Material & Methods

Primary Research Aims:
1. Describe students’ perceived impact of the opioid crisis on healthcare professions.
2. Determine if the perceived impact varies by academic program.

Research Methods:
• Participants = 451 DO, NP, and PA students from Ohio University
• Measures = surveys with short answer questions completed using Qualtrics software
• Qualitative responses analyzed using content and thematic analysis.

Background

• When prescribed for chronic pain, rates of opioid misuse range from 21 to 29% [1].
• Over 47,000 people died of an opioid-involved overdose in the United States in 2017 [2].
• Ohio had the highest number of opioid overdose deaths (4,293) and the 2nd highest synthetic opioid-involved death rate in the nation (32.4 per 100,000) [2,4].
• Multiple calls have been made for the inclusion of pain and opioid specific courses in medical professional school curricula to help prepare future prescribers [5-7]. Interventions have been focused in psychiatry & emergency medicine.
• Students’ clinical experiences in hard-hit states like Ohio influence their future professional plans related to opioids [10].

Content & Thematic Analysis

Theme 1. Opioid addiction severely impacts healthcare professions.
Theme 2. The opioid crisis acts as a barrier to providing quality healthcare.
Theme 3. There is a mental and emotional impact on providers.

Acknowledgements
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Background

Figure 1. Opioid overdose deaths (2017)

- When prescribed for chronic pain, opioid misuse rates range from 21 to 29% [1].
- Over 47,000 people died due to opioid overdose in the US in 2017 [2].
- In 2017, Ohio had the highest number of opioid overdose deaths (4,293) and the 2nd highest overdose death rate (39.2 deaths/100,000 people) in the US [3-4].
- Provisional 2018 data shows a decline in opioid overdose deaths in hard hit states like Ohio [5].
- Multiple calls have been made for the inclusion of pain and opioid specific courses in medical professional school curricula to help prepare future prescribers [6-8].
- Experiential learning may be useful to impart clinical, pain-specific knowledge to students [9].
- Students’ academic program and clinical experiences influence their future professional opioid-related plans [10].

References:
Materials and Methods

Research Aims
1. Describe students’ perception of the impact of the opioid crisis on their respective healthcare profession.
2. Determine if the perceived impact varies by academic program.

Figure 2. Survey Development & Data Collection
• The survey was developed by a panel of experts in the medical education field.
• Survey components: demographics, 5 subscales [1) opioid related knowledge, 2) perceived severity of the opioid crisis, 3) beliefs and attitudes, 4) experiential, and 5) post-graduate plans], and an open-ended short answer question.
• The survey took approximately 15 minutes to complete.

Research Methods and Data Analysis
• Participants: Participants = 451 Doctor of Osteopathy (DO), Nurse Practitioner (NP), and Physician Assistant (PA) students from Ohio University’s Athens, Columbus, and Cleveland campuses.
• Measures: surveys completed online using Qualtrics software
  - Self-reported demographics
  - Short Answer question: please describe in 250 words or less the impact you believe the opioid crisis has had on your profession.
• Descriptive Statistics: (mean, percentage, SD) were calculated for demographic characteristics and the perceived severity, experiential, and post-graduate plans subscales.
• Chi Square Test of Homogeneity: Tests for differences in group distributions between NP, PA, and DO students. Chi square tests were performed using binomial variables derived from content analysis.
• Content & Thematic Analysis: Qualitative analysis of short answer question (Figure 3).

Figure 3. Thematic Analysis Workflow
• Adapted from Braun and Clark’s (2006) process of thematic analysis.
Results – Demographics

Table 1. Descriptive Statistics (percentage, n, chi square) of age, gender, race/ethnicity, year in program, community, and post-graduate specialty

<table>
<thead>
<tr>
<th></th>
<th>NP (N=84)</th>
<th>PA (N=54)</th>
<th>DO (N=313)</th>
<th>Total (N=451)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean (sd) years</td>
<td>34.5 (7.2)</td>
<td>25.7 (6.4)</td>
<td>25.6 (2.6)</td>
<td>27.2 (5.6)</td>
</tr>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>15.5 (13)</td>
<td>25.9 (14)</td>
<td>46.0 (144)</td>
<td>37.9 (171)</td>
</tr>
<tr>
<td>Female</td>
<td>84.5 (71)</td>
<td>74.1 (40)</td>
<td>54.0 (169)</td>
<td>62.1 (280)</td>
</tr>
<tr>
<td><strong>Race/Ethnicity</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Asian or Pacific Islander</td>
<td>0.0 (0)</td>
<td>5.6 (3)</td>
<td>9.9 (31)</td>
<td>7.5 (34)</td>
</tr>
<tr>
<td>Black or African American</td>
<td>2.4 (2)</td>
<td>1.9 (1)</td>
<td>3.8 (12)</td>
<td>3.3 (15)</td>
</tr>
<tr>
<td>Hispanic or Latino</td>
<td>1.2 (1)</td>
<td>3.7 (2)</td>
<td>1.3 (4)</td>
<td>1.6 (7)</td>
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<tr>
<td>Middle Eastern</td>
<td>1.2 (1)</td>
<td>0.0 (0)</td>
<td>3.5 (11)</td>
<td>2.7 (12)</td>
</tr>
<tr>
<td>Multiracial</td>
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<td>1.9 (1)</td>
<td>4.8 (15)</td>
<td>3.6 (16)</td>
</tr>
<tr>
<td>American Indian or Alaskan Native</td>
<td>1.2 (1)</td>
<td>0.0 (0)</td>
<td>0.0 (0)</td>
<td>0.2 (1)</td>
</tr>
<tr>
<td>White or Caucasian</td>
<td>94.0 (79)</td>
<td>85.2 (46)</td>
<td>75.4 (236)</td>
<td>80.0 (361)</td>
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<tr>
<td>Other</td>
<td>0.0 (0)</td>
<td>1.9 (1)</td>
<td>1.0 (3)</td>
<td>0.9 (4)</td>
</tr>
<tr>
<td><strong>Year in program</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Year 1</td>
<td>29.7 (25)</td>
<td>77.8 (42)</td>
<td>36.4 (114)</td>
<td>40.1 (181)</td>
</tr>
<tr>
<td>Year 2</td>
<td>65.5 (55)</td>
<td>22.2 (12)</td>
<td>32.6 (102)</td>
<td>37.5 (169)</td>
</tr>
<tr>
<td>Year 3</td>
<td>1.2 (1)</td>
<td>-</td>
<td>13.1 (41)</td>
<td>9.3 (42)</td>
</tr>
<tr>
<td>Year 4</td>
<td>3.6 (3)</td>
<td>-</td>
<td>16.9 (53)</td>
<td>12.4 (56)</td>
</tr>
<tr>
<td>Year 5</td>
<td>-</td>
<td>-</td>
<td>1.0 (3)</td>
<td>0.7 (3)</td>
</tr>
<tr>
<td><strong>Community where grew up</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Metropolitan Area (500,001 – over 1 million)</td>
<td>8.3 (7)</td>
<td>5.6 (3)</td>
<td>13.1 (41)</td>
<td>11.3 (51)</td>
</tr>
<tr>
<td>City (50,001 – 500,000)</td>
<td>26.2 (22)</td>
<td>44.4 (24)</td>
<td>37.4 (117)</td>
<td>36.1 (163)</td>
</tr>
<tr>
<td>Rural or Town (less than 2,500 – 50,000)</td>
<td>65.5 (55)</td>
<td>50.0 (27)</td>
<td>49.5 (155)</td>
<td>52.6 (237)</td>
</tr>
<tr>
<td><strong>Postgraduate specialty</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Specialty Care</td>
<td>26.2 (22)</td>
<td>51.9 (28)</td>
<td>53.4 (164)</td>
<td>47.5 (214)</td>
</tr>
<tr>
<td>Primary Care</td>
<td>73.8 (62)</td>
<td>48.1 (26)</td>
<td>46.6 (149)</td>
<td>52.5 (237)</td>
</tr>
</tbody>
</table>

* One DO student did not report his/her age. ‡ One DO student did not report his/her race/ethnicity.
Figure 4. Chi square comparisons of common qualitative codes by academic program (NP, PA, DO)

- Grey bars indicate the number of times the qualitative code was NOT mentioned.
- Purple bars indicate the number of times the qualitative code was mentioned.

- (A) Proportionally, more NP students perceived challenges with pain treatment ($p=0.032$, $\chi^2=6.86$, df=2).
- (B) PA students mentioned increased professional regulations more often ($p=0.044$, $\chi^2=6.23$, df=2).
- (C) There was no significant difference in the number of times emotions were discussed ($p=0.134$, $\chi^2=4.03$, df=2).
- (D) NP students discussed drug seeking more often ($p=0.017$, $\chi^2=8.19$, df=2).
- (E) PA students discussed broader impacts of the crisis more frequently ($p=0.042$, $\chi^2=6.36$, df=2).
- (F) Proportionally, more NP students discussed the challenges of their job ($p=0.004$, $\chi^2=11.12$, df=2).

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Short Answer Question
Please describe in 250 words or less the impact you believe opioid addiction has on your profession.
## Results – Thematic Analysis

<table>
<thead>
<tr>
<th><strong>Theme 1. Opioid addiction severely impacts healthcare professions.</strong></th>
<th><strong>Theme 2. The opioid crisis acts as a barrier to providing quality healthcare.</strong></th>
<th><strong>Theme 3. There is a mental and emotional impact on providers.</strong></th>
</tr>
</thead>
</table>
| Students stated that there are an increasingly large number of patients addicted to opioids.  
- The opioid crisis has impacted the nursing profession profoundly as a large percentage of patients in any setting have a current addiction or a history of addiction. (ID 4)  
- I think we’ll see a high volume of individuals facing opioid addiction and associated comorbid conditions. (ID 476) | Students described increasingly restrictive opioid prescribing regulations.  
- I think [opioid addiction] makes prescribing medications more difficult. I think it makes disease management more difficult. It complicates everything. (ID 58)  
- There are now strict rules about opioid prescribing. I know it is very difficult and time consuming which causes many doctors to avoid writing them. (ID 100) | Students expressed fear of prescribing opioids in the future.  
- I believe I will be hesitant to write prescriptions for opioids, even if they are medically appropriate, because I will be afraid of patient harm or legal ramifications. (ID 3)  
- It has made physicians more cautious about prescribing these drugs in fear that the patient in front of them will abuse it or become addicted and that fault will be dealt to the physician. (ID 216) |
| Students reported seeing overdoses and patients in active withdrawal while on clinical rotations.  
- I work daily with drug seekers and overdose patients in the hospital setting. (ID 67)  
- I have seen many patients who are being treated for addiction with suboxone, several overdoses, drug seeking individuals, NAS babies, and many families affected by the disease. (ID 311) | Students perceived difficulty in accurately assessing pain.  
- It makes judging pain very hard. The patient is the only one who can describe their pain but who knows when they are lying? (ID 240)  
- There’s a fine line between fearing/trying to prevent opioid addiction and treating our patients’ pain. (ID 487) | Increased stress and burnout were noted by students.  
- I have seen many residents and physicians show signs of burnout by treating heroin addicts over and over. (ID 366).  
- Dealing with patients with drug seeking behaviors has been one of the most stressful experiences during my training so far. (ID 448) |