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Framework, design, and baseline data of a collective impact initiative to strengthen the Community Health Worker workforce ecosystem in Texas

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Abstract

Background The Health Equity Collective (HEC), a multi-sector systems-level collective impact coalition in the Greater Houston region, partnered with the City of Houston Health Department (HHD) to launch a 2-year effort to implement a comprehensive approach towards strengthening the regional Community Health Workers (CHW) workforce infrastructure as a pathway to advancing health equity. Our paper presents the logic model, methods, and baseline qualitative and quantitative data from this initiative.

Methods In the fall of 2022, the Health Equity Collective brought together a Network of CHW-employing or training organizations in the Greater Houston region. This Network was the working group of CHW employer/training organizations tasked with developing the shared agenda for collaborative action toward strengthening the regional CHW workforce. As part of the baseline needs assessment qualitative interviews were conducted to understand the role and add-value of CHWs in advancing health equity. A landscape scan survey was administered to assess CHW employer organization's funding and sustainability mechanisms for their CHWs job stability, CHW focus areas, organizational health equity priorities, etc. A journey mapping exercise was also conducted to capture CHWs lived experiences in their own voices.

Results The qualitative interviews outlined three themes that describe the role, barriers, and needs of CHWs. Landscape scan survey responses were obtained from 21 out of 29 organizations in the CHW Network. Responses provided insight into CHW employer organizational funding and sustainability mechanisms for CHWs job stability, CHW focus areas, etc. The journey mapping exercise outlines the various paths that brought the participants to pursue a CHW career path and their journey through CHW training and work.

Conclusion In summary, our paper outlines the collective impact approach and baseline data guiding efforts to strengthen the regional CHW workforce. Strategies and priorities were developed based on CHW voices and engaging stakeholders across organizations employing and training CHWs.

Keywords Community health workers, Health equity, Social determinants of health, Health disparities

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Background

Community Health Workers (CHWs) or Promotores de Salud are frontline health professionals who are trusted members of their communities and have a strong understanding of their community's inherent needs [1]. Globally, CHWs have proven valuable assets within the health care ecosystem, with improved return on investments in both financial and health outcomes [2]. Leading nationally, Texas codified into law the use of CHWs/Promotoras de Salud early in 2001 with Senate Bill 751 directing the Health and Human Services Commission to require health and human services agencies to use certified CHWs/Promotores de Salud to the extent possible in health outreach and education programs for medical assistance recipients [3]. Often, CHWs are members of the community who work within health care systems, public health organizations, and community organizations. CHWs work to build trust, relationships, and connections between communities and organizations. Their work often includes conducting health-related outreach or educational activities, linking community members with services needed, advocating for, and providing support to community members [4]. CHWs are able to serve patients and community members in hard-to-reach regions and play a critical role in reducing disparities and achieving health equity [5]. A recent review provides ample evidence of the impact that CHWs in the United States (U.S.) have on improving access to health services, management of chronic conditions, improving patient experience of care, advancing health equity, and reducing cost of care [6].

In the U.S., while there are many pathways to becoming a CHW, one may involve completing a high school diploma, attending a CHW training program, and undergoing on-the-job training to master CHW core competencies [7, 8]. Some states may require a CHW certification. Presently, U.S. states have the flexibility of establishing their own pathways toward CHW certification and related requirements [8]. Texas ranks third in the United States (U.S.) for the total number of CHWs employed and is one of few states that requires certifications for all CHW to be reimbursed for services using state funds [9]. The certification process is authorized by the Texas Department of State Health Services and is offered at many training centers across the state [9]. As of 2023, there were 6,493 actively certified CHWs in Texas, a 32% increase since 2022 [10]. These data also show that Texas CHWs are primarily located in large metropolitan areas. Socio- demographically, 87% of CHWs are female, 60% are Hispanic/Latino, 22% are Black/African American, 13% are White and 5% belong to other racial/ethnic groups [10].

Although Texas ranks third in the country for having the highest number of employed CHWs, it ranks among the lowest for CHW wages. Presently, the mean Texas CHW hourly wage is \$21.63 compared to the top five paying states (Rhode Island, District of Columbia, New Mexico, Nevada, and Connecticut) which have hourly wages ranging from \$29–32 [11]. Texas struggles with some of the nation's largest disparities in health outcomes, social needs, and mortality rates which disproportionately impact people of color, low-income populations, and children [12–15].

CHWs have successfully improved health equity through outreach, advocacy, education, counseling, resource navigation, care coordination, and social support to patients and community members [16]. The need for the CHW workforce became more pronounced during the COVID-19 pandemic when CHWs played a critical frontline role in connecting patients to testing, vaccination, and other social services, especially in vulnerable communities [17]. While policymakers and health care leaders have called for a rapid scaling up of CHWs to address longstanding health inequities, there is little attention given to strengthening the CHW workforce concerning job parity, career growth, and equity within systems that hire and train CHWs [18].

The Health Equity Collective (HEC), a multi-sector systems-level collective impact coalition in the Greater Houston region, has a singular focus to improve care coordination for social determinants of health and advance health equity efforts through linked systems and community-driven approaches [19]. Since 2018, the HEC has engaged more than 325 member organizations, primarily in healthcare and social services, to improve screening, care coordination, and responses to social determinants of health in our region [19]. The University of Texas Health Science Center Houston (UTHealth Houston) School of Public Health serves as the backbone organization for this coalition [19]. Collective impact is a demonstrated, structured approach to generating systems change and aligning isolated, organizational strategies. The five core conditions of collective impact are: establishing a common agenda, shared measurement systems, mutually reinforcing activities, continuous communication, and backbone support organizations [20]. In 2022, in response to the COVID-19 pandemic, with funding from the Centers for Disease Control and Prevention, the City of Houston Health Department partnered with the HEC on a two-year effort to implement a comprehensive approach towards strengthening the regional CHW workforce infrastructure as a pathway to advancing health equity. This included promoting parity in living wages, providing a career pipeline for further advancement, recruiting from ethnically and racially

diverse communities, providing full-time employment opportunities with benefits, valuing the CHW voice, and promoting advocacy among network members. The purpose of this paper is to present the logic model and methods of this collective impact approach to strengthen the CHW workforce, and baseline qualitative and quantitative data from CHWs and regional organizations employing and training CHWs.

Methods

As first steps, in the fall of 2022, the HEC established a CHW Network of 105 members representing 29 distinct CHW-employing or training organizations in the Greater Houston region. The CHW Network was tasked with developing a shared agenda for collaborative action toward strengthening the CHW workforce, the first step of which was operationalized through the development of a logic model. In fall 2022, the CHW Network hosted an in-person, facilitated 3-h visioning session attended by 35 people, primarily CHWs and those engaged in employing, supervising or training CHWs across the Greater Houston region. At this visioning session, participants reviewed current data on CHWs in Texas and nationally, broke out into small groups to outline the strengths/assets, challenges and opportunities associated with the CHW workforce, and finally came back together as a group to review and discuss these findings, and develop a shared agenda for the initiative. The HEC backbone organization team (SVS, HHM, ST and RG) reconciled the findings from this visioning session to finalize the logic model to strengthen the regional CHW workforce.

The logic model (see Fig. 1) developed by the CHW Network, consisting of inputs outlined from the collaborative agenda, is grounded in the Social Ecological model and outlines the inputs, activities, outputs and outcomes at the policy, systems, environment and individual CHW level [21]. At the policy level, there was a shared interest among the CHW Network organizations to increase knowledge and awareness among member organizations of state legislative agenda for the 88th Texas legislative session. At the systems and environmental levels, the CHW Network members identified the need to conduct a baseline needs assessment using mixed methods (qualitative and quantitative) data collection approaches to obtain CHW lived experience, understand barriers and facilitators to CHW workforce strengthening in Texas from the lens of CHW employers and CHWs themselves. We initiated baseline needs assessment through three primary activities: 1) Qualitative assessment of the CHW workforce landscape with CHW employers; 2) Quantitative survey with CHW Network members and; 3) Journey mapping qualitative assessment with CHWs. Results of this assessment were used to further refine the logic

Inputs	Outputs Activities/Products	Short term outcomes	Long term impact
Policy			
Partnership with Texas Research-to-Policy (TRP)	Bill Tracker – Texas Research-to-Policy Collaboration	Increased knowledge and awareness of state legislative agenda and activities	Successful passing of state legislation supporting CHW development (e.g. HB 1575)
Health Equity Collective Policy Workgroup	Shared policy priorities and collaborative advocacy to support CHW-related policies at the state level	Increased knowledge and awareness of regional policy priorities, and advocacy efforts	Policy supports to strengthen CHW workforce Collaborative partnerships on policy change efforts
Systems			
Health Equity Collective CHW Network	<ul style="list-style-type: none"> • Visioning session to build shared agenda to strengthen CHW workforce • Monthly meetings share learnings, and build strategies to implement shared agenda. • Hiring guides for CHWs • Equity Training for CHW employers • Resource hub for CHW employers and CHWs 	<p>Among systems hiring and/or training CHWs:</p> <p>Increased awareness of CHW workforce development best practices among systems hiring and/or training CHWs.</p> <p>Increased adoption of CHW workforce best practices.</p>	Increased job stability and job parity for CHWs
CHW Voice	<ul style="list-style-type: none"> • Journey map to demonstrate and visualize CHW experience, including barriers and challenges. • CHW key informant interviews • Report on community listening sessions to inform how they like to receive social services 	<p>Among systems hiring and/or training CHWs:</p> <p>Increased knowledge of CHW experiences.</p> <p>Increased knowledge of community member desired accessibility of social services.</p> <p>3. Increased knowledge of CHW career pathways</p>	Improved systems support for CHW workforce capacity building and pathways for career advancement. Improved availability and accessibility of health and social services within communities and through CHWs.
CHW Employer Early Adopter Learning Cohort	<ul style="list-style-type: none"> • Develop and implement innovative and equitable CHW hiring and employment practices such as pay parity, job stability, career advancement, and role development. • Resources for capacity building and training in advocacy, health equity, and leadership. 	<p>Among systems hiring and/or training CHWs:</p> <p>Increased knowledge of CHW employment best practices.</p> <p>Improved CHW hiring and employment practices.</p> <p>Increased equity across the CHW workforce.</p>	Improved CHW workforce sustainability.
Equity building within CHW workforce	<ul style="list-style-type: none"> • Formational Health Equity Advisory and Leadership (HEAL) council consisting of CHW leaders, employers and CHWs. • Health Equity Assessment Tool implementation 	<p>Among systems hiring and/or training CHWs:</p> <p>Increased awareness of equity-generating strategies to meet regional needs.</p> <p>Increased knowledge of CHW equity efforts.</p> <p>Increased knowledge of investments and strategies required to sustain equity efforts over time.</p>	Improved culture of equity among CHW employers and training organizations. Increased resources for CHW employers and training organizations to build a culture of equity. Improved procedural, distributional and structural equity for CHW workforce
Environment			
Assessment of regional CHW workforce environment	<ul style="list-style-type: none"> • CHW landscape scan • Support regional CHW association • Build multi-modal communications platform for CHWs and stakeholders • Resources for capacity building of CHWs in advocacy approaches • Resources for CHW Employers in implementing equitable and sustainable CHW employment practices. 	<p>Increased understanding of current barriers and opportunities to strengthen the CHW workforce.</p> <p>Increased knowledge of CHW workforce development strategies</p> <p>Increased knowledge and accessibility of evidence-based CHW workforce tools, trainings, and interventions to strengthen and support CHW environment.</p>	Improved procedural, distributional and structural equity for CHW workforce Increased availability of and accessibility to CHW Workforce tools, trainings, and interventions to strengthen CHW environment.
Evaluation of Health Equity Collective's operations and strategies for promoting collaborative health equity interventions.	<ul style="list-style-type: none"> • Key informant interviews of HEC steering committee members • Evaluation survey of HEC members 	<p>Increased knowledge of HEC members'</p> <p>interest in contributing to collective impact.</p> <p>Increased understanding of what HEC members value in the collaborative approach</p>	Improved effectiveness of the HEC in leading collective impact efforts in the region.

Fig. 1 Logic model for strengthening the CHW workforce in the Greater Houston region

model and inform the CHW Network in regards to next steps for this initiative. The logic model includes a comprehensive overview of the CHW Network activities; albeit detailed description of all activities is beyond the scope of this paper which will be included in a subsequent main outcomes paper.

This project was reviewed and approved by the University of Texas Health Science Center at Houston, Committee for Protection of Human Subjects. Informed consent was obtained from participants for all surveys and interviews in this study.

Qualitative assessment of the CHW landscape as a workforce

In the fall of 2022, we employed a qualitative design to explore and understand the role and value of CHWs, the challenges they faced, and the support needed in Texas to advance health equity, particularly in the wake of the pandemic. Researchers (SVS, JCJ, HM) conducted multiple strategy sessions with four doctoral students in early fall 2022 to develop a qualitative framework for designing, collecting, and analyzing interviews. These strategy sessions also included training to enhance the students' qualitative analysis skills.

We chose a general inductive approach for analyzing qualitative data due to its flexibility and suitability for summarizing emergent data in alignment with clear objectives and established evaluation questions. This approach allows for the identification of key themes without the restrictive parameters and methodological complexity associated with other guided approaches, such as grounded theory. During this phase, the interview guide underwent multiple revisions based on input from key CHW leaders, ensuring that the questions aligned with the study's primary goals. The finalized interview guide comprised ten questions and nine content probes aimed at understanding the role, impact, challenges, and opportunities for CHWs to advance health equity efforts in Texas.

Following approval from our academic institutional review board, we utilized a purposeful sampling approach to select participants based on their roles (CHW leaders) for inclusion [22]. CHW leaders were defined as those individuals who were identified by peer CHWs as a leader in their profession, or were in a leadership position of a CHW-based organization (e.g., Board member of CHW association), or were in a job that included supervising/training CHWs. To facilitate recruitment for the interviews, we leveraged collaboration with health systems and community organization partners across Texas that employed or trained CHWs. Invitation emails to participate in the interviews were sent to these organizational contacts inviting those who met the inclusion criteria

based on their availability and willingness to consent to interviews. Between October and November 2022, trained graduate students conducted 12 semi-structured, virtual, in-depth interviews with 13 key informants. Of these, eleven interviews were one-on-one, while one interview included two participants. The CHW leaders represented academic health institutions, nonprofit organizations, and community-based organizations across Houston, Dallas, Tyler, San Antonio, and El Paso regions of Texas. After data collection, the text data was reviewed, cleaned, and imported into ATLAS.ti software for analysis. Guided by the general inductive approach, our data analysis methods included both deductive and inductive strategies.

We used the deductive approach first to explore structural codes based on the existing codebook that was developed using the interview guide. In this paper, we establish codes as textual data (phrases, or sections of text) that represent interviewees' distinct ideas or actions (e.g., roles, responsibilities, challenges, and the impact of the pandemic). While most of the data were analyzed using this established framework, we also utilized the inductive approach to capture new insights (codes) outside the predefined codes. Once all data were coded, we grouped related codes into categories to organize the data from its simplest form into meaningful clusters. These categories were then reviewed and refined to identify overarching themes that reflected broader patterns across all of our interviewees' transcripts. Additionally, presenting the data in themes helps to provide a comprehensive understanding of the key concepts that emerged across the interviews. Any discrepancies in the coding process and categorization were discussed and resolved through consensus among the research team, ensuring that the final themes accurately represent CHW leaders' perspectives. We then provide examples of quotes that reflect each given theme.

CHW systems assessment landscape scan survey

Concurrently, we conducted a landscape scan survey to understand the opportunities associated with strengthening the Greater Houston CHW workforce from the lens of CHW Network organizations that train and employ CHWs in the region. A convenience sample of CHW Network member organizations ($n=29$ organizations) received a Qualtrics-administered survey administered by UHealth Houston project staff (provided in the supplementary material) assessing CHW focus areas (demographics, geographic priorities, health and social services, etc.), organizational health equity priorities, CHW career development, planning, training, mentoring, and collaborative efforts, and sustainability mechanisms for their CHWs job stability.

The survey administered in English included informed consent language. Participants received a \$25 gift card upon completion. Descriptive statistics, including means, frequencies, and percentages, were used for analysis.

Journey mapping

Finally, as part of the needs assessment, the HEC conducted a journey mapping exercise with a cohort of CHWs in the Greater Houston region. Journey mapping is a visualization tool for enhancing strategic initiatives and capturing participants' lived experiences in their own voices [23, 24]. The purpose of this exercise was to conduct a journey map assessment that engages CHWs in exploring common elements in the CHW career paths, as well as challenges and opportunities in their role and across the wider CHW network. We conducted a convenience sampled in-person focus group of 12 CHWs (14 having been initially invited from the 29 member organizations of the HEC CHW Network). Of the 12 focus group participants, 92% were female ($n=11$). Institutional affiliations included healthcare ($n=4$, 33%), CHW cooperative ($n=4$, 33%), academic ($n=4$, 33%) and a substance use-related organization ($n=1$, 8%). Written informed consent was obtained, and all participants received \$75 gift certificates for participating. The 3-h in-person session was led by an independent graphic facilitator and a journey mapping expert, trained in design thinking and visual storytelling to deconstruct, understand and solve complex systemic issues.

Results

Results of the Qualitative assessment of the CHW landscape as a workforce (Key informant interviews)

There were four major themes related to the roles and responsibilities of CHWs, including their contributions to advancing health equity, the challenges they face in performing their duties and progressing in their careers, opportunities to strengthen the CHW workforce, and the transformative impact of COVID-19 on the primary engagement methods used by CHWs to communicate with patients and clients (Table 1).

Theme 1. CHWs Significantly Contribute to Advancing Health Equity

CHWs play a critical role in bridging healthcare organizations and communities, addressing health disparities through outreach, education, and resource coordination. They add significant value to organizations by leveraging their flexibility, adaptability, and deep familiarity with the cultural beliefs and values of their target populations. These attributes enable them to build trust and establish pathways to address adverse health and social needs.

Participants indicated the importance of hiring CHWs from the communities being served to meet the needs of their diverse responsibilities, which included advocacy, care navigation, promotion of health literacy, bridging cultural divides, building trust within communities, and adapting to expanded roles during the COVID-19 pandemic, such as assisting with education, testing, and vaccination efforts. As one interviewee, a CHW liaison manager, explained:

"The community health workers we hire are from the area, they know the area, they live in the same neighborhoods as individuals they are serving. So, they know what things are like, and they know challenges that people may be facing that might be kind of undertones or undercurrents, or things that aren't necessarily spoken about." IDI_11_112203_NS.
- CHW Liaison Manager, community-based organization

Another health education director of a CHW training program explained:

Concerning their value add to building the cultural barrier/divide, one interviewee stated: "And then with sometimes language barriers, we do have a balanced staff that has been very helpful in sharing education and awareness with the Spanish-speaking populations. And not just lecturing, but also demonstrating and illustrating... so people could actually grasp the concept." IDI_08_102228_JC.
- Health Education Director, CHW training program

Theme 2. CHWs face numerous challenges, both organization-influenced and externally induced, that impede health equity advancement efforts

Results from this study identify the complex web of structural barriers and inequalities CHWs face. Participants described systemic and organizational barriers CHWs encounter such as limited funding, job insecurity, lack of pay parity, and minimal career pathways as well as community and partner engagement challenges, cultural, language, and immigration barriers, and technological challenges- particularly on the heels of COVID-19; these issues hinder their ability to deliver equitable care and sustain long-term efforts.

For example, a community relations project manager working with CHWs on a COVID-19 project was very transparent in their assessment of the compensation landscape and its impact on retention. For example, interviewees indicated that a majority of the CHW positions were grant funded, and as such created job insecurity resulting in challenges with retention of the CHWs. A Community Relations Program Manager for a large,

Table 1 Emergent Codes, Categories, and Themes from Key Informant Interviews on CHW Workforce-related Roles and Challenges

Codes (words, phrases, or observations summarizing CHW leaders' perspectives across distinct topics)	Categories (Grouping of similar codes)	Theme (broader patterns that help summarize key findings)
Aiding in intervention implementation	These are the various functions and responsibilities that CHWs (and CHW leaders) state they perform within communities and organizations	CHWs significantly contribute to their organizations and targeted communities by addressing distinct challenges in pursuit of health equity
Eliminating barriers to health services		
Fighting misinformation		
Guiding patients toward resources		
Maintaining close relationships with the community		
Providing and sharing training insights		
Connecting with the community in ways researchers can't	CHWs work to bridge gaps between communities and health-care and serve as critical linkages in enhancing care outcomes and trust	
Building trust with the community		
Improving care management and health outcomes		
Providing community-based expertise to program development and implementation		
Communicating in a way that connects with clients	CHWs express that they leverage flexibility and adaptability to foster client connections	
Being flexible and adaptable to their clients' needs		
Leveraging trainings to facilitate care coordination		
Meeting patients at their point of need		
Providing feedback on what works or does not work		
Capacity challenges (Including the need for more CHWs)	These are the articulated challenges that CHWs face within their organizations, which impact their efforts	CHWs face numerous challenges, both organization-influenced and externally induced, that impede health equity advancement efforts
Establishing and maintaining contact with the community		
Absence of cross-institutional training opportunities		
Difficulty engaging community partners		
Lack of organizational funding and resources		
Absence of fair compensation for work		
Insufficient referral services to connect patients to after-screening		
The challenge in seeking reimbursement for services		

Table 1 (continued)

Codes (words, phrases, or observations summarizing CHW leaders' perspectives across distinct topics)	Categories (Grouping of similar codes)	Theme (broader patterns that help summarize key findings)
Lagging organizational tech capacity to support communication efforts		
Transient CHW roles		
Lack of knowledge regarding the CHW role	Distinct community and Partner Engagement Challenges	
Keeping participants engaged		
Public apathy		
Engaging community partners in a timely manner		
Targeted community's competing responsibilities		
Immigration status hinders access to services	Distinct Cultural, Language, and Immigration Barriers impeding the ability to connect with clients	
Language barrier in connecting with clients		
Political climate		
Tech challenges (e.g., translation or transcription) to ensure prompt communication	Technological challenges impacting CHW productivity	
CHWs need technology skills training		
COVID-19 revealed technological shortcomings in engaging with clients		
Advocacy training	Ways in which organizations can support CHWs	Organizational policies and resources must be leveraged to support and keep CHWs engaged in health equity work
Organizations need to learn more about their target population		
Professional development opportunities (conferences etc.)		
Promoting fair working conditions		
Providing space for listening and sharing learns		
Pursuing grants consistent with community needs		
Shed light on structural barriers impeding CHW efforts		
Encourage cultural humility	Resources to improve CHW equity efforts	
Provide engagement strategies to CHWs		
Get grant writing support to push CHW work		

Table 1 (continued)

Codes (words, phrases, or observations summarizing CHW leaders' perspectives across distinct topics)	Categories (Grouping of similar codes)	Theme (broader patterns that help summarize key findings)
Funding ("money") to support CHW work	Ways organizations can support CHW hires	COVID-19 upended preferred methods of CHW engagement resulting in the need for workforce development protocols to meet the changing world
Need for more stable, long-term projects		
Foster Training-related activities		
Coordinate, communicate, and collaborate efforts		
Have defined quality metrics		
Have organizational values that match CHW values		
Include CHWs in key decision-making		
Equip organizational staff with skills to support CHWs		
Periodic check-ins to assess CHWs' progress		
Provide space for training opportunities		
Support CHWs in meeting them where they're at	COVID-19 impact on CHW efforts	
Increased need for Tech training for CHWs		
Heightened awareness of CHWs' role in reaching vulnerable populations		
Shift From traditional in-person engagement to virtual forms of communication with clients		
COVID-19 overshadowed the handling of other health and social needs		
Embracing strict safety protocols to engage patients		
Post Pandemic practices: Continued use of safety protocol (masks, rapid testing etc. to engage with clients)		

grant-funded COVID project that employed CHWs explained:

“They [CHWs] aren’t compensated to the degree that they probably should. And I mentioned this before, but relationships take time to build. And when you work on a project that’s a year long, it’s go, go, go. So, I feel like we’re almost taking advantage because we hired them [CHWs] for the project and then ‘that’s all sorry, we don’t have funding to keep you on board.’ So that incentive isn’t there for them; they look for opportunities elsewhere.” IDI_05_102822_EG.

- Community Relations Program Manager, COVID Project

Theme 3. Organizational policies and resources must be leveraged to support and keep CHWs engaged in health equity work

A stronger infrastructure is essential to support CHWs and ensure their sustained engagement in health equity. Participants identified four key recommendations for improving support: empowering CHWs as community experts, creating greater equity within the workforce, building sustainability through career development, and addressing training and professional advancement needs. For example, one participant with a CHW training center emphasized the importance of incorporating community feedback into planning and strategy:

“If you really want to impact the health of your community, then in the bare minimum, what you can do is take the information that you’re getting back on what is the experience of the community and incorporate that into your planning, into your strategy, and have it be sort of an iterative learning process.” IDI_10_102214_NS.

- Role unmentioned, CHW training center

Another program manager with a state-funded prevention program stated the inequities in the CHW workforce in regards to salaries and benefits:

“We have different groups of CHWs. Some of them are employed directly through [large institutions.] And there’s definitely way more equity in that type of employment because they get full benefits. They get a fair salary...So the flip side here is that I don’t manage the CHWs directly that are in our collaborating [community] agencies. They’re managed separately. And even though we try to give them a higher and just pay, they don’t get benefits. So you think about the equity there.” IDI_12_112204_NS.

- Program Manager, state-funded prevention program

Theme 4: COVID-19’s transformative impact on CHWs

The pandemic disrupted traditional CHW engagement, necessitating a shift to virtual communication and new workforce protocols. Despite these challenges, CHWs adapted and played a vital role in COVID-19 education, testing, and vaccination efforts. For example, a CHW liaison manager with a community-based organization explained the changes in care during the pandemic which included rapid capacity building with the CHW workforce on using virtual care-related technologies to be able to serve their patients, as well as changes in types of services CHWs were providing to the patients.

“COVID-19 really changed things a lot. We went from in-person to virtual care and for some of our patients, that was hard. Even within our [CHW] staff, we had to do numerous technology updates and classes to get everyone up to speed to have what we needed to serve them. The biggest thing is how we went from focusing on particular conditions to implementing more on COVID-19 education and vaccine promotion. It was hard to get our clients to see the importance of it, but now I think we have broken the mold on that barrier.” IDI_03_102231_AH.

- CHW Liaison Manager, community-based organization

The findings reveal a reality for CHWs, in that while they play an instrumental role in bridging healthcare institutions and the communities they serve, they may face many environmental and intra-organizational shifts that require them to rapidly pivot and gain additional training to meet community needs.

In summary, the interviews outlined how CHWs leverage their close ties to the communities and knowledge of the cultures therein (often living in these communities) to build trust and address health and social needs. However, these efforts are sometimes stymied by the lack of systemic infrastructure, environmental shifts requiring rapid pivoting, inequities in compensation, and limited career advancement opportunities. Interviewees emphasized the need for a more robust CHW workforce that empowers them as community experts, fosters pay equity and invests in professional development including the necessary skills and resources to meet the demands of pressing and unpredictable challenges.

Results of landscape scan survey

A total of 21 out of 29 organizations in the CHW Network responded to the landscape scan needs assessment survey implemented in Spring 2023. These findings are presented in Table 2 (Descriptive table of respondents)

and Table 3 (Demographics of populations served, CHW Career Planning and Training Capacity among responding organizations). For some questions, participants had the opportunity to select more than one response resulting in values that on appearance, exceeded 21. For instance, as it relates to organizational affiliations, participants were able to select more than one category given that some affiliations overlapped. Twelve were CHW employers (healthcare, community organizations, health departments), six were institutes of higher education, four were CHW training centers, and three were CHW-owned businesses. Concerning their primary roles within CHW efforts, 12 identified themselves as CHW leaders, three as CHW supervisors, two as CHW employees and four as other, with self-described roles covering consultation, employment, and provision of support to CHW efforts. A majority of the respondents were female (76%), non-Hispanic (71%), White (48%) and Black (29%).

When asked how the organizations funded their CHW-based efforts, 71% reported these efforts were funded by grants and 38% through general program funding. Participants were able to select multiple organizational funding sources. These results also revealed that some organizations ($n=6$) derived support from both grant and general program funding. Sixty-seven percent of the respondents reported plans to sustain these efforts beyond the funding period, while 29% were reportedly unsure. Regarding geographical footprint of CHW-related efforts, a majority of these service areas for CHWs were in areas largely defined as persistent poverty areas in the Greater Houston region with CHWs reporting the provision of services in the areas of maternal health, child health, diabetes, chronic kidney disease, hypertension, mental health, and COVID-19 (Table 2).

The landscape scan also explored systems priorities and supports for CHW workforce. Overall, 57% of organizations reported no career planning for their CHWs, while 71% reported no counseling services for CHWs within their organization. Most of the organizations (95%) offered some form of CHW training and certification opportunities with most opportunities offered in areas of maternal health, food security, affordable healthcare access, health literacy, health equity, behavioral and mental health, COVID-19, diabetes, and motivational interviewing. When asked about the future trainings that organizations planned to offer, a majority reported cultural sensitivity/humility, followed by health equity, and health literacy. When asked about priority community and engagement actions for CHW efforts, respondents reported civic engagement/advocacy, economic empowerment, career development, and motivational interviewing as priority areas. Lastly, when asked about priority social needs

for CHW efforts, respondents reported food insecurity, transportation, housing, access to healthcare, health literacy, and behavioral and mental health as the priority areas. Most organizations (81%) reportedly collected evaluation data on CHW efforts, especially on program implementation and effectiveness outcomes.

When asked about organizational likelihood of engaging the community in strategy building or decision-making, half the respondents mentioned being likely or strongly likely to engage, while the other half were uncertain or unlikely. Additionally, 63% of respondents reported being likely or strongly likely to integrate practices and policies to ensure equity in operations and decision-making. Finally, when asked about their likelihood to incorporate strategies to ensure community stakeholders have equal access to community resources, 65% responded likely or strongly likely, while 35% responded unlikely or uncertain.

Journey Mapping with CHWs

This multi-stage qualitative visualization process conducted with CHWs resulted in three journey maps as the final products presented elsewhere. [25] Briefly, the result of the journey map identified the various paths that brought the participants to pursue a CHW career path (i.e., personal development), their journey through CHW training, including fieldwork and certification, and how they obtained their jobs, part-time or full-time. It also highlighted many challenges including an unclear definition of what a CHW does, insufficient systems support (e.g. billing for services unavailable; supervisors are rarely CHWs themselves; lack of investment in career pathways and professional development; lack of systems response to crisis), being overworked and not being paid enough. Conversely, CHWs also identified many opportunities to impact community health including a chance to empower people, community engagement of healthcare systems (i.e. building trust between community and health care), the opportunity to serve people, listen to people, and share knowledge.

Discussion

Our paper presents the logic model, design, and baseline needs assessment of a two-year collective impact initiative to strengthen the CHW workforce ecosystem in the Greater Houston region in Texas. As first step towards initiating this work, the HEC systems coalition convened a CHW Network consisting of organizations employing and training CHWs to co-create a shared agenda to strengthen the regional CHW workforce using a collective impact approach. [20] Collective impact allows for a structured approach to achieve systems and environmental change in a coordinated manner. [20] Baseline needs

Table 2 Sociodemographic characteristics of landscape scan survey respondents

Variables	N (%)
Race/ethnicity	
American Indian or Alaska Native	1 (5%)
Asian	2 (10%)
Black or African American	6 (29%)
Caucasian	10 (48%)
Mixed race (American Indian or Alaska Native/Black or African American/Caucasian)	1 (5%)
Unsure/Prefer not to say	1 (5%)
Hispanic origin	
Yes	6 (26%)
No	15 (71%)
Sex	
Male	5 (23%)
Female	16 (76%)
Organizational role in CHW efforts	
CHW Training Center	4 (19%)
CHW Employer	12 (57%)
CHW Owned Business	3 (14%)
Healthcare (organization or health department)	7 (33%)
Community-based	10 (48%)
Higher Education	6 (29%)
Other (E.g., Global health, contract with Community-Based Organizations that hire and employ CHWs, work with FQHCs, CBOs, Health Plan)	4 (19%)
No current CHW role	1 (5%)
Primary role with CHW efforts	
A CHW Supervisor	3 (14%)
A leader of CHW efforts	12 (57%)
CHW Employee	2 (10%)
Other (E.g., Support projects employing CHW, Bilingual sexual health education, Program Evaluation)	4 (19%)
Some totals exceed 100% as participants could select multiple responses	

Footnote: $n = 21$ organizations in the CHW Network; 1 respondent per organization

CHW Community Health Workers, FQHC Federally Qualified Health Centers, CBO Community-based organization

assessment was conducted to inform the development of the CHW Network shared agenda for this effort. Overall, the results of our baseline assessment demonstrated the challenges faced by CHWs in being underpaid, experiencing burnout, variability in job definitions, and lack of pathways and support for career development from the systems that they are hired within. These challenges were articulated by CHWs themselves as part of the journey mapping exercise, as well as by CHW employers, supervisors, and trainers as envisaged in the key informant interviews. While acknowledging the role of CHWs as trusted and important liaisons between healthcare and community organizations, these CHW leaders also articulated the various structural barriers and inequalities faced by CHWs in the workplace as listed above. The consistency of themes across the three data gathering activities demonstrate clear opportunities for investing in policy, systems, and environmental changes that will

strengthen the CHW workforce and its capacity to contribute to regional health equity improvements.

These results reaffirm findings from other studies that have similarly identified the importance of CHWs as part of the healthcare workforce in bringing critical services to the community, while being vulnerable themselves. [4, 5] This was particularly highlighted during the COVID-19 pandemic when CHWs were essential workers worldwide engaged in COVID-19 outreach, contact tracing, testing, and vaccination response in the community, particularly in hard-to-reach settings. [26] Results of our baseline assessment also called for additional training and resources to support CHWs. These findings concur with those of a statewide survey of CHW employers in Texas that outlined the important role of CHWs as part of a multidisciplinary healthcare team. Results called for continuing training for CHWs and the development of pathways, resources, and opportunities that could

Table 3 Baseline needs assessment of CHW workforce among organizations employing and training CHWs

Variables	N (%)
Demographics of target population served by CHWs in responding organizations' (age of target population)	
0–21 years	1 (5%)
18–65	1 (5%)
22–65	1 (5%)
24 – 60	1 (5%)
24–45	1 (5%)
25–65	1 (5%)
All ages	11 (52%)
N/A – I don't know or refuse to answer	4 (19%)
Demographics of target population served by CHWs in (gender of target population)	
Female	1 (5%)
All genders	15 (72%)
N/A – I don't know or refuse to answer	5 (24%)
Demographics of target population served by CHWs in responding organizations' (race/ethnicity of target population)	
All races	7 (33%)
Black and Hispanic	7 (33%)
Black, Hispanic, and White	1 (5%)
Other	1 (5%)
N/A – I don't know or refuse to answer	5 (24%)
Organization funding source for CHW efforts	
Grant	15 (71%)
General Program Funding	8 (38%)
Services Fees	2 (10%)
Insurance Reimbursement	1 (5%)
Other (Cost reimbursement via a diverse set of payors, not yet funded)	2 (10%)
Responding organization offers counseling services for CHWs	
Yes	4 (19%)
No	15 (71%)
Unknown	2 (10%)
Responding organization offers career planning services for CHWs	
Yes	5 (24%)
No	12 (57%)
Unknown	4 (19%)
Responding organization offer trainings to CHWs	
Yes	10 (48%)
No	10 (48%)
Unknown	1 (5%)
Training courses offered by responding organizations who offer trainings to CHWs (select all that apply)	
CHW Certification	3 (14%)
CHW Recertification	4 (19%)
CHW Instructor Certification	1 (5%)
CHW Instructor Recertification	2 (10%)
CHW Special Topics Trainings	8 (38%)
Other (E.g., Trainings in chronic disease prevention and health equity)	2 (10%)
No response	1 (5%)
Priority health services provided by you/your CHWs (select all that apply)	
Child health	5 (24%)
Maternal health	8 (38%)
Diabetes	8 (38%)

Table 3 (continued)

Variables	N (%)
Chronic kidney disease	1 (5%)
Hypertension	6 (29%)
Mental health	6 (29%)
COVID-19	7 (33%)
Other (E.g., Resource navigation services, Behavioral health, cancer screening and prevention, sexual & reproductive health education, economic development/equity, addiction recovery support, health literacy)	9 (43%)
Priority health and social needs across CHW efforts (select all that apply)	
Food security	12 (57%)
Transportation	8 (38%)
Housing	10 (48%)
Education	4 (19%)
Employment	8 (38%)
Health equity	12 (57%)
Affordable healthcare access	11 (52%)
Health literacy	11 (52%)
Behavioral and Mental health	10 (48%)
Substance use	5 (24%)
Criminal justice	3 (14%)
Stigma reduction	5 (24%)
Cultural sensitivity/humility	7 (33%)
Other (sexual health education and sexual health care access)	2 (10%)
Priority community and engagement actions for your CHW efforts (select all that apply)	
Civic engagement/advocacy	8 (38%)
Economic empowerment	6 (29%)
Career development	5 (24%)
Motivational interviewing	13 (62%)
Other (pandemic preparedness, affordable healthcare access)	3 (14%)
Responding organization collects evaluation or research data from CHW programs/efforts	
Yes	17 (81%)
No	3 (14%)
No response	1 (5%)
If yes, type of data collected (select all that apply)	
CHW demographic and diversity data	9 (43%)
Program demographic and diversity data	6 (29%)
Program implementation and effectiveness	14 (67%)
Grant data	9 (43%)
Employment data	4 (19%)
Training outcomes	6 (29%)
Qualitative data from program participants and or CHWs	11 (52%)
Other (Social Capital)	1 (5%)
Responding organization's likelihood to integrate strategies that engage community in planning and decision making:	
Strongly likely	4 (19%)
Likely	6 (29%)
Uncertain	3 (14%)
Unlikely	4 (19%)
Strongly unlikely	3 (14%)
No response	1 (5%)
Responding organization's likelihood of integrating practices and policies to ensure equity in operations and decision-making:	
Strongly likely	8 (38%)
Likely	5 (24%)

Table 3 (continued)

Variables	N (%)
Unlikely	1 (5%)
Strongly unlikely	6 (29%)
No response	1 (5%)
Responding organization's likelihood of incorporating strategies to ensure that community stakeholders have equal access to community resources and benefits:	
Strongly likely	9 (43%)
Likely	4 (19%)
Unlikely	2 (10%)
Strongly unlikely	5 (24%)
No response	1 (5%)
Total for some variables exceed 100% because participants could select multiple options	

Footnote: $n = 21$ organizations in the CHW Network; 1 respondent per organization

advance the CHW profession. [27] While these studies demonstrate CHWs as a critical workforce for improving health outcomes, they, along with our study, highlight the need for continued attention to strengthening the CHW workforce in regard to advancing their career pathways. These findings informed next steps in developing the shared agenda to strengthen the regional CHW workforce development efforts.

CHWs are highly cost-effective in part due to being one of the lowest paid roles in the health care industry. However, as demonstrated in the results of our landscape scan survey, 71% of the organizations hiring CHWs are vulnerable in regard to job stability since they are largely supporting them through grant funds. And, while a majority of them intended to sustain these hires beyond the grant funding period, there is still great uncertainty concerning the sustainability of these positions in the absence of hard institutional-allocate funds. Additionally, only a few of the responding organizations offered counseling and career planning services to their CHWs or were engaging their CHWs in the strategy and decision-making within their systems. Together, this can threaten the sustainability of the CHW workforce within an organization.

These challenges notwithstanding, there was significant interest among organizations responding to the landscape scan survey, as well as the CHW leaders in the key informant interviews to further invest and support CHW workforce development efforts. Themes that emerged across the key informant interviews, landscape scan survey, and journey mapping exercise include the need for CHW workforce development, career planning, compensation received, CHW retention strategies, the need to improve CHW communication & support strategies, and the need for systems-level support, funding, and policies.

One of the strengths of our approach is the direct involvement of both, CHWs and organizations employing/training CHWs, ensuring all voices were integrated throughout the process allowing for a comprehensive assessment of the CHW workforce landscape, yielding invaluable insights and firsthand understanding of barriers and facilitators across all stakeholders. Another major strength was the engagement of trained students to conduct the key informant interviews. This approach fostered a more equitable and shared balancing of power in the interviews, which may encourage interviewees to be more forthcoming in sharing their experiences and perspectives compared to interactions with senior leadership. Moreover, the survey participants were selected from a diverse field of organizations within the CHW Network, facilitating a more comprehensive perspective on past, present, and future services of target populations and priority action areas across these organizations.

The limitations of our approach including a purposive sampling of CHW leaders for the qualitative interviews which may be biased due to selection of participants based on our specific criteria. Furthermore, we had a convenience sample for the quantitative landscape scan and the journey mapping and results may be biased and not be representative of the broader CHW efforts. Although, the landscape scan sample size contained a diverse sampling of participants across key demographics, the small sample size of 21 organizations in the Greater Houston region reduces our ability to generalize to a larger CHW population regionally or nationally, and there may be a response bias based on those who responded to the survey may be different as compared to those who did not. The journey mapping themes were derived from inputs of small sample size ($n = 13$) and may not transfer to

broader CHW population, though the themes were consistent across data collection methods.

Conclusion

In summary, our paper outlines the design, methods and results of our baseline needs assessment to inform strengthening the CHW workforce across the Greater Houston region using a collective impact approach. Strategies and priorities were developed based on Community Health Worker voices and then engaging stakeholders across CHW efforts. This collaborative approach will inform policy, systems, and environmental changes towards strengthening the CHW workforce.

Abbreviations

CHW(s)	Community Health Worker(s)
HEC	Health Equity Collective
HHD	City of Houston Health Department
UTHealth	University of Texas Health Science Center
SPH	School of Public Health
CPHS	Committee for the Protection of Human Subjects
CMS	Centers for Medicare and Medicaid Services
HEAL	Health Equity Advisory Leadership

Supplementary Information

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Supplementary Material 1.
Supplementary Material 2.

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Authors' contributions

S.S, H.M, J.J, R.G, and S.T were involved in the design of study protocols, data collection measures, analysis, interpretation, writing, critical review, and final approval of the manuscript. D.B was involved in the writing, critical review, and final approval of the manuscript. N.S, S.S, A.G, and S.H were involved in the design of study protocols, writing, critical review, and final approval of the manuscript. P.D was involved in the design of study protocols, data collection measures, writing, critical review, and final approval of the manuscript. E.G, J.C, and A.H were involved in the data collection measures, analysis, critical review, and final approval of the manuscript.

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Data availability

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

Declarations

Ethics approval and consent to participate

Institutional Review Board approval for all needs assessment activities was obtained from the University of Texas Health Science Center (UTHealth) Committee for the Protection of Human Subjects (CPHS). The study adhered to all

ethical guidelines and standards set forth by the IRB to ensure the protection of human subjects involved in the research. Informed consent was obtained from participants for all surveys and interviews in this study.

Consent for publication

Not applicable.

Competing interests

The authors declare no competing interests.

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