

O U T of Stigma: An Evaluation of a Harm Reduction Program
in Connecticut

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INTRODUCTION

The alarming rise in opioid use and misuse despite several efforts to control it, has resulted in a significant public health crisis around the world. Besides increasing the number of opioid-related deaths, it increases homelessness, joblessness, scholar absenteeism, and family disruption. According to the Centers for Disease Control and Prevention, drug overdose deaths have increased by five times in the past twenty years. It is now the leading cause of unintentional poison deaths in the United States.¹

The opioid crisis represents a multifaceted public health issue that can be explained from a socio-ecological perspective. Risk factors at the individual's level include male gender, low socio-economic status, substance abuse history, co-occurring physical and mental disorders, unemployment, unsupervised opioid use, and opioid combination with other substances. At the interpersonal and community levels, the family history of substance abuse and the lack of social or emotional support influence the likelihood of individuals' initiation and misuse of drugs; approximately 70% of the people who report non-medical opioid use obtain opioids from family members or close family friends.² In the war, soldiers became opiate users due to the availability of cheap and potent heroin. Researchers from the Vietnam Veterans study concluded that drug use and addiction among American youth in the war were context-dependent. Once soldiers returned to the same societal environment, almost all quit independently without treatment.³

The opioid overdose crisis and subsequent morbidity and mortality have been described in the United States in three waves. The first wave of opioid addiction began in the 1990s, coinciding with the increase in opioid prescriptions, raising approximately four-fold the rate of fatal overdoses; the White people overpassed other populations, and drug

overdose rates were higher in rural areas.^{4,5,6} The second wave involved heroin in 2010, resulting from the high demand for opioids, restriction on their use, and the low cost and purity of heroin; death rates from African American and Hispanic people continued constant while White people surged, dying three times the rate of other populations as well urban areas opioid overdose accelerated quickly.^{4,5,6} In the third wave from 2013 to the present, synthetic opioids like fentanyl have caused overdose death rates to soar from 1.0 to 9.9 per 100,000 people in 2018. The African American rate of overdose fatalities surpassed White people, and urban and rural areas were affected.^{4,5,6}

Based on the National Vital Statistics 2021, drug overdose death rates vary for sex, drug, and race. Males have higher mortality rates than females. They are 2.6 times more likely to die due to fentanyl and methamphetamine use, 2.8 times more likely to die due to heroin use, 2.5 times more likely to die due to cocaine use, and 1.3 times more likely to die due to oxycodone use, compared to females.⁷ The overdose death rate involving fentanyl surged by 279%, from 5.7 to 21.6 per 100,000 people, between 2016 and 2021. Between 2021 and 2022, race variations for overdose death rates included American Indian and Alaska Native non-Hispanic from 56.6 to 65.2 deaths per 100,000 people, Black non-Hispanic from 44.2 to 47.5 deaths per 100,000 people, Hispanic from 21.1 to 22.7 deaths per 100,000 people, and Asian non-Hispanic from 4.7 to 5.3 deaths per 100,000 people.⁸ In contrast, the rate of drug overdose decreased among White non-Hispanics from 36.8 to 35.6 deaths per 100,000 people and among Native Hawaiian or Other Pacific Islanders from 20.1 to 18.8 deaths per 100,000 people in 2022 compared to 2021.⁸

Drug overdose deaths in Connecticut have risen in the last several years. In 2022, there were 1,452 unintentional drug overdose deaths. The overdose mortality rate increased by 306% from 2012 to 2022. Males had a higher mortality rate than females. Regarding race and age, non-Hispanic Black and Hispanic populations aged 35-44 years had the highest rates of overdose-related mortality compared to the non-Hispanic White population. Of all overdose deaths, 92% were related to opioids, with fentanyl being the cause of 86%.⁹

Overall, opioid use disorder is an urgent public health issue demonstrated by the global health metrics, which in 2019 reported 12.9 million DALYs, 4.09 million years of life lost (YLLs), and 8.83 million years of healthy life lost due to disability (YLDs), considering a prevalence of 21.4 million cases and an incidence of 3.08 million cases, being males the gender that accounted more deaths by 72.2%.¹⁰ Combatting the opioid crisis is essential, as it affects everyone, regardless of race, ethnicity, gender, sexual orientation, or age. Inadequate interventions worsen the problem by increasing opioid-related morbidity and mortality rates and perpetuating health inequities such as healthcare access, stigma, and discrimination. U.S. prisoners lacked drug abuse treatment thirty years ago, increasing the risk of HIV and hepatitis C.¹¹ Currently, vulnerable groups, including Indigenous people, racialized groups, the LGBTQ+ community, women, and people with disabilities, are overrepresented in opioid morbidity and mortality but not well-investigated.¹²

The U.S. opioid epidemic cost \$1.5 trillion in 2020, up 37% from 2017, due to healthcare system disruption, social and economic stress, and reduced access to opioid treatment during COVID-19.¹³ Unstable housing, limited education, incarceration,

violence, racism, unemployment, stigma, and discrimination are the social cost of the opioid crisis.¹⁴

Effective strategies have been implemented to prevent overdose and reduce overdose mortality. Some of them include the Safe and Appropriate Opioid Prescribing program¹⁵, which aims to encourage responsible and effective use of opioids to prevent addiction through education. There are limitations in addiction management among healthcare professionals and in training programs. This knowledge gap creates unfairness in healthcare, politics, and law enforcement.¹⁵ The overdose education and naloxone distribution (OEND) programs effectively train participants to safely reverse an overdose, reducing opioid-related mortality and improving knowledge and attitudes towards naloxone use and distribution.¹⁶ Despite the evidence, the OEND programs need permanent funding and policy support for implementation, expansion, and sustainability. The high cost of naloxone can create accessibility issues for low-income patients. Access laws and coverage policies may help address these issues.¹⁷ The Harm Reduction program is a national strategy that aims to promote the health of individuals who use drugs while addressing stigmatized behaviors associated with them. It recognizes the existence of drug use and risk factors and responds with compassion to minimize the related harms. Instead of prioritizing abstinence goals, the program empowers drug users to make positive changes in their practices.¹⁸ The program being evaluated started in 2021 to tackle the increasing number of overdose-related illnesses and deaths despite previous efforts. Its goals were to raise awareness and understanding of drug use, minimize its adverse effects, and fight against discrimination toward drug users.

Research gaps include identifying subpopulations and adopting a person-centered approach to provide valuable insights into prevention and treatment strategies. Working on these areas would promote the development of new methods for engaging, treating, and retaining patients.^{14,19}

METHODS

Evaluation Design

This study evaluated the Harm Reduction program's reach, implementation, and development. The main goal of this evaluation was to identify strengths, barriers, and areas where the program could improve and provide recommendations for allocating resources under new grant funding. A mixed-methods approach was implemented to address the following evaluation questions comprehensively:

1. Has school participation in the naloxone preparedness strategy been implemented as planned?
2. Has the target population been reached as intended?
3. How did the program promote health equity?
4. What program activities were most successful for program staff versus program participation?
5. What were the program's limitations and challenges?

Data Collection Plan

A mixed-method concurrent design evaluation was used to thoroughly analyze a Harm Reduction program in Connecticut. Qualitative and quantitative methods were employed to gather data. Qualitative data were used to assess the perceptions and experiences of the program staff regarding the barriers and facilitators encountered by

participants. Specifically, this method sought to identify any factors related to social, behavioral, and environmental domains that may hinder or enhance the program's effectiveness. The eligibility criteria comprised being eighteen or older, holding an active position as a program staff member, demonstrating proficiency in English, and expressing willingness to complete the questionnaire. A concise and culturally appropriate online survey was conducted through REDCap, where participants were asked to answer six open-ended questions, which did not take more than fifteen minutes to complete.

Quantitative secondary data contained information about the program activities, participants, and staff members. They helped explore the extent and change induced by the implemented strategies. Secondary data were collected in 2023 by a local health department (LHD) program's staff in Connecticut. To ensure the accuracy and consistency of the data, the LDH utilized validated instruments to collect standardized and reliable information while the investigator secured storage of the data and implemented methodological triangulation by employing a mixed methods approach and gathering data at two distinct points in time: quantitative data in 2023 and qualitative data in 2024.

Data Management

The program employees were informed about the purpose and benefits of the evaluation. It was clear to them that their answers would be kept anonymous; their participation was voluntary and would cause minimal psychological, social, and physical harm. Additionally, they were informed that they had the right to ask questions and withdraw from the assessment without providing a reason or incurring any costs.

Primary data were collected and stored in REDCap, which maintained high-security standards to protect data against cyber-attacks. Accessing was ensured using a login and password only known by the evaluator. Secondary data from the LHD involving human subjects were completely de-identified, non-coded, compressed, and read-only enabled. The LHD director confirmed and provided complete permission for secondary data usage. The quantitative data were organized, encrypted, and stored in an Excel workbook, and their access was restricted to the investigator. The remaining data files were permanently deleted after completing the Harm Reduction program evaluation.

Data Analysis

Qualitative data obtained by surveying the program's staff were analyzed using content analysis with an inductive approach. Survey responses were grouped into codes, categorized, and tabulated to calculate frequency and define a theme. Finally, six themes were identified. These themes included the program's target population, strengths and limitations, motivations, participants' challenges, and the program's equity. Identifying these themes brought to light various aspects of the program that were explored during the analysis. Interpreting these themes was crucial for grasping the program's impact, especially on its target population, challenges, and limitations.

Quantitative data provided by the LHD were stored in an Excel file. A copy of the original dataset was made and saved under a different name. The dataset contained ten variables for the Harm Reduction program of the year 2023. These variables included month, date, event name, staff attendance, location, type of activity, number of attendees, type of testing, test count, and event notes. Program activities included community outreach, naloxone training, sexual health and wellness, youth and mental health events,

HIV/STI screening, and CPR demonstrations. A total of 88 events were conducted, with 3,239 participants attending. The working copy was cleaned by identifying errors, missing values, and outliers, enhancing the subsequent analysis's validity. Descriptive statistics, such as mean, median, mode, frequency distribution, and standard deviation, were established from the activities to identify the characteristics of the data. Tables and charts were developed to summarize the findings and create visual comparisons and patterns between activities to enhance comprehension and answer the evaluation questions.

This study used qualitative and quantitative data to minimize evaluator biases, which also contributed to confirming results. Also, because the data size provided was small, all events were analyzed, reducing the risk of selection bias. Reliability and validity were carefully controlled by using appropriate data collection tools. Tables were utilized to gather quantitative data, while a concise, understandable, easily accessible, and culturally relevant online survey was employed for qualitative data to guarantee equitable participation. Appropriate statistical methods were used to control for potential confounding variables.

The evaluation had limitations due to the small sample size of quantitative and qualitative data and the lack of demographic information. These considerations restricted the ability to correlate variables and provide a detailed analysis of the target population. Despite receiving responses from only eight out of the eleven potential participants, the insights provided by the program's staff through the survey significantly enriched the study's findings.

RESULTS

This study analyzed quantitative data from 2023 provided by the LHD and qualitative data from a Harm Reduction program staff survey conducted in 2024 in Connecticut. Descriptive statistics and thematic analysis techniques were used, respectively. The Harm Reduction program assessment produced a comprehensive, reliable, and valid set of findings, which helped to answer the evaluation questions as detailed below:

1. Has school participation in the naloxone preparedness strategy been implemented as planned?

One of Connecticut's Harm Reduction program work plan activities for 2023 was to train the entire school system staff annually and provide equipment to public and private schools. By the time of the examination, the evaluated town school system comprised forty schools, twenty-nine public and eleven private schools. The public system had twenty-one elementary schools, four middle schools, five high schools, three magnet schools, and three adult schools. In 2023, the LHD trained 960 administrative staff and teachers based on the program's raw data. Moreover, naloxone was distributed to a total of twenty-four schools, containing eleven (52%) elementary schools, four (100%) middle schools, four (80%) high schools, three (100%) magnet schools, and two (67%) adult schools. There were no available data on private schools. In summary, as of the year 2023, a total of 67% of the public schools in a Connecticut Harm Reduction program received naloxone training.

2. Has the target population been reached as intended?

The Harm Reduction program is dedicated to outreach people who are at risk for opioid overdose and their families, especially those in underserved communities, as well as those with high risk for HIV/STIs. According to the quantitative data analysis, 34% of the program events were focused on community outreach. During these events, the LHD prevention team provided education on harm reduction, connected vulnerable populations with substance use disorder (SUD) services, and distributed risk reduction materials such as naloxone, fentanyl, and xylazine testing strips. Additionally, the program dedicated 18% of its activities to promoting sexual health wellness and 9% towards HIV/STI screening for high-risk groups like commercial sex workers and the LGBTQ+ community. Finally, the LHD events 2023 offered stigma reduction, mental health, and resilience support to 902 young individuals, accounting for 6% of the program events.

Qualitative data validated quantitative findings. Two of the survey participants stated: “All of our outreach and harm reduction distribution are in targeted areas, facing the highest rates of a substance use disorder, unhoused populations, and others at risk.”

“We go into the hardest hit areas in our community to help those in need.”

3. How did the program promote health equity?

The Harm Reduction program influences the social determinants of health (SDOH) through its activities to promote health equity and reduce disparities among social, racial, cultural, and financial constraints. In the year 2023, the program had a total of 3,239 participants. Out of the total participants, 30% were enrolled in community outreach, 32% were enrolled in naloxone training, 8% were enrolled in sexual

health and wellness, 28% were enrolled in youth and mental health events, 2% were enrolled in HIV/STIs screening, and 1% were enrolled in CPR demonstrations.

The program's team mentioned promoting health equity by using non-judgmental language, maintaining a diverse, bilingual staff, and addressing participants' needs without discrimination.

“ Our program works with anyone willing to receive our services, giving fair and equal treatment to anyone willing to participate.”

“We make sure everyone in need gets what they need to keep going, including harm reduction supplies, wound care kits, toiletry elements, bus passes, and opportunities to get into treatment facilities if they want to.”

“Our goal is to ensure individuals are safe and alive.”

To summarize, harm reduction initiatives significantly impacted different aspects of the SDOH, including education, community, and overall health, while promoting compassion and humility.

4. What program activities were most successful for program staff vs. program participation?

Based on the quantitative data, in 2023, the three most popular program activities were naloxone training with 1,027 participants (32%), community outreach with 970 participants (30%), and youth and mental health events with 902 participants (28%). These activities were successful in terms of the number of enrolled participants. The program staff's responses validated them: “I believe the most successful activities are education, naloxone training, and the connection we have

built with the community, not only with the people in need but also with community partners.”

5. What are the program’s limitations and challenges?

According to qualitative analysis, funding, the restricted weekday program schedule, and the ability to reach transient individuals were common challenges for the program.

“The program is grant funding and can go away anytime.”

“Employees need to be paid more for the services they provide.”

“Harm and risk reduction services are currently restricted to weekdays.”

“Remaining in the program is challenging for transient individuals with no cell phones to contact.”

Meaningful findings related to health equity during this evaluation involve naloxone training and program funding. Naloxone training was only conducted in 67% of public schools to administrative staff and teachers, and private schools received no training. Therefore, schools that had not undergone training in 2023 were at a higher risk of overdose fatalities among students and faculty members, increasing health disparities and leading to a wider gap between the health outcomes of these schools and those that had encountered the necessary training. Based on the open-ended survey, program funding is a significant concern among employees. Limited funding could lead to restrictions on program activities, underpaying staff, or operating with insufficient personnel members. Such limits may pose considerable challenges in realizing the program's objectives, particularly in reducing the risk of infectious diseases and overdose deaths in vulnerable populations.

Alternatively, the program has reached out to vulnerable populations and accomplished primary and secondary prevention levels in public health practice, which is an outstanding achievement for the LHD. The findings of this evaluation can act as a driving force for policymakers to offer more substantial assistance for harm reduction programs at both the local and state levels. New strategies may involve the creation of specific tactics to lower the rate of homelessness and decrease the number of transient individuals in the region.

DISCUSSION

This evaluation utilized mixed methods to identify strengths, barriers, and areas for improvement of a Harm Reduction program in Connecticut. Its purpose was to make recommendations for resource allocation under new grant funding. The results identified acceptance, inclusion, and non-judgmental attitudes as essential values achieved by the staff to develop the program and advance health equity. Additionally, the program's activities successfully addressed education, health, and community components of the SDOH. Naloxone training, community outreach, and events focused on youth and mental health were particularly effective in engaging many participants and impacting the lives of vulnerable populations. According to the 2023 quantitative data, only 67% of public schools received naloxone training, and no data were provided regarding private schools. As a result, the program goal of complete training in the city school system still needed to be met. Funding remains a significant challenge to the program.

The accomplishments of the staff were in line with the pillars and supporting principles of the national framework of the Harm Reduction program.¹⁸ The program created a safe and trusting environment by treating individuals with respect and dignity,

promoting equity, and connecting them to their families, healthcare system, and community. This supportive environment led to increased engagement in its activities, particularly in naloxone training, community outreach, and youth mental wellness.

The LHD staff worked efficiently to increase awareness and knowledge, reduce stigma, encourage the use of harm-reduction resources such as fentanyl and xylazine test strips, and train bystanders and opioid users to reduce opioid overdose and accidental deaths due to unintentional exposure to substance contamination.²⁰ However, more work and funding are needed to gather data and support the program's goals, such as training the entire city school system. Health disparities can be noticeable among school populations, with trained schools seeing better health outcomes than those not trained. Although the age group most affected by unintentional and undetermined drug overdose deaths in Connecticut in 2023 was 55-64, there were thirty-three avoidable deaths in the 15-24 age group.²¹ The Connecticut Coalitions report in 2020 mentioned that 5.5% of the youth aged 12-17 years had problems with prescription drugs, while heroin and fentanyl were the third concern for individuals aged 18-65 years.²² Thus, starting strategies in the scholarly age would create a supportive environment, significantly impacting future generations.

Based on the results and literature, I recommend that the LHD improve the program's data collection, such as demographics. This information will be beneficial for the LHD to identify differences in access or enrollment based on age, sex, or race to adjust strategies, provide high-quality and culturally competent practices, advance health equity, and offer a person-centered approach.^{19,23} Additionally, the agency would evaluate the SDOH among the program participants, which will help to identify the

underlying conditions that hindered people's involvement in the program, such as unstable housing or unreliable transportation²⁴, that, besides bridging the gaps in data, will provide transparency with stakeholders, improve policymakers' comprehension of community problems, and facilitate funding support.²⁵ By following this recommendation, future research would be advantageous in providing more detailed findings about the population, their dynamics in the program, and other necessities that the limited quantitative data could hinder.

This evaluation revealed the strengths and gaps in the third year of a Harm Reduction program evaluated in Connecticut and supported the need for improvements to promote health equity. The study's strengths included employing a mixed-method approach with data triangulation methodology to enhance the validity and credibility of the findings and the unique insights from the staff's survey to identify the program's strengths, limitations, and challenges. Gathering qualitative data from these complex topics was remarkable for this study.

The main limitation of this study was the poor quality of the data provided by the LHD, which limited the analysis to descriptive statistics. While these limitations did not prevent the interpretation of the findings, the results of this study cannot be generalized. Future research would bring a broader scope of analysis and provide meaningful findings to improve the program if the LHD enhances its data collection methods, including gathering demographic information such as sex, age, and race. Similarly, using alternative methods to collect qualitative information and including questions about staff diversity, such as language and culture, can attract more participants and perspectives, resulting in beneficial health equity promotion. Lastly, further research could be conducted

to evaluate the program's outcomes and effectiveness. These findings are valuable for guiding future policy development and improving harm reduction efforts in the population.

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