about implicit bias, and none discussed prior experience caring for people with SUD in their reflection essay.

Discussion

Overall, this course improved many facets of medical students' perspectives toward people with SUDs, showing that a course incorporating pregnancy and neonatal care can be effective, supporting findings from previously published data on SUD curricula. Quantitative improvement in attitudes correlated with qualitative themes of empathy, bias recognition, desire for further training in addiction medicine, and intent to include SUD treatment in their career path.

Many students described the interdisciplinary panel as a meaningful experience that yielded greater understanding of the social context of families with NOWS infants. Insight into interdisciplinary work is especially important in addiction medicine to combat pre-existing feelings of hopelessness or futility of treatment. [18] Acknowledgement of trauma-informed care and students' own implicit biases may have built empathy for patients' experiences to improve care.

The students who enrolled in the EMBRACE elective were self-selected, often with pre-existing interest in newborn care and/or SUD. This limitation was accounted for by measuring the change in the pre- and postsurveys instead of the raw numbers. The DDPPQ was adapted and lost validity from prior use but was more applicable to students. While the course was pass/no-pass, the reflective essays were a required component of the course which may have influenced responses. The small class size limited the power of our research, but should serve as early data for future, larger studies. Given the limitations of self-assessment of knowledge and communication, future research should include objective evaluation such as observed clinical encounters.

Family physicians are uniquely positioned to expertly care for patients with SUDs and NOWS given their broad training that encompasses the complex dynamics, integrating knowledge on trauma, mental health and SUDs with training in prenatal, obstetric, and newborn care. The creation of this course modeled collaboration between disciplines to educate learners to provide evidence-based, compassionate care. Additional research is needed to understand the generalizability and long-term impact of these efforts.

Tables and Figures

Table 1. Results of Course Survey, Adapted From the DDPPQ

Survey Item #	Code	Survey Item	Mean presurvey score	Mean postsurvey score	Pre/post Difference	Wilcoxon Signed Rank Tests *P* values	HB corrected alpha
1	P	Substance use disorders are a medical illness.	6.2	6.6	0.4	.029	0.0038
2	P	Substance use disorders are a treatable illness.	5.7	5.9	0.2	.132	0.0071
3	I	I am interested in caring for newborns in my future career.	5.7	5.9	0.2	.131	0.0063
4	I	I am interested in caring for pregnant patients in my future career.	5.0	5.2	0.2	.206	0.0083
5	I	I am interested in caring for patients with substance use disorders in my future career.	4.8	5.2	0.4	.207	0.0100
6	**K**	**I feel I have a working knowledge of drugs and drug related problems.**	4.1	5.6	1.5	**.0004**	0.0026
7	**K**	**I feel I know enough about the causes of drug problems to carry out my role when working with drug users.**	3.5	5.2	1.7	**.0003**	0.0024
8	**K**	**I feel I know enough about the physical effects of drug use to carry out my role when working with drug users.**	3.4	5.5	2.1	**.0002**	0.0023
9	**K**	**I feel I know enough about the psychological effects of drugs to carry out my role when working with drug users.**	3.6	5.4	1.8	**.0004**	0.0025
10	**K**	**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.**	4.3	5.6	1.3	**.001**	0.0028
11	C	I feel I have the right to ask patients/clients questions about their drug use when necessary.	5.2	5.2	0.0	.250	0.0125
12	C	I feel I have the right to ask a patient for any information that is relevant to their drug problems.	4.9	5.2	0.4	.286	0.0167
13	C	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.	5.1	5.5	0.5	.105	0.0056
14	**R**	**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.**	4.7	5.8	1.1	**.001**	0.0029
15	A	I feel that there is little I can do to help drug users. (REVERSE)	2.7	2.3	-0.4	.388	0.0250

Table 1, continued

Survey Item #	Code	Survey Item	Mean presurvey score	Mean postsurvey score	Pre/post Difference	Wilcoxon Signed Rank Tests *P* values	HB corrected alpha
16	A	I feel I am able to work with drug users as well as other client groups.	4.5	4.4	-0.1	.860	0.0500
17	A	All in all I am inclined to feel I am a failure with drug users. (REVERSE)	2.4	2.0	-0.4	.040	0.0045
18	**E**	**In general, I have less respect for drug users than for most other patients/clients I work with. (REVERSE)**	2.3	1.6	-0.7	**.001**	0.0031
19	A	I often feel uncomfortable when working with drug users. (REVERSE)	3.4	2.8	-0.6	.071	0.0050
20	G	In general, one can get satisfaction from working with drug users.	5.4	6.1	0.6	.014	0.0033
21	G	In general, it is rewarding to work with drug users.	5.1	5.7	0.5	.015	0.0036
22	E	In general, I feel I can understand drug users.	4.1	5.0	0.9	.035	0.0042

Abbreviation: Drug and Drug Problems Perceptions Questionnaire.
Survey answers were a 7-point Likert scale: 1 (strongly disagree), 2 (disagree), 3 (slightly disagree), 4 (neutral), 5 (slightly agree), 6 (agree), 7 (strongly agree). (REVERSE) signifies questions in which answers towards 1 signify a more positive attitude. Bolded p values were significant after the Holm-Bonferroni correction, being lower than the corrected alpha using the formula HB alpha = 0.05/(22 – *P* value rank + 1). P=perspective, I=professional identity formation, K=knowledge, C=communication, A=confidence, E=empathy, G=gratitude, R=interprofessional/teams

Table 2. Themes, Subthemes, and Quotations From Thematic Analysis of Reflective Essays

Theme	Subtheme	Quotes
Perspective: changes in the student's thoughts about those who use substances	Change in perspective	"This class gave me a deep level of respect for anyone going through the challenges of substance use disorder and also making the commitment to try to parent." "I had previously thought they basically had two options to either quit using drugs completely and parent or to give up their baby/have it taken away. Learning about the middle ground was something I didn't know existed before. This includes harm reduction practices." "I think the biggest outcome of this class has been my reframing of how I see patients with opioid use disorders, and coming at the issue with a far more understanding, compassionate and clinically accurate mindset" "EMBRACE, through the combination of lectures and hands-on learning in the form of cuddling, gave me a unique perspective on the current opioid epidemic and its effect on families."
Professional identity formation: intent towards future careers and education	Interest to advocate for a vulnerable population	"children and mothers, particularly those of low socioeconomic status, are some of the most vulnerable patients in our healthcare system and it is our responsibility as healthcare providers to advocate for them." "I am eager to continue to learn how to care for mothers and babies, especially those who are underserved or marginalized" "This class furthered my passion and intent on providing equitable care to underserved populations. "
	Wanting further training in addiction medicine	"knowledge on substance use disorders and trauma-informed care is vital to a complete medical student education…I'd also love to see this become more integrated into the medical school curriculum" "In the short-term, I definitely want more exposure to substance use treatment from multiple angles" "To better prepare me to provide for these patients, I hope to take more courses regarding addiction medicine"
	Including substance use treatment in career path	"As I progress through my career in medicine I hope to continue working with families, children, and healthcare teams to deliver care to individuals who have been impacted by substance use disorders" "At this point I am very interested in pediatrics and public health, and therefore fully expect my career will include patients with substance use disorders as well as infant care." "I think that I want to care for children through the setting of pediatrics and, if I care for NOWS babies, I want to do so with evidence-based and family-centered medicine" "I feel compelled to work in a field that provides resources and support to families rather than the standard guilt and shame prescription. "
Knowledge: didactic information gained	Course tying in with previous or ongoing experiences	"The coursework tied in nicely with what I had learned during my years in the classroom and my training during Teach for America and Master's of Urban Education program" "My experience at CCC is what prompted me to take this course. I wanted to learn more about her journey as a mother and all mothers who have substance use disorder" "through the Student Navigator Program (SNaP), I have been working with a mother and her two-year old son. The mother is in recovery a [sic] substance use disorder, and while not for opioids, instead methamphetamine, I feel like a lot of our conversations in the class have helped me work with the mother in a more aware way."
	Learning via different modalities	"One of the things I loved most about this course was that we had the chance to learn in so many different ways. We gained invaluable information in class…And then in real time took that knowledge to the clinic where we had the opportunity to utilize it"
	Knowledge acquisition on NOWS treatment	"I was mostly surprised to learn about the paradigm shift regarding care for pregnant mothers and new babies that has recently been implemented at OHSU. Moving from the Finnegan scoring to Eat-Sleep-Console seems to me to be a very logical approach." "I did learn a lot about NOWS during class and plan to use that knowledge when I do encounter a NOWS baby in the future"

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Table 2, continued

Theme	Subtheme	Quotes
Gratitude: appreciation from families and nurses	Appreciation from infants' parents	"As I held the little guy we talked about all that was going on, medical issue, family issues, and other more normal topics. I could tell that having someone to talk to really helped put her at ease" "When his parents returned they seemed rejuvenated from their short break, and profusely thanked me for keeping him safe while they were gone. I felt like a [sic] had a chance to provide them with non-judgmental support, and that they really appreciated it."
	Satisfaction or rewarding work	"I sat and observed the nurses and their workflow. I marveled in their meticulous care of each child in addition to their kind caring of families as they visited. " "I am extremely glad I decided to sign up as it quickly became the best part of my week. Being in the hospital at night getting to hold babies was every bit as wonderful as it sounded and I learned more than I thought possible." "While cuddling one little girl, I looked down and smiled at her. She looked into my eyes and smiled back, cooing happily. We continued to interact in this way, and it warmed my heart."

Abbreviations: NOWS, Neonatal opioid withdrawal syndrome; DHS, Department of Human Services; CPS, Child Protective Services; NICU, neonatal intensive care unit.

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