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The role of community health workers in re-entry of people with HIV and substance use disorder released from jail: a mixed methods evaluation of a pilot study

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Abstract

Background Incarcerated individuals face high rates of mental illness, substance use disorders and communicable diseases including HIV, with increased health complications and mortality in the early post-release period. Multiple re-entry interventions linking justice-involved individuals to community resources via peer navigation have emerged, though limited data exist on the mechanics and personal impact of these approaches. This paper quantifies and evaluates a pilot study of a combined Community Health Worker (CHW)-re-entry intervention for individuals released from jail who use substances and have HIV to inform future large-scale applications.

Methods A mixed-methods analysis of a CHW-re-entry intervention utilized in a pilot randomized controlled trial involving people with HIV who have a history of substance (stimulant, opioid or alcohol) use in Dallas, TX was conducted using an explanatory sequential design. Quantitative assessments of the intervention measured interaction types, time spent, and topics discussed and explored associations between the “dose” of intervention and patient outcomes. Qualitative analyses of CHW field notes and end-of-study participant interviews were triangulated with quantitative findings to elucidate the intervention’s impact.

Results Of the 17/31 participants assigned to the intervention, 16 interacted with the CHW on at least one occasion, and 6 successfully completed a visit with the re-entry organization. Most CHW interactions occurred by phone (66%) or in person (28%). Frequently discussed topics included substance use, housing, and physical health. On average, participants spent 7.65 h (range 0–37.18, SD=9.33) engaged with the intervention over 6 months. Intervention dose was associated with improved HIV control, decreased stimulant use, higher rates of recidivism, and improved clinical appointment show rate. Qualitative analyses revealed key intervention components, paralleling benefits of study participation alone: outreach, nonjudgmental approach, motivation and accountability.

Conclusions A CHW-re-entry intervention, while resource-intensive, shows preliminary promise in improving HIV and some substance use outcomes. Frequent telephone and in-person contact, with an empathetic yet goal-oriented approach, fostered participant support and motivation to address HIV and substance use. Participants reported that engagement in research provided accountability and a sense of purpose. Future studies should focus on optimizing implementation of CHW-based interventions to enhance impact on vulnerable populations.

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Keywords Linkage to care, Re-entry, HIV, Substance use, Community health worker, Incarceration, Jail

Background

The United States has the highest incarceration rate globally with nearly 2 million people held in more than 6000 facilities across the country in 2023 (Sawyer & Peter, 2023). Incarceration disproportionately impacts communities of color and those living in poverty; Black individuals are incarcerated 5 times the rate of White individuals and Latinx individuals are incarcerated 1.5 times more than White individuals (Nellis, 2022). These communities also face significant health disparities, which may be further exacerbated by the carceral system (Grieb et al., 2014; National Academies of Sciences E, and Medicine; Health and Medicine Division; Board on Population Health and Public Health Practice; Roundtable on the Promotion of Health Equity, 2019). Health issues disproportionately affecting individuals who are incarcerated include mental health disorders, substance use disorders and communicable diseases including HIV (Puglisi & Wang, 2021).

The prevalence of HIV among people in jail or prison is three to five times higher than in the general population (Westergaard et al., 2013; Valera et al., 2017). Although access to healthcare and medications during incarceration may temporarily improve HIV clinical outcomes, engagement in HIV care and virologic suppression generally decline after release, underscoring the net negative impact of incarceration on health (Iroh et al., 2015). Furthermore, approximately 72% of people with HIV (PWH) who enter the carceral system report using drugs in the month prior to incarceration (Chitsaz et al., 2013). High substance use rates further contribute to low rates of care engagement and virologic suppression after release for PWH (Ammon et al., 2018; Wirda & Henderson, 2024), increasing the risk of adverse individual outcomes and onward HIV transmission during re-entry.

In 2021, 443,700 people returned back to their communities from the prison system (Carson, 2022). Upon re-entry, these individuals navigate complex social and healthcare needs while also facing numerous barriers. More than half of formerly incarcerated people are unable to secure stable employment within their first year of re-entry (Goger et al., 2022). Other challenges include finding housing and reliable transportation, obtaining documentation, reconnecting with community members, navigating community supervision and legal requirements, and regaining health insurance. Amid these structural challenges, approximately three-fourths of released individuals are rearrested within three years of re-entry (Goger et al., 2022). Research also shows that individuals are at increased risk of death in the first few weeks

of return – with common causes of mortality including homicide, accidents, substance use, HIV, liver disease, and cancer (Binswanger et al., 2007; Rosen et al., 2008).

Given the critical nature of the initial weeks after release, various interventions have been tested to support the transition of formerly incarcerated individuals by addressing multiple social and logistical aspects of re-entry with the goal of impacting health outcomes. For example, the Transitions Clinic Network, a nationwide network which employs community health workers (CHWs) with lived experience of incarceration, has been shown to increase engagement in primary healthcare and decrease unnecessary utilization of emergency health services among people with chronic health issues recently released from incarceration (Prison And Jail Re-entry And Health, 2021; Fauci et al., 2019). Community health workers generally originate from the communities in which they work and serve as trusted sources of health education (Bedell et al., 2015). Peer navigators, in a role similar to CHWs, have also been studied in re-entry, including for PWH. LINK LA (Linking Inmates to Care in Los Angeles) was a landmark peer navigation re-entry initiative specifically directed at PWH, that reported significant improvements in sustained viral suppression (Cunningham et al., 2018). While these studies highlight the impact of peer-based interventions, a gap remains in our understanding of the key components of successful transition interventions, including the principal elements of the intervention (e.g. subject matter), how these are delivered (setting, frequency, duration) and the impact on individuals receiving the intervention.

With this purpose in mind, in this paper, we evaluate a pilot re-entry intervention from both quantitative and qualitative perspectives. Our overall objective is to better understand the impact of a combined CHW and re-entry organization intervention on the re-entry of individuals with HIV and substance use released from jail. Specifically, we aim to (1) describe and quantify our combined intervention; (2) assess for a dose-response between the intervention and study outcomes and (3) triangulate these findings with qualitative feedback from participants about the impact of participation in a research study and key components of the CHW intervention.

Methods

Overview

This project provides a mixed-methods assessment of the COMEBACK (Community Health Workers Eliminating Barriers in Access to Care) study, which is a pilot randomized controlled trial of a CHW combined with a

re-entry organization intervention (CHW+) for individuals recently released from jail with a history of substance (stimulant, opioid, alcohol) use and HIV. The intervention was designed building on concepts from the Gelberg-Andersen Behavioral Model for Vulnerable Populations, which focuses on social structure and enabling resources relevant to health and health-seeking behaviors (Gelberg et al., 2000). This study took place in Dallas, Texas with recruitment occurring at the Dallas County Jail. Dallas County had 19,957 PWH in 2021, with an incidence rate of 38 per 100,000, far greater than the state, regional and national averages (Understanding the Current HIV Epidemic in Dallas, TX (Dallas County), n.d.) and identified as a priority jurisdiction by the national Ending the HIV Epidemic (Fauci et al., 2019). Thus, the need for robust intervention programs in this area is great.

The CHW+ intervention of the COMEBACK study correlated with improved substance use outcomes and social determinants of health (including employment, stable housing, and food security), with no difference in HIV VL suppression (Hoff et al., 2023). While our primary paper adds to a growing body of literature that underscores the value of CHW interventions, it does not explore the intricacies of individual participant and CHW experience. In order to address this, the current paper brings together quantitative and qualitative methods to better understand the mechanics and impact of this intervention. Specifically, we will provide additional details about the intervention itself, quantify the “dose” of intervention received and its association with outcomes. This information is triangulated with qualitative feedback from participants in both arms of the study – those who did and did not receive the intervention – to plan for future implementations.

Participants were referred by medical providers while incarcerated at the Dallas County Jail, where they were subsequently screened for eligibility with the following inclusion criteria (a) age ≥ 18 years old, (b) English-speaking, (c) confirmed HIV diagnosis, (d) evidence of uncontrolled HIV as defined by VL > 200 copies/mL within 90 days prior to enrollment or self-reported non-adherence to HIV medications or no HIV care visit in 6 months prior to incarceration, (e) documented opioid, stimulant or heavy alcohol use in the past 12 months, and (f) willingness to provide two forms of contact information. Individuals who did not provide at least two methods of contact, such as phone number or email (which could include family members), were considered ineligible due to concerns of being unable to connect with these individuals after release.

Study team members monitored the online jail lookup system to identify the release date of interested and eligible individuals. Potential participants were contacted and

invited to complete study enrollment. If these individuals could not be reached within 60 days of release, they were considered ineligible.

At the initial visit, eligibility criteria were confirmed, and participants provided written informed consent. A consent quiz was completed to ensure participants understood that participation was voluntary and that they would be randomly assigned to a treatment group. After completion of baseline assessments, participants were randomly assigned to the intervention group (CHW+) versus treatment as usual (TAU). The randomized controlled trial methods and outcomes are described in detail in our primary paper (Hoff et al., 2023).

As part of the primary study, participant demographics, socio-economic variables, substance use history, and mental health diagnosis were collected at baseline and follow-up visits (at 3, 6 and 12 months). In addition, HIV viral load (primary clinical outcome) and urine toxicology screen (primary substance use outcome) were collected at 6 months. Secondary outcomes included recidivism, clinic attendance, medication adherence and substance use treatment. For the current sub study, additional measurements include the amount (in minutes), setting (e.g. in person, phone) and content (needs addressed) of the CHW intervention.

The goal sample size for the primary pilot study had been 80 participants but due to interruption in recruitment related to the COVID-19 pandemic, only 31 individuals were enrolled.

Qualitative data collection- field notes

To further elucidate the mechanics of the CHW intervention, we compiled CHW field notes. At the end of each CHW-participant interaction, CHWs were required to document completion of various aspects of the interaction, including an open comment box for field notes.

Qualitative data collection- in-depth interviews

All participants were invited to complete an individual qualitative interview after the end of the 6-month intervention period. Interview domains included impact of being in the research study; impression of interactions with their CHW and re-entry organization (for those in intervention arm); barriers and facilitators experienced during re-entry and overall feedback for study staff.

Overall, 18 participants completed interviews, 11 in intervention arm, 7 in TAU. All interviews were conducted by research staff trained in qualitative methods, with an effort made to complete the interview in person. If this was not possible due to COVID-19 disruptions or other factors, interviews were conducted over the phone. All interviews were audio-recorded, transcribed and de-identified. Participants received compensation for each

study visit (\$25 for baseline, \$25 for visits at months 3 and 12, \$50 for visit at month 6 and an additional \$25 for the qualitative interview), with a potential to receive up to \$150 total. 14 participants completed all study visits including the interview and mean compensation was \$110 per participant.

The mixed methods design utilized was an explanatory sequential design. Given the overall small study sample size, conclusions from quantitative analyses alone were inherently limited. Therefore, qualitative interviews were designed to supplement the team's understanding of the implementation of the intervention, both from the perspective of the interventionist (CHW field notes) and the participant (interviews).

Intervention

A total of 157 individuals were referred to the COMEBACK study and 31 were enrolled. Of those referred who were not enrolled, 85 (54%) did not present for enrollment visits after jail release (either were unable to be contacted and did not follow up after initial contact), 7 were not released prior to the close of the study, 18 individuals were ineligible, 13 went to prison, and 3 were not interested in participating. Enrolled individuals assigned to the intervention met with a CHW within a week of randomization and often on the same day. Our study utilized two CHWs, both of whom were formerly incarcerated and had experience working with individuals with a history of substance use disorder and incarceration. They were trained through the Transitions Clinic Network program and training topics included the impact of incarceration on chronic disease management, core CHW competencies, HIV care, substance use treatment and community resources assessment and process mapping (Community Health Workers in the TCN, *n.d.*). CHWs also completed local resource mapping, identifying and cataloging local resources relevant to participants, including housing services, foodbanks, substance use treatment centers and HIV care providers.

At the initial visit, which could be conducted at a variety of locations (research unit, participants home, shelter, library, fast food establishments), CHWs built rapport with participants and their general approach was to meet participants where they were at (figuratively and literally). Visits included several categories of activities: (1) communication, which included confirming detailed locator information and preferred method of contact; (2) needs assessment (identification card, transportation, housing, food, clothing, medical and/or mental health services, substance use treatment); (3) referrals (prioritizing needs and referring to local service providers); (4) education (substance use counseling, harm reduction, adherence counseling around

antiretroviral therapy/HIV clinical care, including using motivational interviewing techniques); (5) social-emotional support (encouraging positive health behaviors, engaging family/social supports). CHWs also linked participants to Unlocking Doors[®], a non-profit re-entry organization focused on reducing recidivism. Unlocking Doors[®] provides comprehensive needs and risks assessments for people with a history of justice involvement and refers these clients to a wide network of service providers (housing, clothing, job training, employment, healthcare). TAU participants received the standard of care, including passive referrals to HIV clinic service providers.

The recommended schedule for meetings between the CHW and participants was weekly for the first month, every two weeks for months 2–3, then monthly for months 4–6, though more/less frequent visits could occur based on participant need. All participants across both arms received regular monthly contact from the research team to encourage retention in the study.

Data analysis

Dose of intervention, defined as the total time each intervention participant spent (in person or over the phone) with the CHW and Unlocking Doors[®], was quantified among participants in the intervention arm and assessed for correlations with the following patient outcomes: HIV control (HIV viral load <20 copies/ml), stimulant use (urine toxicology screen result for stimulants at 6 months), recidivism (reincarceration during 12-month follow up period), and clinical appointment show rate (number of clinic visits participant showed to). Stimulant use was selected specifically as this was the leading drug of choice for many participants. Regression models and 95% confidence interval bands were generated and plotted alongside data points using the python seaborn library.

To understand the impact of the CHW intervention on participants in both arms of the study, we conducted a qualitative analysis of CHW field notes and end of study interviews. CHW field notes, which were relatively brief, did not undergo formal qualitative analyses but were extracted, reviewed and categorized by theme. Transcripts of individual participant interviews were reviewed by at least 2 team members to highlight important quotes and to develop and refine a codebook. Transcripts were subsequently reviewed and coded by two team members (AN and AK) who met to refine codebook definitions, add emerging themes, and resolve discrepancies by consensus. All coded transcripts were reviewed to assess themes and identify findings. Triangulation of qualitative data and quantitative data occurred by integrating key

themes identified in qualitative data analyses with quantitative data findings. Data were organized and summarized by theme.

Results

Participants (N=31) were predominantly male-identifying (77%) and Black (71%) with an average age of 35.9 years. Participants were exposed to HIV through sexual contact (MSM: 65%, Heterosexual:32%), and injection drug use (16%). Most had completed high school or received a GED (48%), with 29% having some college education and 10% holding a college degree. Participants faced various socioeconomic barriers: 74% were unemployed, 42% lacked permanent housing, and 45% faced food insecurity (Table 1). Of 17 intervention participants, 1 died due to HIV/AIDS and the remaining 16 met with a CHW at least once 6 participants also completed a visit with Unlocking Doors®. Demographic characteristics of the 18 participants who completed qualitative interviews were similar to the overall cohort, and were majority male, Black with a mean age 36.9–39.5 years old (Table 2).

Community health workers provided extensive outreach

CHWs initiated 89% of contacts, with 66% occurring by phone and 28% in person. Contact was made with the participant 52% of the time and with a family member or acquaintance 10% of the time. When CHWs were able to connect with participants, they spent an average of 26.72 min (range: 0–180, SD: 20.72) per interaction. The 6 participants who accessed Unlocking Doors®, spent an average of 3.01 h (range: 1.18–6.68, SD: 1.99) utilizing those services in total.

CHW field notes illustrate the extent of these quantitative outreach results. In one instance, the CHW looked for a participant “at a known hangout spot, went to the [Community Center]” and in speaking with individuals there eventually discovered that the participant had gone to a local Hospital’s ED. “CHW was able to find out that the participant had been admitted to the hospital” and was able to visit the participant there (Supplementary Table 1). CHWs did not stop at unanswered phone calls, and typically went on to visit sites, reach out to participants’ contacts and travel throughout the city to locate participants in order to provide in-person support and referrals.

Participants often described persistent and in-person outreach to be most valuable in their interviews. “He worried about me, and he’d come out to see me. And nobody ever does that” (Table 3). These outreach efforts were interpreted as genuine care and concern, helping participants build trust and interact with

Table 1 Comparison of baseline characteristics of COMEBACK study participants in pilot randomized controlled trial of community health worker plus re-entry organization versus treatment as usual, Dallas, Texas, 2019–2021 (N= 31)

	Control (N= 14)	Intervention (N= 17)	p-value
Gender			
Male	12 (85%)	12 (71%)	0.591
Female	1 (7%)	1 (6%)	
Transgender	1 (7%)	2 (14%)	
Race/Ethnicity			
Black	9 (64%)	13 (76%)	0.725
White	3 (21%)	2 (14%)	
Hispanic	2 (14%)	2 (14%)	
Age			
Mean (years)	34.7	36.9	
HIV Risk Factor			
MSM	10 (71%)	10 (59%)	0.71
Heterosexual	5 (36%)	5 (29%)	0.15
IDU	4 (29%)	1 (6%)	1.00
Other	2 (14%)	1 (6%)	1.00
Education			
< HS	2 (14%)	2 (14%)	0.08
HS/GED	4 (29%)	11 (65%)	
Some College	6 (43%)	3 (18%)	
Completed College	2 (14%)	1 (6%)	
Belongings			
Have Cell Phone	10 (71%)	10 (59%)	
Have Photo ID	9 (64%)	11 (65%)	
Employment			
Unemployed	10 (71%)	13 (76%)	0.08
Disabled	1 (7%)	2 (14%)	
Employed, part-time	2 (14%)	0 (0%)	
Employed, full-time	1 (7%)	0 (0%)	
Housing			
Own Place	4 (29%)	1 (6%)	0.10
Family/Friends - Perm	3 (21%)	8 (47%)	
Family/Friends - Temp	4 (29%)	2 (14%)	
Unsheltered	3 (21%)	4 (24%)	
Food Insecurity			
	5 (36%)	9 (53%)	0.47

someone about their health outside of the structured healthcare system. Similarly, outreach by the research team in the form of calls and reminders was also considered helpful.

Community health workers offered a non-judgmental, comprehensive approach

On average, participants received 7.65 h (range: 0–37.18, SD=9.33) as their “dose” of intervention (sum of total

Table 2 Demographic characteristics of participants in the pilot COMEBACK study who completed qualitative interviews, Dallas, Texas, 2019–2021. (N = 18)

	Control (N = 7)	Intervention (N = 11)
Gender		
Male	6 (86%)	7 (64%)
Female	0 (0%)	2 (18%)
Transgender	1 (14%)	2 (18%)
Race/Ethnicity		
Black	7 (100%)	9 (82%)
White	0 (0%)	2 (18%)
Hispanic	0 (0%)	0 (0%)
Age		
Mean (years)	36.9	39.5

time spent with CHWs and Unlocking Doors[®]) (Fig. 1). Popular topics covered included substance use (N = 53), housing (N = 48), physical health (N = 17) and medication management (N = 14). This breadth of topics reflects the CHWs’ access to participant’s realities and the trust they built. CHWs often witnessed firsthand the challenges participants faced, whether it be physical injuries, housing insecurity or managing a pregnancy (Supplementary Table 1). In one visit, the CHW noted “Participant appears to have lost weight and has bruises and scars to the face. Patient was walking with the assistance of a walker, her voice was very faint. She reports to have been jumped by three individuals”.

The non-judgmental approach of both CHWs and research staff was cited as critical by participants, allowing them to be honest and open without feeling stigmatized. Participants described CHWs as “down to earth, allowing [them] to just be honest in [their] situation” and someone who “didn’t just look at the disease, but saw [them] as a person” (Table 2). Through shared lived experience, insight, and a non-judgmental approach, participants could discuss multiple basic needs in addition to HIV and substance use care.

Community health workers improved motivation and accountability among participants

Although limited by a small sample size, intervention dose trended with improved outcomes at 6 months. Participants in the CHW + arm trended toward better HIV control (viral load < 20 copies/mL), decreased positive stimulant screens, and increased clinical appointment attendance (Fig. 2). Dose of intervention, however, also correlated with increased recidivism rates, with overall recidivism in the population being 39%.

Improvements in participant outcomes align with two themes from our qualitative analysis: motivation and accountability. One participants shared, “I started taking [HIV medications] because [the CHW] wouldn’t shut up about them.” Motivation from CHWs and study staff was important to successful re-entry, with some participants feeling inspired by their CHW’s personal success, and others motivated by the research team’s encouragement to take medications, attend clinical appointments, and seek employment (Table 3). Accountability extended beyond feeling a responsibility to attend visits, with participants citing the desire to do well to show the research team their efforts were worthwhile. Intervention participants described a kinship with CHWs, with one saying it would have “felt like letting a family member down if [they] hadn’t kept [their] goals and word.”

Discussion

We present findings from a mixed methods evaluation of a pilot randomized trial that combined the efforts of a formerly incarcerated CHW with a re-entry organization to improve social determinants and health outcomes among justice-involved people with HIV and substance use. The most notable impact of this intervention as presented in our primary outcome paper was on substance use and basic needs, though the study overall was limited by small sample size. Having collected details about processes and qualitative data provided a unique opportunity for the secondary analyses presented in the current paper to explore the intervention components and plan for a future larger trial. While previous studies have examined the role of CHWs (or patient navigators) in post-incarceration healthcare linkage, there is limited information available about the mechanics of such interventions, including their content, intensity and impact on both interventionist and participant (Cunningham et al., 2018; Hoff et al., 2023; Aminawung et al., 2021; Liao et al., 2013). Our secondary analysis of the COMEBACK study reveals that such an intervention is intensive, requiring (a) significant time commitment from the CHW through extensive outreach, (b) non-judgmental approach to participants in order to address comprehensive needs including housing, substance use and interpersonal violence and (c) ongoing support to in the forms of motivation and accountability to improve abstinence from drugs and adherence to medications and clinic visits. In short, this study required that the intensity of the intervention, delivered by an individual with shared lived experience of incarceration and/or substance use, match the high-needs population being served.

Our quantitative results, though not statistically significant, suggest improvement in several health outcomes, including HIV control, HIV clinic visit attendance and

Table 3 End-of-study interviews with participants of the COMEBACK pilot randomized controlled trial elucidate impact of intervention and study participation, Dallas, Texas, 2019–2021. Supplementary data

Themes	Intervention only (N= 11)	Study Participation (N= 18)
Outreach	<ul style="list-style-type: none"> • “[CHW] went in person ... it made it feel as if she cared more” • “He worried about me, and he’d come out to see me. And nobody ever does that” • “She [CHW] was always by my side... she definitely did her part” • “He [CHW] would remember like the little details, like when I tell him where I would be at, and he would pop up... I’m like “Dang, you remembered?” • (after visits changed to virtual): “I just wish we could have gotten together face-to-face more... lets go grab a coffee and chat” • (preferred in person visits in community to coming to hospital) “I’m just not a fan of hospitals you know you know from things happened long ago” 	<ul style="list-style-type: none"> • “The calls and reminders, and stuff like that, that’s what helped me more” • “So a text, a call, I love both of those. And then if I don’t respond that day, then she would call my mom.” • “[The research team] kept reaching out and in contact so it was easy to remember to participate”
Non-judgmental approach	<ul style="list-style-type: none"> • “[CHW was] down to earth... allowing you to just be honest in your situation with him” • “[CHW] doesn’t look at my disease. He looks at me as a person, you know, what’s going on.” • “When I come here and see you... you don’t judge me” • “[I] started talking to him, and I trusted him. And I still trust him.” 	<ul style="list-style-type: none"> • “You guys were always very receptive... I understood that no question is a stupid question... easing my mind on any kind of inquiry” • “You guys were like really professional and polite...made me feel welcome and not judged or looked down on” • “How my addiction and my HIV...has affected my overall disposition... a lot of us don’t have a healthy environment for those topics or those concerns to come out” • “Not many organizations will constantly or make it their main objective to stay in touch with you, to always remain pleasant to deal with, easy to talk to” • “But now, I feel like I’ve opened up more... the rapport that we have with one another has allowed me to not be afraid to come in and say, okay, this is what’s going on with me”
Motivation	<ul style="list-style-type: none"> • “Yeah, I started taking ‘em [HIV medications], ‘cause he [CHW] wouldn’t shut up about them” • “[I] was very appreciative of his just his persistence and passion... I didn’t want to hear what he had to say...I needed to hear it” • “The part I liked about the research, having somebody, um you know, just going good, she [CHW] was really inspiring” 	<ul style="list-style-type: none"> • “I like to know there’s good people and keep you all’s research going on and, and encourage more people ‘cause you encourage me, inspire me” • “[Being in the study] make me want to think about it, leaving drugs alone because understand that ain’t doing nothing but hurting me.” • “This study has helped actually motivate me into wanting to look for another job” • “[The study] allowed me to think about taking better care of myself and ... take my meds and go to my classes and my appointments and stuff like that.” • “[Since getting out of jail and being in the study] I’m more focused and ... purposeful”
Accountability	<ul style="list-style-type: none"> • “I had someone that actually seemed like they care what happened to you. It makes a difference” • “It let me know that, you know, he’s concerned, you know. A lot of people just need to have somebody that’s concerned about them” • “He’s like my dad. My dad passed and [CHW] is like a father figure towards me” • “[Counselor at Unlocking Doors[®]] spoke to me with such wisdom and patience and experience and care and concern. He really made me feel like I would be letting a family member down if I hadn’t kept my goals and my word that I would complete these goals” 	<ul style="list-style-type: none"> • “I liked the study. What they’re doing for me is a great thing because I feel that I need the help...I stay above the water. I finished this thing up because they told every three months that they contact me, so ride it out.” • “So, it helps a lot when you feel like someone cares that you’re here, that they know you’re here. And it just makes you wanna do good and make them happy. So, their hard work and effort of trying to care for you don’t seem to have gone away”

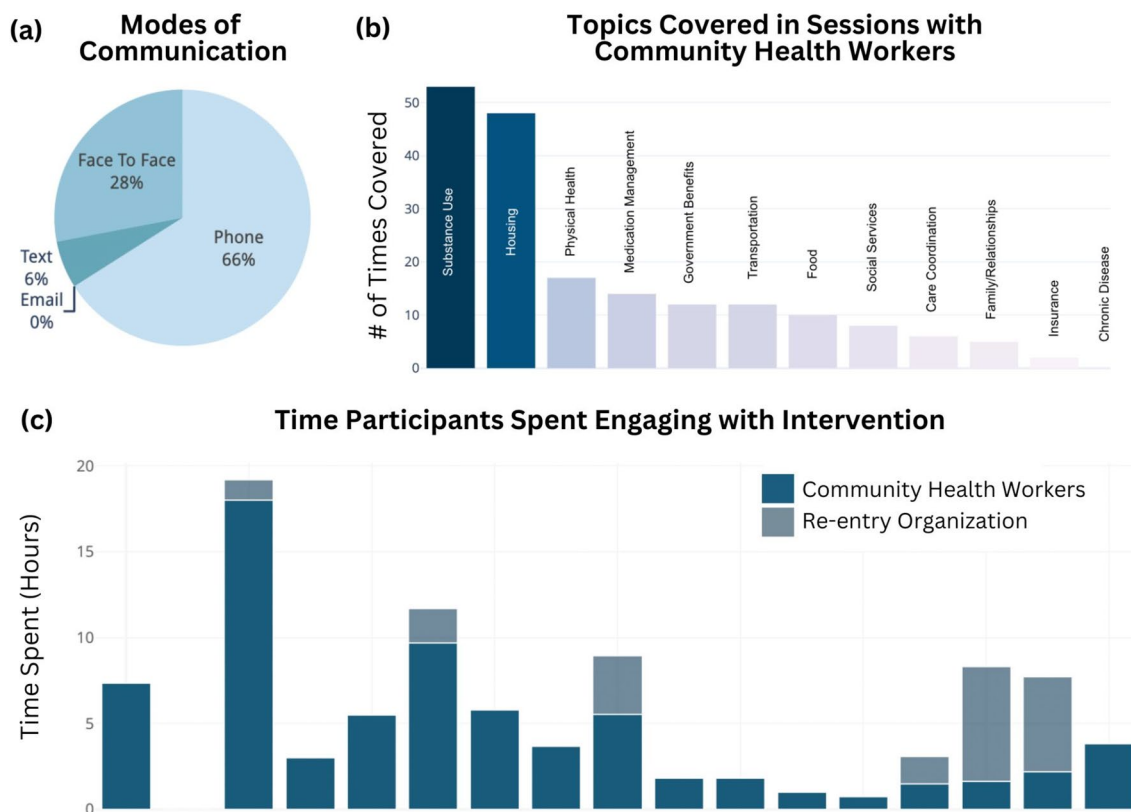


Fig. 1 COMEBACK study participants spent variable time interacting with combined intervention of community health workers and re-entry organization addressing a multitude of topics, Dallas, Texas, 2019–2021. **A** Community Health Workers connected with participants via phone, text, email and face-to-face. **B** Substance use and Housing were most frequently discussed in participant-CHW interactions. **C** “Dose” of intervention consists of both time spent with Community Health Workers (dark blue) and re-entry organization (light blue)

stimulant use, which correlate with intervention dose. While peer-based interventions are widely recognized for their value, most studies have not found statistically significant differences in outcomes like retention in care and HIV viral load suppression, often due to complex post-release challenges (Masyukova et al., 2018; Myers et al., 2018; Fox et al., 2014). The LA Link study was an exception, demonstrating a correlation between number of patient navigation sessions and viral suppression (Cunningham et al., 2018). Several key differences exist between our intervention and that of similar studies focused on justice-involved PWH. First, we enrolled individuals who had uncontrolled HIV, whereas other studies enrolled PWH who had already attained virologic control and their interventions focused on maintaining virologic suppression. Secondly, our intervention, which also offered re-entry services addressing basic needs like housing and employment, and included a focus on substance use, has the potential for broad-reaching impact, though it would need to be studied in a larger population and for a longer period of time.

It is also well acknowledged that solely addressing access to medical care is insufficient for the management of HIV in individuals who were formerly incarcerated – rather, addressing the social, economic, and political context is equally important in impacting health outcomes (Fox et al., 2014). As is true for other communities, our study participants approached post-release with a hierarchy of needs (Bracken et al., 2015). Substance use and housing were the two most common topics that emerged in participant-CHW interactions. This supports the need for a step-wise holistic intervention that addresses the most foundational needs first, followed by medical and legal needs.

Our qualitative analysis aligns with key characteristics of CHW involvement as documented in the literature. An ethnographic study of patient navigators working with individuals released from San Francisco jails highlighted the importance of intensive interactions and underscored the shared life experience of patient navigators with clients (Koester et al., 2014). Other studies of peer navigators in healthcare linkage identified the value of genuine connection and trustworthiness (Broadus et al., 2017;

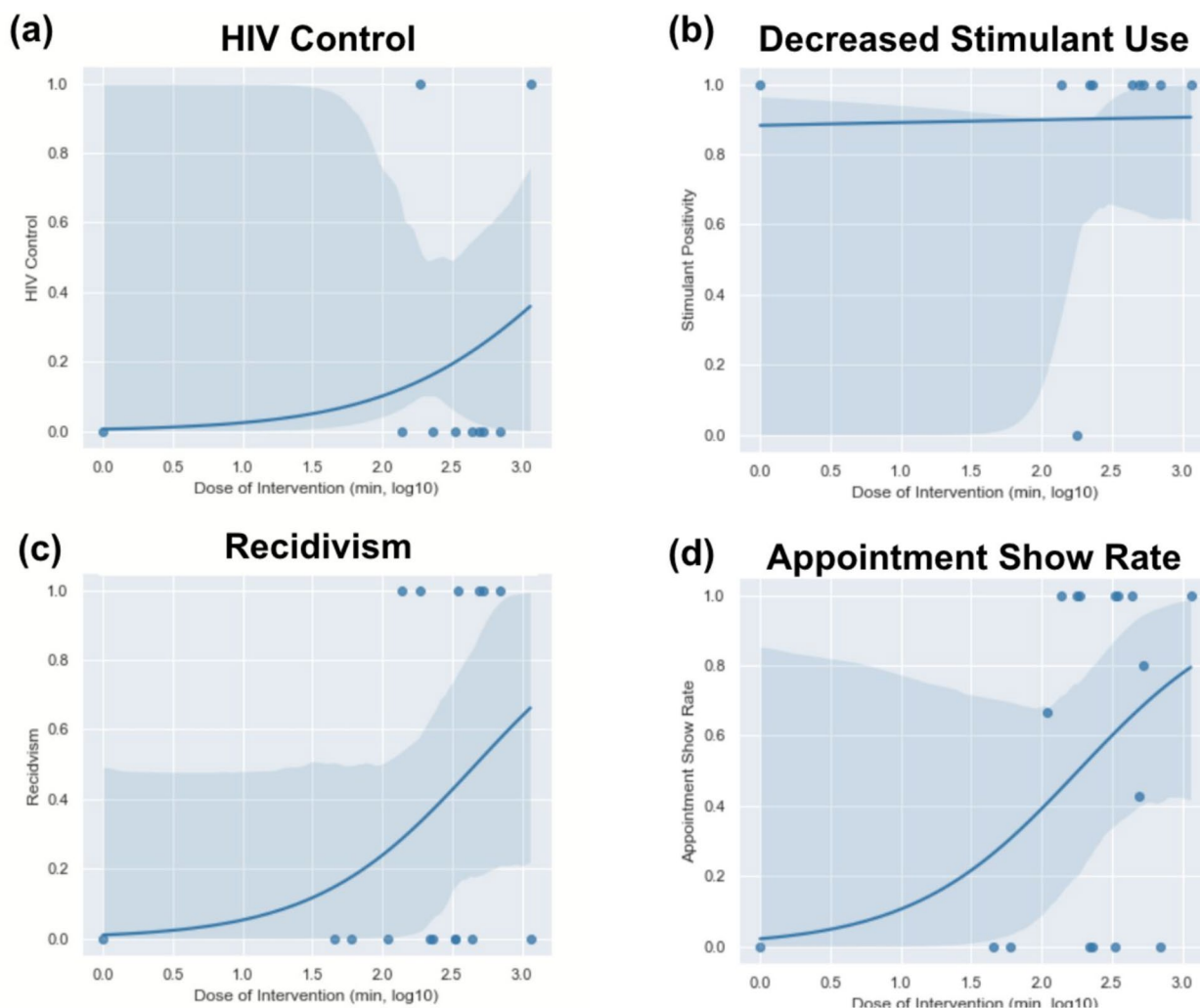


Fig. 2 “Dose” of intervention and association with multiple patient outcomes in the COMEBACK study, pilot randomized controlled trial, Dallas, Texas, 2019–2021. **a** HIV Control is defined as HIV viral load < 20 copies/ml at 6 months **b** Decreased Stimulant Use is captured by a negative urine toxicology screen for stimulants at 6 months. **c** Recidivism indicates reincarceration during the 12-month follow up period and **d** Appointment Show Rate specifies proportion of clinic visits attended

Enich et al., 2023). Our findings similarly emphasize the role of intensive outreach, nonjudgmental approach and motivation provided by CHWs. Additionally, we also found that other research staff, who recruited, enrolled, and followed up with participants fulfilled many of these same roles (e.g. nonjudgmental, providing motivation and accountability) as the CHWs though with somewhat decreased intensity. These findings suggest that future implementation studies of this approach may warrant stratification of levels of CHW involvement depending on participant need.

Our study highlights the essential and unique role of CHWs. They needed first and foremost to be able to build a strong rapport with participants—going out to

visit them in a familiar space, treating them with respect and without judgement and getting to understand the participants’ needs. CHWs then had to be well-versed in various topics, such as social services, substance use treatment, employment opportunities and HIV care, to provide appropriate referrals and advice. Lastly, through relatable and consistent contact with participants, CHWs were able to build trust, provide motivation and encourage accountability.

This study has several limitations. First, we present secondary findings from a small, single site study disrupted by COVID-19, potentially introducing sampling bias. Participants who engaged with the intervention may have had greater baseline stability, while others with

significant needs were difficult to contact, leading to limited intervention delivery. Therefore our “dose-response” analysis could reflect improved outcomes in those more willing to engage with the study and should be interpreted with caution. We also note that despite substantial CHW engagement, high recidivism was observed in the intervention group. This finding may be related to local policy and laws but also underscores the complexity of challenges faced by individuals navigating post-incarceration community re-entry including substance use (Fahmy & Mitchell, 2022). The combined medical-legal intervention was underutilized, with fewer participants connecting with Unlocking Doors[®] than anticipated. As such, our intervention largely offered social and medical support without legal guidance to many participants. A longer or more tailored intervention might have provided additional insights into this component of the intervention.

Conclusion

In this mixed methods evaluation of a combined CHW and re-entry organization intervention, we found that participants who engaged with the intervention tended to have improved HIV and substance use outcomes and reported receiving essential in-person, open-minded social-emotional support, motivation, and accountability from CHWs. This highlights the valuable role that CHWs play in maximizing continuity and health in the post-release period. Future studies should consider optimizing the implementation of peer-led community-based support including the intensity and duration of these interventions, as well as increased collaboration with legal service providers, to maximize benefits to both public health and public safety.

Supplementary Information

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Supplementary Material 1.

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Authors' contributions

AK conducted qualitative and quantitative data analyses, triangulation of data, writing of manuscript; EH assisted in quantitative data analyses; MS assisted with collection of qualitative data, review of qualitative data; LH oversaw collection of all quantitative and qualitative data, assisted with data analyses; NC assisted in quantitative data collection and interpretation; ZP assisted in quantitative and qualitative data review; CC assisted in data collection and analyses from Unlocking Doors[®]; HN assisted in data collection and analyses from Unlocking Doors[®]; SS assisted in CHW training and supervision, development of CHW protocols; RW assisted in development of study protocol, CHW supervision and data collection; AN conceived of the project, oversaw quantitative

and qualitative data collection and assisted in writing the manuscript. All authors read and approved the final manuscript.

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Data availability

The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

Declarations

Ethics approval and consent to participate

The study discussed in this manuscript was approved by the Institutional Review Board of University of Texas Southwestern Medical center. All participants provided written informed consent to participate in the study.

Competing interests

A.N. receives research funds from Gilead Sciences. All other authors declare that they have no competing interests.

Consent for publication

Not applicable.

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