



Research Article

Attitudes and Perceptions of Naloxone Administration Among Chronic Pain Patients and First Responders: Implications for Research and Practice

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Abstract

Background: As opioid overdoses continue to contribute toward a public health crisis, the need for naloxone treatment by emergency first responders is critical. However, there is limited knowledge about attitudes regarding naloxone from the views of patients potentially at risk for overdose in addition to first responders who administer naloxone.

Methods: This cross-sectional survey investigates the attitudes of first responders and chronic pain patients on opioid medications to better understand their perceptions of naloxone administration. Eligibility for patients included: ages ≥ 18 , chronic pain (3 months or longer), and currently taking opioid medications. First responders were identified through the statewide EMS association in Pennsylvania. Data collected included demographics, psychosocial characteristics, and perceptions on naloxone administration. Descriptive and univariate statistics were calculated to characterize both cohorts and assess their attitudes on the efficacy of naloxone administration.

Results: A total of 237 participants completed the survey (120 chronic pain patients and 117 first responders). Patients were significantly more likely (96%, $P < 0.001$) than first responders (56%)

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to agree that providing naloxone to first responders would save lives. While 30% percent of patients (N=37) agreed that distributing naloxone would encourage people to use even more opioid analgesics, there were nearly twice as many (N=69; 60%) first responders who agreed with this statement ($P < 0.001$).

Conclusion: These data help to characterize and highlight the differences of the perceptions and attitudes of chronic pain patients and first responders towards naloxone administration, illuminating critical areas of health education. Further, these data can help inform the field to identify areas of training for both first responders and chronic pain patients.

Keywords: First responders; Naloxone; Opioids; Prevention; Stigma

Introduction

Deaths from opioid overdoses have reached an epidemic level in the United States and specifically in southwest Pennsylvania. The opioid epidemic has created a public health emergency in the ten-county region of southwest Pennsylvania, straining resources and the capacity of providers, creating significant treatment needs and devastating the community with high rates of overdose deaths [1]. In 2018, seven of the ten counties in the southwestern region of the state ranked in the top quarter of county overdose rates in the Commonwealth of Pennsylvania. Overall, in 2018, the ten counties averaged 33 deaths per 100,000 people. Fortunately, corresponding to patterns across the United States, overdose deaths in the region in 2018 began to trend downward, yet in southwestern Pennsylvania rates are still above the national average [2]. This decline has been attributed to enhanced education, prescription monitoring, and increased law enforcement activity [3].

Access to naloxone, the overdose-reversing drug is one factor that contributes to the declining rate of fatal-overdose [4]. In addition, naloxone training and distribution among individuals who use opioids has been effective in reversing overdoses [5]. First responders are often on the frontlines of the opioid epidemic and routinely administer naloxone in overdose situations [6]. Due to the critical public health need, and initial success of naloxone programs, the Secretary of Health in the State of Pennsylvania issued a standing order in July 2019 making naloxone available for the general public. While this has led to greater availability and use of naloxone, there is concern that attitudes among health professionals regarding naloxone and stigma towards drug users could potentially limit the broad implementation of this life-saving medication [7].

The experience of chronic pain patients seeking pain treatment has often been affected by the opioid epidemic, as opioid misuse, abuse and fatal overdose has made many patients with chronic pain feel ostracized and believe they are seen as drug seeking [8]. Patients often fear being seen by the medical profession as "addicts" and this perception is not only harmful, distressing, and marginalizing,

but can result in barriers to treatment access [9]. In order to obtain a comprehensive picture of the opioid epidemic the Center for Interventions to Enhance Community Health at the University of Pittsburgh (<https://www.citech.pitt.edu/>) commissioned two studies to better understand the attitudes of both the potential recipients of naloxone and those health professionals who often administer naloxone. Thus, this study examines two separate cohorts in the ten-county region of Southwest Pennsylvania, comparing chronic pain patients and first responders' attitudes about naloxone and perceptions on the opioid epidemic.

Methods

Researchers at the University of Pittsburgh Center for Interventions to Enhance Community Health conducted two cross sectional surveys in the ten-county region of southwestern Pennsylvania with the aim of comparing both chronic pain patients at risk to overdose in addition to providers who were often administering naloxone. The project was approved by the University's Institutional Review Board for Human Subjects.

First responder Sample. Participants were recruited through an email distribution sent to all members of the Emergency Medical Services (EMS) association registry. The Executive Director of The Pennsylvania Emergency Health Services Council (PEHSC), a 501 (c) (3) nonprofit organization, disseminated the survey via email. PEHSC's primary mission is to serve as an independent advising body to the Pennsylvania Department of Health and all other appropriate agencies on matters pertaining to EMS to support, improvement in EMS quality, and delivery of services.

The survey was shared with members through the regional directors throughout the ten counties of southwest Pennsylvania. The directors disseminated the survey through email to PEHSC's membership. The email was sent three times in an eight-week period in November/December 2018 to maximize participation. Study staff did not have access to the PEHSC's email database. All emergency professionals over the age of 18 were eligible to complete the survey. Participants were not compensated for their survey completion.

Chronic pain patient sample

Participant recruitment was facilitated through registration with Pitt + Me, a database supported by the University of Pittsburgh. The database provided access to patients who consented to be contacted for research participation. The Registry's software paired participants with studies based on their health status, demographics, and ICD-9/10 codes. After patients expressed interest in the study, a research team member screened them for inclusion/exclusion criteria, and following enrollment administered a series of validated questionnaires with an iPad tablet, which took approximately 45 minutes to complete.

Patients were eligible to participate in the study if they had chronic pain (three months or longer), were currently taking opioid medications, were English speaking and ≥ 18 years. Patients were excluded if they were receiving cancer or end of life treatment, were pregnant, or were not primary English speakers. Interested and eligible patients participated in a verbal informed consent process before enrollment. Patients who completed the survey received \$25 compensation.

Measures

Demographic and employment characteristics: Self-reported demographic variables for both samples included: gender, age, race and ethnicity, household income, and household composition. For the first responders, self-reported employment variables included area of first responder service (rural, suburban, urban), level of certification, number of years as a first responder, and hours worked per week. Additionally, we developed a 5-item measure with a Likert scale to better understand first responders' attitudes regarding their employment experience during the opioid epidemic. Questions examined how often first responders felt anger during overdose calls, concern about injury during overdose reversal, increased work-related stress, reduced desire to work as a first responder due to the opioid epidemic, or anger at coworker's response during an overdose call.

Psychosocial characteristics: We included a series of standardized mental health measures in the patient and first responder surveys. For the chronic pain patients, depression and anxiety were measured by the Hospital Anxiety and Depression Screen (HADS), a questionnaire composed of seven questions that examine anxiety and seven questions that capture depression.

HADS has shown both reliability and validity [10]. For first responders, we measured depression with the two-item version of the Patient Health Questionnaire (PHQ-2) and anxiety with the GAD-7, a 7-item measure that indicates presence of Generalized Anxiety Disorder [11,12]. We measured PTSD using the Primary Care PTSD Screen for DSM-5 (PC-PTSD-5), a 5-item measure that assesses severity of PTSD symptoms [13]. Post-Traumatic Stress Disorder (PTSD) in both patients and first responders was demonstrated with the Primary Care PTSD Screen for DSM-5 (PCPTSD-5). The PC-PTSD-5 is a validated five-item measure that reflects the Diagnostic and Statistical Manual of Mental Disorders, fifth edition (DSM-5) [13].

Drug and alcohol use: For chronic pain patients, the Prescription Opioid Misuse Index (POMI), a validated and reliable measure, was used to capture aberrant drug taking behavior [14]. Endorsement of two or more items indicated opioid misuse: doctor shopping, taking medication at higher doses or more frequently than prescribed, and or using opioids for coping with reasons other than pain. Illicit drug use was captured by the Drug Abuse Screening Test (DAST 10), which is clinically validated 10-item self-report questionnaire that has been extracted from the 28-item DAST [15]. For first responders, prescription medication misuse and marijuana use were screened for frequency ("never," "monthly or less," "2-4 times a month," "2-3 times a week," "4+ times a week").

For both patients and first responders, the Alcohol Use Disorders Identification Test AUDIT-C was used to assess alcohol consumption, drinking behaviors, and alcohol-related problems [16]. A score of 8 or more is considered to indicate hazardous or harmful alcohol use. The AUDIT has been validated across genders and in a large range of racial and ethnic groups [17-19].

Perceptions and attitudes about naloxone: For perceptions and attitudes about naloxone (Figure 1), we asked if patients and first responders agreed or disagreed with statements about naloxone's role in overdose reversal and the opioid epidemic, developed by researchers to understand opinions on naloxone distribution [20]. An overview of each of the measures can be found in figure 2.

| |
|--|
| Providing naloxone to first responders would save lives |
| Providing naloxone to friends and family members would save lives |
| Distributing naloxone will encourage people to use even more opioids |
| Preventing overdose is not effective because people will just overdose again |
| Naloxone is a medication that should only be given by medical professionals |

Figure 1: Perceptions and attitudes study questions.

| Domain | Measures | |
|--|---|---|
| | First responders | Chronic Pain Patients |
| Anxiety | GAD-7 | Hospital Anxiety and Depression Screen (HADS) |
| Depression | PHQ-2 | |
| Post-Traumatic Stress Disorder | Primary Care PTSD Screen for DSM-5 | |
| Opioid misuse behaviors | | The Prescription Opioid Misuse Index (POMI) |
| Drug misuse | Fill in item frequency | Drug Abuse Screening Test (DAST 10) |
| Alcohol misuse | | |
| Beliefs about naloxone's role & effectiveness in opioid epidemic | Alcohol Use Disorders Identification Test (AUDIT-C) Naloxone Attitudes Scale | |
| Impact of opioid epidemic on working in emergency services | Attitudes about Opioid Epidemic Scale | Not applicable for patients |

Figure 2: First responder and patient cohort measures.

Analyses

Descriptive statistics were employed to examine frequencies, percentages, and measures of central tendency for demographics, mental health, and substance use. Chi square and t-tests were used to compare baseline characteristics between patients and first responders. Analyses were performed in Stata version 14.2 [21].

Results

Recruitment for the chronic pain patients occurred between September 2018 until September 2019, with a total of 244 patients approached, 199 of whom agreed to participate in screening. Seventy-nine of these patients were excluded, 65 because they were not on opioid medication, 4 who were receiving cancer treatment, 6 who were currently taking suboxone, or 3 who were taking methadone, and 1 who was pregnant. Therefore, a total of 120 patients screened eligible for the study, provided written informed consent, and completed the survey. For the first responder sample, there were 117 first respondents from the ten-county region of Southwest Pennsylvania.

Baseline demographics

Over a third of the participants 39.7% (n=94) were between the age range of 36-54, nearly half (n=103) were female, 81.9% of the participants were Caucasian (n=194), and 18.1% were African American (n=43) (Table 1). The first responders were significantly more likely to be male and more likely to be White than the patients. The first responders were also more likely to be in the 18-35 age range than the patient population. The sample of patients reported significantly more depressive and anxiety symptomology than the first responders, 45.8% (n=55) of the patients screened positive for depression, while 12.8% (n=15) of first responders were positive for depression. Additionally, 51.6% (n=62) of patients screened

positive for anxiety, while only 17.9% (n=21) of first responders screened positive for anxiety. There was not a significant difference in PTSD symptomology, with 44.1% (n=53) of the patients screening positive and 32.5% (n=38) of the first responders reporting PTSD symptoms. With regard to substance use, the first responders endorsed significantly higher rates of hazardous alcohol use 38.5% (n=45), with less than one in five patients 17.5% (n=21) reporting hazardous alcohol use. The first responders also demonstrated significantly higher rates of problematic drug use 52.9% (n=62) than the patients reporting of problematic drug use 30.8% (n=37).

| | Total % (n) | Patient % (n) | First Responder % (n) | X ² (df) | P |
|------------------|----------------------|-----------------------|-----------------------|---------------------|----------------|
| Demographics | | | | | |
| Female | 43.5(103) | 59.2 (71) | 27.4(32) | 23.98(1) | <0.001 |
| Age ^a | | | | | |
| 18-35 | 24.9(59) | 12.5(15) | 37.6(44) | 21.76(2) | <0.001 |
| 36-54 | 39.7(94) | 42.5(51) | 36.8(43) | | |
| 55+ | 35.4(84) | 45.0(54) | 25.6(30) | | |
| Race | | | | | |
| White | 81.9(194) | 67.5(81) | 96.6(113) | 33.73(1) | <0.001 |
| Black | 18.1(43) | 32.5(39) | 3.4(4) | | |
| Mental health | | | | | |
| Depression | 29.5(70) | 45.8(55) | 12.8(15) | 31.02(1) | <0.001 |
| Anxiety PTSD | 35.0(83) 38.4(91) | 51.6(62) 44.12(53) | 17.9(21) 32.5(38) | 29.60(1) 3.42(1) | <0.001 0.64 |
| Substance use | | | | | |
| Alcohol | 27.8(66) | 17.5(21) | 38.5(45) | 12.45(1) | <0.001 |
| Drug use | 41.8(99) | 30.8(37) | 52.9(62) | 11.96(1) | 0.001 |

Table 1: Demographics by patients and first responders (N= 237, Patients=120, First responders=117).

Note: ^a Mean (SD), t, df;

Opioid misuse

The patient sample completed the Prescription Opioid Misuse Index (POMI) (Table 2), which measures components of opioid misuse behaviors. Taking medication too frequently was the most frequently endorsed behavior for 43% of patients (n=52), while 35% of patients (n=42) were taking more medication than prescribed. Further, 25.8% (n=31) reported needing early refills and 12.5% (n=15) reported using opioid medications to "achieve a buzz". The least frequently endorsed misuse behavior was doctor shopping in which 10% of the patients (n=12) reported engaging in this behavior.

| Behaviors | Total % (n) |
|--|-------------|
| Taking more medication than prescribed | 35(42) |
| Taking medication too often | 43(52) |
| Early refills | 25.8(31) |
| Medication buzz | 35(42) |
| Medication to deal with problems | 12.5(15) |
| Doctor shopping | 10(12) |

Table 2: Opioid medication misuse behaviors of patients (N=120).

First responders and the opioid epidemic

First responders were asked five questions regarding how they might be affected by working during the opioid epidemic (Table 3). When asked whether they ever felt angry during an overdose call 54.7% participants (n=64) said never, or rarely. Over 50% of the first responders (n=72) reported that they were rarely or occasionally concerned for their safety. When the first responders were asked if the opioid epidemic has increased work stress, 65.8% of participants (n=77) said occasionally or a moderate amount. Despite experiencing increased stress, 72.6% of respondents (n=85) indicated that they never or rarely had a decreased desire to work in emergency response consequent to the opioid epidemic. However, 28.2% of the first responders (n=33) reported a greater effect on their desire to continue in this line of work.

| | Total (%) Never | Rarely | Occasion- ally | A Moderate Amount | A Great Deal |
|--|--------------------|----------|-------------------|-------------------------|-----------------|
| Felt angry during overdose calls | 29.1(34) | 25.6(30) | 28.2(33) | 12(14) | 5.1(6) |
| Concerned about being injured by a patient after naloxone was administered | 14.5(17) | 34.2(40) | 27.4(32) | 14.5(17) | 9.4(11) |
| Felt that the opioid epidemic has increased The stress of working in EMS | 8.5(10) | 12(14) | 32.5(38) | 33.3(39) | 13.7(16) |
| Decreased desire to work in EMS due to opioid epidemic | 44.4(52) | 27.4(32) | 17.9(21) | 9.4(11) | 0.9(1) |
| Felt angry about how co-workers managed an overdose patient | 26.5(31) | 18.8(22) | 39.3(46) | 8.5(10) | 6.9(8) |

Table 3: First responder questions.

Attitudes on naloxone

Both patients and first responders completed the naloxone attitude scale and the groups responded with significant difference to four of the five items (Table 4). There were 95.8% patients (n=115) agreed that providing naloxone to first responders would save lives, while 43.6% of first responder (n=51) agreed (P=<0.001). There were 85.3% of patients (n=103) agreed that providing naloxone to friends and family members would save lives, while only 59% of first responders (n=69) agreed (P=<0.001). While 30.8% of patients (n=37) agreed

that distributing naloxone will encourage people to use even more opioid analgesics, just under 59% of first responders (n=69) agreed with this statement (P=<0.001).

Additionally, 23.3% of patients (n=28) agreed that preventing overdoses is not effective because people will overdose again, and 54.7% of first responders (n=64) agreed (P=<0.001).

Discussion

The aim of this study was to characterize and compare the attitudes of chronic pain patients and first responders towards naloxone administration and highlight the discrepancies between the two cohorts. Interestingly, there was a fairly significant difference in attitudes and perceptions on naloxone administration between the first responders and patients. Specifically, these data help to characterize the differences of the perceptions and attitudes among these two cohorts, which emphasizes critical areas of health education.

Influence of opioid crisis on first responders

Consequent to rising awareness of the opioid epidemic, between 2013-2014 the number of states that permitted first responders with licensure to administer naloxone doubled [22]. Only within the past decade have first responders in Pennsylvania gained the responsibility for overdose reversals as a support mechanism to increase capacity for emergency service capacity by the passage of Controlled Substance, Drug, Device and Cosmetic Act-Drug Overdose Response Immunity in September 2014 [6].

There are conflicting attitudes held by first responders about the utility of naloxone training and distribution, as one study reports a sample of first responder’s hold negative views about the drug using population’s ability to successfully administer naloxone during an overdose event [23]. This perspective contrasts starkly with evidence collected by Strang and colleagues [24], in which opioid users demonstrate a statistically significant improvement in naloxone knowledge after receiving a training and reported successful overdose reversals.

Professional development and patient education

At the center of the opioid public health crisis, concerning the management of chronic pain and the risks associated with opioid misuse, exists an emphasis for both prevention and treatment. Our study findings have highlighted that while there is a discrepancy between the attitudes and perceptions of patients and first responders regarding naloxone distribution, there is still misconceptions among pain patients regarding naloxone administration.

| | Total% (n) | | Patients | | First Responders | | X ² (df) | P |
|--|------------|-----------|----------|-----------|------------------|----------|---------------------|--------|
| | Disagree | Agree | Disagree | Agree | Disagree | Agree | | |
| Providing naloxone to first responders would save lives | 29.9(71) | 70.1(166) | 4.2(5) | 95.8(115) | 56.4(66) | 43.6(51) | 77.06(1) | <0.001 |
| Providing naloxone to friends and family members would save lives | 21.6(51) | 78.4(186) | 14.7(17) | 85.3(103) | 41.0(48) | 59.0(69) | 21.47(1) | <0.001 |
| Distributing naloxone will encourage people to use even more opioid analgesics | 27.8(65) | 72.2(171) | 69.2(83) | 30.8(37) | 41.0(48) | 59.0(69) | 18.98(1) | <0.001 |
| Preventing overdoses is not effective because people will overdose again | 61.2(145) | 28.8(92) | 76.7(92) | 23.3(28) | 45.3(53) | 54.7(64) | 24.54(1) | <0.001 |
| Naloxone should only be given by medical professionals | 55.3(131) | 44.7(106) | 75.0(90) | 25.0(30) | 74.4(87) | 25.6(30) | 0.01(1) | 00.91 |

Table 4: Attitudes on naloxone by patients and first responders (N= 237, Patients=120, First responders=117).

Chronic pain patients who are being prescribed an opioid for analgesic purposes have been identified as a high-risk population given their continued access to opioid medications and lower relative knowledge of overdose risks compared with illicit opioid users [25,26]. It is critical that patients exposed to opioids have fundamental knowledge of opioid use, opioid overdose, overdose response, and naloxone administration in order to help prevent fatal overdoses [27].

Stratification of patients into different risk categories is important when identifying patients who are at risk for opioid misuse and overdose. This requires the use of screening tools designed specifically to screen for opioid misuse, such as the Opioid Risk Tool [28]. Once risk level is identified, the patient can be matched with appropriate resources and interventions in order to address the corresponding risk. Such interventions should ensure that patients receive appropriate education on: opioid medications and chronic pain, risk and protective factors for misuse and opioid use disorders, and information pertaining to overdose education and naloxone distribution, including issues pertinent to stigmatization [29].

Implication to the field

The patient sample in this study reported favorable views on naloxone administration, similar to results that were reported in a study of Australian injection drug users [30]. While the patient population analyzed in this paper is not one characterized by opioid abuse, both of these groups are at higher risk for overdose and endorse naloxone as an appropriate medical intervention for overdose.

First responders reported a concern that during an overdose reversal they are at risk for injury by the patient as a reaction to the withdrawal initiated by naloxone. This concern is similar to those that have been reported in other samples. While acts of violence have been reported anecdotally by first responders, there is only one study that documents a small percentage of recorded overdoses resulting in a “combative” patient [31,32].

The relationship between these those who overdose and first responders is fraught, yet a relationship that is critical to foster support. It’s well documented that fear of consequences (legal or social) is cited as a reason why emergency services are often not contacted during an overdose event [33]. Concerns that the availability of naloxone “enable” or increase the potential for opioid misuse are unsubstantiated, in fact naloxone training and distribution programs are associated with improved health behaviors [34]. Rather than pose a threat to this population’s wellness, naloxone is a highly effective medication with no potential medical harms if administered to someone not experiencing an overdose [32]. Drug users report favorable attitudes on using naloxone during an overdose event and express empathy for their peers who overdose [35,36].

Limitations

This study offers the field insightful information of perceptions of naloxone administration that encompasses both first responders and chronic pain patients. However, there are some limitations that should be considered when interpreting its findings. This study recruited chronic pain patients from a registry from an urban academic medical center in southwestern Pennsylvania, therefore our study findings may not be generalizable to other patient populations across the United States. Similarly, the sample of first responders are explicitly

from southwestern Pennsylvania. Further establishing these findings within a larger sample of patients may enhance external validity. Additionally, this study used a cross-sectional survey, thus future research is needed to conduct longitudinal designs within broader samples in order to better understand the characteristics of these two samples. An additional potential limitation in this analysis is the utilization of different measures across the two samples, although it should be noted that specific measures were more appropriate among patient and professional variability.

Conclusion

These data help to characterize and highlight the differences of the perceptions and attitudes of chronic pain patients and first responders towards naloxone administration, illuminating critical areas of health education. Further, these data can help inform the field in identifying and implementing areas of training for both chronic pain patients and first responders. In addition, with the advent of the novel coronavirus pandemic, there are increasing concerns that individuals in need of naloxone will not be administered the drug by first responders who fear being infected by the individual in need of assistance [37]. In order to better establish these findings, future research should employ longitudinal designs to examine the role that education and training can achieve in impacting attitudes and behaviors around naloxone administration.

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