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Changes in Community Health Worker Knowledge and Perspectives Following Opioid Overdose Prevention and Response Training

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Abstract

Background: Community Health Workers (CHWs) are trusted community members well-positioned to address the opioid epidemic from the frontlines through education, stigma reduction, and connection to culturally competent care, yet do not regularly receive training in this area.

Methods: This study evaluated changes in CHW knowledge and attitudes toward opioid use before and after a standardized Opioid Overdose Prevention and Response (OOPR) training. CHWs (N=78) 18 years of age or older who were employed, volunteering, or in CHW training in Arizona between January and February 2024 participated in a 60-minute evidence-based OOPR training, completing online surveys pre- and post-training. Elements of training and assessment mirrored the Opioid Overdose Awareness and Reversal training (OOART) by Bascou and colleagues (2022). Paired Sample T-Tests assessed changes related to 1) opioid overdose knowledge, 2) self-confidence in using naloxone and handling overdose situations, 3) Narcan-related risk compensation beliefs, 4) attitudes towards naloxone usage and overdose reversal, and 5) attitudes toward individuals with Opioid Use Disorder (OUD).

Results: Participants were predominantly female (72.8%), with nearly half identifying as Hispanic/Latinx/Spanish (46.2%). The mean age was 37.69 (SD 13.4) years; 96.2% were employed full-time, with 60.2% reporting at least six or more years of CHW experience. Overall, training improved knowledge and confidence response, with 74.6% feeling capable of using naloxone effectively post-training.

Conclusion: Overall, this intervention increased participants' perceived knowledge of overdose response, though some gaps persisted, including inaccuracies in key areas of factual knowledge. Individual feedback and/or booster training may further enhance both the accuracy and retention of knowledge in this population.

Keywords: Community Health Workers; Opioid Overdose Prevention; Stigma Reduction; Narcan Training; Overdose Response

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Introduction

The American Public Health Association (APHA) defines Community Health Workers (CHWs) as frontline public health workers who are trusted members of the community and/or have a close understanding of the community they serve [1]. CHWs operate from a community-centered approach uniquely positioned to advocate for change, helping to increase access to care, address health disparities, and improve quality of life from the ground up [1-5]. CHWs facilitate connections to critical health and social services, requiring knowledge about community resources, organizations, cultural practices and belief systems, and languages spoken within a community [6]. Integrating CHWs into community settings promotes cultural and linguistically competent service delivery spanning health education, motivational interviewing, goal setting, remote health monitoring (e.g., blood pressure), and enrollment assistance for national and local programs such as health insurance and housing assistance [7].

While the value of CHWs is evident, variability in the scope of services provided and target populations served has created a sense of ambiguity surrounding the CHW role. This, along with inadequate funding and lack of standardization in education and training [3,4,8] has contributed to CHWs being undervalued and inefficiently utilized in the United States (US) healthcare system. Standardization in CHW training has been encouraged [3,4] but lacks widespread adoption, as training typically occurs at the employer level and remains centered on a specific project or

program needs [4]. Consequently, individuals entering the field may still lack critical information relevant to the population(s) they serve.

Training and implementation challenges aside, CHWs have been shown to be effective in addressing high-priority public health issues such as managing chronic disease [7,9,10], the COVID-19 pandemic [6,11,12], as well as the opioid epidemic [13]. However, CHWs have not been a primary target for intervention efforts to date. This study focuses on CHWs unique position to address the opioid epidemic using culturally appropriate education, harm reduction strategies, and connecting individuals to culturally centered care to mitigate risk in Arizona.

The role for CHWs in addressing the Opioid Epidemic

The opioid epidemic has been called "an epidemic of poor access to care" [14], disproportionately affecting low-income communities and rural areas with limited resources [15,16]. Arizona ranked 15th for the highest number of drug overdoses in the US [17], reflecting a rise in both fatal and non-fatal overdoses [18]. The state averages more than five opioid overdose deaths each day, with increased fatalities attributed to synthetic opioids (primarily fentanyl). Mortality rates remain highest among males (39.7 per 100,000), Black or African Americans (32.2 per 100,000), individuals 35-44 years of age (55.0 per 100,000) and between ages 25-34 (52.0 per 100,000) [18]. Narcan, a naloxone hydrochloride nasal spray approved for non-prescription use, is widely used to reverse the effects of opioid overdose [19]. However, state data for 2022 indicated naloxone administration was primarily initiated by Emergency Medical Services (EMS) (77.9%) and law enforcement (15.0%), with only 5% of administrations initiated by a bystander [18]. Training CHWs to respond to opioid overdose may help increase timely naloxone administration, expanding access to life-saving interventions.

While stigma is well documented as a barrier to substance use treatment, it may also influence the uptake of harm reduction strategies such as naloxone. Emerging research suggests that perceived stigma toward naloxone is associated with lower knowledge and less favorable attitudes toward overdose response, potentially limiting engagement with training and use [20]. Several studies have suggested that stigma toward persons who use drugs represents a greater barrier to treatment than limited access to care or lack of awareness of available treatment options [21-25]. For example, individuals seeking treatment may face compounded stigma as medicated assisted treatment (MAT) may be viewed as substituting one opioid for another [25]. Drug-related stigma and discrimination directly impact mental and physical health, leading to internalized negative self-perceptions and discouraging persons who use drugs from seeking care due to fear of poor treatment and/or authority [26]. CHWs can contribute to reducing stigma by providing accurate information, correcting misinformation, and fostering empathy and understanding within the communities they serve, yet training programs for opioid overdose response and prevention often give limited attention to this role [27].

Given the prevalence of overdoses in Arizona, CHWs are likely to encounter opioid use even if not explicitly identified as a focus of their work. As trusted members of their community, CHWs are well-positioned to disseminate knowledge and reduce stigma from the front lines. This study sought to evaluate changes in CHW knowledge and attitudes toward opioid use before and after a standardized Opioid Overdose Prevention and Response (OOPR) training in Phoenix, Arizona.

Methods

CHWs (N=78) 18 years of age or older who were currently employed, volunteering, or in training to become a CHW in Arizona between January and February 2024 participated in a 60-

minute evidence-based OOPR training, completing an online pre-training survey distributed via REDCap immediately prior to the session and a post-training survey within one week following completion of the training. Training and assessments were standardized to mirror Bascou and colleagues' (2022) Opioid Overdose Awareness and Reversal Training (OOART) [21]. This training also provided important education around stigma, including definitions and examples of public, institutional, self, and courtesy stigmas along with discussion on how to actively challenge stigma at the individual, agency, and community levels. Discussions incorporated non-stigmatizing language from Substance Abuse and Mental Health Services Administration (SAMHSA) and engaged participants in problem-solving ways to combat stigma in their day-to-day interactions with clients. Key aspects of the standardized training are included as supplementary material. Data collection was estimated at 15-20 minutes per survey. Upon completion, participants were given the option to enter their name in a raffle (up to 3 entries per person) to win 1 of 5 $50 electronic gift cards. This study was approved by the Arizona State University (ASU) institutional review board (STUDY00019299).

Participants were recruited via flyers shared with the ASU Community Health Worker Training Program and affiliated community partner organizations representing a range of CHW service settings from clinical to community-based care. Interested individuals self-selected into the study and received survey links electronically. Surveys contained previously validated measures assessing knowledge and attitudes toward opioid use, overdose prevention, and overdose response [28,29]. Measures were administered through REDCap with invitations sent via email at three-time points: within 1 week of their OOPR training date (baseline), within 1 week of completing the OOPR training (after training), and at a 2-month follow-up. For the purposes of this study, we focus only on the baseline and post-training results, and do not include the 2-month

follow-up data. Baseline surveys also collected sociodemographic information (age, sex, ethnicity/race, education, employment status, job title, years of experience as a CHW, and their role as a CHW), experience with previous opioid training, and perceived value of the training to their present and future CHW roles. Participants were also asked about their experience with naloxone ("Have you ever administered Narcan or naloxone?", "Have you ever witnessed an overdose?", "Do you currently carry any Narcan or naloxone?").

Knowledge of opioid overdose response and naloxone administration was assessed using a 10-item adapted version of the Opioid Overdose Knowledge Scale (OOKS)[26] in which correct responses were scored as one and all other responses ("don't know" or incorrect responses) as zero. For the purpose of this study, only sections D-I regarding naloxone use were included [26], as the other questions did not apply to the training and unique responsibilities of a CHW (See Appendix).

Attitudinal surveys included the five-item Naloxone-Related Risks Compensation Beliefs (NaRRC-B)[29] scored consistently with previous studies [30], along with three items assessing attitudes toward naloxone usage and overdose reversal, and five items assessing attitudes towards individuals with OUD as used by Bascou and colleagues (2022). Self-confidence in using naloxone and handling an overdose was also assessed using the same four questions as Bascou et al. (2022). Each of these items was scored on a five-point Likert scale. To further contextualize participant experience, open-ended survey items assessed training expectations, unanswered questions, likes and dislikes regarding the training, and whether they had utilized knowledge from the training at follow-up.

Data was analyzed in SPSS (version 29). Descriptive statistics (mean, standard deviation, frequencies) were generated to characterize the sample. A chi-square test was used to evaluate differences in categorical variables such as gender, race/ethnicity, and education among

respondents post-training. Paired Sample t-tests and examination of changes in the distribution of responses were used to assess changes from baseline to post-training for each set of measures, including 1) opioid overdose knowledge, 2) self-confidence in using naloxone and handling overdose situations, 3) Naloxone-related risk compensation beliefs, 4) attitudes toward naloxone usage and overdose reversal, and 5) attitudes towards individuals with OUD. REDCap survey settings were used to minimize duplicate responses by distributing unique survey links to participants.

Results

Sociodemographic and CHW Characteristics

Of 78 participants at baseline, 51 (72.8%) were female and 15 (21.4%) were male. Nearly half of all participants (46.2%) were Hispanic/Latinx/Spanish. Mean age was 37.7 (SD 13.4) years. Almost all (96.2%) were employed full-time. Over half (60.2%) indicated six or more years of CHW experience; 37% reported they had worked in the field for 5 years or less (Table 1). Participants endorsed multiple functions in their current work as a CHW: over half (64.1%) reported providing client navigation referrals and/ or enrollment services, in addition to advocacy (52.6%), outreach (51.3%), and provider education (51.3%). Less commonly endorsed roles included screening/risk identification or preventative care (39.7%), case management (33.3%), transportation (32.1%), and coaching or social support (38.5%).

Just over a third (35.9%) reported previously attending training on opioid overdose response. Few (6.4%) indicated they had ever administered Narcan/naloxone, though 18.2% reported carrying it with them. Nearly 1 in 5 (19.7%) reported having witnessed an overdose at baseline (Table 1). Of the 78 participants who completed the baseline survey, 65 completed the post-training survey (83.3% completion rate).

Pre-post analysis

Adapted Opioid Overdose Knowledge Scale (OOKS)

Paired sample t-tests indicated mean knowledge significantly improved for seven of the ten OOKS items (see Table 2). For complex items requiring multiple correct answers, responses to sub-questions were also examined. At baseline, 55% correctly identified the use of naloxone to reverse an opioid overdose, although 32.5% mistakenly indicated it could reverse *any* overdose. Knowledge here significantly improved post-training, t(64) = -4.25, p = <.001, 95% CI: -.78, -.27, with 70% of participants correctly identifying naloxone's utility for opioid overdose. However, 8.8% still endorsed naloxone use for any overdose.

Knowledge of administration methods also significantly improved, t(64) = -2.17, p=.03, 95% CI: -.52, -.02). At baseline, 47.5% reported intramuscular injection as a valid method for naloxone administration; however, fewer participants were aware of intravenous or subcutaneous routes, with nearly half (42.5%) unsure. Post-survey, 55% correctly identified intramuscular administration, with additional improvements in the identification of intravenous (15% to 23.8%) and subcutaneous methods (11.3% to 23.8%). However, few respondents correctly identified all three administration methods at either time point (see Table 2).

Participants' knowledge of the 2 to 5-minute timeframe for naloxone to start working increased from 55% to 65% post-training. This improvement was statistically significant, t(64)= -2.67, p=.009, 95% CI: -.58, -.08. Participant knowledge of the one-hour duration for naloxone's effects also improved significantly, t(64)=-5.83, p<.001, 95% CI: -.99, -.45, from 12.5% at baseline to 45% post-training.

Knowledge that a second dose of naloxone can be given if the first had no effect significantly increased from 55% to 77.5% post-training, t(64)= -5.95, p<.001, 95% CI: -1.01, -.46.

All but two participants at baseline recognized the need for calling an ambulance even if they knew how to manage an overdose. All respondents answered this question correctly post-training, with no significant change in mean score. Awareness that someone can overdose again after receiving naloxone increased from 55% to 60%; paired t-tests indicated this change was also not significant.

Participant knowledge that naloxone's effects are shorter than heroin or methadone significantly improved from 23.8% to 33.8%, $t(64) = -2.18$, $p=.03$, 95% CI: -.52, -.02. There was no significant change in recognizing persons should not drink alcohol or take sleeping tablets after recovering from an opioid overdose, with the majority of respondents correctly answering this question pre and post-training (see Table 2). Finally, awareness of naloxone's potential to provoke withdrawal symptoms significantly increased from 21.3% to 48.8%, $t(64)=-5.55$, $p<.001$, 95% CI: -.96, -.42.

Self-confidence in using Naloxone and handling overdoses

The response rate was lower for self-confidence items than for other measures. Less than half of the participants responded to the item assessing fear of doing something wrong in an overdose situation (n=25), with slightly more (n=36) responding to whether they would panic and not be able to help. Among these respondents, 68% of participants at baseline reported they would be afraid of doing something wrong during an overdose, with 14.2% agreeing they would panic in such a situation. Endorsed fear decreased slightly post-training, with a greater reduction in those who strongly agreed (strongly agree 24% to 8.8%; agree 44% to 41.2%). Fewer participants reported they would panic witnessing an overdose (14.2% to 3.8%), though the change in mean score for these two items was not statistically significant.

More participants were willing to rate their level of agreement with being able to effectively deal with an overdose (n=56). At baseline, less than half (46.5%) of respondents agreed they could

effectively deal with an overdose. Self-confidence on this item significantly improved post-training, with 74.6% endorsing they would be able to respond effectively to an overdose, t(53)=-3.01, p=.004, 95% CI: -.69, -.13).

Naloxone-Related Risk Compensation Beliefs (NaRCC-B)

Paired sample t-tests indicated no significant change in mean score on any of the naloxone-related risk compensation beliefs from pre- to post-training (all p>.05). At baseline, participants reported a general sense of uncertainty as to whether naloxone would promote further opioid use or decrease a person's likelihood to seek treatment at baseline, with "unsure" as the modal response for four of the five items. Just over a third (35.1%) "strongly disagreed" with the fifth item asking whether there should be a limit on the number of times one person should receive naloxone to reverse an overdose. Post-training, participants were more likely to report "disagree" or "strongly disagree" to the same four questions previously answered as "unsure". The proportion of participants reporting strong disagreement with a limit on the number of times one person received naloxone to reverse an overdose increased from 35.1% to 53% post-training.

Attitudes towards Narcan usage and overdose reversal

At baseline, the majority of participants indicated they wanted to help in the event someone overdoses (96.2%, 65.4% strongly agreed); believed everyone should learn how to use and carry naloxone (97.8%, 66.2% strongly agreed), and reported they would do what is necessary to save someone's life in the event of an overdose (97.4%, 63.6% strongly agreed). Attitudes towards Narcan usage and overdose reversal indicated a slight increase in uncertainty post-training: 95.3% wanted to help (62.5% strongly agreed), 92.2% believed everyone should learn how to use and carry naloxone (with 53.1% strongly agreed), and 92.1% reported they would do what is necessary to save someone's life in the event of an overdose (50.8% strongly agreed, see Figure 2). Paired

sample t-tests indicated only a slight decrease in mean willingness to do whatever is necessary to save someone's life in an overdose situation was statistically significant, t(61)=2.58, p=.012, Cohen's d=0.33, 95% CI: 0.70, 0.58).

Attitudes towards individuals with OUD

At baseline, half of all participants agreed with priorities to keep people who use drugs alive (76.7%), minimize harms associated with opioids (94.7%), promote harm reduction (80.5%), and demonstrate empathy to those who use drugs (74.0%, see Figure 2). Prior to training, participants were evenly divided on whether difficulty with opioid cessation was due to a lack of willpower and discipline, with nearly 30% agreeing and disagreeing. Post-survey, this distribution shifted such that more participants disagreed with the statement (34%), while fewer agreed (20%) (Figure 2). However, paired t-tests indicated changes in mean attitude scores from pre- to post-training were not significant (p>.05).

Qualitative Questions

At baseline, participants expressed interest in learning more about the administration of naloxone, how to support individuals during an overdose, opioid-related facts and statistics, and advocating for the communities served by CHWs, particularly within the Hispanic/Latinx and American Indian/Alaskan Native populations.

Overall, the training was well-received, with few follow-up questions. Participants found the training to be informative and engaging and appreciated the use of national and state-specific opioid statistics. Participants also valued the use of open dialogue and activities, particularly discussions around stigma and its impact on people who use drugs. A few requested additional take-home resources and/or a summary of the training for use in the field (n=3). One suggested

additional detail (e.g., step-by-step instructions for naloxone use) would enhance the training. Additional recommendations included a live demonstration of naloxone administration (rather than video, n=3), a discussion on intramuscular naloxone administration (n=1), and more information on the emotions and behaviors of individuals with OUD (n=1). One participant suggested a trigger warning could be beneficial for those with personal experience, heightening sensitivity to this topic.

Discussion

This study adds to the current literature by extending OOPR training to CHWs, a lay audience well-positioned to address the opioid epidemic given their role as frontline public health workers. Assessments reported in other pre/post-OOPR training studies were selected to facilitate comparison of results, though it should be noted these measures were originally developed for medical students, law enforcement, and other service providers whose baseline attitudes and training may significantly differ from CHWs. Nevertheless, knowledge and self-confidence in CHWs ability to respond to an opioid overdose significantly improved following our standardized 1-hour training. These overall results were consistent with previous literature showing that targeted trainings can be an effective way to increase knowledge on how to respond to opioid overdose [21,31-33].

Although prior research has framed results of OOPR training in positive terms, remaining knowledge gaps (e.g., incorrect responses) in this study are notable given all questions were explicitly addressed in the presentation. Such findings may be attributed to low participant interest or engagement, the large volume/ depth of content covered, ambiguity in how the material was presented (either in the training itself or in assessment items), the influence of language and/or cultural context, or some combination thereof. It may also reflect a misunderstanding of nuance,

as some knowledge questions required the identification of multiple correct responses (and not just the most common context discussed in the training). Providing individual feedback and booster training sessions may further help promote consistency of CHW knowledge and preparedness [32].

Study results were also congruent with previous research demonstrating OOPR training has a greater effect on knowledge than self-confidence and attitude change [21,31,32,34]. An examination of the same training by Bascou et al. (2022) in a cohort of 440 participants (predominantly medical students), found significant improvements in all knowledge questions. Significant improvements were seen in all three questions evaluating confidence, two of the three questions assessing attitudes towards overdose reversal, and four of the five questions evaluating stigma and attitudes towards individuals with OUD [21]. By contrast, a brief overdose training given to law enforcement officers found increased knowledge and reduced concerns about naloxone administration but no change in attitudes toward overdose victims [34]. Other longitudinal assessments of emergency responders' attitudes have highlighted similar disparities, with emergency service providers showing more favorable outcomes compared to law enforcement, including improved attitudes and reduced risk compensation beliefs six months post-training [35]. More broadly, current results replicate previous research indicating knowledge alone does not always translate into enduring change in attitudes or behaviors, particularly across diverse professional groups with varying levels of prior exposure and biases [36,37,38].

While the majority of CHW participants reported confidence in managing an opioid overdose, reluctance to respond to questions regarding emotional barriers (e.g., panic and fear) suggests further emphasis on emotional preparedness may be beneficial in training. The slight decrease in willingness to take necessary action observed in this study may similarly reflect greater awareness of the challenges associated with overdose response rather than a decreased

commitment to helping others. Efforts to increase both knowledge and self-efficacy for responding may further bridge the gap between learning and the effective application of acquired knowledge.

Training in this study also included stigma as a critical part of responding to the opioid epidemic. CHWs are inherently positioned to combat stigma through their trusted relationships, community engagement, and culturally responsive approach. While few attitude changes in this study were significant, CHWs willingness to discuss stigma may be seen as an encouraging first step toward engagement in a broader culture shift, supporting individuals challenging personal biases and deeply entrenched beliefs. Prior research indicates reducing stigma and discrimination requires sustained, long-term interventions [39,40], though studies with more robust methodology are needed to improve challenges with measuring behavioral outcomes. Future research should consider what might be needed in specific populations to help CHWs identify and challenge personal beliefs and implicit biases that may adversely impact their effectiveness as a CHW.

Finally, it seems important to consider that educational trainings alone function as little more than a band-aid for the opioid crisis. While awareness and information are important, they fail to address the structural and systemic factors that have fueled the epidemic. Improving health outcomes and reducing stigma require addressing the policies, economic conditions, and healthcare disparities driving the opioid crisis. Coordination of efforts to address these issues at multiple levels (e.g., individual, community, organizational, policy) may ultimately be more impactful than disparate interventions targeting symptoms rather than root causes.

Limitations

The use of a standardized intervention with a shared facilitator allowed data to be pooled across multiple group trainings. However, there are still several limitations which may limit the generalizability of results. The proportion of Hispanic participants (46.2%) was comparable to US

census data for Phoenix, AZ (42.9%) where this study was conducted [39]. While fewer American Indian/Alaska Natives reside in Phoenix relative to the rest of the state (2.3% vs. 6.2%) [41], Community Health Representatives (CHRs) from this population have been estimated to comprise 30% of CHWs in Arizona [42]. As such, this population was still underrepresented among our sample of CHWs, largely due to geographical distance. Training was delivered in English for logistical purposes which presents another limitation; future effectiveness studies should include programming offered in Spanish and other native languages predominantly spoken in many Arizonan communities.

This study had a relatively small sample size of 78, reflecting its exploratory nature and the lack of existing data on CHW knowledge and attitudes related to persons who use drugs. Although paired t-tests were conducted across several items, Bonferroni adjustments were not applied. Given the exploratory nature of this study and the limited sample size, strict Bonferroni correction may be overly conservative and increase the risk of Type II error, potentially obscuring meaningful findings [43]. Consistent with recommendations for exploratory analyses [44], results are presented with unadjusted p-values alongside effect sizes and confidence intervals and should be interpreted with caution. Given the absence of standardized OOPR trainings, additional research is necessary to explore the effectiveness of training formats similar to those used in this study and the OOART study by Bascou and colleagues (2022). Additionally, social desirability, attrition, and self-selection biases were not formally assessed, which could have influenced participant responses and limit the representativeness of the sample. Finally, training in this study focused on nasal spray administration of naloxone due to its ease of access and increased use [19].

Conclusion

Overall, this intervention increased participants' perceived knowledge of naloxone administration, highlighting the potential for CHW training to enhance confidence in responding to opioid overdoses. While some knowledge gaps persisted, including inaccuracies and misunderstandings in key areas of factual knowledge despite being explicitly covered in the training. This distinction is important, as increased confidence does not necessarily reflect accurate understanding and may impact effective overdose response. Training for CHWs should reflect an understanding of their unique role and status within the community, previous experiences, and other important local contexts. Targeted interventions that combine knowledge with emotional preparedness, address stigma, and provide personal feedback are essential to maximize the effectiveness of OOPR training in this lay population. CHW's receptivity to challenging stigma is encouraging, though further research is needed to examine the strength of attitude shifts over time and how they facilitate access and acceptability of treatment within local communities.

Positionality Statement

Mindful that our identities can influence our approach to science [45], the authors wish to provide the reader with information about our backgrounds. With respect to gender, both self-identified as women. With respect to race, both authors identified as white. The authors declare no conflicts of interest.

Data Sharing

De-identified data in aggregate form (descriptives/frequencies) can be obtained by emailing the authors (Madeline Hooten and Dr. Mindy McEntee).

Declarations

Ethics approval and consent to participate: This study was approved by the Arizona State University (ASU) institutional review board. All participants consented via REDCap at the start of each training.

Consent for publication: Not applicable

Availability of data and materials: De-identified data from this study are not available in a public archive. De-identified data from this study may be shared as allowable according to institutional IRB standards by emailing the corresponding author. Materials used to conduct the study are available by emailing the corresponding author.

Competing interests: The authors report they have no competing interests to declare.

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Authors' contributions: M.H. and M.L.M. contributed to conceptualization, methodology, and formal analysis. M.H. wrote the original draft, created visualizations, and led project administration. M.L.M. provided resources, supervision, and supporting writing. All authors reviewed and edited the manuscript.

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Tables and Figures

Table 1. Baseline sociodemographic and CHW experiences (N=78)

Sociodemographic characteristics and CHW experience	Number or Mean	% or Standard Deviation
Age (mean, std)	37.7	13.4
Gender		
Female	51	72.8%
Male	15	21.4%
Non-binary	4	5.7%
Race/ Ethnicity		
Hispanic/Latinx/Spanish	36	46.2%
Black/ African American	6	7.7%
White	26	33.3%
American Indian/ Alaska Native	6	7.7%
Asian	4	5.1%
Education/ Work Experience		
College degree or higher	49	62.8%
Working full time	75	96.2%
Years working as CHW		
5 years or less	29	37.2%
6-10 years	26	33.3%
11 or more years	21	26.9%
Overdose Response Experiences		
Attended overdose training previously	28	35.9%
Ever administered Narcan or naloxone	5	6.4%
Witnessed an overdose	15	19.7%
Currently carry any Narcan or naloxone	14	18.2%
CHW Role (select all that apply)		
Volunteer	15	19.2%
Provider Education	40	51.3%
Screening/risk identification or preventative care	31	39.7%
Client Navigation referrals, and/ or enrollment in services	50	64.1%
Case management	26	33.3%
Coaching or social support	30	38.5%
Translation or interpreting services	15	19.2%
Home visits	37	47.4%
Transportation	25	32.1%

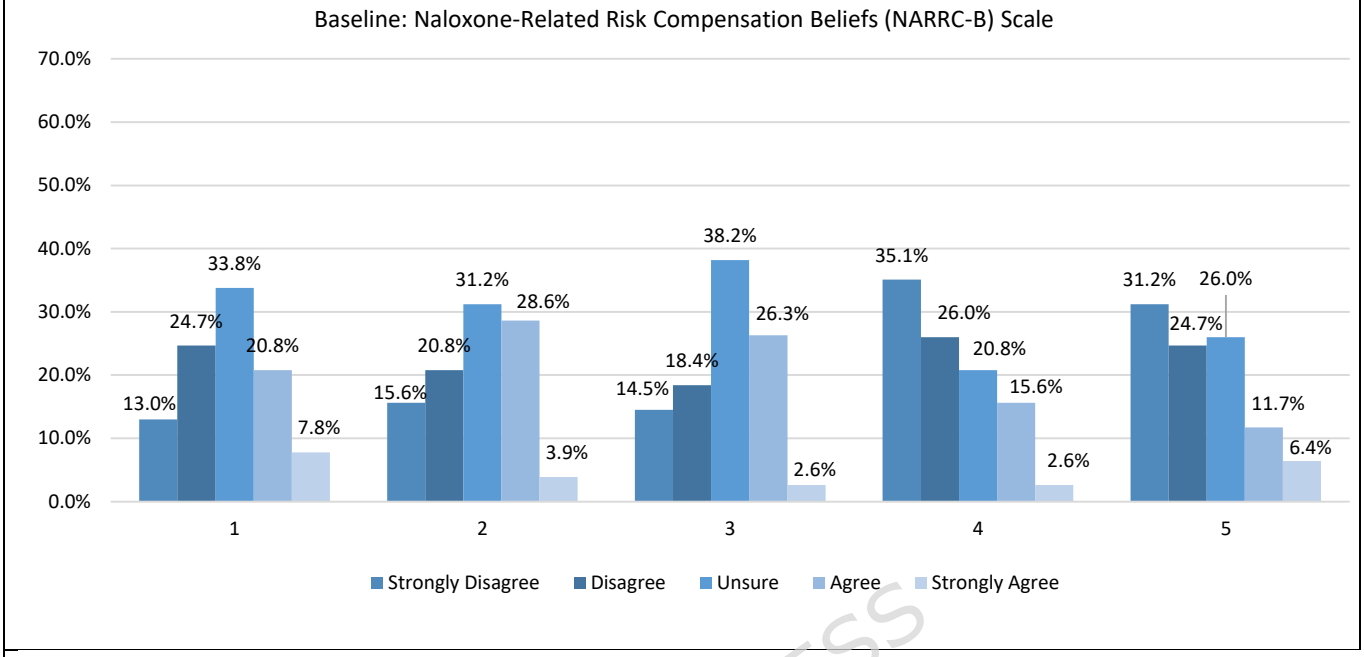
Outreach	40	51.3%
Advocacy	41	52.6%

Table 2. Adapted Opioid Overdose Knowledge Scale (Questions D-I, Excluding F)

Adapted Opioid Overdose Knowledge Scale (OOKS)	Baseline (n=78)		Post (n=65)	
	Correct	*Incorrect*	***Correct***	*Incorrect*
(1) What is naloxone used for?	***44 (55.0%)***	*34 (42.5%)*	***56 (70.0%)***	*9 (11.3%)*
(2) How can naloxone be administered?	***2 (2.5%)***	*76 (95.0%)*	***9 (11.3%)***	*56 (70.0%)*
(3) How long does naloxone take to start having an effect?	***44 (55.0%)***	*34 (42.5%)*	***52 (65.0%)***	*13 (16.3%)*
(4) How long do the effects of naloxone last for?	***10 (12.5%)***	*68 (85.0%)*	***36 (45.0%)***	*29 (36.3%)*
(5) If the first dose of naloxone has no effect a second dose can be given	***44 (55.0%)***	*34 (42.5%)*	***62 (77.5%)***	*3 (3.8%)*
(6) There is no need to call for an ambulance if I know how to manage an overdose	76 (95.0%)	2 (2.5%)	65 (81.3%)	0 (0.0%)
(7) Someone can overdose again even after having received naloxone	44 (55.0%)	34 (42.5%)	48 (60.0%)	17 (21.3%)
(8) The effect of naloxone is shorter than the effect of heroin and methadone	***19 (23.8%)***	*59 (73.8%)*	***27 (33.8%)***	*38 (47.5%)*
(9) After recovering from an opioid overdose, the person must not take any heroin, but it is OK for them to drink alcohol or take sleeping tablets	76 (95.0%)	2 (2.5%)	62 (77.5%)	3 (3.8%)
(10) Naloxone can provoke withdrawal symptoms	***17 (21.3%)***	*61 (76.3%)*	***39 (48.8%)***	*26 (32.5%)*

Note. **Italicized** items indicate statistically significant differences. Percentages were calculated relative to baseline n; percentage sums less than 100 indicate missing data.

Figure 1. Comparison of Baseline and Post NARRC-B survey responses.



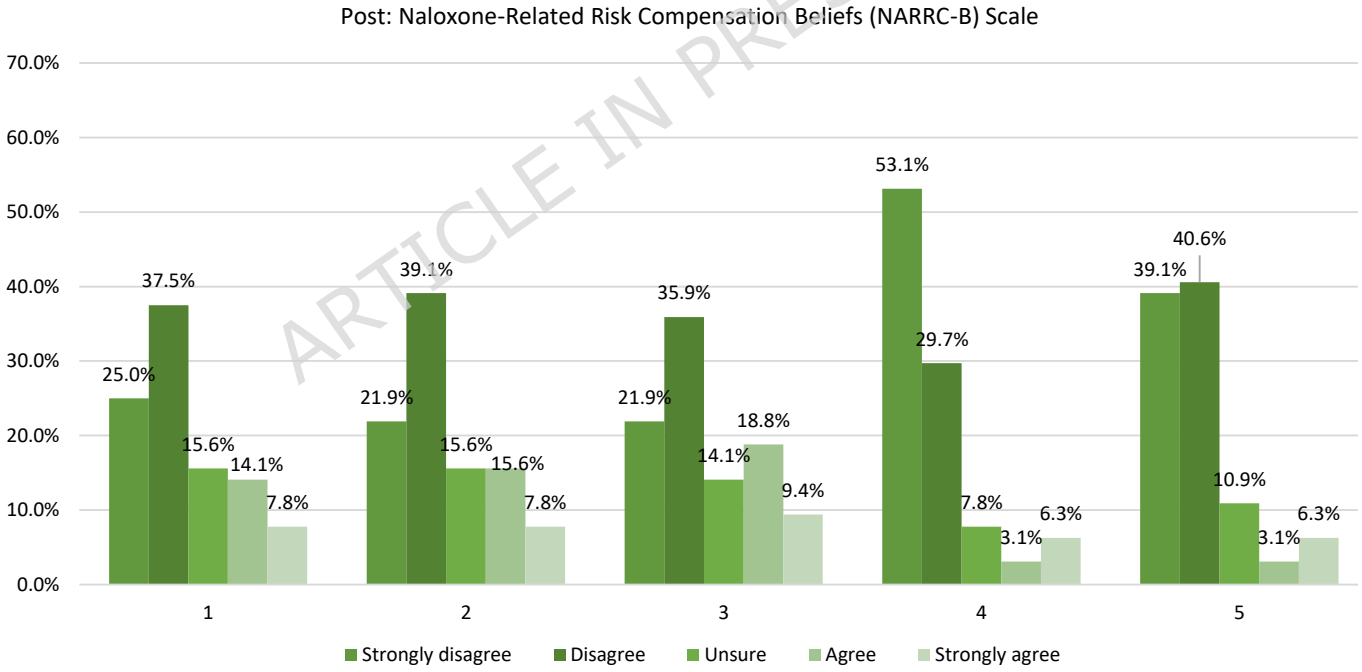


Figure 2. Comparison of Baseline and Post Attitudes towards Narcan, OUD, and Self Confidence survey responses.