Emotional reactions of trained overdose responders who use opioids following intervention in an overdose event

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ABSTRACT

Background: Our aim was to explore emotional reactions to intervening in an overdose event from the perspective of individuals who use opioids (peer responders). In addition, we were interested in the impact this experience may have on peer responders’ feelings about helping in an overdose situation in the future.

Methods: For this qualitative sub-study of a randomized controlled trial (RCT), data from 61 interviews were analyzed thematically using an inductive approach.

Results: Peer responders had diverse emotional reactions to the overdose event. These ranged from a sense of pride and other positive feelings associated with their ability to help to ambivalence about being involved in situations perceived as challenging and burdensome. There were few reports of the overdose event as an exclusively negative experience. Many peer responders perceived it as their duty to use naloxone again if required. However, some had ambivalent feelings toward this responsibility, which may be related to negative experiences with previous intervention efforts.

Conclusions: The capacity of people who use opioids to help reduce the harms associated with opioid overdose is experienced as empowering by some. Nonetheless, engaging peer responders in strategies to reduce opioid-related mortality should be coupled with appropriate resources to process their experiences and emotional responses.

Introduction

In the United States (US), opioid overdoses have been on the rise for the past 20 years. While the European Monitoring Center for Drugs and Drug Addiction (EMCDDA) has noted an increase in drug-related deaths since 2014, the opioid epidemic has most significantly affected the US. Provisional drug overdose death counts indicate that unintentional overdose deaths involving opioids claimed over 50,000 lives in the US in 2019. Bystanders are often present when someone overdoses, which presents a critical opportunity to engage community members in strategies to reduce opioid-related mortality. To address the ongoing opioid overdose epidemic, programs have been implemented where laypersons are provided with naloxone to reverse opioid-induced respiratory depression in a suspected overdose event. Naloxone is a short-acting opioid receptor antagonist with an excellent pharmacological safety profile. Virtually all naloxone distribution programs include brief trainings for participants in recognizing the signs and symptoms of opioid overdose, and instructions on intervention steps. Combining education with naloxone distribution (Overdose Education and Naloxone Distribution [OEND]) during the training of laypersons to respond to an overdose has a measurable effect on reducing the rate of overdose deaths while having a low rate of reported adverse events.

Since 1996, OEND programs—also referred to as Take-Home Naloxone (THN) programs—have been established in the US and elsewhere. The need for overdose harm reduction in recent years has led to the wide-spread adoption of OEND. US reports indicate a 243% increase in service delivery from 2010 to 2014, and an 8-fold increase in naloxone prescriptions between 2015 and 2017.

Existing research on the impact of OEND demonstrates improvements in knowledge, self-efficacy, and overdose response skills from pre- to post-training, at short term follow-up intervals. Less attention has been paid to the experience of intervening in an overdose situation from the perspective of peer responders (i.e., people who use opioids themselves). They are the main target group for
OEND, given that they are most at risk of experiencing, and often in the position of witnessing, an opioid overdose.

With few exceptions, qualitative studies that have focused on the experiences of peer responders place an emphasis on the tasks performed in the context of administering naloxone, such as identification of the overdose, first responses/first aid, calling 911, use of naloxone, and how and why specific actions were taken. These first-hand accounts provide useful information for refining OEND training programs to better prepare responders, increase OEND’s effectiveness in decreasing overdose mortality, and for adapting legislation to lower barriers to intervention. An example of the latter is the institution of Good Samaritan Laws to increase the likelihood that a peer responder calls 911 without hesitation due to fear of repercussion. Nonetheless, this focus on intervention actions and direct outcomes of naloxone administration has meant limited attention has been paid to peer responders’ perception of being involved in these events. As a result, few attempts have been made to tailor support following an overdose reversal.

The aim of this paper is to explore the emotional reactions of responding to an overdose event from the perspective of individuals who use opioids, and the impact this may have on their intention of helping in an overdose situation in the future. Our focus on emotional reactions to intervening in an overdose event and administering naloxone may increase understanding of their experience and identify additional needs of peer responders. Such information may be used to inform future OEND training, service provision and other support resources.

**Methods**

Our qualitative data were generated from a sub-study of a larger randomized control trial (RCT). Semi-structured interviews were conducted with participants enrolled in the larger trial who had responded to an overdose event during their 12-months of participation. Both the RCT and the qualitative sub-study received Institutional Review Board (IRB) approval from the New York State Psychiatric Institute (NYSPI; IRB# 6723) and were conducted in the New York City (NYC) metropolitan area.

The 5-year RCT (Clinicaltrials.gov Identifier: NCT02535494; conducted between October 2014 and October 2019) evaluated the benefits of a novel, in-depth, skills-based overdose prevention training compared to standard, basic training. The extended training included multimodal information, feedback and teach-back, as well as hands-on skills training. Standard OEND training practices provided brief information on overdose recognition and management only. Regardless of training arm, all participants received an overdose response kit at the end of the training that included two doses of naloxone. Participants were offered the choice of an intramuscular naloxone formulation comprising a needle and syringe with two glass vials or an intranasal formulation. At the start of the trial, intranasal naloxone was provided in the form of a multi-step atomized nasal naloxone spray assembled by combining a pre-filled luer-lock syringe with a nasal atomizer and spare vial. In August 2017, the trial changed from providing the multistep intranasal naloxone to the single step Narcan® nasal spray, although participants were still offered the option of receiving the intramuscular device instead (for details see38). Participants were followed up for one year to assess retention of overdose prevention knowledge and to obtain detailed information surrounding overdose events that were witnessed and/or experienced (for detailed information on the RCT see).29,39

To better understand training effects, the RCT was supplemented by a qualitative sub-study, with the aim of exploring detailed first-hand accounts of overdose events encountered after training, during the 1-year follow-up period. Participation in the qualitative sub-study (conducted between January 2016 and December 2018) was voluntary, involved a separate informed consent process, and required (1) enrollment in the larger trial and (2) having witnessed an opioid overdose and direct or indirect participation in the overdose reversal using naloxone. Interviews, which were audio-recorded in private offices at NYSPI, lasted between 20 and 65 minutes. Participants were compensated with US$40. In addition to socio-demographic, substance use and treatment information, the interview topic guide covered circumstances surrounding the last overdose witnessed since joining the RCT, intervention steps taken by the peer responder/participant, subsequent drug use by the person who overdosed, and the peer responder’s/participant’s feelings about the overdose training and the overdose event.

**Participants**

Data from 61 interviews conducted with 51 participants were analyzed. Seven of the 51 participants were interviewed more than once as they had been present at multiple overdose events during the trial (five participants were interviewed twice, one was interviewed three times, and one was interviewed four times). One interview was excluded from the current analysis as the participant had experienced rather than witnessed an overdose. The majority of interviews were conducted within 1 month of the witnessed overdose (44 interviews, 72%), eight were conducted within 2 months and the remaining nine interviews were conducted between 2 and 4.5 months of the overdose event. Fourteen participants in this qualitative study had received basic training as part of the RCT, and 37 had received extended training.

All 51 participants met DSM-IV criteria for OUD within the 6 months prior to enrollment into the RCT and were aged between 22 and 63 years. Socio-demographic characteristics and overdose experience of participants in the qualitative study, compared to all participants who completed the RCT, are presented in Table 1. The two groups did not differ in sociodemographic characters at baseline. However, participants in the qualitative study were more likely to have ever overdosed and ever witnessed an overdose prior to...
enrollment in the RCT, compared to the overall RCT sample (Table 1). Since enrollment in the RCT, one participant of the qualitative study reported experiencing an overdose, whereas all participants had witnessed at least one overdose event (as this was an inclusion criterion for the qualitative study), seven had witnessed two overdoses and 4 had witnessed three or more overdoses. Two participants confirmed that the person they had witnessed overdose did not survive; all other overdose reversals were non-fatal to the knowledge of the participants. In 16 out of the 61 overdose events (26%), the person who overdosed was a stranger to the peer responder. Thirty people (49%) who overdosed were described as friends, family members or spouses of the peer responders, and 15 as known by sight (24%).

Analysis

The interview audio-recordings were transcribed verbatim by a transcription service in the US. Transcriptions were then encrypted and emailed to research team members at the National Addiction Center (King’s College London). Here, the transcripts were uploaded into the qualitative software program MAXQDA v18 and coded by three team members, working together to ensure reliability. The data were carefully tracked at each stage through interview, transcription, coding, and analysis, and matched with data from the RCT. This was to ensure that the integrity of the qualitative data was maintained and no data loss occurred, to provide additional information about the qualitative study participants, and to monitor the extent to which the characteristics of the qualitative study participants reflected those participating in the RCT. The study team included experienced qualitative researchers who led on topic guide design, provided training to other team members in conducting interviews, reviewed and provided feedback on interviews as they happened, discussed emerging findings, coded all data, and contributed to the analyses presented in this paper. The coders immersed themselves in the data by listening to the interview audio files before embarking on the coding process.

The relevant coded data for this paper were extracted from MAXQDA and exported into Microsoft Word documents for subsequent analyses. To meet the aims of this paper, data from the following labels in the coding frame were analyzed:

i. How did you feel after the overdose?
ii. What happened to the person who overdosed?
iii. What did others do afterwards?
iv. Would you use naloxone again?

We prioritized inductive thematic analysis for identifying, analyzing, and reporting patterns within the data from these labels. Our aim with this analysis was to generate practical and applied knowledge, rather than to build or extend theory. We used a ‘codebook’ thematic analysis variation and generated initial codes after systematically reviewing data from the labels listed above. These were collated into potential themes relating to peer responders’ emotional reactions to intervening in an overdose event. Candidate themes were reviewed and refined through inductive data engagement. In a final step, we refined the specifics of, and generated names for, each theme. In addition, we worked through descriptive themes and categories to check for differences between participants who only received basic training and those who received extended training.

Analyses were undertaken by two members and discussed with the entire research team. Discussions occurred over several months with bi-weekly meetings supplemented with feedback provided via email until the research team agreed upon final themes. These strategies, including transparency about how the data were generated, coded, and analyzed, and persistent observation (i.e., identifying characteristics and elements that are most relevant to the issue under study by constantly reading and rereading the data, analyzing and discussing them, and revising the concepts accordingly), were used to ensure credibility of the findings.

Results

Themes that emerged from peer responders’ descriptions of their individual experience of and emotional reactions to the overdose event and feelings about future naloxone

| Variable                  | RCT Participants | Qualitative Study Participants |
|---------------------------|------------------|-------------------------------|
| Sex                       |                  |                               |
| Female                    | 71 (22.1)        | 8 (15.7)                      |
| Male                      | 250 (77.9)       | 43 (84.3)                     |
| Age                       |                  |                               |
| Under 40                  | 75 (23.7)        | 10 (19.6)                     |
| 40–50                     | 100 (31.7)       | 20 (39.2)                     |
| Over 50                   | 141 (44.6)       | 21 (41.2)                     |
| Race/Ethnicity            |                  |                               |
| Non-Hispanic White        | 59 (18.8)        | 9 (17.6)                      |
| Non-Hispanic Black        | 136 (43.3)       | 23 (45.1)                     |
| Hispanic/Latino/a         | 99 (31.5)        | 17 (33.3)                     |
| Other/Multiracial         | 20 (6.4)         | 2 (3.9)                       |
| Ever Overdosed            | 84 (27.5)        | 23 (45.1)                     |
| Ever Witnessed an Overdose| 203 (66.6)       | 50 (98.0)                     |

*prior to enrollment in the RCT.

p < .001
administration are described below. A range of emotional reactions were reported linked to timing (before, during, and after the event) and response from the person that overdosed. Of note, we did not identify any notable patterns in the data (e.g., participants from one subset of the data made the same points, or particular points were relevant to only one subset) with regard to differences between participants who had received basic training and those who participated in extended training as part of the RCT.

**Emotional reactions prior to and during naloxone administration**

While questions about the “response to the overdose event” were asked in all interviews, they mostly focused on technical and procedural aspects such as recognition of the overdose, rescue breathing/CPR, naloxone administration, and calling 911. Nonetheless, several peer responders talked about their emotional experience during the event even though they were not specifically asked about it.

**Initial nervousness and panic**

A common response to identifying a possible overdose was initial nervousness, feeling scared or panicked. Peer responders’ process of moving from initial shock to action was difficult to retrace from the interviews, perhaps “because it happened so fast” (#24 male) and on a somewhat automatic level. The latter was highlighted by participant #19 (male):

Yeah, like a panic automatic pilot. I didn’t want to fuck up. I did not want to mess up. I did not want to mess up. I was like damn, this dude better not die.

Others mentioned initial thoughts related to potential repercussions of having someone overdose in their residence, like “I don’t want this person to die especially right here [in their place of residence]” (#52 male) or “I don’t need this fucking heat [of someone dying in their room]” (#46 male).

Despite initial shock or nervousness, peer responders explained how they were still able to follow the response steps they had learned during the training:

I did panic a little bit. The excellent training, I knew what to do, so you know. Because of that, you know, I saved her life. (#46 male)

While another said the training helped prepare them for how they might feel:

And it’s a good thing that I did the study because that’s one of the things that I’m told in the study that if someone OD are you going to panic. (#52 male)

The type of relationship to the person who overdosed appeared to shape initial feelings. Some peer responders who had a preexisting relationship to the person who overdosed described that this added to their initial nervousness when encountering the overdose situation:

I’m usually pretty together, but I kinda … I don’t know I guess cause I knew her. I was real good friends with her. (#15 male)

Similarly, another responder reported:

(My) willingness to wanting to help each of them was the same … but it was just—it was more emotional when it was my spouse. It was more emotional. (#07 female)

Others said knowing the person might have made them more likely to intervene:

I wasn’t even planning to intervene. I panicked at first but I knew the dude and I met his daughter. (#19 male)

**Uncertainty**

When describing their experience of being in the midst of the overdose event, several peer responders expressed uncertainty about whether the naloxone product was working, as exemplified by the following quote by participant #48 (female):

Then she went into a deep sleep like a deep sleep then I got scared. I was like oh god this thing is not working.

Another peer responder switched to the intramuscular formulation of naloxone after having delivered the first naloxone dose intranasally but not getting a response from the person who overdosed and explained:

I didn’t think it was working. … The nose thing, I didn’t think that did anything. (#47 male)

**Emotional reactions following an overdose event**

When reporting how they felt after the overdose event, peer responders described a range of emotional reactions from positive, to mixed, to negative feelings.

**Positive feelings**

Numerous peer responders described positive or good feelings following a successful overdose reversal. This is exemplified by the following quote from participant #19 (male):

I don’t know if—I’m not like an adrenaline junkie like that, but I felt so exhilarated, I felt so fucking good.

However, peer responders ascribed these positive feelings to different aspects of the overdose event and their intervention.

**Pride.** Some peer responders who reported positive aspects of the experience described this good feeling in reference to their active engagement in having saved someone’s life. For example, participant #36 (male) reported:

I felt like a hero. I felt good. After I seen him come back, and I was like yeah.

Others described that they “felt good about being able to help” (#07 female), thought they did “a pretty good job” (#27 female), “the right thing” (#31 female), or “a good deed” (#40 male), they were “pretty proud” (#03 male) of themselves, and were “pleased that I did what I had to do” (#05 male).

Other peer responders reported positive experiences based on external recognition of the overdose reversal. For
example, one peer responder described the importance of having had “a chance to do hands-on experience to help somebody” in an overdose event with his daughter present:

And it made me feel good, because she needs to see me do good. She’s seen a lot of bad, me going in and out prison, getting in trouble. (#08 male)

Gratefulness and relief. Some peer responders described gratefulness that the person who overdosed had survived without mentioning their active involvement:

It's a good feeling to know that she made it and she's okay and everything like that and you know and I don't know, you know? It's a good feeling, that's all. (#33 male)

One peer responder felt grateful that people believed in him enough to let him act:

He (the person who overdosed) allowed me and security allowed me to do what I needed to do; and I just felt like he believed in me enough. (#18 male)

In a slightly different context of feeling good, several peer responders described how they were able to talk about what happened with the person who overdosed later on. Participant #52 (male) explained:

Everybody was just you know sometimes you know how people are when something is a close call they can laugh about it and joke about it because he's (the person who overdosed) like 'I survived that.'

Fortunate. Other peer responders described the experience in spiritual terms.

And I like to look at it as my higher power might have set that up so when it really counted, I was able to go through my steps, you know? Because I was like a wreck with him, and I didn't process a lot of stuff. (#07 female)

Participant #28 (female) described how her own return to use may have had a purpose by placing her in the position to help someone else:

Well I felt that like if I hadn't relapsed I wouldn't have been here. So that's the good thing that came out of it. I think I just felt that excited that it worked. That it—and that you know, I could put my own personal disease and desires aside to assist someone else. Because I would want somebody to do it for me. That's how I felt. It was amazing. It really was. I just felt—wow, overwhelmed with that.

The experience of having helped someone in an overdose situation seemed to open up a new perspective or motivation for change among some peer responders, as described by participant #40 (male):

And by me going through this thing with (person who overdosed) here, if I can get clean and sober and help other people and teach them that I have no problem doing it.

Similarly, participant #19 (male) describes finding a new role as a peer responder in the following way:

I'm not part of the problem anymore, the drug dealing, the hustling, the scrambling, the wheeling. I'm not part of that anymore and I don't tolerate it around me. That's over with. (#19 male)

Mixed feelings
While many peer responders reported positive feelings in relation to their overdose response, others had “mixed feelings” (#11 female) about having been involved in these situations. They stated that “I felt good and I felt bad.” (#51 male)

Ambivalence. Ambivalence often arose from the “unfortunate circumstances” (#15 male) that led to the overdose in the first place, “see(ing) the person … there, messed up” (#38 male), and the realization that the outcome could have been worse:

I mean, I can say that I wish it wouldn't have happened. You know what I'm saying? And I'm glad it didn't go any worse than that. You know? (#37 male)

Some peer responders reported that they were resentful about having been put in this situation, as exemplified by participant #13’s (male) account:

I felt like—I felt like, you know, lucky that I had it on me, you know? But, you know, I don't want people to like think that it's okay for them to like, it's okay, let me just do more bags than what I usually do because you've got Narcan, you know? No, because like, I don't like going through that experience. And say something happens and I can't bring you back? Then what? You know what I'm saying? I don't want to have to go and explain to the cops or explain to anybody why you're sitting dead in my back seat.

Blunted. Others reported finding overdose events relatively commonplace and described a certain emotional blunting to this kind of experience. For example, responders said that it made them feel “regular” (#42 male) and they acknowledged that “it is what it is” (#33 male). Others said “I didn't really do too much. I was just like hey, and nothing.” (#52 male) Some explained that “overdoses don't affect me” (#12 male), particularly when they had “been around it before” (#37 male), “seen so much, so many overdoses” (#20 male), and “been there, done that, and seen it” (#40 male). Participant #36 (male) described his experience as follows:

I'm glad I did the training, like, I feel training to help somebody else. But other than that I'm not really like—nothing is different. It wasn't traumatic for me, it's nothing like that. Just another dude that overdosed but this time I could help him.

Reflection. Having been involved in the situation also led to challenging self-reflection by responders, prompting them to look at their own use and acknowledging that it “could have been me” (#51 male). Participant #45 (male) described a shift from an initially good feeling about himself to a more critical evaluation of his situation:

I was proud of myself. And then I start thinking like damn man what the hell am I doing?

One woman (#01) described ruminating about her own situation in the context of intervening in her husband’s overdose:

And then at some point I was thinking maybe I should just get him out of his misery and not bring him back. You know?
That’s what my mom says, because she knows we come here, you know? And she knows I do dope. And she’s like, you know, if I found you like that, I would leave you. You know? It’s hard.

**Negative feelings**

Very few peer responders described the overdose response as a fully negative experience without mentioning positive aspects. However, there were elements of the event that were challenging and uncomfortable.

**Distressing.** Some of the reactions that were more negative included a description of the experience as “sad and depressing” (#15 male) or as “really scary” to the point that “sitting there talking to her (the person who overdosed) and just hanging out” was not possible anymore after the overdose situation (#48 female). Others described their “disgust” toward the situation and that “nobody should have to see that” (#02 male).

A number of responders appeared to manage negative feelings by actively avoiding thinking about the experience. One peer responder reported they would just “try not to think about it” because they would still “wonder if she’s (the person who overdosed) alive” (#02 male). Others described repressing or avoiding the memory of the overdose event by “put(ing) it out of my mind” (#02 male) or avoiding the person who had overdosed and not “even go(ing) to her house anymore” (#48 female). Participant #41 (male) described how the experience seemed to pass him by:

> It just like came and went. Because it’s something you don’t want to talk about, and some people don’t want to hear it.

Participant #02 added that “this (the interview) is the most I’ve thought about it right here.”

**Frustration.** Several peer responders reported negative experiences related to the immediate response from the person who experienced the overdose, after the person who overdosed had just regained consciousness. They described persons who overdosed getting “upset” (#52 male), “agitated” (#48 female), “pissed … off” (#07 female), “frantic” (#28 female), “kind of aggressive” (#35 male), or as being “in denial” (#36 male). In some cases, these interactions were coupled with the refusal of the person who overdosed to go to the hospital and/or attempts to use more drugs. Peer responders indicated that they themselves felt disbelief about this behavior and/or got angry about the reaction of the person who overdosed.

The following quote by participant #31 (female) describes the immediate reaction of the person who overdosed after the reversal, her disbelief about this reaction and the overdose survivor’s continued drug use:

> I can’t believe this guy yelled and cursed at me and called me all types of names under the sun and ran away before the ambulance can get there. And my friends told me later on that he went and got high again, after I gave him a double shot of Narcan (naloxone) he went and copped again.

**Discomfort.** Some peer responders described their discomfort when being “put on a pedestal” (#32 male) for their intervention efforts. Participant #24 (male) described his experience of being treated like “a movie star” as overwhelming:

> People all around you and you get nervous. They is noisy. People on the camera, on the telephone. It’s different. I’m not no movie star. Don’t put me on no camera and all that.

Another peer responder (#18 male) expressed “I don’t want none of that” in response to emergency medical technicians (EMTs) commending his actions in response to the overdose.

**Guilt and rumination.** Two accounts from peer responders who were involved in unsuccessful rescue attempts (i.e., the person who overdosed died after they had administered naloxone) described that they felt responsible for the outcome “even though (I) know it ain’t my fault” (#04 male), and that it “really hurt” (#47 male) that the person who overdosed passed away.

The ambivalence between feeling obligated to help and the hardship associated with this experience is described in detail by participant #04 (male) (the person who overdosed died in the ambulance):

> They get in the ambulance, right? And they die. Now because I gave them the shot, over a heart attack. Anxiety or, or people getting panic attacks and die, stuff like that. I worry about that. Because now, if I wouldn’t have helped this individual died one way. Or died another way. I’m helping knowing that it’s the right thing to do. But then to hear, yo, * had died after you gave him a shot. … That shit’ll stay in my head. Even though I know I didn’t do it, that stay in my head.

Finally, some peer responders had unsuccessfully tried to follow up with the person who overdosed, and they reported that they “can’t stop, you know, wondering if she’s (the person who overdosed) okay,” (#02 male)

**Confidence/obligation to administer naloxone in the future**

When asked if they would intervene in another overdose situation and/or use naloxone in the future, many peer responders expressed their willingness to help again. Peer responders indicated that they would be willing to administer naloxone in the future because “it’s the right thing to do” (#04 male). The fact that they had received training in responding to an overdose and now had experience in doing so seemed to contribute to this sense of duty as exemplified by the following account.

> Yeah. I mean I can’t see myself letting someone go and I know what to do. I can’t see that. If I can save a life, I’m going to do it. (#37 male)

Some described helping in an overdose situation as a way of giving back to society or the community.

> I feel like it’s my duty for all the fucked-up shit I did. God knows I did so much shit to society that I got away with. It’s
Several peer responders described a confidence in their ability to help and said they would do the exact same thing again when encountering another overdose event or that they "might even be a little better the next time." (#03 male) One peer responder said he even "kind of like search(es) for it (overdose situations) now." (#19 male) Others acknowledged that future overdose interventions might be easier to handle after helping once before, as exemplified by the following quote:

You know I think next time maybe you know I won’t be as nervous with loading up the cartridge. You know, next time I won’t be as nervous. I’ll be a little slower and calmer and go through the motions like you know, it’s like I won’t be so out of the frying pan into the fryer. (#26 male)

Despite their expression of a willingness to intervene again, peer responders also expressed that they hoped that they would not have to use naloxone again. For example, participant #02 (male) said:

I (hope I) don’t ever have to, you know? I don’t want to do that. You know, that’s not for me.

These contemplative ascriptions of a situation they did not want to be in even made some peer responders question if they would help again:

I was worried at that time. Like damn, I don’t know if I would do it again. (#11 female)

Discussion

This study provides descriptions of themes that emerged from first-hand accounts of 51 trained overdose responders with OUD from the NYC metropolitan area about emotional reactions to their intervention in an overdose situation. Our results add to the OEND literature by increasing the understanding of their emotional reactions to the overdose event and needs that may arise in relation to the peer responder role following an overdose event.

Emotional reactions prior to and during naloxone administration

When they first encountered the overdose, some peer responders described a sense of nervousness or even panic. Panic has previously been described as a frequent emotional response when witnessing an overdose46 or upon administration of naloxone.31 Several factors that may fuel the individual stress experienced by peer responders emerged from their descriptions. Among them were the need to respond rapidly, a preexisting relationship with the person who overdosed, and concerns about the consequences of someone potentially dying in their home. Some peer responders also described a lack of confidence in naloxone. This is not necessarily related to the effectiveness of naloxone, but could be due to the general unpredictability of overdoses and/or uncertainty regarding whether they administered naloxone correctly.47 These and other contextual factors—such as the time to visible recovery of the person who overdosed and the location of the overdose event31,47,48—have previously been implicated in influencing the initial emotional response.

The possibility that peer responders may panic in an overdose situation should be acknowledged during OEND training. It has also been suggested that stress, panic and urgency may affect decision-making throughout the event.31,48 Nonetheless, despite their nervousness and consistent with previous reports,35,36,47 peer responders indicated that they were able to recall what they had learned during OEND training.

Emotional reactions following an overdose event

Witnessing an overdose has been referred to as a traumatic experience.49 However, our data indicate that such generalized assumptions may not fully reflect the wide range of emotional reactions to being involved in an overdose response.

For some peer responders, positive aspects of this experience prevailed. They were grateful that the person who overdosed survived, they felt fortunate for having been in the right place at the right time, and some described a sense of pride in relation to their ability to help. Feelings of pride are commonly reported as positive reactions that emerge in the context of taking part in this harm reduction approach and in relation to helping a person who overdosed.16,31,47,50 Successfully intervening in an overdose may allow peer responders to further enhance or re-discover self-esteem, and others to see them in the role of someone who can help.

It has been suggested to use positive experiences such as these as communication tools to promote greater adoption of this harm reduction approach.31 In addition, the many reports of positive emotional reactions in relation to their engagement in the event point to the role of resilience and the ability of peer responders to cognitively restructure such adverse experiences. We have previously discussed the experience of responding to an overdose as a potential window of opportunity to engage individuals with OUD in treatment.39 The present findings reinforce the notion that a recent overdose response experience may be a starting point for interventions to help maintain positive emotional changes, newly developed or re-affirmed social roles, and self-efficacy—if desired by the peer responder.51,52

This is not to say that witnessing overdose events is not impactful and challenging. Several peer responders described mixed feelings about this experience. While reporting some feelings of pride and/or relief about the successful intervention, they acknowledged stress and burden related to being confronted with and involved in these situations. Some described a blunted emotional response, particularly when they had witnessed many overdoses before. It has been reported previously that peer responders and others who are repeatedly involved in overdose intervention are beginning to be exhausted by the emotional burden of an increased...
number of overdoses, which may lead to a desensitization to this type of experience.32,33–35

While less common than positive feelings, some peer responders described overwhelmingly negative emotional reactions to the overdose event. The situation was experienced as depressing and scary, and some described their frustration in relation to the response from the person who overdosed. Negative reactions by the person who overdosed, including angry, hostile and/or aggressive outbursts, were quite frequently reported immediately following the overdose reversal. These are likely reactions to naloxone,31,37,47,56–58 which have been discussed elsewhere.59 It has been suggested that peer responders’ sense of relief and pride may originate from the process of successfully responding to an overdose and being recognized for this accomplishment.47 Thus, negative reactions from the person who overdosed may overshadow positive feelings of peer responders about their intervention efforts.31

Some peer responders who reported negative feelings in relation to their experience indicated a tendency to avoid the memory of the overdose event. Others reported feelings of guilt or ruminating thoughts about the person who had overdosed. Despite the increasing implementation of OEND, there is a lack of formal mechanisms to support peer responders in these demanding tasks and to prevent exhaustion due to excessive demands. Though our findings and previous qualitative research47 indicate that many peer responders are likely able to cope with emotional reactions to this experience on their own, some may benefit from opportunities to discuss the experience and find support in processing complex feelings.

OEND training programs typically encourage trainees to return to the program to report an overdose reversal, importantly for documentation and monitoring purposes, but also to receive additional naloxone. This provides a low threshold (and low cost) opportunity to include informal conversations about the peer responders’ experience, for example by training those who provide replacement kits to help peer responders talk through their experiences. Others may benefit from more intensive support to cope with the responsibility of helping to save lives. Future studies are tasked with exploring which and how such interventions may be integrated into the OEND framework and other harm reductions services.32,60

We did not identify any notable differences between participants who received basic training and those with in-depth, skills-based overdose prevention training in their emotional reactions following an overdose event. This corresponds with results from the RCT, which indicated no significant differences by training group in self-perceived readiness to intervene in an overdose event following the training.61 This should not be interpreted as evidence that more elaborate training may not be beneficial. However, it might be beneficial to specifically discuss the types of diverse feelings that can arise in the context of an overdose rescue during training to better prepare responders for emotional responses they may have and where they may seek support following the overdose event.

**Confidence/obligation to administer naloxone in the future**

When specifically asked, peer responders indicated their willingness to administer naloxone again. They often felt a responsibility to help. The availability of naloxone, the training they had received in responding to an overdose and the experience of administering naloxone contributed to this sense of duty.

It has been suggested that the active engagement of people who use opioids in reducing the harms related to opioid use for themselves and their communities facilitates them to occupy a new social role.47,62 This was also apparent in our data in that peer responders described appreciation for and confidence in their acquired ability to help a person and determination to further improve these skills. However, other peer responders expressed an ambivalence toward being involved in another overdose situation, which may be related to lingering negative emotions.

 Adequate preparation for challenging overdose situations in OEND training, validation of their intervention efforts, and opportunities to process these experiences may promote peer responders’ readiness to use naloxone in the future. However, facilitating peer responders to fulfill this role should be balanced against the acknowledgement of the emotional burden associated with (repeated) overdose intervention. The capacity of people who use opioids to respond to someone else’s overdose emergency—albeit empowering for some—should be coupled with appropriate resources to process these experiences and low threshold opportunities to seek their own care services, if desired.

**Strengths and limitations**

The focus within the OEND literature remains on how to best prepare peer responders for effectively responding to an overdose event with much less emphasis on support mechanisms following a rescue. The results provided here add to our understanding of peer responders’ experience, which is a necessary precondition to identify additional needs that may arise after an individual has received overdose prevention training and has responded to an overdose. These qualitative findings were generated from within a large sample, when compared to previous, similar investigations.31,47 In addition, our sample included individuals who had varying degrees of experience of and exposure to opioid overdose prior to study enrollment. However, several limitations merit comment. First, given that the time between overdose intervention and interview varied, our results are subject to differential recall bias. For example, individuals who were interviewed shortly after they had responded to an overdose may have remembered details of the event and their emotional reaction during the intervention more accurately. In addition, self-report data may be affected by social desirability responses.63 We acknowledge that the strengths of in-depth interviews rest heavily on the context and setting of the interview, and conducting interviews in a research setting at the NYSPI may have inhibited some aspects of discussion. Future qualitative studies may consider conducting
interviews in settings that are more independent; for example, in community settings near or close to where peer responders live or spend their time. Second, given that exploring emotional reactions was not the main objective of the qualitative study, the sample size was not designed around saturation on this topic. Nonetheless, our sample was large enough for patterns and themes to emerge and for potential differences between subgroups of participants to be explored. Recommended sample sizes to achieve data saturation within thematic analysis range from 6 to 16 interviews to identify common themes from relatively homogenous groups, and from 20 to 40 interviews for metathemes. Lastly, as per our recruitment strategy, all peer responders had used naloxone in response to at least one overdose event while being enrolled in the primary RCT. It would be interesting to contrast our findings with the experience of peer responders who witnessed an overdose but did not administer naloxone even though it was available.

Conclusion

Our findings provide insight into the range of emotions related to intervening in an overdose event from the perspective of trained overdose responders who use opioids. Even though many reported stress, nervousness and panic when encountering these situations, they largely perceived themselves as capable to effectively fulfill their role as peer responders. Emotional reactions to this experience included pride about their successful intervention and gratefulness that the person who overdosed had survived. At the same time, responding to an overdose was experienced as challenging and burdensome. Positive experiences may allow peer responders to occupy a new role and increase confidence in their ability to help in an overdose situation in the future. Negative emotional reactions to this experience—including distress, frustration, and guilt—may linger and cause ambivalence toward being involved in an overdose response in the future.

Training as many people as possible to effectively respond to an overdose event and maintaining the readiness of repeat responders to intervene again are imperative to the public health impact of OEND. As such, some peer responders may benefit from additional opportunities for support (e.g., in the context of OEND services, harm reduction, or drug treatment) to process their experience with, and emotional reactions to, overdose events and their role in them.

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Author contributions

L.B. and A.N.C.C. conducted the analyses for this manuscript and discussed the results with all authors. L.B. drafted the manuscript. All authors have reviewed and edited the manuscript, with L.B. preparing the final draft for submission.

Disclosure statement

In the past three years J.D.J has served as a paid consultant for Alkermes, and in the recipient of an investigator-initiated grant from Merck. In the last 3 years, J.N. has received, through her University, research funding from Mundipharma Research Ltd and Camurus AB. J.S. is a researcher and clinician who has advocated for wider pre-provision of take-home naloxone, using several types of naloxone. He has also worked with pharmaceutical companies to seek to identify new or improved treatments (including forms of naloxone) from whom, within the last 3 years, his employer (King’s College London) has received honoraria, travel costs and/or consultancy payments. This includes work with, during past 3 years, Mundipharma, Camurus and Accord Healthcare and trial medication supply from Camurus. His employer (King’s College London) has registered intellectual property on a novel buccal naloxone formulation and he has also been named in a patent registration by a Pharma company regarding a concentrated nasal naloxone spray. For a fuller account, see J.S.’s web-page at http://www.kcl.ac.uk/ioppn/depts/addictions/people/hod.aspx. Within the past three years, S.D.C. has received research funding from Alkermes, Braeburn Pharmaceuticals, Cerecor Inc., Corbus, Go Medical, Intra-cellular Therapies, and Lyndra. In addition, S.D.C has consulted for: Alkermes, Charleston Labs, Clinilabs, Collegium, Depomed, Epipdyne, Inspirin Delivery Sciences, Janssen, KemPharm, Mallinckrodt, Nektar, Newron, Opient, Otsuka, Pfizer, and Sun Pharma. She also has received honoraria from the World Health Organization. L.B., A.N.C.C., S.M., S.P., and C.B. have no disclosures to report.

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