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Research paper

"The life they save may be mine": Diffusion of overdose prevention information from a city sponsored programme

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Abstract

Background: Overdose remains the leading cause of death among injection drug users (IDUs) in the United States. Overdose rates are consistently high in Baltimore, MD, USA. The current qualitative study examines diffusion of information and innovation among participants in Staying Alive, an overdose prevention and naloxone distribution programme in Baltimore, MD.
Methods: In-depth interviews were conducted between June 2004 and August, 2005 with 25 participants who had completed the Staying Alive training and had reported using naloxone to revive an overdose victim. Interviews were taped and transcripts were transcribed verbatim.
Results: Participants were 63% male, 63% African American, and the median age was 41 years old. Participants successfully shared information on overdose prevention and management, particularly the use of naloxone, to their peers and family.
Conclusions: The current study demonstrates IDUs' interest in and ability to diffuse overdose prevention information and response skills to the injection drug use community. The study underscores the importance of promoting the diffusion of information and skills within overdose prevention programmes.

Keywords: Overdose; Naloxone; Injection drug users

> "I want as many people as I possibly can I, anybody that I can affect to go there and take the course, do so because you never know the life that they save may be mine." (Male, 50)

Introduction

Opiate overdose is the single leading cause of death among injection drug users (IDUs) in the United States and in many developed countries. Opiate overdose accounts for over half the deaths of heroin IDUs (Sporer, 1999), far exceeding the proportion of deaths due to HIV/AIDS (Brettle et al., 1997; Frischer et al., 1993; Klatt, Mills, & Noguchi, 1990; Prins et al., 1997; Tyndall et al., 2001). Baltimore consistently ranked among the top four metropolitan areas in prevalence of heroin-related emergency department drug episodes from 1995 to 2002 (Substance Abuse & Mental Health Services

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Administration, 2002Substance & Mental Health Services Administration, 2002). In Baltimore, deaths due to "narcotics" overdose rose 30% between 1997 and 2001 (Lehder, Arria, Artigiani, & Wish, 2002), and exceeded homicide deaths for the first time in 1999 (Shane, 2000). In 2000, Baltimore had the highest rates of heroin-related mortality in the U.S., with 15.8 cases per 100,000 population in 2002.

In addition to the burden of overdose mortality, IDUs suffer a high prevalence of non-fatal heroin overdoses. Studies have documented that a high percentage of IDUs have experienced at least one non-fatal overdose in their lifetime: 38% in London (Strang et al., 1999); 41% in Baltimore (Tobin & Latkin, 2003); 48% in San Francisco (Seal et al., 2001); and 68% in Sydney (Darke et al., 2007).

Non-fatal opiate overdose is associated with numerous deleterious health outcomes including pulmonary edema, pneumonia, cardiac arrhythmia, compartment syndrome, necrotizing fascitis ("gangrene"), rhabdomyolisis, renal failure, and cognitive impairment. These morbidities occur in a relatively small but significant proportion of opiate overdose cases, ranging from 5% to 10% (Sterrett, Brownfield, Korn, Hollinger, & So, 2003; Warner-Smith, Darke, Lynskey, & Hall, 2001).

Over the last fifteen years, a small number of overdose prevention and naloxone distribution (OPND) programmes have emerged in the United States (Galea et al., 2006; Maxwell, Bigg, Stanczykiewicz, & Carlberg-Racich, 2006; Piper et al., 2007; Seal et al., 2001), following Europe and Australia. Naloxone, commonly called by its trade name Narcan, is opiate antagonist that is routinely used by emergency medical personnel to reverse the effects of an opiate overdose (Burris, Lurie, Abrahamson, & Rich, 2000). Naloxone has minimal pharmacological effects in the absence of opiates and is an inexpensive and effective intervention (Zaks, Jones, Fink, & Freedman, 1971). In the U.S., as in most countries, naloxone is regulated as an unscheduled prescription drug and is not available for broad distribution.

By their very nature, OPND programmes build upon an extensive body of peer education and diffusion of innovation intervention research (Broadhead et al., 1998; Kelly, St. Lawrence, Diaz, & Stevenson, 1991; Kelly et al., 1997; Latkin, Sherman, & Knowlton, 2003; NIMH Collaborative HIV/STD Prevention Trial Group, 2007). Peer education has been found to be an effective HIV prevention tool in targeting numerous populations, including IDUs (Broadhead et al., 1998; Latkin et al., 2003). Although there are a number of variations of peer-based approaches, in essence, such programmes train individuals to both adopt and promote specific health behaviours among their peers. The benefit of peer education is that it does not rely on a top down approach to education. Rather, like individuals promote healthy behaviours to their peers, which can enhance the credibility of the message and create a greater potential for adapting the targeted behaviour. Peer education also has the ability to reach populations hidden to researchers such as opiate users. As the peer educators are members of the community, they can reinforce the messages and provide programmes with constant feedback about its effectiveness, and methods of enhancing and adapting the programme.

Peer education is closely related to the diffusion of innovation theory, a conceptual framework that explains the adaptation, acceptance, and normative changes around a given technology or behavioural innovation (Rogers, 1995). According to the theory, innovations are initially adapted by a subset of the population, opinion leaders, who are respected, trusted, and influential within a given community (Kelly et al., 1997). As most opiate overdoses occur in the presence of other drug users, training users to administer naloxone is not only a logical method of treating overdose victims, but it also provides the opportunity for drug users to witness the positive effects of naloxone and diffuse this information. OPND programmes depart from traditional opinion leader interventions, which focus on identifying and solely training opinion leaders. Instead, OPND programmes train members of the injecting community to take a lead on overdose prevention within their community. But OPND programmes do draw from diffusion theory in that they aim to disseminate new information and a new technology, the use of naloxone, as well as change social norms around overdose prevention and response. The current study qualitatively explores the types of information that participants shared with others after attending an overdose prevention and naloxone distribution programme, "Staying Alive."

Methods

Programme description

In April, 2004, the Baltimore City Health Department (BCHD) began an overdose prevention and naloxone distribution pilot programme, Staying Alive. Staying Alive was conducted at multiple locations throughout the city and participants were recruited through street outreach and publicity on the BCHD Needle Exchange Programme (NEP). During the study's 14-month pilot phase which began in June, 2004, participants were enrolled by programme staff who explained the purpose of the training and obtained written informed consent. The 90-min training was conducted in small groups of three to ten participants by two health educators. They curriculum focused on: preventing opioid overdose; recognizing overdose symptoms; performing rescue breathing; calling emergency medical personnel; and administering an intramuscular injection of Narcan. After the training, participants completed a brief test reviewing the training's content, a short health screening and were then provided with a naloxone kit which included: three 3cc syringes with 21 gauge intramuscular needles; one 10 mL vial of 0.4 mg/mL strength Narcan; a face shield for rescue breathing; a "sharps container;" a prescription for Narcan; and a one page informational sheet that reviewed the basic concepts of opioid overdose prevention and management including naloxone administration.

Prescriptions were refilled in the needle exchange van. The programme and evaluation was a collaborative effort between BCHD with researchers from Johns Hopkins and the University of Maryland. The evaluation was approved by the Johns Hopkins Bloomberg School of Public Health Committee on Human Research.

Recruitment

The evaluation was comprised of both a qualitative and quantitative component, the latter of which is described elsewhere (Tobin, Sherman, Welsh, Bieleson, & Latkin, 2009). Inclusion criteria for the qualitative study were: being 18 years or older; having participated in Staying Alive; having reported using naloxone to revive an overdose victim; and being fluent in English. Qualitative participants were recruited through referrals from the NEP van (70%) and recruitment by the study's first two authors (30%). Upon requesting a Narcan refill at the NEP van, individuals were informed of their eligibility for the qualitative study and given contact information. Potential participants were screened by the study's second author. Additionally, participants were recruited from the NEP van and upon providing written consent, they were interviewed in a nearby private location. Participants were compensated $20 for the interviews which lasted approximately 1 h.

Data collection

The interview guide was developed and administered by the study's first two authors, both of whom have experience designing and implementing qualitative studies. Both interviewers piloted the guide with a Staying Alive participant in the presence of each other, after which point the guide was refined. The first several interviews were conducted by both interviewers to enhance consistency. The guide explored the following themes: injection history; participants' history of both witnessing and experiencing overdoses; the physical and social setting of the overdose; how reported overdoses were intervened upon; participants' interactions, if any, with emergency medical personal and police during overdose events; and what they had learned during the naloxone training that influenced their drug use behaviours as well as what they did in the event of an overdose.

Data analysis

All interviews were tape-recorded and transcribed. Two qualitative researchers analysed the data thematically in a multi-step process using the constant comparative method that is central to grounded theory (Glaser & Strauss, 1998). After reading several interviews for comprehension of interview content, five interviews were coded by themes in a process called open coding. The labels or codes used in this process were then synthesized into a code list to remove redundancy and similar labels were grouped together. The resulting code list was then used to code all of the interviews. The current analysis describes themes that were related to diffusion of information and skills learned during the Staying Alive training as well descriptions of "overdose talk" after attending the training. Data were entered into Atlas-ti Version 4.2, a qualitative data management programme, in order to organize all project coding.

Results

Sociodemographics

Participants ($N = 25$) were 63% male, 63% African American, and the mean age was 41 years old. Participants had extensive experience of both witnessing and having had overdoses, with 90% reporting that they had experienced at least one overdose. Participants reported having witnessed a median of two overdoses, with 20% having witnessed a fatal overdose. Over 85% of participants reported daily heroin injection.

Overdose prevention discussions

In spite of the prevalence of witnessing and experiencing overdose among participants and within the IDU community, conversations about overdose were rare outside of talking about the training. As a 22-year-old male explained, "because we never expect it to happen. People don't like to talk about it, like it will make it happen." Participants described trying to talk to their drug using friends about overdose prevention directly but such efforts were not well received.

> He was only gone for a couple of months and he just came home from the Jail. . .I asked him do you think this is too much? And he said no. I honestly thought it was, but this was his party so, I just went on and let him a go ahead and do what he wanted to do. (50-year-old male)

> He was hard headed and he didn't want to listen to nobody about drinking and then wanting to do coke and dope at the same time. . .The guy there asked him not to do that at his house anymore and he told him he wouldn't and he turned right back around and did it again. (39-year-old female)

Participants described heir attempts to talk about overdose prevention with victims after the overdose, but few felt that they were successful.

> I was saying, 'Man don't you go out there, don't you go and go out.' I was concerned that he don't go and try another blast that quick. That's what I was more concerned, or hoping he did go ahead home. Man I hope he don't go try that shit because if he do, his ass will fall around and go out again. (38-year-old male)

A 57-year-old male said that most of his friends did not want to hear him talk about overdose. He strategically began to incorporate overdose prevention message into conversations about controlling his own and others' drug use. He described what he had said to a friend who had overdosed, "I told you about putting it right in you. . . Take it easy, you know, give yourself a little bit at a time. . .That's the way I do mine."

Diffusion of information about naloxone

A more effective way of addressing the issue of overdose was teaching others how to use naloxone. One-third of participants talked about teaching others how to administer naloxone, which was taught in several contexts. First, participants taught other IDUs in the context of an actual drug overdose and when they were sharing the overdose prevention and response information received in the training. Secondly, participants taught other IDUs and family members as a part of their own overdose response plan. Lastly, several participants mandated that people knew how to use naloxone as a part of their "house rules." In these situations, naloxone was kept in a prominent, designated public place for all to use.

> Everybody that comes over knows that that's where the naloxone is...It's right on top of the TV and everybody knows it's right there. . .Most people that come there regularly know it's there and know how to use it. (33-year-old male)

> So, you know, we had naloxone in the house and before I had been trained to use it, I had a friend come who had been trained, and kind of explain what to do, just in case something happened, because a lot of people had been coming in and out of the house. So, he showed us what to do and, and he had left his there. (24-year-old male)

Prior to attending the Staying Alive training, a 22-year-old man reported that he had been trained by a Staying Alive participant and based on this information, he successfully revived someone with naloxone based on that informal training. Subsequently, he participated in the formal Staying Alive training and then shared what he learned with his housemates.

> I was like, yeah, you got to make sure you do this, or you got to make sure you do that, just to put everybody on the same page. But pretty much everybody that's in there [his house] knows how to do it if it has to be done. It's always in there- because I leave my bag or stuff in a drawer. Like, 'look here it is, if anybody needs to use it. . . if I'm not here. . .' Because I might not be there one day. I might have to go out to work one day, some body might need to use it while I'm out.

Several participants shared naloxone administration information with friends through making their own overdose response plans. A 27-year-old man who had only injected for a few years was afraid that he would not remember how much to use so he prepared a syringe with naloxone and left it out for his girlfriend to administer. Another 54-year-old man showed his 18-year-old daughter how to use the naloxone and wrote out instructions for use complete with a diagram showing the correct places to inject. Another participant showed a friend's fiancé how to inject naloxone into her because she had overdosed several times.

> [A friend] was staying with me – her and her fiancée – and I knew that she went out [overdosed]. I pulled up like one CC and just had it there and I said to her fiancée, 'hold onto this'. . . Because I didn't give him too many instructions or anything, but I just wanted to if she goes out and she's not coming back. . . I said 'just shoot it in her thigh,' because I had already pulled up the right amount, you know what I mean, and I put the cap back on there, and I just left it there. Because I didn't want him fumbling for anything, I just wanted him to know that, that needle right there had stuff that would bring his girlfriend back. (47-year-old male)

A 36-year-old woman showed her father, who does not use drugs, how to administer naloxone after he had seen it in her house. After she revived a friend in his presence, he asked her, 'Well, can you show me how to, what to do and everything and all so in case something like that happens to you I can help you out like that."

Participants were proud of their ability to teach such a useful skill to others and incorporated it into their roles of helping other IDUs. One participant, who had witnessed numerous overdoses and had administered naloxone on three separate occasions, described himself as a "medic from the streets."

> I thought it was really cool when I got my little kit and I was like, "Oh yeah I'm a medic from the streets." (laughs) you know what I mean. So I told a lot of people about it and told them where to get it at and where it was at and stuff. You know I was telling everybody "look I've got Narcan. (34-year-old male)

Promoting Staying Alive

Promoting the Staying Alive training was also an effective way to increase awareness about overdose prevention. Over half of participants reported that they referred others to the training. Participants' responses reflected pride and enthusiasm in having learned such useful information and their ability to help others.

> I talked to everybody about the class. I'm surprised I don't have any of the literature in my pocket right now because I pass it out...I give it to everybody. I let them know when and where they giving the class and everything, you know. (47-year-old male)

A 40-year-old woman talked about her conversation with a friend several hours after she had revived him with naloxone.

> . . .he was asking me what did I do to him, and I told him that I shot him with some Narcan. He asked me, "You're a nurse or something?" I said, 'No, I just took the classes from the Needle Exchange.' And that's when he was asked me about how could he do it? (40-year-old female)

The skill of responding to overdoses was seen as highly valuable in the community, which is likely to motivate continued participation and enhanced diffusion.

Discussion

The current study qualitatively explores types of skills and kinds of information that were shared by IDUs after participating in an overdose prevention and naloxone distribution programme in Baltimore, MD. The study demonstrates the degree to which participants spread what they learned in Staying Alive without any prompting from the training. Participants shared what they learned in both their actions as well as their conversations, which occurred within and outside of the context of overdose events. Results of this study indicate that among this small sample, the training was not only effective in teaching correct response skills but it also was effective in reaching people that did not participate in Staying Alive who were affected by overdose. Peer diffusion of such information is particularly important in populations of IDUs because of the difficulty in recruiting IDUs for trainings and the stigmatised nature of illicit drug use.

Participants reported the difficulty they had in talking to their friends directly about overdose prevention, and as a result there were limited examples of such discussions. The information was best received when participants contextualized it in discussing their own overdose treatment plan, talking about the Staying Alive programme, or actually administering naloxone. Understanding the challenges that drug users have in promoting naloxone is important in the design of effective interventions. Strategies to address these challenges could be discussed during the initial OPND trainings or when participants request naloxone refills, which is a point when they have had time to have discussions and actually use naloxone. Additionally, OPND trainings should emphasize participants' development of their own overdose prevention plan as well as encouraging their peers to make such plans.

The novelty of and value placed in having naloxone was apparent by the number of times participants taught others how to use it. Naloxone is not only a life-saving drug in and of itself, but also provides an opportunity for participants to promote overdose prevention information. Talking about and teaching others how to use naloxone was central to most overdose prevention conversations.

The reach of OPND trainings could be enhanced if they included brief communications skills trainings with the aim of increasing "overdose prevention talk" in tandem with a discussion about naloxone. The success of brief communications skills training among IDUs is evidenced by a number of HIV prevention interventions targeting drug users and other at-risk populations (Latkin et al., 2003; NIMH Collaborative HIV/STD Prevention Trial Group, 2007). These and other interventions are good models in teaching participants how to discuss health education information with their peers. OPND programmes need to develop methods making discussions of overdose prevention as interesting to participants as is the use of naloxone. By its very nature, naloxone avails itself to being diffused. Overdose prevention is not as inherently interesting as naloxone administration; hence, more creative approaches are needed to diffusive changes in overdose prevention behaviours.

The diffusion of the information learned in the OPND trainings was an important part of participants' own overdose prevention plan. The importance of making an overdose plan, which includes having ones' injection partners trained in overdose prevention should be stressed in overdose prevention trainings. Diffusing innovations and information learned in OPND trainings broadens the trainings' access to individuals who do not attend the formal training. To expand their reach, OPND programmes could target individuals who demonstrate leadership by frequently using naloxone or discussing overdose prevention and treatment to attend a "train the trainers" training. Such a model is loosely based on the popular opinion leader approach (Kelly et al., 1997, 1991; NIMH Collaborative HIV/STD Prevention Trial Group, 2007). Such efforts are a cost effective way of broadening the reach of overdose prevention efforts.

Results of the current study must be viewed with several limitations in mind. The analysis is not generalizable beyond this small sample as the sample was not randomly selected and in many ways participants self selected participation. The study only looked at those individuals who reported using naloxone to reverse an opioid overdose. A great deal might also have been learned from those individuals who had undergone the training but had not used the naloxone, either because they had not encountered an opioid overdose situation in the study's time frame or for some other reason. It would also be informative to explore reasons regular users of the NEP have not chosen to take the initial training. Lastly, a central theme of the analysis was that of the diffusion of information about naloxone, but we only interviewed Staying Alive participants and not their peers. This potentially limits the strength of the conclusions that can be drawn from the current study and does not provide information about degree to which, the nature of, and the effects of diffusing information with the IDU community. But the study highlights participants' willingness to discuss overdose prevention with their family and friends.

In light of these limitations, the current study has numerous strengths. In this modest size study, we found that OPND programmes provide vital information in the lives of IDUs. Participants disseminated the skills and knowledge that they learned in a number of ways. As such, Staying Alive provided participants with the unique opportunity of providing

a service to their community while at the same time influencing norms around overdose prevention and response. OPND programmes could further their impact by formalizing training of these trainers who have much more of a reach into the target population. OPND programmes are a good example of the benefits of peer education and diffusion interventions with populations that are hard to reach for service providers and researchers.

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