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A rapid-cycle assessment strategy for understanding the opioid overdose epidemic in local communities

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Abstract

Background: Certain communities in the United States experience greater opioid-involved overdose mortality than others. Interventions to stem overdose benefit from contextual understandings of communities' needs and strengths in addressing the opioid crisis. This project aims to understand multiple stakeholder perspectives on the opioid epidemic in communities disproportionately affected by opioid-involved overdose mortality.

Methods: We performed a rapid-cycle qualitative assessment study utilizing in-depth interviews with community stakeholders and observations of community meetings in eight communities in Allegheny County, Pennsylvania, USA, disproportionately impacted by opioid-involved overdose mortality. Stakeholder categories included: current and past illicit users of opioids; medical and social service providers; emergency medical services; law enforcement; spouse or other family members of illicit users/former users of opioids; government officials; school officials; community members. Content analysis was utilized to identify themes and answer study questions. Regular feedback to stakeholders was provided to support targeted interventions.

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Author contributions

The authors confirm contribution to the paper as follows: study conception and design: KH, JC, ST; planning and supervision of work: ST, JC, KH; data collection: ST, NS, NP. All authors contributed to the analysis and interpretation of results, and to the preparation of the manuscript. All authors reviewed the results and approved the final version of the manuscript.

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Results: We performed semi-structured, in-depth interviews with 130 community stakeholders and 29 community meeting observations in 2018–2019. Participants perceived similar economic and social determinants as origins of the opioid overdose epidemic including lack of economic resources, loss of jobs, transient populations and dilapidated housing. However, they differed in their awareness of and attention to the epidemic. Awareness was dependent on the visibility of opioid use (presence of paraphernalia litter, location of drug users, media coverage, and relationship to users). Overall, there was good knowledge of naloxone for opioid overdose reversal but less knowledge about local syringe services programs. Perceptions of harm reduction efforts were ambivalent.

Conclusions: Members of communities impacted by the opioid epidemic perceived that economic downturn was a major factor in the opioid overdose epidemic. However, the varied beliefs within and between communities suggest that interventions need to be tailored according to the cultural norms of place.

Keywords

Opioid; overdose; rapid-assessment; overdose prevention; community assessment; qualitative; harm reduction

Introduction

Over the last two decades, opioid-involved overdose mortality rates have increased to become a major public health crisis in the United States. There is significant geographic variation in drug mortality rates across the US.[1] Pennsylvania, for example, has seen an increase from 37.9 deaths per 100,000 in 2016 to 44.3 in 2017, an increase of 16.9%.[2] The number of deaths was more than double the 2017 national average (21.7 per 100,000).[3] Attention has been paid to geographic variation in rates of opioid-involved mortality, with most focus on differences between rural and urban settings. Yet the rural/urban distinction has belied the considerable variability in the magnitude of the epidemic across different rural areas.[4] Recent attention is being paid to the heterogeneity both between and within communities as factoring into different opioid-involved overdose rates, and a call to account for the unique socio-economic and demographic character of neighborhoods.[5] The magnitude and variability of the epidemic in Allegheny County, Pennsylvania offered an opportunity to highlight the importance of differing local contextual factors contributing to the opioid overdose epidemic.

Allegheny County contains 130 self-governing municipalities, including the urban center of Pittsburgh, suburbs, and small towns. The Allegheny County Health Department and the Allegheny County Department of Human Services performed “hotspot” analyses using medical examiner, 911, and emergency medical service data to identify municipalities and Pittsburgh city neighborhoods with higher than average fatalities.[6,7] Despite available quantitative data, questions remained about how these communities perceived the opioid crisis and strategies to address it. To develop and successfully implement interventions targeting the needs and strengths of specific communities, it is essential to have contextual understandings of the communities’ beliefs, vulnerabilities, needs and barriers in addressing the opioid crisis. To explore these perspectives, we designed a rapid-cycle qualitative

assessment study to understand stakeholder experiences of, and perspectives on the opioid crisis in eight Allegheny County, Pennsylvania communities disproportionally impacted by opioid-involved overdose fatalities.

Methods

Study design

We used an applied, rapid-cycle assessment approach to expediently identify and share knowledge/information on actionable areas and factors for intervention. This was considered critically important given the rapidly evolving nature of the opioid overdose epidemic.[8-13] We utilized multiple data sources and methods (county epidemiological data, ethnographic interviews, observations, attention to media accounts), triangulation between data sources/methods, and cyclical sharing of data with a locally-involved leadership team and integrating their feedback into further interviews and observations.[11]

Forming the leadership team

A leadership team of critical stakeholders, all involved in formulating and carrying out interventions in the opioid epidemic, was brought together. The nine members represented: Allegheny County Health Department, Allegheny County Department of Human Services (ACDHS), Emergency Medical Services, local government representatives (including Pittsburgh), Prevention Point Pittsburgh (a regional harm reduction advocacy and service provider) and the University of Pittsburgh's Congress of Neighboring Communities. The leadership team helped refine the study proposal, selected the communities for study, and provided initial community contacts. The team met monthly to discuss interim findings, provide ongoing reflection and feedback on findings, and take interim findings back to their own organizations to affect potential interventions.

Community selection

The leadership team selected eight communities (2 Pittsburgh neighborhoods, 6 county municipalities) based on the following criteria: high number of opioid-involved overdoses in 2016 and 2017;[14] geographic variation; and demographic diversity. Two were majority African American communities, and six communities contained one or more census tracts characterized as "very high need" to "distressed" in terms of economic decline by the ACDHS.[15-18]

Sample and data collection

We used semi-structured individual interviews with community stakeholders and observations from community meetings to collect data.

Individual interviews—Key stakeholder groups identified by the leadership team as targets for interviews included: local government officials, law enforcement, emergency medical personnel, health care and social service providers, family members of individuals who illicitly use opioids, people who currently or in the past have illicitly used opioids, and community members. The study was explained as an effort to learn more about opioid use and overdose in the community from people whose lives have been affected by it. We

wanted to know what community members thought were factors creating the problem, and what could help in response.

Researchers contacted initial participants in each community by email or phone using contacts provided by the leadership team, and chain referral was used to expand the sample.[19] Participants were also recruited through fliers left with community members. Two interview participants were recruited at observed meetings, and another twelve attended one or more of the meetings but were contacted and interviewed prior to meeting observations. Potential participants contacted researchers to schedule interviews, several were unreachable on callback or unable to be scheduled. All 130 interviews were conducted by ST, NS, or NP, all trained in qualitative interviewing and analysis.

Researchers had no previous relationships with participants. Interviews were conducted in person or by telephone, lasted approximately 1 h, were audio-recorded, and professionally transcribed verbatim. Transcripts were checked for accuracy before being uploaded to Atlas.ti 8 for analysis management. Informed consent was obtained from all participants. Participants were offered a $20 gift card as compensation. All interviews were anonymous. The study was approved on June 26, 2018 by the University of Pittsburgh IRB and a waiver for written consent was obtained (Protocol # MOD18030265-01/PRO18030265).

Observations—Events or meetings (open to the public) that included a focus or reference to opioids or the opioid crisis were identified through word-of-mouth, review of advertisements, and neighborhood websites. ST, or ST and NS, attended meetings and took detailed field notes on: number and type of attendees; stated and implied objectives of the meetings; content and format of the discussion; group dynamics; “tenor” of the discussions; process for engaging audience/community members (if any), and conclusions or results of the meetings. Locations and attendees were anonymized.

Data analysis

Individual interviews—Preliminary deductive codes were developed for content analysis from topic areas in the interview guide and further emergent, inductive codes were added during the coding process. The aim of achieving trustworthy findings by meeting criteria of credibility, transferability, dependability, and confirmability[20] guided analytic efforts.

ST and NS separately coded the first 5 transcripts, compared codes, then altered, merged, or added codes in an iterative process. This process was repeated for the next 3 transcripts until saturation at 17 transcripts.[21] Topics and themes were reviewed early in the project with the leadership team who prioritized the topic list to reflect need for timely input for intervention efforts. The coding team first performed a more detailed analysis of the prioritized topics, creating sub-codes for each topic, but all themes were analyzed in-depth. As the data set yielded rich data on multiple topics and themes that cannot be fully explored in a single paper, this manuscript focuses on overall views of participants regarding the opioid epidemic within their community and ideas/needs for their community’s response.

The study team met to discuss the coding list and develop a coding rulebook with definitions, rules, and examples for each code. Five other coders were trained and JC

and the coders met on a regular basis to debrief on the analytic process and to co-code further transcripts until there were no discrepancies, particularly as interviews from different communities and different stakeholder categories were added to the analysis.

Observations—Observational notes were used to cross-validate themes derived from analysis of the interviews, and to background the individual interview data by capturing another dimension of community response to the opioid epidemic. During study team meetings, we triangulated our thematic findings with data from our observations as well as leadership meetings feedback which served as both peer debriefing and a check on referential adequacy.

Results

Sample

A total of 130 people were interviewed across the selected communities; 107 interviews were conducted in-person, 28 by telephone. Thirty-four participants worked in positions that served the population of the entire county, while also working or living in one or several of the study communities. On an anonymous demographic form, participants were instructed to self-select all stakeholder categories that applied to them, and to indicate one primary category for the purposes of the study. (Table 1) Almost half of our interview participants (48%, $n = 62$) chose more than one stakeholder category, and overall 35% of participants were family members of an opioid user. (Twelve percent chose “family member” as their primary category, and an additional 23% chose “family member” as an additional category.) Choice of multiple categories illustrates that the opioid crisis has affected these individuals in multiple ways.

Observations were conducted for 29 community meetings. Meetings included: community block watch; community meetings focused on addiction; meetings of a group focused on opioids; meetings of the Congress of Neighboring Communities; community group meetings on violence and health; city council meetings.

Thematic results

Perceptions of the opioid crisis in communities and community characteristics influencing response to the opioid crisis—Participants in all study communities held similar perceptions that their communities were changing for the worse. They identified factors such as reduced economic opportunities, limited or failing infrastructure, dilapidated housing, increased crime, violence, exodus or closing of large sources of employment, and new or transient populations as evidence of such changes.

> It looks like a deserted town. There is empty lots everywhere, buildings that need to be torn down, and that is where a lot of them go and do their drugs in all these abandoned buildings. I really don’t see too much happening right now. I mean ever since our steel mill went down… that’s been years ago, yeah.

> I mean it has changed so much…Now, there is so much violence over here and people getting shot, everybody is scared to come out of their house.

Participants viewed such factors as increasing the risks for the opioid crisis:

> I feel like they are out there with no job, no education; so, when you have nothing to do, what do you do? You get into trouble.

> You know what might magnify [the opioid crisis] …These problems are heightened by sort of issues of poverty. And there is a concentration of poverty here.

Participants perceived impacted communities could not "keep up" with the pace of change, adding to community stress.

> There's a really good community in [town area], but they can't embrace all the different changes that are happening,…they're tryna embrace it, but there are so many people moving in, so many new people that it's not—they're not getting connected to the '[town name]ness' that this community had.

Although participants generally felt that the opioid overdose epidemic was not unique to their community, some recognized the need to understand the specific contexts of the opioid crisis in efforts to intervene:

> [Do you think that neighboring communities are struggling with the same kind of issues?] With opioid addiction, oh of course. But I think we have a lot of different neighborhoods and some are similar, but I wouldn't say anything is exactly mimicking either trajectory or its history. In the context of its future, you have to respect individuality of the time and place you live in. There are some similarities. People try to make that all the time, 'It is just like [X neighborhood] or [Y neighborhood]', maybe, maybe not.

Awareness of the opioid overdose epidemic—Study communities differed markedly in terms of awareness of and attention to problems around opioid use and overdose. Although some communities focused on the issue, others denied or minimized it. This perception was influenced by the visibility of drug use and people who use drugs, media coverage of the community, and the degree to which the crisis was a new issue. In some communities, opioid overdoses were overt, happening in cars and public spaces; in others, opioid overdoses were hidden, occurring mostly in private residences. In communities with few sidewalks and a dependence on cars, people who use drugs were not a visible part of the community's landscape. There were also community differences in the presence of syringe and stamp bag litter. If opioid use and misuse was not visible in the community, nor highlighted in local press, it could remain hidden. One participant described his quiet suburban community and stated, *"I was shocked when I saw the [overdose death] numbers."*

Visibility of the problem was also affected by media coverage of opioid-related issues within the community and across the region. Media accounts have depicted people who illicitly use opioids as younger, white, and suburban.[22,23] One participant in a majority African American study community compared their town to other communities, saying the opioid overdose crisis, *"it's not to the point of, say, those types of white river towns."* They perceived that their community didn't "fit" media accounts, which may help to explain limited focus on the problem there.

Alternatively, another study community was the focus of newspaper articles about opioid overdose deaths.[24] Citizen reaction to the pieces was mixed, with anger about the community being stigmatized, while at the same time the pieces served to inform the community about what was happening.

> We went to the first community meeting after that article broke, because we knew it was going to be bad and that they were going to be upset, and they were! There was a lot of "why us?" Why did they pick on us? Because when you looked at the numbers it didn't seem like we were the hardest hit area.
>
> [Law enforcement officer]

In other communities, drug use and misuse had become "normalized" over the decades. One participant noted:

> For many of these people that are in the thick of this generational poverty this was never a choice and they're surrounded by other people who are in the same trenches of despair in a lot of ways…Almost everyone knows someone who's died. And that's not scary in a way to them.

Finally, there was a perception in some of the study communities that the opioid overdose problem was something happening to "other people"–perceived as people coming in from outside, either newcomers or people passing through and using drugs.

> There's a lot of people who come in to [town name] to get drugs…So it's almost seeing in that case if they OD, it was while there was like a drug, you know, deal going on.
>
> Most people don't have roots here, so they come in, they do what they have to do here and then they move out. [They are brought here by] affordable housing and a lot of public housing and Section 8 housing. I think that [the city], they give them a voucher and bus pass to get here. So sometimes we are a point of last resort…Mostly the only problems we have are a lot of times from the people outside.

Capacity to respond

Differences in resources and relationships within the communities affected their ability to address the epidemic and served as barriers or facilitators to interventions. Main differences included: available goods and services, relationships with surrounding communities, geographic features, and transportation.

There were many differences in the goods and services available such as the presence or absence of existing community organizations able to take on opioid-related issues. Some communities had resources such as a community health clinic, social service agencies, and/or a buprenorphine provider, which did or could serve as the first line of intervention, while other communities had few resources available to assist residents.

There were also differences in how participants characterized relationships with surrounding communities, which affected resource utilization. For example, two neighboring study communities perceived each other as decades-long rivals.

> You are from [town A], I'm from [town B], we got this rivalry thing. [Town B] people don't mess with [town A] people. Why that is? I have no idea, because there are resources in [town B] that [town A] families can utilize as well, too…It is all just one small community acting a fool, instead of getting together!

There are geographic features like rivers and bridges that affect movement between neighboring communities. For some community members, having to cross a bridge to access services in another community may be a barrier.

> [Our clinic serves people] mostly on this side of the river. People don't like to cross over the bridges.

Lack of public transportation was frequently mentioned as a barrier to accessing services and employment. One community was described as, "This little island…" Transportation issues figure into perceptions of what is needed, below, as well.

What is needed

We asked all participants what they thought was needed to tackle the opioid crisis. Across all communities and stakeholder categories, perceptions of what is needed clustered into six interconnected categories: access to treatment; education (for stigma reduction and prevention); harm reduction; strengthening families and communities; increased peer support and social support; and law enforcement. (See online supplemental Table 2 for additional participant responses.)

The following discussion is focused on the three categories mentioned by most participants: access to treatment; education for prevention and stigma reduction; and harm reduction.

Access to treatment

Treatment capacity, treatment location, limited transportation, and the need for treatment navigation were often mentioned. The difficulty of accessing treatment outside one's own community when transportation is difficult was often mentioned.

> That [medical clinic] went and left and they want the people to go to [health center in town across the river]. It is two buses…

Capacity limits at treatment facilities inhibited attempts to facilitate the connection of someone seeking treatment to care providers.

> There are not enough treatment beds. There is not always enough funding. There is usually a gap between when somebody demonstrates the willingness, and ability to get to the bed.

The issue of timing treatment engagement with willingness to start treatment was mentioned by a number of providers and former illicit users of opioids. The following participant describes what happened with his own nephew:

> I got the approval… the driver [from the rehab] is ready to go get him; now he isn't answering his phone. And he was dead. Literally it was that last one before rehab that killed him. Sometimes, in that period while we are waiting, that happens.

The dearth of waivered prescribers of buprenorphine was also felt to limit treatment availability. Participants also described how treatment access was limited by lack of easy ways to obtain information. Most information about treatment options was word-of-mouth.

> Someone said to me, 'Maybe I should go to [that rehab], but someone else said I should go here. I'm not sure where to go.' Sometimes people say, 'Ah screw it, I don't even know where I'm supposed to get help.'

Even healthcare and social service providers described having to perform extensive research to find out where to send their clients/patients. Across stakeholder categories, participants talked about the need for help in navigating a very confusing treatment landscape, particularly during transition times such as between inpatient and out-patient treatment.

Education for stigma reduction and prevention

Participants talked about how education was needed to reduce stigma and compared current discourse on opioids to the early days of the HIV/AIDS crisis.

> I still think there is a huge lack of education and understanding of what addiction is and what the opioid crisis is, not only in the community but in many facets like law enforcement, emergency workers, people in school… it is very, very close to what happened at the late 70s early 80s with HIV/AIDS crisis.

Providers lamented the lack of training on substance use and addiction, and the need to improve healthcare for those with opioid use disorder (OUD).

> I feel like we need education for health care professionals to decrease stigma and to learn how to have these difficult conversations with patients, and to make sure they are aware of places they can refer their patients to. I think that would be really important…Like at NP school I really didn't have that education.

Participants, notably people who use or have illicitly used opioids, wished they had known more about the effects of substance use (and opioids specifically) at a young age.

> Drug addiction should all start being explained before middle school because by then it's too late. You've got to start in elementary school.
>
> [person who formerly misused opioids]

This is consistent with what people who illicitly use or have used opioids shared about starting to use substances at a young age.

Harm reduction: perceptions of naloxone and syringe services programs

We asked all participants about naloxone and syringe exchange services. Most participants had heard of naloxone and knew that it is an opioid overdose reversal drug. There were, however, beliefs that it allowed for continued drug use, and contributed to first responder burn-out.

> I feel good because [naloxone] is helping someone. But then I feel bad because [the police] had probably been at that house 3 times today. So, they abuse it. I don't know about that answer. I just believe everybody deserves a chance. I don't think you should just let somebody die.

> There are like pros and cons with [syringe exchange]. Because it is like, ok, it is to help them not to catch AIDs, Hep C and HIV…but it is like they are also condoning for them to go back out and do more drugs.

There was also anger that it was being provided for free when other life-saving interventions - such as Epi-pens - were not.

> I didn't ask to have asthma. I didn't ask to have food allergies. I have to pay $800 for an epi pen. You want to give Narcan to these people for free?

We asked all participants if they had heard of syringe exchange, and how they feel about making it more accessible. Knowledge of syringe services programs was less broad than that of naloxone; there were also perceptions that it encouraged drug use.

> There was a little story in the local paper about maybe starting a needle exchange… they don't understand or get that. They aren't happy about it either. They feel that it is still making it too easy.
>
> [Government official]

Nonetheless, several participants described how their views on naloxone and syringe exchange had changed with more experience and time dealing with the opioid crisis.

> You would hear a lot of 'I ain't touching that.' And actually, that is how we are with everything. 'I'm not doing that!' and then we do that. …Everybody seems now to be, 'That is what we do. This is the norm.' We are just very stubborn. We don't like change.
>
> [Law enforcement]

> …I used to be completely against [the needle exchange]. But then I realized we are not going to stop them from doing the dope. So if we give them clean needles and help stop the spread of disease it really does make a difference.

Discussion

Data from [X] County and the US census shows that county communities and [CITY] city neighborhoods, disproportionately affected by the opioid overdose crisis, are usually those also affected by deindustrialization and poverty.[7,15-18,25] The Pittsburgh region has suffered a loss of population and jobs throughout the later part of the twentieth century with the demise of the steel industry. Although some municipalities, and Pittsburgh neighborhoods have revitalized others continue to slip further into poverty.[15-18]

Participants across the different study communities shared a general perception that their communities were in decline; indeed, the factors mentioned are consistent with the sort of multiply distressed areas which serve as "risk environments" for overdose.[22] Nonetheless, differences between communities pointed to further considerations in developing local interventions in the opioid epidemic: the need to pay attention to how visible the epidemic is within a community and what this might mean for educating and raising awareness as part of intervention efforts; the varied goods and services available within a community and how accessible those are to residents who may encounter transportation issues; perceptions of

neighboring communities as partners versus rivals in potential interventions. The culture of a community is paramount for success and leaders need to be attuned to local perceptions.[26,27]

Our findings are consistent with work that characterizes the opioid overdose epidemic as "multiple" epidemics based on observable spatial patterns and ecological conditions within geographic locations in Pennsylvania, and alerts us to the requirement of different approaches to combat the epidemic.[28] Our work examines community differences at a more granular level by examining perceptions of the opioid overdose epidemic as contextualized within communities with higher than average opioid-involved overdose mortality.

As participants described the opportunities to address the epidemic, some noted existing community organizations in place that could take on the work of intervention, while participants in other communities were relatively unaware of the extent of the opioid-involved overdose mortality in their communities. Although there was disagreement about the need for more harm reduction services, there was consensus that improving treatment access and education to reduce stigma were important interventions to implement. These two areas could be developed across numerous impacted communities. Stakeholders can utilize this feedback to determine where to provide resources and how best to work with community members on implementing programs.

Limitations

The sample likely did not represent all viewpoints. In particular, our sampling and recruitment approaches targeted individuals with experiences, insights, and opinions regarding this issue or who held positions/roles that required them to consider this issue. Thus, our sampling would not include the beliefs and opinions of those who may view themselves far removed from the opioid crisis. However, the points of view represented in our interviews were consistent with reports that leadership team members had heard and with other county initiatives describing barriers to accessing OUD treatment in the county.[29]

This study is limited to specific communities within our county and thus would not represent the entire county, nor communities beyond our region. However, while this study is particular to this region, we feel there are themes that can be extracted and potentially applied elsewhere.

Finally, the information we obtained is only pertinent to the timeframe in which it was collected and given the changing nature of the epidemic, this type of study may need to be repeated at regular intervals. In particular, our study was conducted prior to the COVID-19 pandemic. Future work is needed to explore the impact of the pandemic on these community perspectives and their perceived capacity/needs to address in a world changed and challenged by this overlay of new health, economic, and political crises.

Conclusions

Qualitative rapid-cycle assessments can provide context, and actionable information to decision-makers during the opioid epidemic, complementing quantitative surveillance data. This data is rooted in the voices of community members themselves and can corroborate

or challenge existing notions. Thus, this study and others like it, can help substantiate or discredit current actions and guide direction.

There is a call in the literature to better understand the unique context of communities hard hit by the opioid epidemic. While this study is particular to a region there are themes that can be extracted and potentially applied or tested in other geographic areas. In particular, themes of economic decline were somewhat universal while strategies for response differed greatly among participants and across communities. This suggests that the unique contextual factors that reflect local culture are critical to understand in determining interventions. Future research could test those themes by comparing findings from this study with other geographic areas.

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Table 1.

Self-selected participant stakeholder categories.

Stakeholder category (On an anonymous demographic form, we instructed participants to choose as many stakeholder categories as apply, and to select one primary category for purposes of the study)*	**# Interviewed, selected as primary category**	**# Who chose as additional category (can select as many as apply)**
People who currently illicitly use opioids	5	2
People who illicitly used opioids in the past	20	8
Parent/guardian of people who illicitly use opioids	2	4
Spouse of a person who illicitly uses opioids	5	9
Child of a person who illicitly uses opioids	0	8
Family member of a person who uses illicit opioids	7	26
Government official	12	4
Healthcare/social service provider	52	8
Law enforcement/legal system	4	2
School official	1	3
Community member	17	30
Other	1	1

* There was no quota for each category of stakeholder in each community.