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Structural supports and challenges for community health worker models: Lessons from the COVID-19 response in Orange County, California

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ABSTRACT

Public health relied on community health workers (CHWs) during the COVID-19 pandemic to connect with the most vulnerable communities, which saved lives and addressed inequities. Understanding the structural factors that supported and hindered the success of CHWs is essential for building a stronger public health infrastructure in the future. We analyzed semi-structured, in-depth interviews with 15 institutional representatives and policymakers who engaged in COVID-19 response involving CHWs in Orange County, California. Findings indicated that while participants realized during the COVID-19 pandemic how essential CHWs were in addressing health and social inequities, CHWs were often undervalued by systems that were not established to support them. Participants highlighted needs for government and healthcare systems to equally partner with CHWs, reimburse CHWs for their work, decrease administrative barriers, and fund CHW-hiring organizations sustainably. We discuss recommendations for supporting CHWs through systems changes.

1. Introduction

Community health workers (CHWs) are increasingly recognized for their ability to address health inequities by reducing the structural space between marginalized communities and public health institutions (Ingram et al., 2014; Kangovi et al., 2020). CHWs, who go by different titles including Promotores de Salud or Community Health Advocates, are defined as "frontline public health workers who are trusted members and/or have an unusually close understanding of the community served" (American Public Health Association, 2024). Public health institutions in the United States (US) such as non-profit organizations, health care systems, county public health agencies, and local governments have been gradually integrating the work of CHWs to address the social and structural drivers of health (Horwitz et al., 2020; Sabo et al., 2021; D. J. Washburn, Callaghan, et al., 2022). However, more effort is needed to identify best practices for incorporating CHWs into public health systems, which may include promoting awareness and appreciation of CHWs, integrating and hiring CHWs, and policies or programs to support the CHW workforce (Balcazar et al., 2011; Malcarney et al., 2017).

The COVID-19 pandemic created a pressured situation in which local public health leaders realized the urgency of incorporating CHWs to reach the most vulnerable communities (Bhaumik et al., 2020; Wells et al., 2021). Across diverse communities, CHWs were on the frontline of the public health emergency—delivering health messaging, distributing needed resources, organizing mutual aid, facilitating COVID-19 testing and vaccination efforts, and more (Logan & Castañeda, 2020; Peretz et al., 2020; Valeriani et al., 2022). However, public health and healthcare systems had varying levels of experience working with CHW models, ranging from some institutions engaging with CHWs and the community-based organizations (CBOs) that mobilize them early on, to other institutions being unaware and unknowledgeable about CHW models and how to engage with them (D. J. Washburn, Callaghan, et al., 2022; Wells et al., 2021). Reflecting on the experiences of the latest crisis is critical for identifying factors that contributed to or hindered the incorporation of CHW models, as public health looks to ensure CHWs are

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Nomenclature

CHW	community health worker
CATALYST	Community Activation to TrAnsform Local sYSTems
CBO	community-based organization

thoughtfully integrated into future response efforts (Perry et al., 2021).

This study examines the structural factors that supported or challenged the success of CHW models during the COVID-19 pandemic. Adapting the definition of structural determinants of health from Heller et al. (2024), we define structural factors here as the written and unwritten rules that govern the work of CHWs and the power relations between CHWs, their organizations, and other powerful or well-resourced government and healthcare institutions. By this definition, structural factors affecting CHW models may include the organizational value of and norms surrounding CHWs' roles, institutional practices that influence power relations between people and organizations, as well as the policies, regulations, and budgets that structure CHW work. To uncover these structural factors for this study, we interviewed institutional representatives, organizational leaders, and policymakers in Orange County, California. Their perspectives are unique for illuminating structural factors affecting CHW models because these leaders were in positions of power to make decisions regarding the resourcing, training, organization, and oversight of CHWs in their respective institutions during the pandemic. This research aims to highlight best practices and provide future recommendations for supporting CHW models within the broader public health infrastructure.

1.1. Orange County, California

The study was conducted in Orange County, California, where the first known COVID-19 case in California was identified. Orange County is the third largest county in California and the sixth largest county in the US, with 3.2 million residents (US Census Bureau, 2021). Mirroring nationwide trends, Orange County experienced racial and ethnic inequities in COVID-19 incidence, mortality, and socioeconomic outcomes exacerbated by the pandemic (Orange County Health Care Agency, 2020).

From 2020 to 2021, the Orange County Health Equity COVID-19 Community-Academic Partnership formed to advocate for and guide equitable local COVID-19 response and recovery initiatives (K. J. Washburn et al., 2022). Their efforts supported the training of hundreds of hired and volunteer CHWs through local CBOs and school districts that comprised the county's community equity response. CHWs in Orange County provided residents with health education, testing information, contact tracing, vaccination outreach, healthcare navigation, as well as connections to community resources (e.g., food banks, rental assistance, health clinics, social workers, legal aid, etc.). As COVID-19 protocols loosened in 2021, a subset of community-academic partnership members formed the Community Activation to TrAnsform Local sYSTems (CATALYST) project. CATALYST is a community-based participatory research project responding to recommendations from community partners with expertise in CHW models, who recognized the significant leadership and innovation of local CHW models that continually adapted to meet community needs. The goal of CATALYST is to inform multilevel community-centered recovery and strengthening efforts.

2. Methods

This study analyzed qualitative data from the CATALYST project (LeBrón et al., 2024). We followed a phenomenological approach to develop the research design, interview guides, sample inclusion and exclusion criteria, and analytic process (Michelen et al., 2024). All study protocols were reviewed and approved by the University of California, Irvine Institutional Review Board.

2.1. Interview participants and data collection

Key informants were identified through a purposive sampling method, in which community and academic partners nominated participants based on their familiarity with CHW models in Orange County (Patton, 2014). Participants were selected to represent a range of sectors, including local government leaders, school districts, and community-based non-profit organizations that were involved in some way in community-based COVID-19 response. While government and public health leaders mostly contracted with CBOs that hired CHWs, school districts and CBOs interacted more directly with CHWs.

Community and academic partners developed a semi-structured interview guide informed by the NIMHD Research Framework, the Multidimensional Promotores/Community Health Worker Model, as well as community partner experience and expertise (Alvidrez et al., 2019; Lafarga Previdi & Vélez Vega, 2020; Montiel et al., 2021). Open-ended questions and probes inquired about the local COVID-19 context, the roles of CHWs and institutional actors, perceived structural facilitators and barriers to CHW efforts, and vision for the future. Example questions included: "Based on your experience working with CHWs during the pandemic, what has worked well about these models in Orange County during the COVID-19 pandemic?" and "What could public health departments and policy makers do differently to support the work of CHWs?"

Trained academic partners (AMWL, BNM, JB, MM) conducted one-on-one semi-structured interviews remotely via Zoom between January and April 2023 with a research assistant who supported technical assistance and notetaking. Interviews were conducted in English and lasted an average of 56 min (range: 32–86 min). All interviews were digitally audio and video recorded. Participant attributes, as determined by a brief demographics survey after each interview, are provided in Table 1. City government officials represented four cities in north and

Table 1
Attributes of participants, CATALYST study key informant Interviews, 2023 (n = 15).

	frequency	%
Participant Role		
Appointed city leadership	4	27%
Elected city leadership	2	13%
County public health department leadership	2	13%
County-serving non-profit leadership	3	20%
School district leadership	2	13%
CBO director	1	7%
Community organizer	1	7%
Years worked in role		
1–4 years	7	47%
5–9 years	4	27%
10+ years	4	27%
Age group		
30-39	2	13%
40-49	4	27%
50-59	8	53%
60+	1	7%
Gender		
Woman	9	60%
Man	6	40%
Non-binary	0	0%
Race or Ethnicity		
Asian American (including Chinese, Korean, Filipino)	6	40%
Black/African American	1	7%
Hispanic/Latiné (including Mexican American)	6	40%
White/Caucasian	2	13%

Note: Attributes are self-reported by key informants based on open-ended questions. CBO = community-based organization.

central Orange County—Anaheim, Garden Grove, Irvine, and Santa Ana—areas that experienced some of the greatest COVID-19 disparities in the county (Orange County Health Care Agency, 2020).

2.2. Data analysis

Recorded interviews were professionally transcribed and analyzed using Atlas.ti (Version 23.2.1) software. We used an adapted flexible coding data analysis approach involving five steps (Deterding & Waters, 2021; Michelen et al., 2024). First, the research team indexed transcripts according to major topics included in the interview guide while maintaining analytical reflective memos. Second, lead researchers (BNM, MM) identified relevant indices for the analysis. Third, the lead researcher (BNM) developed an abductive (inductive and deductive) codebook (Tavory & Timmermans, 2014; Vila-Henninger et al., 2024). Fourth, two coders (MP, SC) independently coded the relevant index codes within the transcripts. Fifth, the coders and the lead researcher discussed and reconciled discrepancies between codes until reaching consensus and the intercoder agreement assessment was 0.80 or above (Michelen et al., 2024; O'Connor & Joffe, 2020). Following flexible coding, the lead researcher reviewed the codes and memos and organized the codes into themes and subthemes. Themes are discussed below, with quotations attributed to the speaker using the assigned interview number in brackets (e.g., [1]) to protect anonymity.

3. Results

Our analysis resulted in three overarching and cross-cutting themes. First, we discuss the theme of CHW value from the perspective of participants. This theme focuses on why participants valued CHWs and how systems undervalued CHWs during the pandemic. The second theme we discuss is relational capital—the nature of ties (or lack thereof) between CHWs, their organizations, and public health decision makers. Lastly, we describe the theme of supporting CHW models organizationally, in which participants provided examples of infrastructure needed in the future. The major themes and subthemes are summarized in Fig. 1.

3.1. Perceptions of CHW value

High Value of CHWs. Participants unanimously indicated high regard for CHWs and the CBOs that engage and support them. They cited several reasons for this valuation. First, during the COVID-19 pandemic, government and healthcare representatives recognized that they lacked the established trust of many of the communities disproportionately affected by COVID-19, including communities of color, immigrant communities, and communities with lower socioeconomic status. Participants reflected that local communities often lacked trust in healthcare organizations and/or government agencies. As one school district leader stated, "they don't always trust doctors, they don't always trust the district office, they don't always trust the city." [12]. In addition to lacking trust, healthcare and governmental institutions had limited bandwidth for community outreach. A county public health department leader stated that the public health department could not "wait for people in the community to come to us, because they don't come," and recognized that the county health department still does not have the means to go out and reach all diverse communities [13]. Participants therefore recognized they "needed to partner with" [10] existing CHW organizations to reach the most impacted communities with health information, testing sites, vaccination efforts, rental assistance, and more. Participants emphasized that without the partnership with CBOs, they would not have been able to identify, locate, and reach "the most marginalized, underserved, low-income communities" [10] in Orange County.

Thus, participants described valuing that CHWs had existing community trust and intimate knowledge of effective strategies to connect with communities. This knowledge included familiarity with the ways that "systemic bias" [9] results in the exclusion of communities of color and low-socioeconomic status communities from public health and healthcare institutions. It is with this knowledge that CHWs who "weren't government … weren't city … or county employees" were able to "break down that barrier" between community members and health institutions "to make sure that their community was receiving [the] vital help that they needed" [5]. In other words, participants recalled that CHWs' expertise intimately informed the strategies they used to lessen

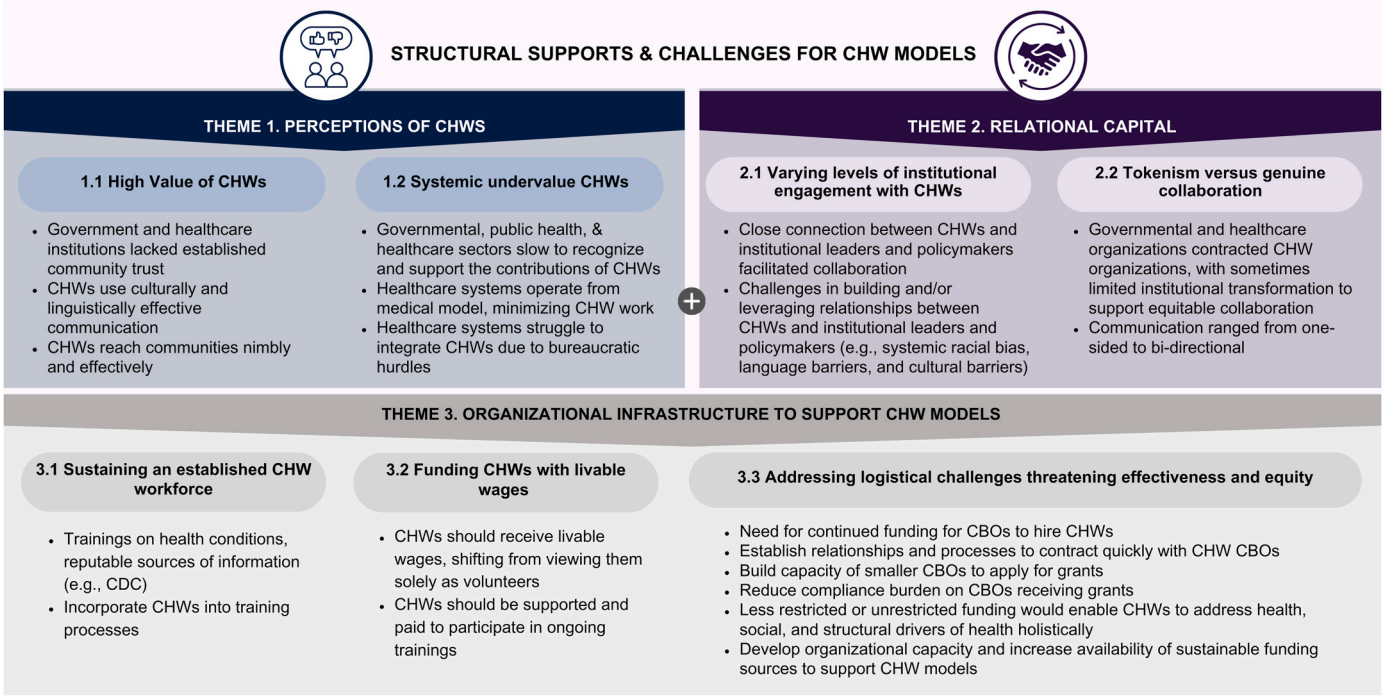

Fig. 1. Themes and subthemes
Notes: CHW = community health worker; CBO = community-based organization.

the structural space between their communities and health institutions. Participants, especially those representing government and healthcare systems, frequently viewed CHWs and CBOs as the "bridge" [3] or "link" [10] between underserved community members and broader public health systems.

Secondly, beyond serving as a "link," participants further noted that CHWs were valuable for their ability to communicate effectively with community members, which involved language skills as well as cultural understanding/sensitivity, existing relationships, relational abilities, and listening skills. As one elected city leader stated, CHW organizations were the "voice that will speak to people in their own language" [5]. Another appointed city leader stated:

> "[What] worked well with the promotora model [was that] not only did they speak the language, but they also knew their neighborhoods … really well, to the point where it was very easy for us not to not only get the information to them, but also get feedback on what worked and what didn't work." [3]

A community organizer stressed the importance of bi-directional communication between public health institutions and CHWs for information sharing and translation, saying, "With the promotores, there has to be … an information loop and feedback loop to get the most updated information" [15] to communities, then back to health institutions. Therefore, effective communication also involved CHWs communicating community members' expressed needs to public health institutions.

One major communication challenge of the COVID-19 pandemic that participants discussed was reaching communities with timely, accurate information about "programs and resources" when "everything was in English" [13]. This county public health department leader explained that "we needed to have the pandemic so [the county public health department] can … realize that … they were not meeting the needs of the residents of … different communities," especially "minorities" (i.e., communities of color) and "non-English speaking people" [13]. According to participants, the need to reach communities with the "right information" about how to stay healthy, where to access resources, and when to be vaccinated was even more urgent in the context of having "to combat the myths and disinformation that was out there" [15] in communities. Therefore, participants described as a major challenge "getting the promotores to have all that information, to understand that information themselves" [15] to counter misinformation, particularly in at-risk non-English speaking and immigrant communities. A county public health department leader described this sense of urgency during times when new information was constantly emerging:

> "The county … they don't have a system to start posting information in different languages. So, one of the things that I was also doing is every time there was something new, I was asking, 'Please, if you have information about a program, about a resource, or about a grant, let me know so I can send that information out to the community, also to the media, so people can find out.'" [13]

These quotes reveal that public health departments and other government entities recognized that they did not have the infrastructure within their organizations to provide life-saving information to the public in various languages. Instead, they had to quickly push information out to CHWs and their organizations so that CHWs could translate this information and effectively reach communities.

A third overarching reason that participants valued CHWs was their ability to reach communities nimbly and effectively, due to their established rapport and flexible engagement with communities. This flexibility stemmed from CHW organizations employing power-building models, as one appointed city leader illustrated when discussing why CHW organizations are "so effective … It's because … they empower their staff to do their job effectively" [11]. They expanded on this to say CHW models are effective because,

> "You're empowering these community healthcare workers, these promotores, to reach out to the community … you're going from having … people come to you [to] provide services … to, your services are going out into the community. You're quadrupling, doubling—your impact is exponentially growing because you have these promotores empowered and with the resources they need to fulfill the mission of the program." [11]

Another appointed city leader emphasized that CHW models worked because "they already had a well-built established relationship[s] … which allowed [them] to do [the work] very quickly" [3]. Overall, CHWs could quickly and effectively tap into their trusting community relationships and well-established neighborhood knowledge, making community outreach initiatives during the pandemic more effective for the public health institutions who partnered with CHW organizations.

Systemic Undervalue of CHWs. While all participants personally endorsed valuing CHW models, interviews simultaneously highlighted how government, public health, and healthcare institutions systematically undervalued CHWs. One non-profit director recognized that in the hospital system they worked in, it took the pandemic for the hospital to realize the value of CHWs, noting that moving forward, there is a need to figure out how to continue the collaboration. They stated,

> "I think [the COVID-19 pandemic] prompted us to really look at how much we were engaging community health workers on a regular basis. As a hospital … never had we really looked at the way in which the community health worker touches across all spectrums of a person's well-being whether it be health, socioeconomic status, education, housing. It really shed a light on how invaluable this work can be. And it took us the pandemic to really see that. And get up to speed on, 'Okay, now that we've done this, what are other ways we need to continue to collaborate with this specific workforce to help us get to the communities we're serving?'" [10]

One appointed city leader, upon reflection, expressed regret at the city not contracting with a CBO mobilizing CHWs earlier or resource them more, saying,

> "We should have invested sooner … and more … Looking back, we should have contracted with them immediately … We could have reached more families had we contracted with them sooner and had we invested more in the organization … because they had the closest connection, and closest understanding, and closest communication and coordination with the people we were trying to serve … there was no shortcoming on behalf of [the CHW organization] … There was a shortcoming on our behalf where we … didn't contract with them soon enough." [11]

These quotes highlight participants who recognized the shortfalls in their organizations' ability to value and therefore engage CHW models.

One community-serving non-profit director distilled the problem of undervaluing CHWs by explaining how hospitals and the healthcare system operate from a "medical model" or "clinical services" model, which minimizes the work of CHWs [16]. They explained that in the healthcare model, "services are always the answer," but CHWs understand that, "yes, we need to get resources and help our community members access services and get the care they need, but it's also through a community equity lens that [CHWs] are more comfortable with … knowing why certain folks and certain communities and certain neighborhoods are under-resourced and experience inequity" [16]. Therefore, CHWs are "devalued or undervalued" because they "live in this middle ground, where they are helping navigate the healthcare system, but also, they are navigating and understanding the community and the community systems that are at play," [16] the latter of which, healthcare systems are not set up to value.

Building upon this, they outlined how it is difficult for healthcare systems to have CHWs "be fully integrated," due to "internal systems" and "barriers that are caused by the healthcare system itself" [16]. The

non-profit director explained that this included fundamental differences in the definition of what a CHW is between CBOs, hospitals, healthcare systems, and licensing entities. Further, they pointed out "hiring practices" creating challenges. They gave an example of a hospital wanting to hire trained CHWs, but the CHWs "were not able to get in through HR because there's a lot of traditional hiring levers that they were not able to access … like requirements of an advanced degree or a bachelor's degree" [16]. Therefore, even though healthcare systems and individuals within them may recognize the value and need to work with and hire CHWs, the "transactional health care model" made it so that "community experience, lived community experience, and nonprofit experiences, [are] undervalued or devalued" [16]. This indicates the need for changes in bureaucratic structures that empower CHWs in their expertise, which lies in their lived experiences of oppression, community knowledge, and community-based solutions—expertise that cannot easily be conferred by a degree. Valuing these CHW roles will allow them to be integrated into healthcare, public health, and government systems.

3.2. Relational capital

The previous theme of CHW value informs how public health decision makers—who were in positions to make important decisions during the COVID-19 pandemic within government, healthcare, funding, and politics—related to CHWs. One participant used the term "relational capital" [14] to describe relationships between CHW organizations and institutions. In this section, we apply the term "relational capital," borrowed from sociology and organizational theory, to describe the quality or closeness of social connections between individuals and organizations that is built on mutual trust and shared expectations of continued interaction (Kale et al., 2000; Zhang et al., 2024). We focus on the relational capital that CHWs and their organizations had, or did not have, with those who had power to implement policies impacting CHWs, their work, and ultimately, community members who CHWs serve.

Varying Levels of Institutional Engagement with CHWs. First, there were varying levels of CHW access and connection to public health and policy makers. Participants cited how close collaboration and connection with CHWs and their organizations facilitated the work, making it fast and efficient during the urgent crisis. One elected city leader took pride in the existing relationships they had with CHWs that they had "been cultivating … over the years" [5]. They explained how they were "invited to a national gathering of promotoras," and how, as a "public servant," they saw it as "valuable in my investment of time" because "they represent neighbors and neighborhoods and issues that are important" [5].

An appointed city leader spoke about the relationships between the school district (which was serving as an organizer of CHWs) and policy makers, which brought resources to communities,

> "We were fortunate enough that … there was a connection between a council member and me as a school board member and the superintendent, we kind of worked very collaboratively to say, like, 'Okay, what needs to be done?' And then we brought the resources to the neighborhoods. That helped a lot." [3]

Another school district leader commended the "relational capital" that CHW organizations had with "institutions, with the school, with the churches, with other organizations" that facilitated the hiring of several CHWs "so they were able to hit the ground running in our neighborhoods" [14]. They further added, "how loose is your link, or how disconnected? That's going to dictate how you survive and respond through a crisis" [14]. This highlights the importance of CHWs and their organizations having pre-existing relationships with policy makers, school districts, and government institutions to be effective at reaching communities with timely information and resources.

Building and/or leveraging these relationships, however, also presented challenges to CHWs and CBOs. As one appointed city leader noted that there were some challenges with connecting CHWs "with somebody who was a county official who didn't speak the language, they only spoke English, and trying to bridge that gap was sometimes a tough situation" [3]. Therefore, sometimes language and perhaps cultural barriers limited CHWs' relationships with county leaders.

A couple of participants described systemic racial bias as a barrier to relationships between public health decision makers and CHW organizations. One CBO leader described how county public health representatives did little outreach to their Black community-serving organization, saying,

> "We shouldn't, as an organization and being in Orange County all these years, I shouldn't have to always hunt down the public health department … especially with COVID-19. They should have been knocking down our door. And I believe that honesty was not practiced. I've been in a lot of meetings [where] they would say, 'Oh, we're trying to find the Black community.' Well, it's not true. Because I simply say, because I'm a truth teller, 'You didn't Google.' … So, that in itself is systemic and a bias." [9]

This interview surfaced how some public health decisionmakers demonstrated a lack of initiative in outreach to CBOs, particularly Black-serving organizations. This is even as county public health leaders recognized that "we have to go to the grassroot community-based organizations that historically have served the population and go through them, and to make sure that we outreach" [2]. As the Black-serving community-organization leader emphasized, the county public health department "need[s] to do a … much better job of identifying who they could bring on board" [9] so that relational capital could be built.

Although systemic bias was mentioned explicitly by only one participant, an elected city leader further implied that systemic racial bias impacted the relational capital that CHW-modeled CBOs had with government agencies. They explained,

> "The municipalities and government agencies cannot turn to the nonprofit organizations, expecting them to do free work all the time. The municipalities can't be giving money to mainstream organizations. I'm calling them mainstream organizations. And then they give pennies on the dollar to those of color that serve communities of color. And that paradigm has to stop." [7]

This implies that CHW organizations representing communities of color received fewer resources and had less relational capital during the pandemic than majority white population-serving "mainstream" organizations, and yet still had to do the work of outreach, education, and advocacy to ensure the survival of their communities. This also implies that government agencies and funders cannot continue to expect CBOs to simply show up when needed without reciprocity. Building relational capital with CBOs may help ensure more equitable partnerships in the future.

Tokenism versus Genuine Collaboration. A second observation is that, depending on whether or not power sharing was practiced in the exchanges between public health institutions and CHW organizations, these relationships could range from engaging in tokenism to genuine collaboration. For the most part, participants expressed the benefits of the transactions between public health and CHW organizations. To illustrate, one of the main ways that government and healthcare partnered with CHW organizations was through contracts. As one appointed city leader explained, "we partnered with probably at least 30 different organizations … the community groups and … then we'd enter into agreements with them. So, there's literally been hundreds of contracts as a result of the funding that we received in our efforts to help our community recover quicker" [1]. On the other hand, one community-serving non-profit leader emphasized that "it's not as simple as putting out a simple contract, but really looking at how are we—we, meaning healthcare systems and maybe county systems—are partnering and not contracting with community organizations and communities themselves to co-develop and co-design what a care team will look like, what an

outreach and an engagement strategy will look like" [16]. This participant stated the importance of "building capacity within healthcare partners to understand and build authentic relationships with community and for community groups, including those that house community health workers, to … advise on creating new systems that are more appropriate for community" [16]. Therefore, participants on the whole expressed that contracts and consultations with CHW organizations were vital to funding and supporting CHW models. However, these relationships can be improved by authentically collaborating with CHW organizations, providing opportunities for those organization leaders to have more power and say in developing the community outreach strategies.

Another way that relationships between government entity and CBO leaders could be improved was through communications, which ranged from being one-sided to more bi-directional. To illustrate, one county public health department leader described communication during the early days of the pandemic as "weekly meetings with the different community groups, with the leaders of the community clinics" that formed the basis of the "connection and communication between county and community groups" [13]. These meetings seemed to be essential to provide communities with the necessary information. But, one CBO director gave an example of how unidirectional communication with the county public health department could be:

> "Let's just say … somebody from Orange County Health Agency contacts me and says, 'Oh, I have … something that the Black community is needing. And I want to partner with you on getting this information out about HIV and AIDS. How can I partner?' Well, I already know you're not partnering with me. You're bringing your briefcase and your presentation for me to do all of the work to get the information out and tapping into the network, and that is not a partnership. That is bringing in a presentation about what you're needing and knowing." [9]

In other words, public health departments may approach communication as one-sided, not truly partnering with CBOs. This quote may also imply that there was a lack of existing partnership or relationship between the CBO and the public health agency. A different non-profit leader gave an example of how communication and partnership could be more bilateral and collaborative, emphasizing,

> "The most integral part is that … we work around their [CHWs'] schedules. Again, this figurative table, not just invite them, but really have them be the ones informing us on what could have been better, or what is needed … because we won't know where to uncover all the needs if we don't have them at the table leading the conversation … to be most responsive." [8]

Thus, while some participants touted their strong or many relationships with CHWs and CBOs, others highlighted gaps in the reach of public health decision makers due to the lack of relational ties and inattention to relational deficiencies. Participants representing city and county leadership saw great success with partnering with non-profit CHW organizations through government contracts. Participants representing nonprofit organizations highlighted the need to push beyond tokenistic interactions to establish power-sharing collaboration with CHW organizations. We can surmise that developing more egalitarian relationships between CBOs and healthcare, government, and other nonprofit leaders could better support CHWs and result in improved community-based solutions to public health crises.

3.3. Organizational infrastructure to support community health worker models

The two prior themes of CHW value and relational capital provide a framework for understanding and applying the recommendations and best practices that participants suggested to support CHW models.

Sustaining an Established CHW Workforce. Valuing CHWs can translate into having an established, trained workforce of CHWs ready to be engaged in a public health emergency, and/or to respond to chronic health issues in communities. A county public health department leader emphasized this saying, "You cannot wait until there's a crisis … because people need to … go through training and coaching … And so I hope that's the lesson learned, that the state will create a lot of training program[s] … to make sure that you have a large pool [of CHWs]" [2]. They stated how training includes learning how to "educate people on chronic health condition[s]" other than COVID-19, as well as staying up-to-date on health information from reputable sources like the Centers for Disease Control and Prevention (CDC) [2]. Still, CBOs need the capacity to train CHWs. One CBO leader explained that during the pandemic, "One of my biggest lessons was how much capacity could you offer. And then what I did to provide a solution was to train other staff members and have them to share in the responsibility" [9]. They went on to describe how training CHWs within their CBO involved "prescreening, identifying individuals who would add to the work." Also, training CHWs was collaborative so that CHWs saw themselves as "valuable individuals who are part of the solution" [9]. As a result, training can value CHWs through equitable partnership "from a community-wide perspective of problem solving" [9].

Funding *CHWs with Livable Wages.* At the same time, participants recognized that CHWs included both paid and volunteer staff. One county department of public health leader asserted that CHW work should be reimbursable and not volunteer. They said,

> "Livable wages for community health worker is very important … That's the most important thing of all … I don't think volunteer works. I don't believe in volunteer. I believe that people should get paid for the work that they do, but they need to get paid at a livable wage." [2]

Another community organizer emphasized this sentiment: "Promotores are not [well] paid, or a lot of them are volunteer-based" [15]. They went on to say that CHWs should earn "a liveable wage" and get "paid and compensated for their work" [15]. Similarly, a school district leader believed CHWs "deserve something more … we need to pay them, because honestly, I feel like they saved more lives than any listed" [12].

One CBO leader acknowledged grappling with the reality that their staff were both paid and volunteer. They were able to retain volunteers "for over five or seven years because they see that they are part of something bigger than themselves … being paid or not being paid, but they still feel valued" [9]. This shows how retention was not only about funding, but also about value of CHWs. Still, this leader explained how public health departments do not appreciate this nuance or recognize the difference between volunteers and paid staff, saying,

> "Public health doesn't realize that … as managing the budget and [CHWs'] work, I have to always factor [the budget] in, that I cannot have four people going to a training … who's paying them to go to that meeting? Because all of the budget is allocated to a different line item … I have to protect the funding." [9]

This reveals a need for public health and healthcare institutions to recognize CHWs should be paid and supported to receive ongoing training. As a community-serving nonprofit leader highlighted,

> "A lot of these [community-based] organizations are just making it by. They have limited access to community health workers themselves, or maybe this is not their sole job. And so, it's building the nonprofit infrastructure that allows for adequate levels of staffing and reimbursement and compensation for their work. And then, also allowing for an understood pipeline and education, training, and community embracing of community health workers so that there's a steady supply, that it's seen as a viable career and not just something that, maybe, someone's aunt does on the side." [16]

Participants recognized a large and steady pool of trained CHWs is critical. Yet, maintaining adequate levels of CHWs means valuing CHW

work by having the infrastructure and funding to support training, education, and offer livable wages.

Addressing Logistical Challenges Threatening Effectiveness and Equity. Funding for CHWs and the organizations that house them was noted by participants as extremely important. Participants recognized the essential nature of funding for CHWs at CBOs. As one appointed city leader described their partnership with CBOs,

> "I would say, nonprofits and service providers live on grants. The ability to be able to deliver information and be a community partner is, if I receive a grant to share information about COVID and access to vaccinations or COVID testing, that's what I'm going to do. So, I appreciate that those partners are available." [4]

Another appointed city leader described their supportive role of CHW organizations through funding, saying,

> "Let's go ahead and give [CBOs] the money to expand that [CHW] role, and make sure that we support that. So I think the funding was the key when it came to expanding the [CHW] model … [the CHW organization], they were the ones who actually said, 'hey, we see a model which worked in different neighborhoods, and we're going to tap into that, and we're going to bring them in and support us with the money.' And that's how we supported them." [3]

A county public health department leader stated the nature of this funding relationship in clear terms:

> "Well, we fund them. We fund all the initiatives to … hire community worker[s] to go into the community. I mean, [we] don't have community worker[s] in the county, [there] is not a classification of county worker. So we know we have to fund the community-based organization[s] to hire community worker[s] to go into the community. That's what we do … we provide funding." [2]

These quotes represent participants in government who saw the value of CHW organizations in reaching minoritized communities and saw government's role as simply funding the CHW work, especially since their institutions lacked the infrastructure to support CHWs.

While funding CHWs was clearly vital, the nature of these grant funds meant that the well-intentioned outflow of money came with logistical challenges that threatened effectiveness and equity. There were complications, such as the flow of funds being too little or too slow, with cities "calling on all the various [CHW] organizations, and initially … not having even the funding mechanism in which to do the work that needed to be done" [7]. This elected city leader said, "the fact that [CHWs] rose up" to do community response at the onset of the pandemic "is nothing short of incredible" [7].

One county-serving non-profit leader described how the competitive nature of funding applications caused strife between nonprofit organizations, as they were competing over the same pots of funding to provide service to their communities. They described the situation as a "disservice to the community" and a "blow to progress" [8]. They went on to describe how their organization created a "power building fund" to support smaller nonprofit organizations "have a place at the table … to be inclusive" [8]. A community organizer likewise pointed out the need to build organization capacity for "more local, smaller organizations" to receive training to "know how to … apply for government funding" [15]. A leader of a more established CHW organization felt that the process of receiving funds and being "supervised" by funders is unnecessary, leading to "less [funds being put] into the community" [9]. They stated that as an organization "we are very knowledgeable and capable of managing contracts and understanding our communities" so that money would be better spent towards the community, rather than paying government staff to supervise CBOs [9]. This leader perceived the public health department as lacking understanding of how a CBO operates as a "small business" that has a "budget like any organization does" and has gone through "all of the compliance like any other business, any other corporation" [9].

Another challenge participants cited was the restrictive nature of funding, which often supported just one type of service (e.g., testing), when in fact, the work CHWs do is far more holistic and upstream. To illustrate, one participant pointed out how CHWs understand the "social determinants of health" from "the community side" [16]. On the one hand, a "service approach" says, "'Okay, well, we linked someone with housing for the night, so we addressed their social determinants of housing needs.'" However, the CHW understands "there are various drivers that are causing housing insecurity, so how do we address that while meeting [the community's] immediate need?" [16]. Therefore, funders with overly restricted funding did not always recognize and value CHWs' understanding and abilities to address the social and structural drivers of health. As one appointed city leader saw it,

> "The state and federal government that provides grants makes it so difficult. So, if you have an organization that's doing fabulous work and to get money they're applying for your grant, but you've boxed them in on what they can use the grant for. And, you know, they're out in the field and they could do so much more if they could just use the grant for just slightly different. They need to provide assistance for an overall arching reason and let the professionals do their job." [1]

This shows the importance of valuing CHW work through less restrictive funds, in addition to setting up systems to fund the work that CHWs do to address health and the social and structural drivers of health holistically, so that their work is not partially funded or underfunded.

Limited capacity of CHW organizations to meet all the work demands and expectations was linked to limited amount and scope of funding. Many participants saw the solution to this problem was, as one county department of public health leader stated, simply to "get more funding to those groups" [13]. However, dependence on government funding also led to precarity in CHW workforce. As funding decreased over the course of the pandemic, this meant that organizations could not retain their CHW workforce. One school district leader noted, "I know funding would be about to run out, or it would be precarious, right? So … we didn't know if we were going to have health promoters after the new year, or in a couple of months … And then once the team is reduced, there is not enough resources to deploy all the way around" [14]. One non-profit director thought the solution was to sustain funds to build organizational capacity. They described how for one CBO, "It made no sense for us to cut off funding … And so, we gave them another year of funding, as well as another year of technical assistance, support, coaching, and … joint strategy development … and there [were] a lot of outcomes, I think, directly related to that, that are still felt now" [16]. Therefore, more work is needed to develop both CHW organization capacity and increase the availability of sustainable funding sources to support CHW models.

4. Discussion

In this analysis, we set out to uncover structural factors that supported or challenged the work of CHWs and their organizations during the COVID-19 pandemic to inform how to support CHW models to address community health inequities in the future. We found broad themes of perceptions of CHW value, relational capital, and organizational infrastructure to support CHW models.

Participants in this study viewed CHWs as crucial for successful COVID-19 response due to CHWs' deep knowledge of and rapport with communities, which public health institutions lacked. Although participants did not always have knowledge of the specific strategies that CHWs employed to engender trust in the community, participants largely attributed the success of CHWs to the rich ties they have in communities. These observations align with prior literature that similarly endorsed the ways that CHWs impact health through outreach, trust-building, community empowerment, and focus on social and structural determinants (Malcarney et al., 2017). At the same time, some

participants highlighted how CHWs were undervalued by healthcare and government systems that failed to recognize or were slow to acknowledge the crucial role CHWs have in outreach and connection with historically excluded communities. Prior to the COVID-19 pandemic, research showed that CHWs described how employers did not recognize their contributions and health systems often did not understand CHW roles and benefits, which likely led to poor integration of CHWs into public health systems (Gutierrez et al., 2021). Our analysis adds to this research at a time when many healthcare systems have started recognizing the importance of CHWs and are now working to integrate, expand, and sustain CHW models in the future (Nawaz et al., 2023; Payne et al., 2017).

In Orange County, the COVID-19 response was impacted by the varying levels of relational capital that CHWs and their organizations had with public health decisionmakers. Participants noted that the pandemic response was most successful when CBOs working with CHWs had existing relationships and established processes for collaborating with key public health decisionmakers and policymakers. This seems to have facilitated the receipt of contracts and faster engagement of CHWs during the height of the pandemic. This finding suggests the importance of government and healthcare agencies having invested relationships with CHW-hiring CBOs prior to major public health crises to ensure readiness when new crises emerge. Furthermore, our findings point to the importance of government and healthcare agencies being aware of their implicit biases and working to establish authentic relationships with CBOs that outreach to the diverse communities within their service areas. While most prior literature has focused on the relationships between CHWs and the communities they serve, our findings are among the few to highlight the importance of building and maintaining relationships between CHW-hiring CBOs and institutions in government and healthcare (Knowles et al., 2023).

While contracts were seen as essential to supporting CHW models, participants pointed out that partnership between CHW CBOs and funding agencies should be established in a collaborative and relevant manner. This approach avoids partnership that is simply tokenistic, which does not sustainably support CHWs. Processes that can facilitate genuine collaboration may include incorporating CHWs into decision making processes, working with CHWs' schedules, and expressing value for CHWs' essential roles. CHW value could be expressed through enhanced capacity development, leadership opportunities, and equitable pay. Further, institutional and organizational leaders may engage in building career ladders for CHWs, valuing their community expertise and years of experience equitably (e.g., comparable to a college degree). Establishing more equitable partnerships between CHWs and public health decisionmakers may also facilitate and improve community-based solutions to be more effective at addressing health inequities, as is suggested in our analysis and by other public health practitioners (Ignoffo et al., 2022; Rodriguez Espinosa et al., 2024). Therefore, we suggest that public health decisionmakers consider applying tools created to advance community-driven efforts, such as "The Spectrum of Community Engagement to Ownership" (Gonzalez, 2019).

In recent years, there have been efforts to professionalize CHW roles and standardize their training. These efforts have delineated the roles of CHWs and provided suggestions for training, continuing education, and certification (Covert et al., 2019; Ruiz et al., 2012). Our analysis complements these efforts. Notably, although participants mentioned ongoing training and certification for certain skills, our analysis showed that CHWs do not need to be certified to be effective. Instead, institutional leaders expressed that CHWs should be valued as professionals by being hired, rather than volunteer, and be paid living wages as members of the essential public health workforce. Such funding models would incorporate living wages and benefits for CHWs, in addition to administrative costs of managing grants and sustaining the infrastructure behind effective CHW models. At the same time, some organization leaders noted their reliance on volunteer CHWs who were recruited, trained, and mobilized during the pandemic when the need for lay-person CHWs was high. In these cases, CBOs trained and mobilized volunteer CHWs based on their capacity. Together, these findings emphasize the importance of supporting and funding CBOs that recruit, train, and engage CHWs so that they have the capacity to support CHWs sustainably as professionals.

Lastly, this study highlighted the importance of supporting CHW models by funding them. Participants cited the deployment of COVID-19 response funds to support and hire CHWs leading to major successes during the pandemic. At the same time, the well-intentioned outflow of money came with logistical challenges, including getting grants and contracts set up quickly, varying levels of capacity of CBOs to receive funds, and the tenuous nature of funds decreasing or ending altogether as the pandemic continued. Some leaders noted that funds were insufficient to support the work of CHWs to address inequities due to the limited amount or restrictive nature of grants. Constraints with how to use funds or bureaucratic oversight mechanisms could be onerous and hamper the implementation of CHW models. Furthermore, the instability of funding made it difficult for CBOs to employ and sustain their CHW workforce to be ready to respond.

Knowles et al. (2023) observed similar challenges with funding mechanisms in their review of the literature and, in alignment with participants' suggestions in this study, point to the importance of more sustainable funding mechanisms for CBOs and financing models that value CHW labor. Sustainable funding models include reimbursement for CHW services and partnership with CBOs through state Medicaid agencies, a financing practice that has been implemented by several states in recent years (Crumley et al., 2023). For example, effective July 2022, California began covering CHW services under its Medi-Cal benefits and additionally expanded an initiative for Medi-Cal health plans to contract with CHW-hiring CBOs (Kumar et al., 2022). Still, there remain problems with Medi-Cal reimbursement, including reimbursement mechanisms and rates being insufficient to cover the scope of the services that CHW-hiring CBOs provide. For example, CBOs may not be able to bill for the time it takes to identify and outreach to Medi-Cal members in their service area (Durham, 2023). Further, CBOs should be consulted with, trained in, and resourced to develop infrastructure to bill Medicaid systems. Infrastructure that CBOs need to bill state Medicaid systems may include finance- and compliance-trained personnel, technological expertise, secure computer systems, as well as cash reserves to sustain CBOs while awaiting reimbursements (Crumley et al., 2023). Smaller CBOs especially may need financial and technical support to build the type of infrastructure needed to receive Medicaid reimbursements. More state and federal efforts are needed to diversify and sustain funding for CBOs to support a robust CHW workforce (Rush et al., 2020).

4.1. *Strengths and limitations*

A strength of this analysis is that it examined the perspectives of institutional representatives, organizational leaders, and policymakers on CHW models—important perspectives given the need for structural transformations to support these models. Employing a qualitative approach with semi-structured individual interviews provided deep contextual insights into individuals' understanding of and engagement with CHW models. These insights can inform educational, communication, and advocacy efforts to support and sustain these models. The research was also strengthened by community and academic partners collaborating in all processes including study design, data collection, analysis, interpretation, and dissemination. The community-based participatory approach of this study sustained community capacity and led to more practical research implications. Future research can test how implementation of the recommendations provided can impact CHW models and community health.

Our findings have some limitations. First, we recruited participants using purposive sampling, which allowed us to focus on interviewees most familiar with CHW models in the county (Patton, 2014). Our

findings are representative of only those perspectives, not of institutional leaders or policymakers who were not familiar with or not supportive of CHW models. While study participants were familiar with CHW models, most did not have specific insights into the operational details or everyday workings of CHWs in communities. More research is needed to highlight on-the-ground experiences and feelings of CHWs, especially on topics of structural barriers and supports.

While there were significant impacts of the COVID-19 pandemic on Black, Native American, and Pacific Islander communities in Orange County, participants spoke less about CHW models in these communities. Accordingly, these data provide deeper insights into understandings and experiences of CHW models for Asian and Latiné communities. Although participants represented most of those originally nominated by community and academic partners, some nominees were unable to participate given legitimate demands on their time and energy. Nevertheless, we gained perspectives representing a wide range of sectors—including CBO leaders, city leadership, county public health department leadership, funders, policymakers, and school districts.

Lastly, our data were collected in 2023, as communities were increasingly engaging in in-person activities and COVID-19 resources were diminishing. The time lapse between the pandemic's onset in early 2020 and our interviews may have introduced recall bias, with less specific recollections of the pandemic's initial stages. Additionally, starting July 1, 2022, the California Department of Health Care Services (DHCS) began allowing some CHW services to be billed to Medi-Cal, the state's Medicaid program (California Department of Health Care Services, 2024). This shift may have increased the awareness of CHW models among study participants who were interviewed in 2023.

5. Conclusion

CHW models were essential to equitable emergency response and recovery efforts during the COVID-19 pandemic. CHWs connected low-income, communities of color with essential resources and information necessary for protecting health, and they created feedback loops of communication with public health leaders to inform and implement flexible strategies for addressing inequities. Lessons learned during the COVID-19 pandemic inform efforts to ensure that CHW models can be successfully expanded to respond in future public health crises and to address continued health inequities (Michener et al., 2020). Structural change is needed to support CBOs that engage CHWs and to sustain a CHW workforce that is valued for their vital roles.

CRediT authorship contribution statement

Brittany N. Morey: Writing – review & editing, Writing – original draft, Visualization, Validation, Supervision, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Melina Michelen:** Writing – review & editing, Writing – original draft, Visualization, Validation, Supervision, Resources, Project administration, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Madeleine Phan:** Validation, Methodology, Investigation, Formal analysis. **Sarah Cárdenasa:** Validation, Methodology, Investigation, Formal analysis, Data curation. **Mary Anne Foo:** Writing – review & editing, Validation, Supervision, Investigation, Funding acquisition, Data curation, Conceptualization. **Patricia J. Cantero:** Writing – review & editing, Validation, Supervision, Investigation, Funding acquisition, Data curation, Conceptualization. **Samantha Peralta:** Validation, Supervision, Investigation, Formal analysis. **Noraima Chirinos:** Writing – review & editing, Validation, Supervision, Investigation, Formal analysis. **Rocio Salazar:** Validation, Supervision, Investigation, Formal analysis. **Gloria Itzel Montiel:** Writing – review & editing, Validation, Investigation. **Sora Park Tanjasiri:** Writing – review & editing, Writing – original draft, Validation, Supervision, Resources, Project administration, Methodology, Funding acquisition, Data curation, Conceptualization. **John Billimek:** Validation, Supervision, Resources, Project administration, Methodology, Funding acquisition, Data curation, Conceptualization. **Alana M.W. LeBrón:** Writing – review & editing, Writing – original draft, Visualization, Validation, Supervision, Resources, Project administration, Methodology, Investigation, Funding acquisition, Data curation, Conceptualization.

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References

Alvidrez, J., Castille, D., Laude-Sharp, M., Rosario, A., & Tabor, D. (2019). The national Institute on minority health and health disparities research framework. *American Journal of Public Health, 109*(S1), S16–S20. https://doi.org/10.2105/AJPH.2018.304883

American Public Health Association. (2024). American Public Health Association. *Community Health Workers*. Retrieved August 2, 2024 from https://www.apha.org/apha-communities/member-sections/community-health-workers/.

Balcazar, H., Rosenthal, E. L., Brownstein, J. N., Rush, C. H., Matos, S., & Hernandez, L. (2011). Community health workers can Be a public health force for change in the United States: Three actions for a new paradigm. *American Journal of Public Health, 101*(12), 2199–2203. https://doi.org/10.2105/Ajph.2011.300386

Bhaumik, S., Moola, S., Tyagi, J., Nambiar, D., & Kakoti, M. (2020). Community health workers for pandemic response: A rapid evidence synthesis. *BMJ Global Health, 5*(6). https://doi.org/10.1136/bmjgh-2020-002769

California Department of Health Care Services. (2024). Community health workers. State of California. Retrieved August 2 from https://www.dhcs.ca.gov/community-health-workers.

Covert, H., Sherman, M., Miner, K., & Lichtveld, M. (2019). Core competencies and a workforce framework for community health workers: A model for advancing the profession. *American Journal of Public Health, 109*(2), 320–327. https://doi.org/10.2105/AJPH.2018.304737

Crumley, D., Houston, R., & Bank, A. (2023). Incorporating community-based organizations in Medicaid efforts to address health-related social needs: Key state considerations. https://www.chcs.org/media/Incorporating-Community-Based-Organizations-in-Medicaid-Efforts-to-Address-Health-Related-Social-Needs_040623.pdf.

Deterding, N. M., & Waters, M. C. (2021). Flexible coding of in-depth interviews: A twenty-first-century approach. *Sociological Methods & Research, 50*(2), 708–739.

Durham, D. (2023). *All plan letter 22-016 (revised), subject: Community health worker services benefit.* Sacramento, CA: California Health and Human Services Agency. Retrieved from https://www.dhcs.ca.gov/formsandpubs/Documents/MMCDAPLsandPolicyLetters/APL2022/APL22-016.pdf.

Gonzalez, R. (2019). The spectrum of community engagement to ownership. https://movementstrategy.org/wp-content/uploads/2021/08/The-Spectrum-of-Community-Engagement-to-Ownership.pdf.

Gutierrez, A., Young, M. T., Duenas, M., Garcia, A., Marquez, G., Chavez, M. E., Ramirez, S., Rico, S., & Bravo, R. L. (2021). Laboring with the heart: Promotoras' transformations, professional challenges, and relationships with communities.

Family & Community Health, 44(3), 162–170. https://doi.org/10.1097/FCH.0000000000000286

Heller, J. C., Givens, M. L., Johnson, S. P., & Kindig, D. A. (2024). Keeping it political and powerful: Defining the structural determinants of health. *The Milbank Quarterly, 102*(2), 351–366. https://doi.org/10.1111/1468-0009.12695

Horwitz, L. I., Chang, C., Arcilla, H. N., & Knickman, J. R. (2020). Quantifying health systems' investment in social determinants of health, by sector, 2017-19. *Health Affairs, 39*(2), 192–198. https://doi.org/10.1377/hlthaff.2019.01246

Ignoffo, S., Margellos-Anast, H., Banks, M., Morris, R., & Jay, K. (2022). Clinical integration of community health workers to reduce health inequities in overburdened and under-resourced populations. *Population Health Management, 25*(2), 280–283. https://doi.org/10.1089/pop.2021.0376

Ingram, M., Schachter, K. A., Sabo, S. J., Reinschmidt, K. M., Gomez, S., Zapien, De, J, G., & Carvajal, S. C. (2014). A community health worker intervention to address the social determinants of health through policy change. *Journal of Primary Prevention, 35*(2), 119–123. https://doi.org/10.1007/s10935-013-0335-y

Kale, P., Singh, H., & Perlmutter, H. (2000). Learning and protection of proprietary assets in strategic alliances: Building relational capital. *Strategic Management Journal, 21*(3), 217–237. https://doi.org/10.1002/(SICI)1097-0266(200003)21:3<217::AID-SMJ95>3.0.CO;2-Y

Kangovi, S., Mitra, N., Grande, D., Long, J. A., & Asch, D. A. (2020). Evidence-based community health worker program addresses unmet social needs and generates positive return on investment. *Health Affairs, 39*(2), 207–213. https://doi.org/10.1377/hlthaff.2019.00981

Knowles, M., Crowley, A. P., Vasan, A., & Kangovi, S. (2023). Community health worker integration with and effectiveness in health care and public health in the United States. *Annual Review of Public Health, 44*, 363–381. https://doi.org/10.1146/annurev-publhealth-071521-031648

Kumar, N., Jones, S., Marshall, M., & Ostrom, S. (2022). A hard day's work: Promoting sustainable financing for community health workers. https://familiesusa.org/wp-content/uploads/2022/09/CHW-Sustainable-Financing.pdf.

Lafarga Previdi, I., & Vélez Vega. (2020). Health disparities research framework adaptation to reflect Puerto Rico's socio-cultural context. *International Journal of Environmental Research and Public Health, 17*(22), 8544. https://doi.org/10.3390/ijerph17228544

LeBrón, A. M. W., Michelen, M., Morey, B., Hernandez, M., G, I., Cantero, P., Zárate, S., Foo, M. A., Peralta, S., Chow, J. J., Mangione, J., Tanjasiri, S., & Billimek, J. (2024). Community activation to TrAnsform local sYSTems (CATALYST): A qualitative study protocol. *International Journal of Qualitative Methods, 23*, Article 16094069241284217. https://doi.org/10.1177/16094069241284217

Logan, R. I., & Castañeda, H. (2020). Addressing health disparities in the rural United States: Advocacy as caregiving among community health workers and. *International Journal of Environmental Research and Public Health, 17*(24). https://doi.org/10.3390/ijerph17249223

Malcarney, M. B., Pittman, P., Quigley, L., Horton, K., & Seiler, N. (2017). The changing roles of community health workers. *Health Services Research, 52*, 360–382. https://doi.org/10.1111/1475-6773.12657

Michelen, M., Phan, M., Zimmer, A., Coury, N., Morey, B., Montiel Hernandez, G., Cantero, P., Zarate, S., Foo, M. A., Tanjasiri, S., Billimek, J., & LeBrón, A. M. W. (2024). Practical qualitative data analysis for public health research: A guide to a team-based approach with flexible coding. *International Journal of Qualitative Methods, 23*, Article 16094069241289279. https://doi.org/10.1177/16094069241289279

Michener, L., Aguilar-Gaxiola, S., Alberti, P. M., Castaneda, M. J., Castrucci, B. C., Harrison, L. M., Hughes, L. S., Richmond, A., & Wallerstein, N. (2020). Engaging with communities - lessons (Re)learned from COVID-19. *Preventing Chronic Disease, 17*, E65. https://doi.org/10.5888/pcd17.200250

Montiel, G. I., Moon, K. J., Cantero, P. J., Pantoja, L., Ortiz, H. M., Arpero, S., Montanez, A., & Nawaz, S. (2021). Queremos transformar comunidades: Incorporating civic engagement as an equity strategy in promotor-led COVID-19 response efforts in latinx communities. *Harvard Journal of Hispanic Policy, 33*, 79–102.

Nawaz, S., Moon, K. J., Vazquez, R., Navarrete, J. R., Trinh, A., Escobedo, L., & Montiel, G. I. (2023). Evaluation of the community health worker model for COVID-19 response and recovery. *Journal of Community Health, 48*(3), 430–445. https://doi.org/10.1007/s10900-022-01183-4

O'Connor, C., & Joffe, H. (2020). Intercoder reliability in qualitative research: Debates and practical guidelines. *International Journal of Qualitative Methods, 19*, Article 1609406919899220.

Orange County Health Care Agency. (2020). COVID-19 case counts and testing figures. https://occovid19.ochealthinfo.com/coronavirus-in-oc.

Patton, M. Q. (2014). *Qualitative research & evaluation methods: Integrating theory and practice. Sage publications*.

Payne, J., Razi, S., Emery, K., Quattrone, W., & Tardif-Douglin, M. (2017). Integrating community health workers (CHWs) into health care organizations. *Journal of Community Health, 42*(5), 983–990. https://doi.org/10.1007/s10900-017-0345-4

Peretz, P. J., Islam, N., & Matiz, L. A. (2020). Community health workers and covid-19-addressing social determinants of health in times of crisis and beyond. *New England Journal of Medicine, 383*(19). https://doi.org/10.1056/NEJMp2022641

Perry, H. B., Chowdhury, M., Were, M., LeBan, K., Crigler, L., Lewin, S., Musoke, D., Kok, M., Scott, K., Ballard, M., & Hodgins, S. (2021). Community health workers at the dawn of a new era: 11. CHWs leading the way to "health for all". *Health Research Policy and Systems, 19*(Suppl 3). https://doi.org/10.1186/s12961-021-00755-5

Rodriguez Espinosa, P., Vazquez, E., AuYoung, M., Zaldivar, F., Cheney, A. M., Sorkin, D., Zender, R., Corchado, C. G., & Burke, N. J. (2024). Partnering with community health workers to address COVID-19 health inequities: Experiences of the California alliance against COVID-19. *American Journal of Public Health, 114*(S1), S45–S49. https://doi.org/10.2105/AJPH.2023.307471

Ruiz, Y., Matos, S., Kapadia, S., Islam, N., Cusack, A., Kwong, S., & Trinh-Shevrin, C. (2012). Lessons learned from a community-academic initiative: The development of a core competency-based training for community-academic initiative community health workers. *American Journal of Public Health, 102*(12), 2372–2379. https://doi.org/10.2105/AJPH.2011.300429

Rush, C., Smith, D. O., Allen, C., & Mavhungu, B. (2020). Sustainable financing of community health worker employment. https://nachw.org/wp-content/uploads/2023/06/SustainableFinancingReportOctober2020.pdf.

Sabo, S., O'Meara, L., Russell, K., Hemstreet, C., Nashio, J. T., Bender, B., Hamilton, J., & Begay, M. G. (2021). Community health representative workforce: Meeting the moment in American Indian health equity. *Frontiers in Public Health, 9*. https://doi.org/10.3389/fpubh.2021.667926

Tavory, I., & Timmermans, S. (2014). *Abductive analysis: Theorizing qualitative research*. University of Chicago Press.

US Census Bureau. (2021). Quick facts: Orange county, California (Quick Facts, Issue https://www.census.gov/quickfacts/fact/table/orangecountycalifornia/PST045219.

Valeriani, G., Vukovic, I. S., Bersani, F. S., Diman, A. S., Ghorbani, A., & Mollica, R. (2022). Tackling ethnic health disparities through community health worker programs: A scoping review on their utilization during the COVID-19 outbreak. *Population Health Management, 25*(4), 517–526. https://doi.org/10.1089/pop.2021.0364

Vila-Henninger, L., Dupuy, C., Van Ingelgom, V., Caprioli, M., Teuber, F., Pennetreau, D., Bussi, M., & Le Gall, C. (2024). Abductive coding: Theory building and qualitative (re) analysis. *Sociological Methods & Research, 53*(2), 968–1001.

Washburn, D. J., Callaghan, T., Schmit, C., Thompson, E., Martinez, D., & Lafleur, M. (2022). Community health worker roles and their evolving interprofessional relationships in the United States. *Journal of Interprofessional Care, 36*(4), 545–551. https://doi.org/10.1080/13561820.2021.1974362

Washburn, K. J., LeBron, A. M. W., Reyes, A. S., Becerra, I., Bracho, A., Ahn, E., Urzua, A. S., Foo, M. A., Zarate, S., Tanjasiri, S. P., & Boden-Albala, B. (2022). Orange county, California COVID-19 vaccine equity best practices checklist: A community-centered call to action for equitable vaccination practices. *Health Equity, 6*(1), 3–12. https://doi.org/10.1089/heq.2021.0048

Wells, K. J., Dwyer, A. J., Calhoun, E., & Valverde, P. A. (2021). Community health workers and non-clinical patient navigators: A critical COVID-19 pandemic workforce. *Preventive Medicine, 146*. https://doi.org/10.1016/j.ypmed.2021.106464

Zhang, X., Shen, W., Tang, W., Duffield, C. F., Hui, F. K. P., Zhang, L., & Lou, C. (2024). How to improve the effects of knowledge governance on individual learning across projects: From the perspective of relational capital. *International Journal of Project Management, 42*(1), Article 102562. https://doi.org/10.1016/j.ijproman.2024.102562