RESEARCH

A Multi-Site Qualitative Study Examining Student Perspectives of the Opioid Crisis

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Objective. Conduct focus groups to learn the perspectives of pharmacy students regarding opioid use, the opioid crisis, and pharmacy education on both topics.

Methods. Students from each professional year at eight participating schools or colleges were asked to volunteer for focus groups with peers to answer questions about their experiences with the opioid crisis. Faculty and/or staff moderated the focus groups and audio recorded responses. Recordings were deidentified, transcribed and analyzed. IRB exemption from each school was obtained.

Results. 150 students participated in 29 focus groups. Responses were categorized according to themes using consensual qualitative research (CQR) methodology. Sources impacting student views on the crisis include school, personal and work experience, and media. Perspective changes since starting school included increases in knowledge and awareness, and a decrease in bias/stigma. Schools can better prepare students with training on opioid counseling, naloxone, and having difficult conversations with patients.

Conclusion. The results provide information beneficial to pharmacy schools as they continue to work to equip students to combat the crisis. This information includes what student pharmacists are learning about the crisis, practices they see, and their recommendations to address the crisis.

Keywords: opioid, pharmacy, education, experience, student

INTRODUCTION

The opioid crisis is a public health emergency, complicated by diversion and misuse of prescription opioids and a rise in illicit use of heroin and potent synthetic opioids, such as fentanyl. 1 This crisis has caused significant morbidity and mortality. Overdoses involving prescription and illicit opioids caused almost 450,000 deaths between 1999, when the opioid crisis was first identified, through 2018. 2 The number of filled prescriptions peaked in 2012 and have decreased thereafter largely due to efforts to reduce high-dose opioid prescribing. 3 In 2018, there were 67,367 drug overdose deaths and approximately 70% involved opioids, and prescription opioid-involved death rates decreased by 13.5% from 2017 to 2018. 4

Given the widespread use and misuse of opioids, it is likely that during internships and experiential training, student pharmacists encounter patients who use opioids for legitimate as well as illicit purposes. However, the extent of student interactions with these patients, knowledge of the opioid crisis, and student ability and comfort during patient interactions have not been described.

While examples of curricular innovations to improve student education in opioid prevention, intervention, recovery, and harm reduction have been published, there is a paucity of data describing pharmacy student perceptions on the opioid crisis. This information is critical to determine how pharmacy education must adapt to ensure that the pharmacy workforce is educated to create positive change in reversing the opioid epidemic, and at the very least to do no harm to patients.
A collaborative task force of American Association of Colleges of Pharmacy (AACP) Experiential Education Section and the Substance Use Disorder Special Interest Group (SUDSIG) members was formed to gather student pharmacists’ perspectives about the opioid crisis and opioid use. The results of this study will help inform pharmacy educators and practitioners how to address the crisis with students and prepare them for practice.

METHODS

Students from each professional year from eight colleges/schools of pharmacy (COPs) were recruited through email and word of mouth for focus groups to discuss their perspectives with the opioid crisis. No incentives were offered. Faculty and/or staff moderated the 1-1.5-hour focus groups and audio recorded anonymous responses. Colleges of pharmacy and professional years were deidentified, and recordings were transcribed and analyzed. IRB exemption was obtained at each COP.

Participants were first (P1), second (P2), third (P3), and fourth (P4) year student pharmacists from Binghamton University, Butler University, Creighton University, University of Michigan, University of Minnesota - Duluth, Midwestern University - Chicago, Purdue University, and St. Louis College of Pharmacy. Sample size of focus groups ranged from two to eight participants (mean and median = 5; mode = 4). Binghamton did not have P4 students, so only P1, P2, and P3 students participated. Michigan was only able to recruit P1 students.

Focus group interviews consisted of 12 scripted open-ended and 11 close-ended questions. Sessions were conducted fall 2019 at each COP and audio recorded by each interviewer. All 29 transcripts were transcribed by one research assistant. The script with interview questions is available at https://docs.google.com/document/d/1fN1tZrYpoFxBw_rMOkTL2Ftez0ZXN9hXLiaQ_ zzaOVk/edit?usp=sharing.

Demographic data, including name of school, grade level, previous education, age, gender, and work experience was collected electronically at the beginning of each focus group. Students responses to one question on note cards (physical or electronic) were transcribed for analysis.

Deidentified transcripts were analyzed according to the principles of consensual qualitative research (CQR) methodology. Eight student coders (SCs) from two academic institutions were recruited and randomly assigned in pairs to code transcribed data. At least one student per pair had previous experience with CQR methodology. Prior to coding, SCs reviewed examples of published qualitative studies using CQR methodology, reviewed the CQR process, and completed a bias self-check survey. Two faculty auditors met with SCs and reviewed progress prior and during coding for consistent analysis of transcripts and monitored adherence to the process.

In the first round of CQR process, SCs coded data to identify themes mentioned in transcripts and created a master codebook with coding, thematic domains, and subdomains. After the codebook was reviewed by the two faculty auditors and SCs, a second round of CQR was completed, and consensus on coding was reached. The codebook was finalized and verified by SCs and the two faculty auditors. The number of times that domains and subdomains were mentioned in transcripts were tallied and tabulated.

RESULTS

One hundred fifty students from eight COPs participated in this study. Demographic data of participants in focus groups is shown in Table 1. Seven domains (causes, overall impact, stigma, solutions, education, naloxone, sources) and 45 subdomains were identified and coded. Domains, brief descriptions of subdomains, and number of mentions are included in Table 2. Participant responses to quantitative questions are shown by grade level in Table 3.

Ninety-nine percent of participants believed that there is an opioid crisis. Their perspectives were affected by school/curriculum, pharmacy work, media, and personal experiences. The most mentioned causes of the crisis were prescribers, lack of awareness, patients, industry, and pharmacists. Overall impact of the crisis leading to death or overdose was mentioned 13 times. Stigma or bias from the pharmacy community about opioid use was mentioned by 93% of participants, including patient attitudes, public perspectives, patient history, and requests for early fills, needles and syringes as contributors to stigma. Solutions to the crisis included making changes in pharmacy practice and changing or modifying therapies. Student training and patient education were most mentioned in the education domain at 43% and 31%, respectively. A total of 108 participants (74%) believed naloxone should be dispensed with all prescriptions. Overall, 64% of participants had been trained how to use naloxone; however, 33% P1 were trained compared to 67-81% P2, P3, and P4. Fifty-seven percent of participants felt prepared to administer naloxone and 46% had dispensed it. Most common sources of the opioid crisis mentioned were school curriculum, places of employment, media, or personal experience.

DISCUSSION
Prescribers were the most mentioned cause of the opioid crisis. Inappropriate prescribing leading to widespread availability and misuse of opioids is implicated in the literature as a major cause of the opioid crisis, with many factors contributing to high rates of prescription opioid use and misuse.5 Physician-prescribing practices play an important role as evidence suggests that more than 30% of opioid misuse is associated with patients with prescription opioids.6,7 Inappropriate opioid prescribing, defined as inadequate, continued, or excessive, poses high risks of causing patient morbidity and mortality.9,10,11 Prescribers were mentioned as succumbing to pressures from short appointment times and fears of pain undertreatment. We theorize a general lack of awareness about the safe use of opioids, abuse, addiction, and overdose potential for chronic users can apply to prescribers, patients, health care professionals, and the public. Mentions were not specific regarding those who lacked awareness as a cause of the crisis.

Participants believed patients, who were not being educated about how to use the medication appropriately, did not understand the addiction potential and risks of long-term use. The crisis is exacerbated by opioid use disorder (OUD), which has been described with patient behaviors including use of multiple pharmacies and providers to obtain opioids (termed ‘doctor-pharmacy shopping’), cash payments to avoid insurance restrictions, and use of friends, relatives, or black-market supply.12 A few students believed socioeconomic factors were contributory, which from a public health perspective is a root cause of addiction at the population level.13 While the scope of this study did not specifically aim to assess pharmacy student knowledge on the role of social determinants of health (SDOH) in the opioid crisis, we were surprised that so few students identified psychosocial and socioeconomic factors as an underlying cause of the opioid crisis, when the literature is clear regarding the impact.14 Research has shown the deep roots of the opioid crisis in social and economic determinants, with some analyses focusing on “diseases of despair,” in referring to the interconnected trends in fatal drug overdose, suicide, and alcohol-related disease.14,15,16,17 Students’ lack of perspective is notable given that most academic institutions have a focus on SDOH and may indicate that current practitioners share the same lack of recognition; this phenomenon would likely contribute to the stigma towards patients with OUD.18

Opioid manufacturers have faced lawsuits citing their responsibility in the crisis. Industry has been implicated as a contributing factor to the opioid crisis, through incentives to prescribers, false advertising, and aggressive product marketing without disclosing addictive nature.19,20

Pharmacists were mentioned as a cause if they did not provide adequate counseling, education, monitoring, or had personal misconceptions regarding opioid use. Pharmacists play an important role in protecting public health and safety.21 The Centers for Disease Control (CDC) reported that 25-66% of fatal opioid overdoses occurred after using another patient’s prescription.22 National Survey on Drug Use and Health (NSDUH) data indicates that more than 30% of opioid misuse is from patients who were prescribed opioids. Pharmacists are responsible for providing education, counseling, and monitoring patients using opioids to affect this cause.

Two subdomains, deaths and overdoses that do not result in death, were unexpectedly mentioned only 13 times, given the significance of the overall impact of the crisis to public health. The opioid epidemic has not been associated with an increase in violent or property crime; however, students recognized that as access to prescription opioids dwindles, patients often obtain cheaper illicit drugs.23 No mentions were made of significant emotional, economic, and quality of life burdens that patients and their families experience related to the opioid crisis.24

Participants mentioned that stigma focused on negative perceptions of substance use disorder (SUD) and was palpable, as evidenced by attitudes and practices within the pharmacy setting. Some pharmacy staff were openly biased against certain prescribers and clinics that served individuals with SUD and against patients who received high doses of opioids and/or medications for treating OUD. Research indicates that negative attitudes of health professionals towards patients with SUD are common and contribute to suboptimal health care for these patients.25,26,27 A systematic review by Van Boekel and colleagues indicated that health care providers lacked proper education on how to best care for individuals with SUD, and there was less provider involvement, more task-oriented approaches, and decreased personal interaction with these patients.25 Stigma towards individuals who received drugs from health care professionals and systems resulted in a decreased utilization of services.27 Participants mentioned that some pharmacy staff believed that addiction is a choice rather than a medical illness. There appeared to be a culture in which pharmacy staff were on high alert for potential signs for misuse of opioids, including early refills, large quantities and/or high doses, cash payments, and signs of altered prescriptions. Some participants reported that these practices crossed a line, passing beyond vigilance into bias.

When discussing stigma directed towards patients, multiple patient-related factors that contribute to the opioid crisis were mentioned. Negative emotions (eg, frustration and aggression) and behaviors (eg, argumentative and emotional) can lead to a higher perceived level of danger.25 Public perspectives focused on addiction as a choice versus an illness is frequently highlighted in literature as a significant contributing factor to the opioid crisis.6,28,29,30 Stigma around needle use was mentioned and Nora Volkow, Director of the National Institute on Drug Abuse (NIDA) noted that those who use injectable drugs are sometimes denied care in hospital settings because they are viewed as drug seeking.6
Physical appearance (e.g., age, attire, or the condition of nails or teeth) and socioeconomic status impacting stigma was mentioned less frequently by participants. McGinty and Barry showed that negative attitudes related to addiction are very closely linked to stigma against some socioeconomic classes and races.³⁹ Geographic variables (e.g., out-of-state, rural areas, and distance traveled) and depth of patient-pharmacist relationship were also mentioned as impacting stigma.

Change requires community participation in learning solutions, improved management of care, and more consistent use of better pain-control options.³¹ Overcoming the crisis will involve critical evidenced-based methods that address research, clinical, and educational apprehensions.³¹ Participants shared perspectives on multifactorial solutions to stop the opioid crisis. Prescription drug monitoring programs (PDMPs) along with pharmacists rechecking prescriptions, increasing communication among other health care providers, applying patient contracts in pharmacies similar to pain clinics, and following policies and procedures implemented by the law were mentioned as solutions to combat the opioid crisis.

Participants discussed using the US Centers for Disease Control and Prevention (CDC) guidelines as an educational tool. Skolnick reported that informing society about CDC prescribing guidelines was a strategy within pharmacy practices.³² Guideline recommendations include finding alternative pain therapies, using nonsteroidal anti-inflammatory drugs, acetaminophen, nonpharmacological therapy, and/or having patients attend addiction or mental counseling. Additionally, understanding the basis of pain can help eradicate the opioid crisis.³²

Health care systems could implement strategies to tackle the opioid crisis by adding addiction specialists to the health care team to assist patients with SUD treatment, continuing research, and applying commercial warnings about use to prevent OUD. Responses to the opioid crisis should address inadequate resources, societal ills that promote addiction, and stigma that is attached to illicit drug use.³¹

Pharmacists can prevent opioid-related deaths by dispensing naloxone and educating patients and family members, however, many community pharmacists do not feel comfortable doing so.³³,³⁴ The data presented here indicates that opioid-related education for health care providers is needed, including training pharmacists on counseling patients about naloxone use as well as pharmacist- and prescriber-focused education to reduce stigma. The ability for education to reduce stigma has been well described in literature.⁵,³²,³⁹

While there are a number of programs focused on the opioid crisis for health care professionals and community members, the quality of the training is highly variable.³⁵ Most naloxone training programs discuss essential clinical topics including administration, formulation, and adverse events.³⁶,³⁷ Additional education could include pharmacist-patient and pharmacist-caregiver communication to increase confidence and effectiveness.³⁷

Many participants in focus groups had community pharmacy experience and exposure to expanded naloxone access laws across many states, which grant pharmacists direct or indirect authority to dispense naloxone with autonomy, often times without a prescription.³⁸ While 46% of participants reported having dispensed naloxone, only 15% had witnessed administration or use of naloxone. For those who had seen an opioid reversal, they reported improved acceptance of naloxone after seeing the ease of use and immediacy of response. Significant reductions in opioid overdose deaths have been linked to states with laws which allow pharmacist direct authority to dispense naloxone without a prescription, yet 31% of participants reported making this recommendation to patients during their training.³⁹

Naloxone education should ensure that students can identify whom would benefit from naloxone, such as patients with risk factors for respiratory depression from opioids regardless of whether they have a prescription. Improving students’ knowledge of naloxone during their pharmacy education can support the success of expanded naloxone access laws, although more pharmacy schools are starting to report naloxone education as part of their curriculum, the breadth and depth of the training varies greatly.⁴⁰,⁴¹,⁴²,⁴³,⁴⁴ Sixty-four percent of participants in focus groups had received some training on naloxone and 57% reported feeling prepared to administer naloxone. Based on these numbers, increased formal training to administer naloxone should increase student pharmacists’ confidence level. Despite common knowledge of opioid overdoses occurring in public community spaces, only 16% of students carried naloxone themselves and only 3% had ever administered naloxone.

Greater awareness and availability to promote naloxone access were two predominant themes mentioned by participants. Health care professionals and family members of individuals who use opioids would benefit from improved awareness. Although naloxone education by harm reduction organizations targeted at people with OUD has been successful, stigma with naloxone arguably makes counseling more difficult with people who are prescribed opioids for acute or chronic pain.³⁵ Pharmacy student education should incorporate the nuances of counseling patients on opioid overdose prevention by embracing non-stigmatizing language with emphasis on patient specific factors that pose additive respiratory risks with opioids. Conversations can be more compelling to address the dangers of inadvertent opioid administration among other members at home and pets.⁴⁵

Participants reported being in favor of increased access to naloxone in public spaces, such as schools, hotels, airports, and in conjunction with automated external defibrillators. Education should include that while naloxone can
immediately restore breathing in someone whose respiratory drive is impaired by opioids, it is harmless if administered to a person without opioids in their system. This knowledge prepares students to address common concerns with public access, such as fear of causing harm from administering naloxone and any potential personal liability. Students should also be aware of good Samaritan laws in their states, which provide criminal and civil immunity to anyone administering naloxone to reverse an overdose.

Pharmacy students foster common stigmas associated with naloxone, despite recognizing its benefits. Some reported that access to naloxone encourages opioid misuse, which has repeatedly been proven false by research. Without professional training, pharmacy students are prone to the perpetuation of the public’s misconceptions and stigma for naloxone. Participants mentioned that naloxone was rarely discussed among their peers or professors and noted that they had not seen any advertisements regarding naloxone from the media. Seventy-four percent of participants agreed with the CDC’s recommendations for co-prescribing naloxone and opioids. It was mentioned that more primary care providers should counsel patients on naloxone and felt first responders should leave naloxone with people revived from overdose.

The financial burden of naloxone was a common concern reported by participants. It is essential that pharmacy students appreciate the value of carrying naloxone and are able to make recommendations for different formulations if cost is a barrier for the patient.

Participants described receiving naloxone education in the curricula spanning all educational formats including lecture, school projects, rotations, student, and professional organizations. First-year students primarily received knowledge from family, friends, and media sources, while P2s-P4s reported learning about naloxone from coursework. Independent of source, students consistently felt exposure to naloxone was positive and beneficial. When asked to state sources that have impacted views on or awareness of the opioid crisis, the most mentioned subdomains were school/curriculum, pharmacy experiences, media, and personal experiences. While participants discussed answers to the specific question, sources were mentioned in responses to other focus group questions.

Doctor of Pharmacy programs are accredited by and abide to the American Council for Pharmacy Education standards, and often look to professional organizations including AACP for guidance in their substance use curricula. Courses and introductory/advanced pharmacy practice experiences help shape the future pharmacist’s professional approach to patient care. Many students are employed in pharmacy settings as interns and technicians. Practicing pharmacists mentor students and are often role models on rotations and when interacting with various patient populations and other health professionals. Whether in class or on rotations, students are exposed to opioid pharmacotherapy and prescription dispensing. Students may be introduced to national and community issues including substance use disorders and public health initiatives during courses and experiences. Therefore, it is not surprising that professional programs and pharmacy experience were identified as most impactful to student perspectives of the opioid crisis. There may have been unconscious bias to discussion about the impact of professional training as focus groups were conducted by pharmacy faculty and researchers.

Specific media sources included clinical trials, news, and advertisements. However, access or frequency of access to media was not determined from the focus group discussions. Information about the opioid crisis is evident in mass media, and drug discovery to treat opiate misuse and overdose is evolving. Drug court and police were mentioned in response to the media source question; however, it was not determined if participants had personal experience with court-based programs or police. When reflecting about the opioid crisis, perspectives were more in line with health professionals than judicial and department of correction professionals. Personal experiences included community, social media, and overdose events of family and friends. It is noted that some participants may not have felt comfortable sharing personal experiences.

Limitations

This study involved several academic institutions and required a large number of focus groups; however, it is possible that inconsistencies in how focus groups were created and conducted between institutions may have influenced study results. More P1s (32.7%) participated compared to P2s, P3s, and P4s and their perspectives are likely different compared to upperclassmen who have more experience in pharmacy school. We planned for a purposive sample with a similar number of students in each focus group but focus group participation was voluntary and no incentives were offered. Sample size at each school varied, resulting in a convenience sample, which may limit its applicability to the general population of pharmacy students.

Focus group questions, vetted by faculty educators, provide an additional limitation to this study due to intentionally asking broad, open-ended questions. The time restraints (1 – 1.5 hours) of the focus groups and the broad research questions did not allow for more focused questions to address the deeper causes of the opioid crisis. Additionally, focus group sizes varied and smaller groups tended to finish faster. While participants were given unlimited time to speak...
and respond to questions, it is possible that some may have perceived insufficient time or felt uncomfortable to thoroughly express their viewpoints.

One clear limitation of this study was the focus on the “supply” perspective of the opioid epidemic, contemporary pharmacy practice, and pharmacist/student attitudes towards individuals with OUD rather than the “demand” perspective, which would be more helpful in a public health context. For example, we noted that few participants identified psychosocial and socioeconomic factors as an underlying cause of the opioid crisis. Further research is needed to determine if this is due to the study design and questioning route or if participants were simply unaware of the deep impact of social and economic factors. Pharmacy students and pharmacists cannot effectively address the opioid crisis if causes and impacts of substance use disorders related to individual patients are not well understood, and this is a potentially critical area for the Academy to provide guidance.

Lastly, while the SCs were trained in conducting CQR analysis, not all of them had previous experience in this methodology prior to coding. It is possible that lack of experience in qualitative research methods may have influenced our study results, despite the meetings and support provided throughout the CQR process. While SCs and faculty auditors completed a bias self-check prior to coding, there is always the potential that life experiences and positive or negative biases could have impacted the coding process, even though adherence to the CQR methodology minimizes this phenomenon.

CONCLUSION

Student education and school/curriculum were frequently mentioned under the education and sources domains, reaffirming the importance of guidance from organizations such as AACP in SUD/OUD and pharmacy education. Pharmacists and pharmacy schools would benefit from our results, including recognition of how stigma and bias contribute to poor health outcomes for individuals with SUD/OUD and a notable lack of acknowledgement of social determinants of health impacting the opioid crisis, as students are educated to combat the crisis. This study documents what student pharmacists are learning about the opioid crisis, practices they are seeing, and belief sets that influence pharmacy experiences. Results provide information needed to develop ideas and recommendations to address the crisis in pharmacy education. We believe that the Academy must leverage its uniquely strategic position to guide pharmacist educators in curricula that stress the critical role of social determinants of health in substance use and strive to educate students on the ways that bias and stigma interfere with patient care. As a profession, we must do better to do no harm. Themes began emerging regarding the perspectives based on grade levels in the quantitative data. We plan to analyze the qualitative information by year in school, further examine the results and perspectives compared to programmatic sequences of curricula and make specific recommendations for improvement to each program. A few of the programs involved in this study have already made curricular adaptations based on our results.

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Table 1. Demographic Data for All Students Participating in Focus Groups (N=150)

| Student Demographic     | N   | (%)  |
|-------------------------|-----|------|
| **Grade Level**         |     |      |
| P1                      | 49  | 32.7 |
| P2                      | 31  | 20.7 |
| P3                      | 36  | 24   |
| P4                      | 34  | 22.7 |
| **Gender**              |     |      |
| Female                  | 105 | 71   |
| Male                    | 44  | 29   |
| Other                   | 1   | 0.6  |
| **Age (years)**         |     |      |
| Mean                    | 23.6|      |
| Mode                    | 20  |      |
| Range                   | 19-47|     |
| **Past Degree**         |     |      |
| None                    | 66  | 44   |
| Associate               | 11  | 7.3  |
| Bachelor’s              | 71  | 47.3 |
| Masters                 | 6   | 4    |
| Doctorate               | 5   | 3.3  |
| **Work Experience**     |     |      |
| Community               | 121 | 80.7 |
| Hospital                | 45  | 30   |
| Other                   | 16  | 10.7 |

*Students could indicate more than one prior degree
*Students could indicate work experience in multiple settings
Table 2. Codebook with Frequency of Student Mentions per Domain and Subdomain Identified through Consensual Qualitative Research Analysis

| Domains and Subdomain (brief description) | Mentions (N) |
|-----------------------------------------|-------------|
| Causes of the crisis                    |             |
| Prescriber (appointment too short, malpractice, overprescribing (duration or quantity), lack of pharmacology experience, misconceptions, misunderstanding of physiology of addiction, prescriber fears (under/over treatment, challenge other prescribers, high dose opioids etc.)) | 82          |
| Lack of awareness (overdose)            | 65          |
| Patient (doctor shopping, misunderstanding of physiology/psychology/chemistry of addiction, not understanding addictive nature of some drugs, misconceptions that prescription drugs are safe, lack of education) | 37          |
| Industry/manufacturer (false advertisement/ prescriber incentives/ drug development) | 35          |
| Pharmacist (inadequate counseling/ patient education, misconceptions, lack of monitoring) | 29          |
| Pain is subjective (different types of pain with different diagnosis code: cancer, chronic, terminal) | 19          |
| Accessibility to opioids (opioids versus street drugs) | 15          |
| Corporate policies (short-staffed, discourage counseling) | 11          |
| Patient population (young patient: sports/injuries; socioeconomic: homeless; elderly patient: arthritis) | 8           |
| FDA regulations/guidelines (clearer guideline/steps in therapy/reduce prescribing frequency) | 7           |
| Cultural influence (music about drugs, other cultural influences) | 6           |
| Overall impact of the crisis            |             |
| Deaths                                  | 9           |
| Overdoses that don’t result in death    | 4           |
| Stigma contributing to the crisis       |             |
| Patient attitude contributing to later stigma by pharmacy staff (frustration/ aggressive/ argumentative/ urgency/emotional) | 34          |
| Public perspectives (addiction as a choice versus an illness) | 18          |
| PMH/ medication history (medication for addiction/ controlled substances/ other opioids) | 17          |
| Early fills/ due date as a trigger for suspicion | 13          |
| Stigma towards needle users/ injectables (needles/syringe uses versus drug addict, transition to illicit drug use) | 11          |
| Judgements based on patients’ appearance (age, the way they dressed, nails, teeth, etc.) | 7           |
| Bias against certain prescribers/clinics (negative experiences with healthcare system, etc.) | 7           |
| Large quantities/ high dose of opioids  | 6           |
| Healthcare professional’s perspectives (addiction as a choice versus illness) | 6           |
| Payment method (cash pay, no insurance, etc.) | 4           |
| Socioeconomic status (stereotyping) | 4 |
|-----------------------------------|---|
| Relationship w/ pharmacist (eg, new patient) | 4 |
| Geography (eg, out-of-state, rural area, travel far) | 3 |
| Prescription (hard copy, marked with different color pen) | 3 |

**Solutions to the opioid crisis**

| Pharmacy practice solutions (double check prescription, PDMP, argument, increased communication (eg, doctor calls), patient contracts (normally with pain clinics), legislative guidance (follow law/policy), policy reform (harm reduction policy, opioid policy, laws etc.), clinical guidance (treatment guidelines, etc.), commercial/advertisements warnings (FDA, manufacturers)) | 70 |
| Therapeutic solutions (alternative therapies, drug therapy (NSAIDS, injections, APAP, opioid tapers, etc.), non-drug therapy (chiropractor, acupuncture, etc.), addiction or mental health counseling) | 59 |
| Healthcare system solutions (adding specialists to the team; assisting patients with addiction; awareness (provider, community etc.); patient empowerment; continuing research (companies); commercial warnings) | 12 |

**Education**

| Student education (increased lecture opportunities (guest speakers, class lectures); increased situational experiences (skills lab to identify/handle overdose); provide naloxone training; increased exposure (student organizations, health fairs, earlier in curriculum)) | 89 |
| Patient education: increase counseling by prescribers/pharmacists; Pharmacists counseling (warning stickers, drug/ naloxone counseling; increase community awareness (community workshops)) | 64 |
| Healthcare professionals’ education (pharmacists; medication counseling, increased education, adequate education; prescribers: need for pharmacology) | 32 |
| Education to reduce stigma (opioid use can be good and bad; normalize naloxone (to public, healthcare professional, increase access etc.); addiction can be environmental, addiction can be de-stigmatized) | 24 |

**Naloxone**

| Availability (case by case basis; public spaces (hotels, apartments, near fire extinguishers/AEDs); community spaces (law enforcement, schools); those with children/elderly in the household) | 42 |
| Awareness (family members, healthcare professionals) | 36 |

**Sources**

| School/curriculum (research, classes, projects, naloxone training, rotation) | 90 |
| Pharmacy (community, inpatient, ambulatory, other) | 56 |
| Media (news, drug company trials, advertisements) | 48 |
| Personal (community, social media, overdose (friends/family)) | 36 |
| Professional organizations (student organizations, CDC, clinics, magazines, naloxone training) | 26 |
| Lack of resources as a barrier (mental health support, individualized therapy, med disposal) | 15 |
| Professional (EMT, online training, CE for pharm tech, drug rehabilitation center) | 12 |
| Others (drug court, police) | 10 |
Healthcare providers (prescribers, pharmacists)

PMH=past medical history; PDMP=Prescription Drug Monitoring Program; FDA=Food & Drug Administration; NSAIDS=nonsteroidal anti-inflammatory drugs; APAP=acetaminophen; AED=automatic external defibrillator; CDC=Centers for Disease Control; EMT=emergency medical technician; CE=continuing education
Table 3. Student Responses to Quantitative Questions about the Opioid Crisis and Naloxone

| Quantitative Question | P1  | P1 (%) | P2  | P2 (%) | P3  | P3 (%) | P4  | P4 (%) | All Grade Levels |
|-----------------------|-----|--------|-----|--------|-----|--------|-----|--------|------------------|
| Is there a crisis with opioids? | 48/48 | 100 | 30/31 | 97 | 35/36 | 97 | 34/34 | 100 | 147/149 | 99 |
| Is there a stigma or bias from the pharmacy community about opioid use? | 40/49 | 82 | 30/31 | 97 | 36/36 | 100 | 33/34 | 97 | 139/150 | 93 |
| How many of you have dispensed naloxone? | 13/49 | 27 | 19/31 | 61 | 14/36 | 39 | 23/34 | 68 | 69/150 | 46 |
| How many of you have witnessed the administration or use of naloxone? | 7/49 | 14 | 5/31 | 16 | 6/36 | 17 | 5/34 | 15 | 23/150 | 15 |
| How many of you have been trained on the administration or use of naloxone? | 16/49 | 33 | 25/31 | 81 | 24/36 | 67 | 31/34 | 91 | 96/150 | 64 |
| How many of you feel you are prepared to administer naloxone if the need arises? | 17/49 | 35 | 15/31 | 48 | 25/36 | 69 | 28/34 | 82 | 85/150 | 57 |
| How many of you carry naloxone? | 6/47 | 13 | 6/31 | 19 | 6/36 | 17 | 5/34 | 15 | 23/148 | 16 |
| How many of you have administered naloxone to someone? | 0/49 | 0 | 3/31 | 10 | 0/36 | 0 | 1/34 | 3 | 4/150 | 3 |
| Have you ever recommended naloxone to a patient? | 10/49 | 20 | 11/31 | 35 | 8/36 | 22 | 17/34 | 50 | 46/150 | 31 |
| Should naloxone be offered with all opioid prescriptions? | 32/49 | 65 | 21/31 | 68 | 27/32 | 84 | 28/34 | 82 | 108/146 | 74 |