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## Physical Therapy Professionals' Opioid Knowledge and Attitudes in a Midwestern State: A Cross Sectional Survey

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# Physical Therapy Professionals' Opioid Knowledge and Attitudes in a Midwestern State: A Cross Sectional Survey

## Abstract

**Purpose:** To determine perspectives towards opioid use, knowledge on managing an opioid overdose, and awareness towards individuals who use opioids of Indiana physical therapy (PT) professionals. **Methods:** An online questionnaire was disseminated to PT professionals in Indiana from various practice settings. This questionnaire included two standardized measures, the Opioid Overdose Knowledge Scale (OOKS) and the Opioid Overdose Attitude Scale (OOAS). An additional 12 questions regarding the role of PT and other groups in the opioid crisis as well as opioid education were included. These questions were developed by discussion between investigators as well as feedback from another rehabilitation professional. Descriptive statistics were primarily used to analyze the data. Further investigation via non-parametric tests, including Mann-Whitney U and Kruskal-Wallis tests, were performed to analyze the impact of demographic variables on OOKS and OOAS scores. **Results:** Of 1840 surveys disseminated, the questionnaire was initiated by 67 PT professionals, while 58 participants completed it. The OOKS score was 30.24 mean (5.67 standard deviation) and the OOAS score was 90.36 (9.36). 93.1% of respondents reported wanting to help in an overdose situation, but 94.8% of respondents also reported needing more training. Only 48.3% of participants received education on the opioid crisis within the last 3 years that significantly impacted their clinical practice. Those who had opioid education in the last 3 years had higher OOKS scores ( $p = .003$ ) and OOAS scores ( $p = .002$ ) compared to those who did not receive opioid education. American Physical Therapy Association members had statistically significant higher OOAS scores ( $p = .005$ ) but not OOKS scores ( $p = .322$ ). **Conclusion:** A sample of PT professionals in Indiana surveyed in this study lack knowledge and awareness on opioid use, specifically managing an overdose. While most want to help, further education or training is needed for them to confidently manage these situations.

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### **ABSTRACT**

**Purpose:** To determine perspectives towards opioid use, knowledge on managing an opioid overdose, and awareness towards individuals who use opioids of Indiana physical therapy (PT) professionals. **Methods:** An online questionnaire was disseminated to PT professionals in Indiana from various practice settings. This questionnaire included two standardized measures, the Opioid Overdose Knowledge Scale (OOKS) and the Opioid Overdose Attitude Scale (OOAS). An additional 12 questions regarding the role of PT and other groups in the opioid crisis as well as opioid education were included. These questions were developed by discussion between investigators as well as feedback from another rehabilitation professional. Descriptive statistics were primarily used to analyze the data. Further investigation via non-parametric tests, including Mann-Whitney U and Kruskal-Wallis tests, were performed to analyze the impact of demographic variables on OOKS and OOAS scores. **Results:** Of 1840 surveys disseminated, the questionnaire was initiated by 67 PT professionals, while 58 participants completed it. The OOKS score was 30.24 mean (5.67 standard deviation) and the OOAS score was 90.36 (9.36). 93.1% of respondents reported wanting to help in an overdose situation, but 94.8% of respondents also reported needing more training. Only 48.3% of participants received education on the opioid crisis within the last 3 years that significantly impacted their clinical practice. Those who had opioid education in the last 3 years had higher OOKS scores ( $p = .003$ ) and OOAS scores ( $p = .002$ ) compared to those who did not receive opioid education. American Physical Therapy Association members had statistically significant higher OOAS scores ( $p = .005$ ) but not OOKS scores ( $p = .322$ ). **Conclusion:** A sample of PT professionals in Indiana surveyed in this study lack knowledge and awareness on opioid use, specifically managing an overdose. While most want to help, further education or training is needed for them to confidently manage these situations.

**Keywords:** opioids, opioid use disorder, physical therapy, naloxone, harm reduction, public health, survey

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## INTRODUCTION

This study aims to describe physical therapy (PT) professionals' opioid knowledge, attitudes toward opioid use, and knowledge on managing an opioid overdose. Additionally, this study aims to determine if professional organization membership or recent education can impact opioid knowledge and attitudes among PT professionals. Further investigation into opioids is paramount as the opioid epidemic continues to be a major public health concern in the United States with 91,799 people dying in the last year according to the Center for Disease Control (CDC) overdose death data.<sup>1</sup> Despite significant efforts and resources allocated to this public health crisis, the rates of opioid overdose deaths have actually increased in recent years including Indiana, which has the 13th highest drug overdose rate among states in the United States.<sup>1</sup>

Physical therapy (PT) professionals, including physical therapists and physical therapist assistants, can play a major role in this public health crisis. The CDC recommends nonopioid treatments as first line interventions for chronic pain, including PT management in the treatment of musculoskeletal pain.<sup>2</sup> Early physical therapist management of musculoskeletal (MSK) conditions has been shown to reduce the likelihood of taking opioids, to decrease the dosage of opioids, and to improve function.<sup>3-5</sup> However, there is potential for PT professionals to impact the opioid epidemic further. Since referral to PT and overall utilization of PT remains low for common MSK conditions, it is plausible that increased access to PT could amplify these benefits. For example, PT utilization for individuals consulting primary care for low back pain (LBP) has been reported as low as 7%.<sup>6</sup> Accessibility of PT services, particularly early and direct access services, may also be limited.<sup>7,8</sup> These limitations in utilization and access could limit PT's role in reducing opioid use and lead to a reduced PT presence over the course of treating individuals with chronic pain who are already using opioids.<sup>9</sup>

It has also been proposed that PT professionals can play a larger role in interventions at the societal level and in later stages of opioid use.<sup>10</sup> An ongoing concern with the use of opioids for the management of pain is a potential opioid overdose.<sup>11</sup> While those with opioid use disorder are at the highest risk of overdose, any individual who uses opioids can be at risk.<sup>11</sup> Based on national survey data, the most frequently cited reason for opioid misuse was to relieve musculoskeletal pain.<sup>12</sup> As many as 25% of patients seeking care for musculoskeletal pain are on prescription opioids.<sup>13</sup> Administration of naloxone in emergent opioid overdoses has the ability to reverse these overdoses and save lives.<sup>14</sup> Additionally, training individuals on how to use naloxone has the potential to influence participants' knowledge, attitudes, and stigma related to opioids.<sup>15,16</sup> Training both healthcare professionals and lay responders have yielded positive outcomes regarding knowledge and ability to administer, along with reducing stigma around opioid use disorder.<sup>14,16</sup> Due to these relationships between musculoskeletal pain, opioid use, and opioid overdoses, there is reason to investigate healthcare professionals with expertise in managing musculoskeletal conditions. The knowledge and awareness of PT professionals to act in emergent opioid overdose situations could therefore be an asset.

This study aims to describe PT professionals' opioid knowledge, attitudes towards opioid use, and knowledge on managing an opioid overdose. Due to the lack of research in this area, we hypothesize that PT professionals will have limited knowledge and confidence in opioid overdose situations. Since the APTA has a position statement on naloxone availability and administration, it was predicted APTA members would score higher in these areas. Additionally, as prior studies have found education to affect these measures, it was predicted education would positively influence these scores as well.

## METHODS

### Survey Construction

The study was approved by Indiana State University's Institutional Review Board. A cross sectional survey approach was decided upon to capture current knowledge and attitudes of PT professionals in Indiana. Authors SK and JK performed a literature review for opioid overdose measures. While a number of measures were identified, two measures, the Opioid Overdose Knowledge Scale (OOKS) and the Opioid Overdose Attitude Scale (OOAS) were ultimately selected.<sup>17,18</sup> These assessments had construct and concurrent validity assessing overdose management knowledge and attitudes respectively.<sup>17,18</sup> These assessments were determined to have the greatest validity while providing information on PT professionals' knowledge and attitudes.<sup>17,18</sup>

A total of 65 questions were included in the final survey. The OOKS and OOAS were used along with questions developed specifically regarding the PT professionals' perceptions on roles in solving the opioid crisis. A separate literature review at the time did not identify related items that could be used to determine PT professionals' perceptions on roles in solving the opioid crisis. An additional 12 questions regarding the roles in the opioid crisis and recent education related to opioids were included. These questions were developed through discussion between investigators with clinical expertise treating individuals with persistent pain. Each had greater than 10 years of experience and had taken additional continuing education to best serve this population. Additionally, both investigators collaborated with a local harm reduction group whose services also included naloxone training. Feedback from another rehabilitation professional was considered before using the questions in the final survey. Questions were measured on a 5-point Likert-scale from 1=strongly disagree to 5=strongly agree. 11 demographic questions were also included.

### Survey Distribution

The investigators input the questionnaire into a Qualtrics® (Provo, UT) survey to be disseminated online with protection of data and preservation of anonymity. A convenience sampling approach was used for this study. The investigators disseminated the questionnaire to the Indiana Chapter of the American Physical Therapy Association through the chapter's electronic newsletters. Since there are PT professionals in Indiana who are not APTA members, efforts were made to include these individuals to be more representative of Indiana PT professionals. As a result, the questionnaire was also forwarded to contacts at private employers of PT professionals. The total number of emails sent out was recorded to calculate a response rate. The survey was open from February 9, 2021 to March 22, 2021. Respondents were allowed a single response matched to the link provided in the distributed email. The survey could not be found via search engines.

Consent was obtained from all participants prior to starting the survey. The inclusion criteria were: PT professionals in Indiana in all practice settings. Student physical therapists and student physical therapist assistants were also included. Individuals were excluded if they were not PT professionals in Indiana or students in Indiana. Surveys that were greater than 90% completed were included in this analysis.

### Data Analysis

Demographics, responses to each individual item, total mean score of OOKS, and total mean score of OOAS were analyzed using descriptive statistics. Participants who met the above completion criteria were included in the statistical analysis. Demographic characteristic impacts on scores for both the OOKS and the OOAS were explored. Non-parametric tests were used as a more statistically conservative approach for comparisons of demographic characteristics due to several groups not meeting assumptions for homogeneity of variance for the one-way analysis of variance (ANOVA). Mann-Whitney U tests were used when demographic variables were presented as two groups. Kruskal-Wallis tests were used to compare scores where three or more groups were present. Statistical significance was set a-priori at  $p < 0.05$ . OOKS and OOAS mean scores with standard deviations along with p-values are reported in table 1 for each demographic characteristic. Statistical Package for the Social Sciences version 28.0.0.0 was used for statistical analysis.

## RESULTS

### Responses

A total of 1840 surveys were sent out via email. Sixty-seven (67) PT professionals initiated the online survey for a response rate of 3.6%. Fifty-eight (58) participants completed the survey yielding a completion rate of 3.2%. Two (2) respondents were excluded from the study since the respondents did not practice in Indiana.

### Respondent Demographics

The majority of respondents were licensed physical therapists 84.5% (n=49) or physical therapist assistants 10.3% (n=6), along with physical therapy students 5.2% (n=3). Survey participants included both APTA members 51.7% (n=30) and non-members 48.3% (n=28). See table 1 for further demographic information.

**Table 1.** Demographics of Survey Participants (n=58)

Characteristic	Number of Participants	Percentage of Participants	OOKS Score	OOAS Score
Gender			$p = .451$	$p = .789$
Male	21	36.2%	31.14 (4.93)	91.33 (10.57)
Female	37	63.8%	29.73 (6.05)	89.81 (8.71)
Prefer to self describe as _____	0	0		
Prefer not to answer	0	0		
Age Range			$p = .502$	$p = .302$
20-29	15	25.9%	32.20 (5.16)	86.73 (7.36)
30-39	22	37.9%	28.45 (6.19)	90.59 (8.92)
40-49	12	20.7%	31.33 (4.56)	93.83 (11.88)
50-59	6	10.3%	29.33 (6.74)	88.50 (5.24)
60+	3	5.2%	31.00 (5.00)	96.67 (14.01)

Characteristic	Number of Participants	Percentage of Participants	OOKS Score	OOAS Score
Race / Ethnicity			p = .117	p = .241
Asian or Pacific Islander	1	1.7%	40.00	96.00
Black or African American	1	1.7%	24.00	77.00
Hispanic or Latino	0	0		
Native American or Alaskan Native	0	0		
White or Caucasian	56	96.6%	30.18 (5.55)	90.50 (9.33)
Multiracial or Biracial	0	0		
Prefer to self describe as _____	0	0		
Prefer not to answer	0	0		
Title			p = .257	p = .303
Physical Therapist	49	84.5%	30.88 (5.41)	91.22 (9.31)
Physical Therapist Assistant	6	10.3%	26.17 (7.57)	83.50 (9.71)
Student Physical Therapist	2	3.4%	27.50 (0.71)	92.50 (2.12)
Student Physical Therapist Assistant	1	1.7%	29.00	85.00
Community			p = .623	p = .354
Urban	12	20.7%	31.00 (4.61)	93.67 (7.3)
Suburban	31	53.4%	30.55 (5.92)	89.52 (8.58)
Rural	14	24.1%	29.00 (6.30)	89.21 (12.49)
Other	1	1.7%	29.00	93.00
Entry Level Degree			p = .312	p = .127
Associates (AASPTA)	6	10.3	26.67 (7.66)	84.17 (9.64)
BS (BSPT, BSPTA)	6	10.3%	32.67 (1.86)	99.33 (12.08)
Master's (MPT)	9	15.5%	28.89 (4.73)	88.89 (10.41)
Doctorate (DPT)	36	62.1%	30.89 (5.81)	90.53 (7.77)
Other	1	1.7%	26.00	81.00
Primary Practice Setting			p = .065	p = .243
Academic	3	5.2%	27.00 (3.61)	94.00 (15.39)
Home Health	4	6.9%	34.00	105.00
Inpatient Acute	8	13.8%	31.00 (5.87)	87.50 (5.96)
Inpatient Rehabilitation	1	1.7%	39.00	96.00
Outpatient Private Practice	14	24.1%	33.17 (4.24)	94.75 (7.04)
Outpatient Hospital / Managed Care	33	56.9%	28.61 (5.30)	88.48 (9.20)
Skilled Nursing	3	5.2%	29.50 (14.84)	87.50 (14.85)
Other (Wellness)	1	1.7%	36.33 (3.51)	91.33 (13.61)
APTA Member			p = .201	p = .003*
Yes	30	51.7%	31.17 (4.92)	93.77 (9.10)
No	28	48.3%	29.25 (6.31)	86.71 (8.33)
Board certified by the American Board of Physical Therapy Specialties			p = .968	p = .976
Yes	11	19.0%	30.09 (4.70)	90.73 (12.26)
No	47	81.0%	30.28 (5.91)	90.28 (8.71)
Board Certification(s) obtained				
Orthopaedics	9	15.5%	29.44 (5.17)	92.67 (12.01)
Sports	0	0		
Geriatrics	2	3.4%	32.00 (2.83)	82 (12.73)

Characteristic	Number of Participants	Percentage of Participants	OOKS Score	OOAS Score
Neurology	0	0		
Pediatrics	0	0		
Women's Health	0	0		
Cardiovascular & Pulmonary	0	0		
Clinical Electrophysiology	0	0		
Oncology	0	0		
Wound Management	0	0		
Completed post graduate program			p = .603	p = .068
None	38	65.5%	29.55 (6.46)	89.32 (8.00)
Transitional DPT (tDPT)	4	6.9%	31.67 (2.08)	79.00 (7.21)
Doctor of Philosophy (PhD)	3	5.2%	29.00 (7.07)	84.00 (9.90)
Other Doctoral Degree (DSc, EdD)	0	0		
Residency	2	3.4%	33.00 (1.41)	96.50 (6.36)
Fellowship	4	6.9%	30.50 (3.11)	102.00 (8.60)
Other (Certified Athletic Trainer, McKenzie Method of Mechanical Diagnosis and Therapy Certification, Manual Therapy Certification, Masters, Master of Business Administration)	5	8.6%	33.75 (1.71)	90.00 (14.85)

**Perspectives on the Opioid Crisis**

The majority of PT professionals surveyed (98.3%) agreed that the opioid crisis has had a significant societal impact nationally, but only 48.3% had received education on the opioid crisis in the last 3 years that had significantly impacted their clinical practice. While 100% PT professionals surveyed agreed that healthcare professionals have a role in an emergent opioid overdose, only 38% of PT professionals felt they had a role in an emergent opioid overdose. See table 2 for complete responses to the perspectives on the opioid crisis.

**Table 2.** Description of Responses

Item	Strongly Disagree	Somewhat Disagree	Neither Agree or Disagree	Somewhat Agree	Strongly Agree
The opioid crisis has had a significant societal impact nationally	0	1 (1.7%)	0	9 (15.5%)	48 (82.8%)
The opioid crisis has had a significant impact in Indiana	0	1 (1.7%)	1 (1.7%)	9 (15.5%)	46 (79.3%)
Healthcare professionals have an important role in addressing the opioid epidemic	0	1 (1.7%)	0	5 (8.6%)	52 (89.7%)
Healthcare professionals have a role in an emergent opioid overdose	0	0	0	16 (27.6%)	42 (72.4%)
Healthcare professionals have a role administering potentially life-saving medications in an emergent opioid overdose	0	0	1 (1.7%)	12 (20.7%)	45 (77.6%)
Physical therapy professionals have an important role in addressing the opioid crisis	0	1 (1.7%)	3 (5.2%)	16 (27.6%)	38 (65.5%)

Item	Strongly Disagree	Somewhat Disagree	Neither Agree or Disagree	Somewhat Agree	Strongly Agree
Physical therapy professionals have a role in an emergent opioid overdose	0	3 (5.2%)	16 (27.6%)	23 (39.7%)	16 (27.6%)
Physical therapy professionals have a role administering potentially life-saving medications in an emergent opioid overdose	12 (20.7%)	5 (8.6%)	19 (32.8%)	11 (19.0%)	11 (19.0%)
Physical therapy professionals should play a more significant role in solving the opioid crisis	0	2 (3.4%)	6 (10.3%)	22 (37.9%)	28 (48.3%)
Lay members of the community have a role in an emergent opioid overdose	0	3 (5.2%)	7 (12.1%)	26 (44.8%)	22 (37.9%)
Lay members of the community have a role administering potentially life-saving medications in an emergent opioid overdose	7 (12.1%)	11 (19.0%)	16 (27.6%)	14 (24.1%)	9 (15.5%)
I have received education on the opioid crisis within the last 3 years that has significantly impacted my clinical practice	9 (15.5%)	9 (15.5%)	12 (20.7%)	19 (32.8%)	9 (15.5%)

### Management of Opioid Overdoses (OOKS)

The majority of PT professionals surveyed (67.2%) knew that naloxone is used to reverse the effects of an opioid overdose, and 70.0% were aware that someone can overdose again after having received naloxone. Only 22.4% were aware that the effect of naloxone is shorter than the effect of heroin and methadone, and only 22.4% knew that a second dose of naloxone can be given if the first dose has no effect. Mean scores for the OOKS are available in table 3.

### Attitudes Regarding Opioids (OOAS)

Only 6.9% of respondents agreed that they already have enough information regarding how to manage an overdose. 93.1% of participants agreed that if someone overdosed, they wanted to be able to assist them. However, 94.8% of participants indicated they needed additional training before feeling confident to help someone who had overdosed. Only 10.3% agreed they are already able to inject naloxone into someone who had overdosed. Mean scores for the OOAS are available in table 3.

**Table 3.** Scores for Standardized Scales

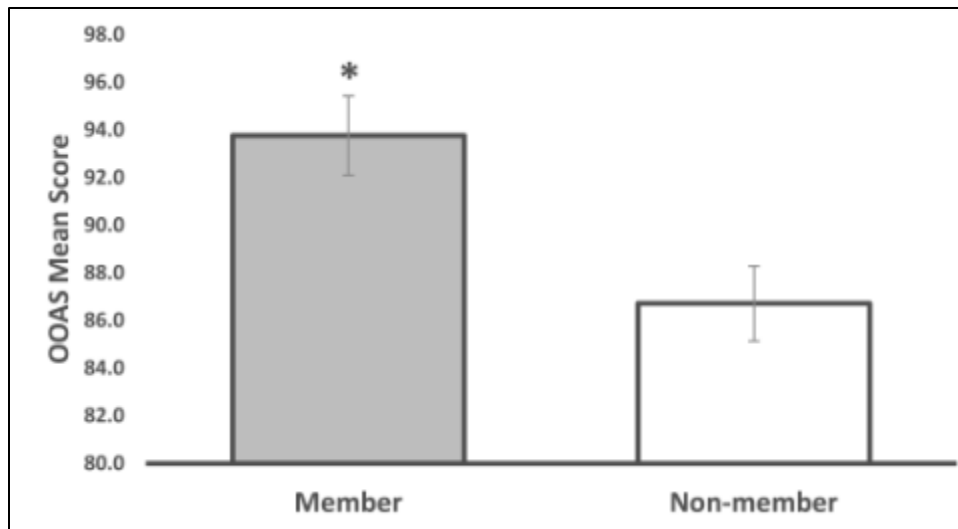
Scale	Mean Score
Opioid Overdose Knowledge Scale (OOKS)	30.24 (5.67)
Risks	7.05 (2.41)
Signs	6.62 (1.62)
Action	9.47 (1.08)
Naloxone Use	7.10 (3.06)
Opioid Overdose Attitude Scale (OOAS)	90.36 (9.36)

### Factors Associated with OOKS and OOAS scores

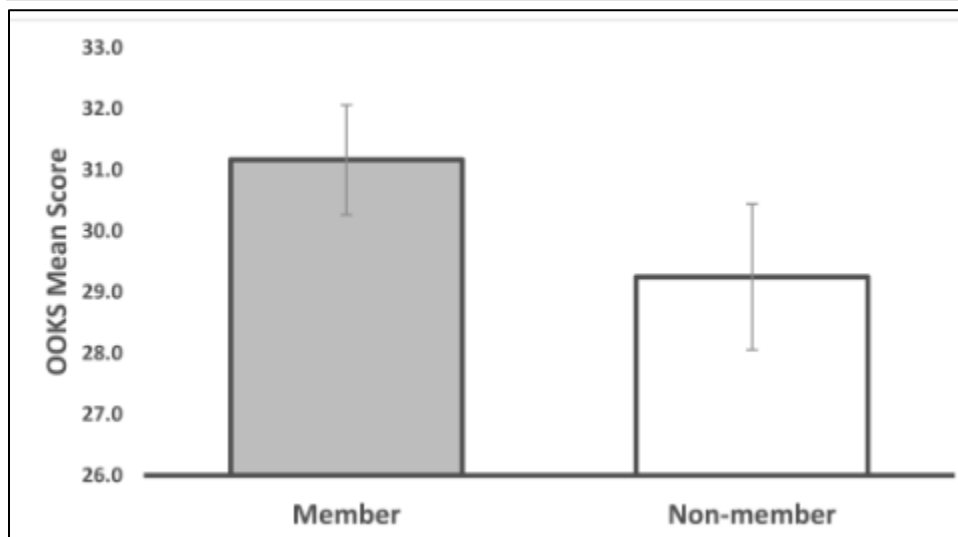
Demographic characteristic impacts were explored related to both OOKS and OOAS scores in Table 1. The only demographic variable with a significant finding was APTA membership. No statistically significant differences were noted between APTA



members (n=30) and non-members (n=28) on the OOKS ( $p = .322$ ), but APTA members had statistically significant higher OOAS scores ( $p = .005$ ). One additional factor explored was whether self-identifying as having opioid education in the last 3 years had an impact on OOKS or OOAS scores. Individuals who agreed with the statement, "I have received education on the opioid crisis within the last 3 years that has significantly impacted my clinical practice" (n= 28) had significantly higher ( $p = .003$ ) mean scores on the OOKS 32.50 (4.93) compared to the mean OOKS scores 28.13 (5.56) for those who did not receive opioid education (n=30). Individuals agreeing with the statement also had significantly higher ( $p = .002$ ) mean scores on the OOAS 94.43 (9.03) compared to the mean OOAS scores 86.57 (8.09) of those who did not receive opioid education. See figures 1-2 for comparison of mean scores of APTA members to non-members and figures 3-4 comparing individuals who reported receiving opioid education within the last 3 years to individuals with no opioid education.



**Figure 1.** Bar chart demonstrates mean OOAS scores for APTA members significantly higher than non-members



**Figure 2.** Bar chart demonstrates mean OOKS scores for APTA members higher but similar to non members

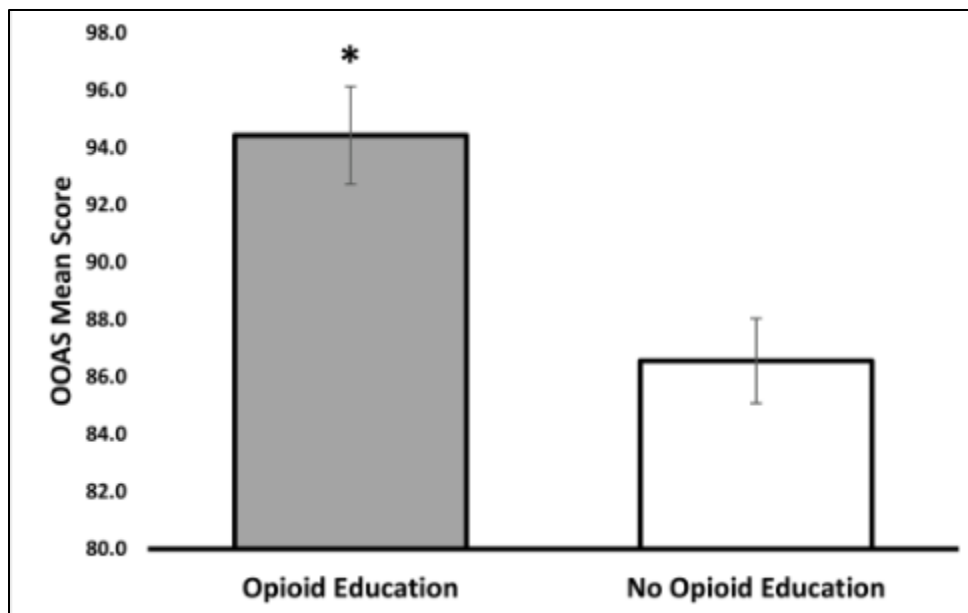


Figure 3. Bar chart demonstrates mean OOAS scores for those with opioid education significantly higher than those without.

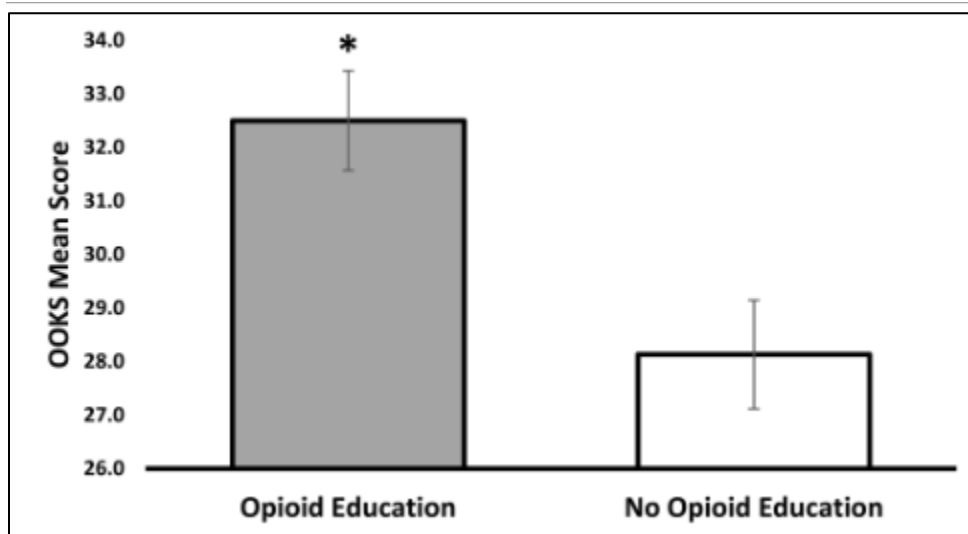


Figure 4. Bar chart demonstrates OOKS scores for those with opioid education significantly higher than those without.

## DISCUSSION

Our study is the first to explore PT professionals' opioid knowledge, attitudes towards opioid use, and knowledge on managing an opioid overdose. This sample starts to provide insight on a small sample of Indiana PT professionals. While the majority of respondents from this small sample of Indiana PT professionals acknowledged they would help in an overdose, 94.8% agreed they would need more training before they would feel confident to help someone who had overdosed. In this study, the composite scores of both the OOAS and OOKS, two measures used to assess effectiveness of naloxone training programs, support this finding. Individuals certified as trainers for take home naloxone programs had substantially higher scores of 40.02 (3.19) for the OOKS and 116.95 (15.52) for the OOAS than respondents in this study.<sup>18</sup> However, the mean score for the OOKS is in the range of scores seen for untrained student healthcare professionals in previous studies.<sup>19-23</sup> Once educated on opioid overdoses and naloxone distribution, pharmacy students' OOKS score improved to 41.9 (1.6) and OOAS score improved to 120.4 (10.3), which is similar to individuals certified as trainers.<sup>21</sup> While at baseline both medical students and pharmacy students had similar OOKS scores to PT professionals in the current study, nursing students had higher scores.<sup>19-22</sup> Student social workers had lower scores than PT professionals surveyed.<sup>23</sup> OOKS scores of PT professionals were also similar to those of untrained lay responders.<sup>18,24-26</sup> The composite scores of the OOAS are similar to the baseline characteristics of most student healthcare providers.<sup>19-23</sup>

Interestingly, the OOAS scores for PT professionals in this study and student healthcare professionals in other studies are lower than that of lay responders.<sup>18-24</sup> This may speak to the stigma healthcare professionals have for individuals that use opioids.<sup>27</sup> This stigma in healthcare professionals has been associated with decreased provision of appropriate interventions for those using opioids.<sup>27</sup> Understanding opioid attitudes of healthcare providers has implications for the care they render to patients who use opioids. Improving opioid attitudes for healthcare providers is a worthwhile goal as these attitudes likely result in improved care for individuals using opioids. Additionally, in this study membership in the professional association was associated with significantly higher OOAS scores (though not higher OOKS scores). It is possible that this membership status may positively influence attitudes.

Despite all respondents agreeing that healthcare professionals have a role in emergent opioid overdoses, only 38% of PT professionals felt they had a role in these situations. Participants indicated they did not have enough training to manage emergent overdose situations. This self-report in knowledge mirrors the scores on the OOKS, particularly the domain on naloxone use which appear to be lower than other healthcare professionals.<sup>18-21</sup> This domain score is much closer to reported domain scores of lay responders though in some studies lay responders had higher domain scores.<sup>18,24,26</sup> This further emphasizes how the participants in this study lacked confidence in administering naloxone. Participants that had any education on opioids in the last 3 years had significantly higher OOKS scores than those without opioid education during that time.

### Implications

The survey findings could indicate a potential opportunity to improve opioid education for PT professionals. Though future research studies need to verify these learning opportunities, it appears this sample of Indiana PT professionals could benefit from education on how to administer lifesaving care in the event of an emergent opioid overdose. In our survey, over 90% of participants indicated a desire to help in emergent opioid overdoses. Many patients seen by PT professionals are taking opioid medications for musculoskeletal pain.<sup>28</sup> Increasing the number of PT professionals who are trained in naloxone administration would increase the likelihood of administering lifesaving care for these individuals using opioids.<sup>28</sup> In 2019, the American Physical Therapy Association recommended naloxone should be available in all locations that PT is performed.<sup>29</sup> Previous studies on naloxone training have demonstrated an ability to improve participant's confidence to manage an overdose.<sup>30-32</sup>

While the impact of naloxone training on stigma has been mixed in earlier trials, it is important to note that evidence suggests healthcare professionals commonly have negative attitudes towards patients with substance use disorders, and these attitudes contribute to suboptimal health care for these patients.<sup>32,33</sup> A recent trial with a diverse group of subjects has demonstrated that opioid overdose prevention training can have a positive impact on attitudes towards people with substance use disorder.<sup>30</sup> As a result, education on opioids should likely include specifics on naloxone administration and content to help destigmatize opioid use. Pre-licensure training may be the ideal location for building this foundational knowledge and fostering appropriate attitudes on the topic. Ultimately, inclusion of this education in pre-licensure training may be the most effective way to reach all new PT professionals. Barriers to this education could include lack of awareness of this knowledge gap, legal concerns, costs, and stigma. As the United States continues to face the increasing effects of the opioid crisis, this information can inform local strategies to address this public health emergency. Local strategies are a major component of a multi-pronged strategy in addressing the opioid epidemic.<sup>34</sup>

### Limitations

The major limitation of this research is a relatively small sample. The survey also was distributed to 1840 PT professionals in Indiana though only 3.2% completed the survey. This could lead to a response bias in the results. Perspective questions developed by the research team were not validated items. The OOKS and OOAS are valid rescuer response assessments for opioid overdoses though still have limitations.<sup>17</sup> This includes a question on naloxone delivery that does not list intranasal (currently the most prevalent route) as an option. Education in the last 3 years was found to be associated with higher OOKS and OOAS scores though details regarding the specific content and learning activities is lacking from the current study. While the findings of this study are applicable to PT professionals in Indiana, it is unclear how applicable these findings are to PT professionals outside of Indiana.

### Future Research

Future larger scale studies in Indiana and on a national level are indicated for future research. This would help better compare the knowledge and attitudes of PT professionals with other groups. The authors hypothesize similar findings may be present in a larger sample at both the state and national level. With a larger sample size, further sub-group analysis could be performed to see if these findings may vary between different sub-groups. Since education had a positive influence in this study, more details regarding the content and learning activities of the education could assist in developing future education for PT professionals regarding opioids. In a recent study, orthopaedic specialists and fellowship trained physical therapists outperformed their counterparts who did not have additional specialty training in prescription opioid medication misuse management practices.<sup>35</sup> Future research could determine if specialty training is correlated with increased preparedness for emergent opioid overdoses.

## CONCLUSION

The data found in this study indicates a lack of knowledge for the management of emergent opioid overdoses among a sample of PT professionals surveyed in one midwestern state. Furthermore, as naloxone training has been shown to change knowledge, attitudes, and stigma regarding opioid use, it is possible education in this area may have other positive effects in addressing the opioid epidemic. Most PT professionals in this study agreed they have a role in reducing the impact of the opioid public health crisis and feel they should play a more significant role in solving the opioid crisis. This study underscores a possible need for additional training to optimize the ability of one group of healthcare professionals to respond to the opioid health crisis. The scope of the ongoing opioid crisis warrants exploring how healthcare professionals, like physical therapists, can best be prepared to make a positive impact using public health principles that range the spectrum of harm reduction. At the very least, this interested group of healthcare professionals has the potential to further positively impact the state of Indiana in this public health emergency.

## DECLARATION OF INTEREST

The authors report no conflicts of interest. The authors are responsible for the content and writing of this article.

## REFERENCES

1. Death Rate Maps & Graphs | Drug Overdose | CDC Injury Center. Published June 2, 2022. Accessed July 15, 2022. <https://www.cdc.gov/drugoverdose/deaths/index.html>
2. Prescribing Practices | Drug Overdose | CDC Injury Center. Published June 23, 2021. Accessed July 15, 2022. <https://www.cdc.gov/drugoverdose/deaths/prescription/practices.html>
3. Sun E, Moshfeh J, Rishel CA, Cook CE, Goode AP, George SZ. Association of Early Physical Therapy With Long-term Opioid Use Among Opioid-Naive Patients With Musculoskeletal Pain. *JAMA Netw Open*. 2018;1(8):e185909. [PMID 30646297]
4. Pugh A, Roper K, Magel J, Fritz J, Colon N, Robinson S, Cooper C, Peterson J, Kareem A, Madsen T. Dedicated emergency department physical therapy is associated with reduced imaging, opioid administration, and length of stay: A prospective observational study. *PLoS One*. 2020;15(4):e0231476. [PMID 32324821]
5. Hon S, Ritter R, Allen DD. Cost-Effectiveness and Outcomes of Direct Access to Physical Therapy for Musculoskeletal Disorders Compared to Physician-First Access in the United States: Systematic Review and Meta-Analysis. *Phys Ther*. 2021;101(1):pzaa201. [PMID 33245117]
6. Fritz JM, Childs JD, Wainner RS, Flynn TW. Primary care referral of patients with low back pain to physical therapy: impact on future health care utilization and costs. *Spine (Phila Pa 1976)*. 2012;37(25):2114-21. [PMID 22614792]
7. Sharpe JA, Martin BI, Fritz JM, Newman MG, Magel J, Vanneman ME, Thackeray A. Identifying patients who access musculoskeletal physical therapy: a retrospective cohort analysis. *Fam Pract*. 2021;38(3):203-209. [PMID 33043360]
8. Boissonnault WG, Lovely K. Hospital-Based Outpatient Direct Access to Physical Therapist Services: Current Status in Wisconsin. *Phys Ther*. 2016;96(11):1695-1704. [PMID: 27277495]
9. 2018 NEXT: Physical Therapy Can Play a Part in Addiction Treatment. APTA. Published July 2, 2018. Accessed July 15, 2022. <https://www.apta.org/news/2018/07/02/2018-next-physical-therapy-can-play-a-part-in-addiction-treatment>
10. Davenport TE, DeVoght AC, Sisneros H, Bezruchka S. Navigating the Intersection Between Persistent Pain and the Opioid Crisis: Population Health Perspectives for Physical Therapy. *Phys Ther*. 2020;100(6):995-1007. [PMID 32115638]
11. Webster LR. Risk Factors for Opioid-Use Disorder and Overdose. *Anesth Analg*. 2017;125(5):1741-1748. [PMID 29049118]
12. Han B, Compton WM, Blanco C, Crane E, Lee J, Jones CM. Prescription Opioid Use, Misuse, and Use Disorders in U.S. Adults: 2015 National Survey on Drug Use and Health. *Ann Intern Med*. 2017;167(5):293-301. [PMID 28761945]
13. Stokes A, Berry KM, Hempstead K, Lundberg DJ, Neogi T. Trends in Prescription Analgesic Use Among Adults With Musculoskeletal Conditions in the United States, 1999-2016. *JAMA Netw Open*. 2019;2(12):e1917228. [PMID 31825504]
14. Clark AK, Wilder CM, Winstanley EL. A systematic review of community opioid overdose prevention and naloxone distribution programs. *J Addict Med*. 2014;8(3):153-63. [PMID 24874759]
15. Doughty B, Young S, Eggleston W. Assessment of a comprehensive naloxone education program's impact on community member knowledge and attitudes on a college campus. *J Am Coll Health*. 2022;70(5):1332-1335. [PMID 32877623]
16. Moses TEH, Chou JS, Moreno JL, Lundahl LH, Waiono E, Greenwald MK. Long-term effects of opioid overdose prevention and response training on medical student knowledge and attitudes toward opioid overdose: A pilot study. *Addict Behav*. 2022;126:107172. [PMID 34774365]

17. Franklin Edwards G 3rd, Mierisch C, Mutcheson B, Horn K, Henrickson Parker S. A review of performance assessment tools for rescuer response in opioid overdose simulations and training programs. *Prev Med Rep.* 2020;20:101232. [PMID 33163333]
18. Williams AV, Strang J, Marsden J. Development of Opioid Overdose Knowledge (OOKS) and Attitudes (OOAS) Scales for take-home naloxone training evaluation. *Drug Alcohol Depend.* 2013;132(1-2):383-6. [PMID 23453260]
19. Moses TE, Chammaa M, Ramos R, Waiono E, Greenwald MK. Incoming medical students' knowledge of and attitudes toward people with substance use disorders: Implications for curricular training. *Subst Abus.* 2021;42(4):692-698. [PMID 33166242]
20. Klimas J, Egan M, Tobin H, Coleman N, Bury G. Development and process evaluation of an educational intervention for overdose prevention and naloxone distribution by general practice trainees. *BMC Med Educ.* 2015;15:206. [PMID 26590066]
21. Kwon M, Moody AE, Thigpen J, Gauld A. Implementation of an Opioid Overdose and Naloxone Distribution Training in a Pharmacist Laboratory Course. *Am J Pharm Educ.* 2020;84(2):7179. [PMID 32226065]
22. Giordano NA, Whitney CE, Axson SA, Cassidy K, Rosado E, Hoyt-Brennan AM. A pilot study to compare virtual reality to hybrid simulation for opioid-related overdose and naloxone training. *Nurse Educ Today.* 2020;88:104365. [PMID 32088524]
23. Halmo RS, Sellers CM, Collin CR, Chinamasa G, Putney JM. Changes in social work students' attitudes and knowledge following opioid overdose prevention training. *Subst Abus.* 2022;43(1):289-293. [PMID 34214409]
24. Williams AV, Marsden J, Strang J. Training family members to manage heroin overdose and administer naloxone: randomized trial of effects on knowledge and attitudes. *Addiction.* 2014;109(2):250-9. [PMID 24103087]
25. Lott DC, Rhodes J. Opioid overdose and naloxone education in a substance use disorder treatment program. *Am J Addict.* 2016;25(3):221-6. [PMID 27002783]
26. Stover AN, Grogg K, Patel J, Thornton D, Dwibedi N. Opioid Overdose Knowledge among College Students in a High Overdose Death State. *J Hum Behav Soc Environ.* 2019;29(7):887-896. [PMID 32952392]
27. Cheetham A, Picco L, Barnett A, Lubman DI, Nielsen S. The Impact of Stigma on People with Opioid Use Disorder, Opioid Treatment, and Policy. *Subst Abuse Rehabil.* 2022;13:1-12. [PMID 35115860]
28. Boissonnault WG. Prevalence of comorbid conditions, surgeries, and medication use in a physical therapy outpatient population: a multicentered study. *J Orthop Sports Phys Ther.* 1999;29(9):506-19; discussion 520-5. [PMID 10518293]
29. Naloxone Availability Where Physical Therapist Services are Provided. APTA. Published September 20, 2019. Accessed July 15, 2022. <https://www.apta.org/apta-and-you/leadership-and-governance/policies/naloxone-availability-where-pt-services-are-provided>
30. Bascou NA, Haslund-Gourley B, Amber-Monta K, Samson K, Goss N, Meredith D, Friedman A, Needleman A, Kumar VK, Fischer BD. Reducing the stigma surrounding opioid use disorder: evaluating an opioid overdose prevention training program applied to a diverse population. *Harm Reduct J.* 2022;19(1):5. [PMID 35034649]
31. Moses TEH, Moreno JL, Greenwald MK, Waiono E. Training medical students in opioid overdose prevention and response: Comparison of In-Person versus online formats. *Med Educ Online.* 2021;26(1):1994906. [PMID 34727840]
32. Winograd RP, Stringfellow EJ, Phillips SK, Wood CA. Some law enforcement officers' negative attitudes toward overdose victims are exacerbated following overdose education training. *Am J Drug Alcohol Abuse.* 2020;46(5):577-588. [PMID 32931324]
33. van Boekel LC, Brouwers EP, van Weeghel J, Garretsen HF. Stigma among health professionals towards patients with substance use disorders and its consequences for healthcare delivery: systematic review. *Drug Alcohol Depend.* 2013;131(1-2):23-35. [PMID 23490450]
34. Partnerships Between Public Health and Public Safety | Drug Overdose | CDC Injury Center. Published October 18, 2021. Accessed July 15, 2022. <https://www.cdc.gov/drugoverdose/strategies/public-safety.html>
35. Magel J, Bishop MD, Lonnemann E, Cochran G, Fritz JM, West N, Gordon AJ. The association between advanced orthopedic certification and confidence and engagement in prescription opioid medication misuse management practices: a cross-sectional study. *J Man Manip Ther.* 2022;30(4):228-238. [PMID 34784850]