



"People Don't Just Start Shooting Heroin on Their 18th Birthday": A Qualitative Study of Community Stakeholders' Perspectives on Adolescent Opioid Use and Opportunities for Intervention in Baltimore, Maryland

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Abstract

Initiation of non-medical prescription opioid use (NMPO) during early adolescence is tightly linked to heroin and other drug use disorders and related sequelae in later adolescence and young adulthood. Few studies explore stakeholders' perspectives on the burden and determinants of youth opioid use and barriers and facilitators to engaging youth in opioid use prevention and treatment services in urban settings with longstanding opioid epidemics. In-depth interviews were conducted with 22 stakeholders representing health and social service agencies in Baltimore, Maryland from May 2018–February 2019, to examine their perspectives on the burden and context of adolescent opioid use and identify barriers and facilitators to preventing and responding to adolescent opioid use. Transcripts were analyzed using the constant comparison method to identify themes. Most respondents described a recent uptick in opioid use independently, and in combination with other substances. As compared to heroin, NMPO was perceived to be more frequently used and less stigmatized among youth. Stakeholders perceived the process of transitioning from using NMPO to heroin as more common among White vs. Black youth and was perceived as occurring faster among White vs. Black youth. Some stakeholders believed racial differences in internal stigma against heroin use, and differential health service use among Black youth and White youth may have influenced these differences. Trauma and poverty were noted determinants of youth opioid use. Barriers to service provision included youth cognitive development, stigma and structural factors (e.g., disinvestment, lack of youth-centered and integrated services). Stakeholders perceive prevalent NMPO among Baltimore youth and identify multilevel barriers to delivering prevention, treatment and harm reduction services to this population. These findings encourage further investigation of determinants and consequences of opioid use among diverse racial/ethnic groups of youth in urban settings, and development of multilevel, youth-driven and youth-centered approaches to prevention and treatment.

Keywords Opioid use · Adolescents · Urban setting · Qualitative research

Introduction

The opioid crisis in the United States is showing no signs of abating (Hedegaard et al., 2018), and within the midst of the COVID-19 pandemic, concern over its intensification has emerged (Volkow, 2020). Most research on opioid use focuses on adults, but adolescence is a critical period for initiation of opioid use. There have been increases in opioid use disorder (OUD) and opioid overdose fatalities among adolescents over the last two decades (Brighthaupt et al., 2019; Gaither et al., 2018; Hadland et al., 2017; Hedegaard et al., 2018; McCabe et al., 2017). More than 10% of U.S. youth

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(≤ 18 years) report any lifetime opioid use, and non-medical prescription opioid use (NMPO) – i.e., taking a prescription opioid in a manner not prescribed by a doctor – is the most common means of opioid use among this population. NMPO use during adolescence increases risk for subsequent adverse outcomes, including heroin use and injection drug use, opioid use disorder (OUD), HIV, and hepatitis C virus (Cerdá et al., 2015; Lankenau et al., 2012; Mars et al., 2014; Pollini et al., 2011; Yedinak et al., 2016). Vulnerability to these outcomes is exacerbated by adolescents' limited access to behavioral health services (Alinsky et al., 2020; Bagley et al., 2017; Chadi & Hadland, 2019; Hadland et al., 2017; Wilson et al., 2018). Given the emerging public health concern of adolescent opioid use, it is critical to uncover knowledge that can inform strategies focused on prevention, treatment, and harm reduction. This study investigates social and health service professionals' perspectives on social and structural determinants of adolescent opioid use and barriers to youth access of behavioral health and social services.

A strong evidence base suggests that social and structural factors (e.g., peer, familial, school, neighborhood, health and social service system characteristics, jurisdiction and state characteristics) are critical to preventing and responding to the opioid epidemic among adults (Dasgupta et al., 2017; Park et al., 2020), but the relevance of these factors to adolescent opioid use has been understudied. Additionally, among Black and Latinx adolescents in particular, this topic has gone largely unexplored; (Ford & Rigg, 2015) and this is an important knowledge gap to address given that this population has a high likelihood of experiencing adverse health and social outcomes associated with use. The existing research on adolescent opioids emphasizes: (1) the epidemiology of initiation of use (Ford & Rigg, 2015; Hudgins et al., 2019; Lankenau et al., 2012; McCabe et al., 2013), (2) limited access to medications for OUD, naloxone for overdose reversal, and behavioral health services, and (3) inability to receive care in the earlier stages of use (Carson, 2019; Wilson et al., 2018; Yedinak et al., 2016). Lack of research on how social and structural determinants shape risk for opioid use and influence access and utilization of behavioral and social services among diverse populations of adolescents limits efforts to reverse the trend of opioid use among this vulnerable population.

This qualitative study seeks to add to the growing but limited research on the burden and determinants of adolescent opioid use and generate new knowledge on barriers and facilitators to engagement and utilization of social and behavioral health services for opioid use prevention and treatment. We specifically explore local stakeholders' perceptions of these circumstances among adolescents living in an urban setting, Baltimore City, Maryland. Coined the "Heroin Capital" well before the recent opioid crisis, Baltimore City- a predominantly Black city, has had a longstanding heroin epidemic that has had high rates of injection drug

use, HIV and HCV, since the late 1980s (Simon & Burns, 1998; Washington/Baltimore: High Intensity Drug Trafficking area Drug market Analysis, 2007). The city has the highest age-adjusted mortality rate for unintentional opioid-related intoxication deaths (84.8 per 100,000 population) in Maryland from 2016–2018 (Maryland's Inter-agency Opioid Coordination Plan, 2020). Data from the 2017 Youth Risk Behavior Survey show that the 2017 prevalence of lifetime heroin use (7.6% overall, 11% among Black males) among Baltimore high school students was the highest of all participating urban school districts (Jones et al., 2019). Research on the burden of opioid use and social and structural determinants of opioid use among adolescents in Baltimore, has not been systematically investigated since the mid-2000s (Fuller et al., 2001; Latkin et al., 2006; Sherman, 2007; Sherman et al., 2005).

We specifically sought to gain experiential insights on these topics from health and social service providers representing diverse sectors and organizations in this study because they have valuable and varied understanding of the role that macro-level factors, including local community and social conditions, organizational factors and policies play in determining adolescents' risks for opioid use and consequences of opioid use. Their deep understanding of the multitude of factors influencing youth opioid use and related sequelae is also critical to informing the development of sustainable and effective agency and community-based solutions to overcome barriers and strengthen facilitators to prevention, treatment and harm reduction for youth who use or are at risk of using opioids. Furthermore, eliciting perspectives from providers who are not just in the health sector is necessary to highlight the ways in which service providers outside of health settings are engaged with and support youth who use opioids or are at risk of using opioids, so that potential points for integrating prevention, treatment and harm reduction services within non-medical settings can be identified and alternative strategies to meet the needs of youth are considered (Ramos et al., 2017; Sales et al., 2018).

Methods

Data Collection Procedures and Sample

Semi-structured in-depth interviews were conducted with 22 stakeholders employed at health and social service agencies in Baltimore, Maryland that provide services exclusively to youth, or to both youth and adults between May 2018–February 2019. Stakeholders were eligible to participate if they were 18 years of age or older and fluent in English. We purposely sought stakeholders representing diverse professions, including but not limited to medicine, clinical

social work, behavioral health, workforce development, and juvenile justice, to explore the extent to which adolescent opioid use intersects with multiple sectors and disciplines. This approach was also intentional in uncovering how professionals working in both health-focused (e.g., medical, behavioral health, harm reduction, clinical) and non-health-focused (e.g., justice/legal, work force development) institutions respond to opioid use prevention, treatment and harm reduction among their clients. Stakeholders were recruited by initiating contact through publicly available telephone numbers and email addresses and through networking at meetings and conferences. Enrolled stakeholders were also asked to refer others. We did not screen stakeholders for their level of experience working with youth who used opioids. Final sample size was determined by the breadth and depth of data obtained (Patton, 1990).

Interview guides informed by prior studies (Mars et al., 2014; Yedinak et al., 2016) were used to specify the population of interest (i.e., adolescents < 18 years) and guide discussions with stakeholders. The interview guide included but was not limited to open-ended questions that asked respondents to define opioids, describe the burden of opioid use among youth, the social and environmental contexts of initiation, types (e.g., NMPO, heroin) and modes (e.g., oral, snorting, injecting), and transitions in and out of different types and modes of opioid use, determinants of use, barriers and facilitators to providing drug prevention, treatment and harm reduction services to youth, and perceived differences in above mentioned topics by demographic groups (e.g., by age, race, gender, special population). Interviews probed on different topics in an iterative manner to explore and further investigate topics in depth according to the content discussed. With the exception of one interview, which was manually recorded at the participant's request, interviews were audio recorded. Audio files were confidentially transcribed by an external company. Participants received a \$20 Amazon.com gift card after each interview; 4 respondents declined receiving this incentive.

Analytic Coding

We used a thematic analysis approach that was informed by the constant comparison method to iteratively identify and categorize themes that emerged within and across interviews (Charmaz, 2014; Thorne, 2000). First, initial line-by-line coding was independently conducted by the research team on the first two transcripts to develop an initial list of codes. Five team members condensed the initial list of codes to more focused codes. The focused codes were then finalized after interviewers added codes that reflected phenomena that emerged in the 3rd-21st interviews but weren't initially identified from line-by-line coding of the first two interviews. The finalized list of focused codes were used to draft a codebook that was subsequently used by the same 5

team members to deductively code all transcripts. This team of coders included 3 members of the team who conducted the in-depth interviews. Transcripts were divided among the 5 team members, and each coded transcript was reviewed (not coded) by one other team member to determine how well a coder adhered to the codebook. Any disagreements in coding that were identified based on the reviewers' review of coded transcripts were discussed and reconciled.

Dissemination Strategies

Results were disseminated to stakeholders for feedback prior to journal submission. While most respondents acknowledged receipt, only one provider organization, which 3 stakeholders were affiliated with, provided feedback suggesting that the information would be used to inform service provision. This provider organization did not explicitly express agreement or disagreement with the themes presented.

Results

Twenty-two stakeholders were interviewed once. The majority of stakeholders were women ($n = 13$), and the majority were White ($n = 13$) followed by Black ($n = 7$), Hispanic/Latinx ($n = 1$), and Asian ($n = 1$). Nearly half ($n = 12$) of stakeholders worked at an organization in the health sector. Among those who worked in a social service setting, 2 participants worked within the medical department of the respective social service organization. Most stakeholders had direct contact with youth ($n = 15$). The minority of those who had direct contact with youth served in executive, management or administrative roles ($n = 4$); all stakeholders who had little or no contact with youth ($n = 7$) served in executive, management, or administrator roles within their organizations. Two stakeholders also described caring for an adolescent family member who had histories of opioid use. On average, interviews lasted one hour.

Below we summarize the dominant themes discussed in the interviews: (1) description of stakeholders' perceptions of the burden and trends of opioid use among youth in general and their client base; (2) perceptions and norms around use; (3) determinants of use; and (4) barriers to and (5) facilitators of prevention, treatment and harm reduction service delivery to youth. Among stakeholders whose service provision extended beyond Baltimore City, we only present data referencing Baltimore City. "Opioid use" is used below to reference broader definitions of opioid use, which may include prescription opioids that are used non-medically, heroin and/or other opioids. Specific opioids are mentioned by name where relevant, and NMPO is used exclusively to refer to non-medical prescription opioid use. We also use the

terms adolescent, youth, and young person interchangeably to refer to youth under the age of 18.

Stakeholder Perceptions of the Burden and Trends of Opioid use Among Youth in Baltimore City

While the focal point of this paper is centered on understanding the social and structural factors influencing opioid use and service use among adolescents in Baltimore, a description of stakeholders' descriptions of their client base, and their understanding of the trends and patterns of adolescent opioid use in Baltimore city more broadly is included to provide context to opioid use among adolescents living in this predominantly Black city with a longstanding opioid crisis.

Many respondents perceived that among youth in Baltimore City, marijuana use was common, but noticed that NMPO and heroin use had increased in this population within the last 5 years leading up to the time of their interviews. With the exception of one stakeholder who indicated that the majority of youth served by his/her organization used heroin, most stakeholders described NMPO use to be more frequent than heroin use among their clients. Many stakeholders also described potential racial and age-related differences, with White teens and teens aged 15 or older perceived to use heroin more than Black and younger teens. However, some stakeholders interpreted lower counts among Black and younger teens as possibly reflecting delays in seeking care.

Youth initiation of opioids was described by stakeholders as occurring within multiple social contexts, including a young person's place of residence where adults' (relatives or not) prescription opioids were accessible, on the street where people who sold drugs sometimes offered free samples to youth to try for the first time, and school and social settings where youth experimented with peers and intimate partners. Medical professionals were also identified as potential sources, but some respondents mentioned this with caution.

The media story of a choirboy or choirgirl who was getting straight A's, not even smoking cigarettes, star on the college field hockey team, twisted her ankle and then met an evil orthopedist that got her hooked to Percocet and the next week she was shooting heroin under a bridge-- that is not the preponderant path. Maybe there's one of them, but that is not how it happens, even though the media would have us believe that that's the kind of bad doctor story. What mostly happens is that people may meet opiates through physicians, but they've already-- most of them, the ones who are vulnerable-- progressed. Not 100 percent of them, but most of them who are vulnerable to progress have already had a SUD [substance use disorder]. — female health provider

Stakeholders indicated that youth's opioid use could escalate over time, with a trajectory toward more potent routes of administration. As described by one respondent, this transition often went from: "oral use with pills, nasal use with the pills, and then switching to heroin nasally and then progressing up to IV [intravenous] use." This transition was primarily described as a response to higher costs and reduced availability of prescription opioids as compared to heroin. The transition was also described as occurring quicker among White vs. Black youth. Additionally, some stakeholders indicated that some youth transitioned from NMPO to misuse medications used to treat opioid use disorder (e.g., buprenorphine), anxiety, or sleep disorder, and some suggested that these actions reflected youth's attempts to avoid exposure to Fentanyl, which among other synthetic opioids, including those that are illicitly manufactured, has been attributed with causing the largest increase in opioid-related overdoses since 2013 (Scholl et al., 2018).

...There's a group that's trying to avoid Fentanyl but not always being successful. Or thinking they know how to avoid it, but they really don't, and so in that bag of the kids trying to avoid the Fentanyl are the group that then are, like, veering off to the benzos [benzodiazepines], thinking that "I don't know if my Percocet's pure." The Percocet might have Fentanyl, but I'm thinking my Xanax bars and my Klonopin is still what it looks like — female health provider

Simultaneous or sequential use of prescription opioids with other substances, including other prescription drugs, marijuana, alcohol, and cough medicine that contains the opioid, Codeine, with soda and candy, were additional patterns of opioid use that several stakeholders reported.

It depends [what drug marijuana is laced with]. They even wet it with PCP [Angel Dust, Phencyclidine] sometimes. Embalming fluid. They may crush some opioids on it. I know that they have the methadone in a cocktail version that might be laced on top of it. It's whatever.... I had kids tell me that they would get, as they called it Xani bars. They'll have a Xani which is Xanax and crush it up. Pop a Perc [Percocet] and then smoke weed. And that will be that they have to go through these three different levels just to get the ultimate high — female social service provider

Perceptions and Norms Around Opioid use Among Youth

Stakeholders indicated that youth perceived NMPO use to be common and socially acceptable, and they suggested that peer and media images facilitated normalization.

So, if we're talking about African American youth, you could look at hip-hop, which has a lot of influences. You know, Trinidad James had a song where the whole song was "Popped a Perc [Percocet], now I'm sweatin.'" Right? And then... it's just a lot of references, in terms of popular youth culture, around what it is. So, if I'm a 14- or 15-year-old kid, and I'm hearing, "Oh, I have so much more fun when I do this," why not try it? Especially if I don't have anybody telling me that it's wrong... – male, social service provider

By contrast, stakeholders described heroin as being less socially acceptable and more stigmatized among youth than prescription opioids and diverted opioid agonists.

There's still a little bit of a perception that heroin is like a lower, it's dirtier, it's grosser, it's less acceptable. But Percocet is an FDA [Federal Drug Administration]-approved medication... Buprenorphine is an approved medication, at least I know what's in it. Comes in a sealed package, you know? – female, social service provider

Some stakeholders indicated that youth's stigma against heroin was reinforced by their lack of knowledge about the biochemical similarities between prescription opioids and heroin. Although stakeholders discussed the stigma related to heroin as broadly occurring among youth, it was described as being more pronounced among Black youth. Many stakeholders contextualized this stigma as rooted in Black youth's historical perspectives.

They [Black youth] see what it [heroin] has done to their family members, their structure. They know people who have OD'd [overdosed]. So, in the community it's like you know, you don't want to be a junkie because a junkie is like the lowest low. And I hate using that term but that's what they use. – female, social service provider

Determinants of Opioid Use

The most frequently reported drivers of opioid and other drug use included living in resource poor, unstable home and neighborhood environments and experiencing and witnessing adverse events (e.g., abuse, assault, violence). Overwhelmingly, these circumstances were characterized as causing mood and anxiety disorders that when left untreated caused youth to self-medicate with opioids and other drugs.

So, there's a lot of trauma. Our young people are dealing with stuff that they should not be dealing with at their age. They're thinking about and trying to understand stuff that they have no business trying to understand and so that then leads to a lot of depression that

leads to anxiety and fearing what's happening next and fearing the worst all the time because they've witnessed so much negativity and violence in their community – male, health provider

Some stakeholders also highlighted family history of substance use disorders as a potential risk factor for initiation of opioid use in adolescence. Others cautioned against relying on "risk factors" to predict problematic opioid and other drug use among youth.

You can also walk down the hall and find patients where there's no history of substance abuse, they're a loving, supportive family, and this kid had every single thing offered to him on a silver platter. And everything in between. I always want to say, "Well, be careful not to pigeonhole." Because, sure, there are things that are risk factors, but you don't need to have risk factors to develop an addiction. – female health provider

Barriers to Prevention, Treatment and Harm Reduction Service Delivery to Youth

Stakeholders provided rich insight on barriers to preventing and responding to youth opioid use. These barriers were operationalized as macro-level structural barriers and interpersonal and intrapersonal barriers at provider and youth levels. The most prominent structural barrier that stakeholders highlighted was the dearth of youth-centered services at every stage of care (i.e., prevention, treatment, and recovery).

Structural Barriers

Stakeholders noted that prevention was not a focus of local public health efforts, and such oversight may cause young people to not get the attention and care they deserve until they enter the treatment system.

They're strictly looking at the treatment side of things and totally forgetting about the value of prevention, to keep people from getting to the treatment system. The adolescent population -- this is the smallest population. So, most of the treatment programs throughout Baltimore City and all of Maryland are geared to adults, and I think they forget a lot of times about the young people and what they need, and the money gets diverted to other places I think after a while if we just kind of let things go the way they're going now, there are not going to be any resources for them and we're going to have a community of young people who are just kind of floundering around until they get 18 and our treatment system is going to just be flooded. – female health provider

Similarly, stakeholders reported that there was little to no infrastructure for treatment of substance use disorders for minors, and inpatient drug treatment programs were not available at all.

There is no inpatient treatment for kids under 18... When it comes to physically dependent substances, it's critical that there's medical oversight and that there is supervision and a structured, you know, not necessarily locked, but firm boundaries where a child can-- anybody, but particularly someone under 18, can be in a secure environment where not only are their safety needs being recognize, you know, you're fed, you're clothed, you're-- you have a place to sleep, but all-- and there's not drugs in your face, but also that there's some sort of medical management of withdrawal or detox.- female health provider

Contextual Barriers

Several contextual barriers to youth obtaining treatment and participating in long-term recovery, including lack of transportation and payment assistance, housing insecurity, and adverse, systemic social and community factors (e.g., lack of economic and recreational opportunities, housing insecurity, police brutality), were also described by stakeholders.

You have to really dedicate [to treatment], and that's hard for youth too, because either they don't know where they're going to sleep the night before, so getting to a program at the same time every day is really challenging, because you may be 15 minutes away or you might have to wait two hours to get the bus to get to where you need to be. That's one issue, but then the other issue too is people were really desperate for employment, and that was their main goal and their main focus. They're like "I want employment, I want money, and so I don't have time to go to this treatment program, because I should be going to the temp agency instead and getting work." – female social service provider

You have to change your people, places, and things. And I get that, right? But as an adolescent, a 13-year-old, how much control do you have over changing your places? You may be able to change where you hang out at, but if you live next door to the person that you're using with, it's not that simple. So, really thinking about getting the family involved, and increasing that level of family support and community support. The other things are pretty much kind of systemic, right? I mean, not too long ago-- what, three years ago? -- we had the whole Baltimore uprising in West Baltimore, that focused on, you know, police brutality, the socio-economic conditions?... You know, it's hard to come to

treatment, it's hard to stop using, when I have all these other stressors that are going on in my life. – male social service provider

Institutional Barriers

Stakeholders also described several institutional barriers to service delivery including lack of youth-centered approaches, one-size-fits-all programming, zero-tolerance policies in multiple service settings (e.g., mental health treatment, juvenile system), and lack of integrated mental health and drug treatment.

.... A lot of the young people that I'm referring to now, they have medical assistance, people either don't take it or don't want to take it... Then you have a lot of private mental health providers who want to only address mental health issues; they're not doing both, and young people are not willing to go see Ms. Little for substance abuse and Ms. Jones for my depression. And so, getting someone who can treat both, which in mental health providers should be able to treat both, is difficult, so there can be a disconnect. – female health provider

Low availability and rigidity of existing drug treatment programs were described as causing providers, parents, and youth to identify alternative, less ideal, access to treatment. For example, a few stakeholders described how getting youth admitted into the juvenile justice system was one of the few ways to guarantee treatment access, and some noted that youth may revert to buying medication-based treatment on the street, if they are unable to complete a formal drug treatment program.

Well, I would say still the majority of people who are using [street] Bup [Buprenorphine] are using it either in an illegitimate program where they're prescribed it and either dosed or given their strips or as kind of a self-extension of that program. In other words, maybe they've gotten kicked out of their official program for not coming to group or what have you, so then they find them illicitly in order to kind of keep with their program.... – female social service provider

Provider Barriers

With the exception of one respondent, all stakeholders reflected on personal barriers to service provision, or that of their colleagues, which included “bureaucratic hoops”, heavy workloads, lack of expertise and training in screening for youth substance use. One respondent also described how medical providers' reluctance to acknowledge the risks associated with chronic pain management

can discourage them from promoting overdose prevention and prescribing overdose reversal medication (i.e., Narcan/naloxone).

I think people don't understand the risk, because I think they're like, "Oh, well we've been doing this for so long, our kids have been fine on chronic opiates. Yes, they have problems with chronic opiates, but they would not overdose." And I think that that's a misperception among that community. I think people are nervous to prescribe Narcan because then it's like admitting to the patient that there's a problem -- female health provider

One stakeholder also described how providers' lack of understanding of the barriers that hinder service use among young people or integrating two systems that may not have the same objective can impede successful service delivery and uptake.

Sometimes they'll [judges will] court order a certain thing that may not be clinically appropriate or possible. So, for instance, if a magistrate says and put in a court order, and it's signed by the clerk and everyone is like it's stamped and official that this client needs to complete inpatient treatment. Well, there is no inpatient treatment. So, by not doing that this child is violating a court order, which means they're violating their probation, subject to further disciplinary action, whether it's them, you know, GPS monitoring or detention or what have you..."So, are we setting a child up to fail by putting treatment in a court order? -- female health provider

Lastly, some stakeholders criticized how local researchers and practitioners develop programs and interventions without engaging youth or drawing upon their perspectives and expertise. This is poignantly described in a stakeholder's interpretation of how researchers approach youth.

Let's test you for this because we just are making the assumption that you're at higher risk for HIV, or that you don't use condoms, or that you use injection drugs," or whatever the research question that was being asked. But "We'll go off and design the intervention. We'll go off and figure out what you need. We just need you to tell us what's going on." And that sort of lack of collaboration, this lack of interest in young people, or any people being studied for that matter...I think that that setup of so much research is really a problem, and keeps power imbalance going, and keeps the idea that someone who's detached from our lives, who lives a very different life, knows what's best for us. -- female health provider

Youth and Family-Level Barriers

Youth cognitive development, perceived invincibility, lack of knowledge about opioids were described by stakeholders as hindering drug treatment and harm reduction efforts.

We had someone come in and do a Narcan, or a training on how to administer naloxone, and it was so fascinating because almost all of the youth were just like, "We don't need to know how to do this," and our staff was like, "Are you kidding me? We've had to use this on people in our center. What do you mean you don't need to use this?" They just identified naloxone [with] heroin, and so we had to do a lot of education around other types of opioids. -- female social service provider

Despite the many structural barriers that were noted as reducing youth's ability to access and use services, some respondents put the onus on youth and their families, as mentioned by one stakeholder: "if a kid and a family wants to be in treatment, they'll find a way to make it to treatment." Some stakeholders also cast blame on parents or guardians for being lenient, downplaying the risks involved with drug use and enabling their drug use. By contrast, some stakeholders were empathetic to parents'/guardians' competing priorities, personal histories of addiction and trauma, and inflexible working hours.

If your parents are working swing shift-- three to eleven, or eleven to seven-- that in itself can also create a barrier, right? So, given the area that we live in, where there is a low SES [socio-economic status], parents try to make a way out of no way, right? So that may mean that a lot of kids that we are seeing are latchkey kids. So, they come home from school, or their parents go to work, and they're left to supervise themselves. -- male social service provider

Stigma

Stigma at the provider, youth and family levels evolved as a key cross-cutting determinant of suboptimal service utilization and delivery that intersected with those discussed above. For example, stakeholders indicated that stigma against medication-based treatment discouraged the delivery and integration of drug treatment into other programs.

There is also an unfortunate but real stigma against agonists-- that is methadone and buprenorphine-- in the criminal justice setting and in the recovery community... And so, the notion has been, among some-- erroneous as far as I'm concerned, but still a very powerful belief-- that if you continue to be on an opioid agent, that's somehow not as good. -- male health provider

Many stakeholders also described how youth stigma against heroin, in particular, discouraged service use and undermined providers' efforts to identify and respond to potential heroin disorders.

They [youth] don't want anybody to know about it [heroin use] so then you've got to take them and do a one-on-one and say hey. And they will [say]: "That is not mine. You must have gotten my urine mixed up with somebody else's. I don't know who's that is, but I don't want to talk about it." They shut down. – female health provider

Facilitators of Service use Delivery and Utilization

In response to the multitude of barriers that they highlighted, stakeholders also described how they or their colleagues sought to break them down. Primary facilitators that stakeholders described included tailoring services to the needs and interests of youth and their families, delivering services in an informal way and integrating substance use education into curriculums or programs not focused on health.

So, most of our groups that happen here, for adolescents, happen in the evening time, because we also fundamentally believe that you're supposed to be in school. We try to do as many community events as we can, and be out, visible in the community; to even invite parents. We'll have tutoring for kids in the evening time when we don't have groups... We kind of try to meet the youth where they're at, because they love hip-hop. So, we created this group, where they essentially come in and talk about hip-hop all day. And we talk about the lyrics-- you know, what they actually mean, how do you internalize them. You know, "Is this real life? Can you go out here and pop 30 pills, and not have any consequences?" – male social service provider

Stakeholders also noted efforts to reduce organizational and structural barriers by establishing flexible hours of operation, providing transportation, delivering medications to youth (e.g., extended-release injectable naltrexone), and integrating mental health and substance use services, helping youth and their families acknowledge and address stigma, empowering youth through self-guided action planning, educating youth on the impacts of trauma on cognitive development and behavior, and explicitly preparing youth for the challenges associated with recovery.

On average, the research shows most people have to go through four to five treatment encounters before they're going to have sustained recovery. And when do you give that message to a patient? Do you tell them the first time they come in, when you're trying

to encourage them to go into recovery and stay clean? But you tell them that, so that if they relapse, they don't feel like a failure? Or if you tell them that, is that opening the door and giving them permission to relapse? I have that discussion with my patients all the time. Certainly, people who tell me they've tried to get clean three or four or five times, I will tell those people that statistic right up front, and say, "You're not a failure. You're average. This is normal." – female health provider

Stakeholders also provided recommendations on how they, their colleagues, institutions or other actors (e.g., policymakers) could overcome gaps in service provision in the future, by increasing "treatment on demand", strengthening economic and community development, filling "idle time" in recovery, increasing cultural competency in working with diverse populations according to gender, sexual orientation, and race/ethnicity, collaborating with youth to develop and implement programs and interventions, building capacity for substance use disorder screening in medical and non-medical settings, and incorporating behavioral health training into medical and non-medical curriculums.

Discussion

This study sheds light on stakeholders' perspectives on the context of NMPO and heroin use among adolescents in an urban setting with a longstanding opioid epidemic. Because adolescents who use opioids are more vulnerable to developing problematic opioid use and suboptimal consequences related to opioid use in adulthood, stakeholders provided key insights and opportunities for addressing the opioid epidemic among this population in ways that might otherwise reduce the burden of adverse consequences among young adults and adults in the future. Overwhelmingly, this diverse group of stakeholders perceived NMPO alone or in combination with other substances (e.g., marijuana, alcohol) as prevalent and acceptable among youth, and heroin to be stigmatized. Youth were described as not understanding the similarities between NMPO and other opioids, and the health risks that they pose. NMPO use was characterized as both a consequence and determinant of other non-medical drug use and heroin use, but perceived differences in use and drug use trajectories were described, with younger and Black adolescents perceived as using opioids less than older and White adolescents, and Black youth perceived to transition from NMPO to heroin use less frequently and rapidly than their White counterparts. Little to no infrastructure for youth-centered prevention, treatment, recovery, and integrated services, were described, and stigma among service providers and youth challenged delivery and utilization of services

that were available. Lastly, stakeholders widely discussed the roles of trauma, poverty, community disinvestment and structural racism in increasing vulnerability to opioid disorder among youth in Baltimore.

The normative nature of adolescent opioid use, transitions from NMPO to heroin, mixing opioids with other substances, psychosocial and structural (e.g., housing instability) determinants of opioid use, peer and familial and social contexts in which opioids are initiated and used, and young people's underestimation of risks associated with opioid use, which were described by stakeholders in this study is similar to what has been reported in prior research among young adults (Bouvier et al., 2019; Cerdá et al., 2015; Ford & Rigg, 2015; LeClair et al., 2015; Mars et al., 2014; McCabe et al., 2013; Moore et al., 2014; Pollini et al., 2011; Yedinak et al., 2016). This study therefore adds to the limited research documenting similar circumstances as occurring among adolescents.

Similarly, stakeholders' perceptions of youth's stigma against heroin, youth's misunderstanding of the similarities between NMPO and heroin, and the manner in which these circumstances interrupt service provision and utilization is consistent with what has been reported elsewhere among young adults (Yedinak et al., 2016), thus this study is among the first to provide perceptions on this issue in reference to adolescents specifically.

Stakeholders also described potential racial and age-based differences in service utilization across different age groups and racial groups. Among younger adolescents, in particular, low service utilization was described as a potential consequence of having few drug prevention programs that would identify early drug use and prevent progression to problematic drug use into late adolescence and emerging adulthood, and thereby highlighted the need for greater investment in drug prevention programs for youth. With research also documenting potential racial differences in service uptake of drug treatment and other related services, and potential racial/discrimination in service sector more broadly, additional research, both quantitative and qualitative in nature, is needed to understand if there are any service-related biases that may prevent Black youth in particular from accessing these services (Matsuzaka & Knapp, 2020).

Racial disparities in transitions from NMPO to heroin use have also been described in prior literature set in Baltimore and elsewhere (Kann et al., 2016; Palamar et al., 2016; Sherman et al., 2005), but some stakeholders in this study raised the potential for racial differences in stigma against heroin to partly explain this disparity. Specifically, stigma among Black youth was tied to their experiences witnessing the health and social consequences of the longstanding opioid epidemic in their Baltimore communities, which dates back to the 1960s. Differences in how stigma against drug use behavior manifest across different racial groups of youth

has been underexplored in contemporary research on the opioid epidemic. However, Furst and colleagues explored the role of stigma in crack use among a predominantly Black sample of young adults in New York City and described how sensationalized, dehumanizing, racialized and stigmatized portrayals of people who use crack as amoral, desperate, sexually promiscuous, and responsible for destabilizing families and communities as causing this sample of young adults to dissociate from other people who use crack, avoid or conceal their crack use, and downplay the severity of their use (Furst et al., 1999).

The widely held perception by Baltimore stakeholders and scholars elsewhere that NMPO is more acceptable and associated with less harm than heroin among youth overall, encourages better communication of the similarities between NMPO and heroin. The emergence of stigma as a barrier at multiple levels supports efforts to destigmatize opioid use disorder in ways that encourage youth to access and use services without shame. In light of prior research including our own documenting that Black and Hispanic/Latino youth in some cities, including Baltimore bear some of the highest rates of opioid use nationwide (Jones et al., 2019), future studies should explore whether stigma interacts with race to influence service utilization as described by stakeholders interviewed in this study. Additionally, the relationships of stigma to underutilization of services and overdose risk (Latkin et al., 2019; Tsai et al., 2019) encourages deeper investigation into this relationship and its relevance to developing culturally congruent prevention, treatment and harm reduction approaches in diverse communities.

While differences in service utilization were acknowledged as potentially explaining race and age-based differences in opioid use, it was the lack of health service availability overall that caused considerable concern among most stakeholders. Prior studies document underutilization and unavailability of youth-centered services (Alinsky et al., 2020; Feder et al., 2017). Lack of prevention, treatment and recovery services tailored to the developmental stage, lifestyle, interests and priorities of youth remain missed opportunities to prevent opioid use initiation, dependence and related health consequences, and to help youth with histories of drug use transition to life without drugs.

Lack of youth-centered services also run counter to state-wide goals of reducing NMPO and heroin use among youth (Maryland's Inter-agency Opioid Coordination Plan, 2020), and national guidelines that promote buprenorphine/naloxone and methadone opioid agonist therapies for youth (Center for Substance Abuse treatment Guidelines for the use of Buprenorphine in the treatment of Opioid Addiction, 2004; Kampman & Jarvis, 2015; Levy et al., 2016; Medication-Assisted Treatment of Adolescents With Opioid Use Disorders, 2016; Substance A, Mental Health Services A & Office of the Surgeon G. Reports of the surgeon Gen-

eral, 2016). Similar to prior literature (Bagley et al., 2017; Hadland, 2019; Harris et al., 2016; Sterling et al., 2012), time constraints, lack of competency in medication-based treatment delivery, lack of knowledge about medication-based treatment efficacy, bureaucratic hoops, stigma against medication-based treatment, and abstinence-only policies within organizations, were key barriers to its delivery that stakeholders reported. Also concerning were stakeholders' descriptions of how lack of services caused youth to enter the juvenile justice system or seek medication-based treatment outside of medical settings to get the care that needed, circumstances which can ultimately lead to negative health and social consequences. These findings strengthen support for city-wide and agency-level efforts to reduce stigma against medication-based treatment and increase providers' knowledge and capacity to provide medication-based treatment (Bagley et al., 2017; Hadland, 2019). Similarly, increasing training on naloxone use and identifying signs and symptoms of an overdose among youth may be necessary, as several stakeholders stated doubt that such approaches reached youth in Baltimore effectively, and extant literature suggests that challenges in delivering naloxone and harm reduction strategies to youth may be similar to those associated with medication-based treatment delivery (Carson, 2019; Chadi & Hadland, 2019; Hadland, 2019).

Also, noteworthy, the insights shared by stakeholders suggest that expansion of youth-centered prevention, treatment, harm reduction and recovery services, should not occur in a vacuum that does not attempt to address the root causes of opioid use and suboptimal service utilization. Opioid and other drug use and related sequelae result from structural factors, including racism, unaffordable and inadequate housing, income inequality, and over policing (Cooper, 2015; Cooper et al., 2013; Dasgupta et al., 2017; Ford & Rigg, 2015; James & Jordan, 2018; Linton et al., 1982; Saloner et al., 2018; Swift et al., 2015; Zaller & Brinkley-Rubinstein, 2018). However, to-date most structural solutions to the opioid epidemic have not focused on these distal causes. More interventions that move beyond individuals and healthcare settings are needed to directly respond to youth and families' needs for economic mobility, safe and affordable housing, transportation and fair public safety approaches.

Limitations

This study's findings must be interpreted in light of several considerations. First, while we interviewed a diverse group of stakeholders representing multiple sectors who therefore provided broad perspectives, perceptions from other service providers, including educators and first responders, were not elicited. Furthermore, the perspectives that stakeholders provided may have predominantly reflected perceived behaviors of youth engaged in care. Second, although stakeholders' insights and knowledge are necessary to improve the

implementation and development of prevention, treatment and harm reduction programs and services delivered to youth, youth voices were not captured directly and stakeholders' knowledge of youth experiences may be limited despite close interaction with youth, as youth may not share all experiences and circumstances with stakeholders. Service provider's perceptions may also be informed by implicit biases related to substance use overall and specific to racial/ethnic identity of the young persons they serve (Matsuzaka & Knapp, 2020). Additional studies that capture the voices and direct experiential knowledge of diverse populations of youth in urban settings are still necessary to successfully prevent, treat, and reduce harms associated with adolescent opioid use (Hawke et al., 2019).

Findings from this study may not be transferable to rural and suburban settings and areas outside the Mid-Atlantic region. However, several findings from this study are consistent with research outside of Baltimore and non-urban settings. Because the research team is affiliated with a university that has historically faced challenges with community engagement, some stakeholders expressed reluctance toward sharing their views, and this may have tempered their responses. However, some stakeholders may have been more comfortable sharing their views with people outside their organizations.

Conclusion

This study shares stakeholders' perspectives on the burden and determinants of opioid use among youth in an urban setting. The rich insights shared by stakeholders representing diverse fields bears evidence that the footprint of youth opioid use touches multiple sectors and requires an interdisciplinary, multi-sectoral response. This response will specifically need to strengthen health education and promotion to youth that clarifies the similarities between NMPO and heroin and other opioid use and destigmatizes opioid use in a manner that encourages uptake of treatment and harm reduction services among youth, and encourages service providers to facilitate referral to and provision of treatment and harm reduction services. This study also reiterates the fact that adolescent opioid use occurs within the context of structural inequalities that require the establishment of youth-centered and youth-driven prevention, treatment and harm reduction programs and procedures, and multidisciplinary and multilevel responses that eliminate social, economic and other contextual barriers to prevention, treatment and harm reduction service delivery at the levels of the provider, local jurisdiction and state. If the role of social and structural forces on opioid use among this population has been unclear before, the COVID-19 crisis, and its ability to lay bare social and structural inequities that determine opioid use among this

population, further necessitates service providers' and policy makers' efforts to ameliorate social and structural barriers to opioid use prevention, treatment and harm reduction among youth. Additional systematic investigations of the determinants and consequences of opioid use among youth in urban settings are needed to develop appropriate youth-centered prevention, treatment and recovery programs, and ensure that youth in urban settings are not overlooked by efforts to halt the opioid epidemic. Given the tight connection between adolescent opioid use and poor health and social related outcomes in adulthood, ameliorating opioid use disorders in this population is critical to slowing opioid use and its ramifications in the future.

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Declarations

Ethics Approval This study was determined non-Human Subjects Research by the Johns Hopkins Bloomberg School of Public Health Institutional Review Board.

Informed Consent In accordance with guidance of the Johns Hopkins Bloomberg School of Public Health Institutional Review Board, oral consent was obtained from all stakeholders prior to each interview.

Conflicts of Interest The authors declare that they have no conflict of interest.

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