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ORIGINAL PAPER

Community Health Workers as *Puentes*/Bridges to Increase COVID-19 Health Equity in Latinx Communities of the Southwest U.S.

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Abstract

This study documents the pivotal role that Community Health Workers (CHW) played while supporting underserved Latinx communities affected by COVID-19-related health inequities. With the support of CHWs' agencies historically serving three Latinx-dense counties in Arizona, we recruited CHWs who participated in a state-wide COVID-19 testing project. Using phenomenology and narrative qualitative research methods, five focus groups were facilitated in Spanish between August and November 2021. Bilingual research team members conducted the analysis of the Spanish verbatim transcripts and CHWs reviewed the results for validity. Three interconnected themes reflected the CHWs experiences: (1) CHWs as *puentes*/bridges with deep community embeddedness through shared experiences and social/cultural context, (2) CHWs as communication brokers and transformational agents, playing a pivotal role in responding to the health and socioeconomic challenges posed by the COVID-19 pandemic, (3) CHWs satisfaction and frustration due to their dual role as committed community members but unrecognized and undervalued frontline public health workers. These findings emphasize the CHWs' commitment towards supporting their communities, even amidst the stressors of the pandemic. It is important to continue to integrate the role of CHWs into the larger healthcare system as opposed to relegating them to short term engagements as was the case during the COVID-19 pandemic. This article provides a set of practice, policy, and future research recommendations, emphasizing the need to allocate greater budgetary and training resources in support of CHWs.

Keywords Community health workers · *Promotoras* · Health equity · COVID-19 · Latinx Communities

Introduction

The coronavirus (COVID-19) pandemic brought the social determinants of health (SDoH) to the forefront of discussions regarding health equity in the United States (U.S.) and worldwide [1, 2], World Health Organization (WHO), 2021. SDoH are the conditions in which people are born, grow, work, live, and age, and the differential access to power, money, and other resources they have [3]. SDoH are crucial when assessing the impact of contextual factors on the health status of diverse populations as these have been identified as major drivers for health inequities, particularly during global health crises such as the COVID-19 pandemic [3, 4].

Minority racial and ethnic groups in the U.S., including Latinx and Black/African American populations, have experienced health disparities long before COVID-19, but the pandemic made the existing inequities worse [5–7]. These communities were disproportionally affected during the early stages of the COVID-19 pandemic [8, 9]. In Latinx communities, disparities in accessing COVID-19 preventive care, including testing and vaccination have been attributable to low digital literacy, low access to health insurance and health care, unfamiliarity with the U.S. healthcare system, and linguistic challenges, [10–12]. To address historical and COVID-19-related health care disparities, there is a need to consider diverse SDoH to expand and/or implement healthcare models that are accessible, welcoming and affordable to all [1, 13].

Community Health Workers (CHWs) are frontline public health workers who are trusted members of local communities serving as culturally appropriate bridges between healthcare facilities, community-based services, and community members in need of those services [14]. Among

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Latinx communities, CHWs -commonly known as *Promotoras*- address community-based impacts of SDoH outside of the clinical setting by leveraging their cultural connections [15]. CHWs responded swiftly to the COVID-19 pandemic public health crisis and produced successful outcomes [14, 16–19]. CHWs are effective assets to interventions aiming to increase language and cultural appropriateness for Latinx communities at the micro- and macro-levels [20].

There is a need to clarify, expand and acknowledge the role of CHWs. Communites are asking for a better integration of CHWs into the larger primary healthcare system, as well as the allocation of sustainable economic and training resources for CHWs [20–24]. There is a lack of consensus about the CHWs role, some advocate for CHWs to be only enagged in upstream interventions addressing SDoH, such as food insecurity [22],others see CHWs playing more clinical roles [25]. Regardles of how narrow or broad their role is defined, CHWs tend to have stressful and poorly compensated jobs, experiencing "high levels of stress and anxiety due to limited resources while trying to balance the needs of clients with personal and family needs" [17], p. 8. Despite these external and systemic obstacles, the Latinx community perceives CHWs as a trusted source of support and public health information [26].

The Current Study

In November 2020, a community-university partnership launched a state-wide CHW-led model aiming to increase access to culturally relevant and linguistically appropriate COVID-19 testing for vulnerable and underserved Latinx communities in Arizona. The model engaged CHWs as trusted bilingual/bicultural community members, trained in public health, to address COVID-19-related questions and help navigate associated online services [27]. This study documents the experiences of the CHWs as they responded to the pandemic and the health disparities resulting from barriers to COVID-19 testing and therapeutics through the COVID-19 testing model [24].

The ecological systems theory [28–30] guided the formulation of the study's research questions and provided a lens for analyzing the qualitative data. The theory argues that the environment or context affects every facet of individuals' lives, including their way of thinking, emotions and feelings, and opportunities to access resources. According to Bronfenbrenner [30] there are five ecosystems: (1) Microsystem: includes proximal factors that have direct contact with the individual, (2) Mesosystem: relationships between the groups from the first system, (3) Exosystem: factors that affect an individual's life but that do not have a direct relationship with the individual, (4) Macrosystem: includes cultural elements that affect the individual and everyone around them, and (5) Chronosystem: the context of an individual at a time point.

From an ecological theory perspective, this study investigates the influences of the immediate and larger ecosystems (micro- to macro-systems) on the CHWs. It prioritizes the CHWs' lived experiences and phenomenological perceptions regarding their participation in a COVID-19 testing model [31]. Three main research questions guided the study: (RQ1) What are the sociocultural and economic challenges community members were facing related to COVID-19 as identified by CHWs? (RQ2) How CHWs helped overcome these challenges and what else can be done to overcome these micro- and macro-level challenges? And (RQ3) What resources do CHWs need to effectively respond to the present and future global health crises in an impactful and sustainable manner?

Methods

Study Design, Sampling and Data Collection

We used phenomenology and narrative qualitative research methods to answer the research questions [32, 33]. Qualitative data were collected using focus groups given that these have proven effective to elicit participants' feelings and opinions that may not emerge through individual interviews or other data collection methods [33].

Using snowball sampling strategies [33], partner CHWs' agencies supported investigators in recruiting CHWs that participated in the state-wide COVID-19 testing program in three counties in Arizona with large Latinx populations. Eligibility criteria included: (1) age $\geq$ 18 years, and (2) able to speak, read, or write in either English and/or Spanish.

Three Latinx bilingual (English and Spanish) research team members (two female and one male) facilitated five focus groups in Spanish between August and November 2021. One of the female facilitators was a CHW, who played a peer-facilitator role. One focus group was in-person in a conference room setting following public health prevention strategies (e.g., face masks, physical distancing), while the remaining four were online via teleconferencing. Participants completed written informed consents prior to the focus groups, facilitators informed them that the sessions would be audio- and video-recorded. Team members recommended beforehand that participants join the online focus groups from a secluded setting (e.g., a room within their house where they could have a private conversation). Focus groups ranged from 45 to 80 min. A bilingual research team member transcribed the recording verbatim, removing any personal identifiers, and finally destroying the recordings.

The facilitators followed a set of open-ended questions to lead the conversation: (1) What role CHWs have played

in your community to address health disparities? (2) What specific barriers would you identify as undermining the access to COVID-19 testing and vaccination? (3) What are CHWs doing to address those barriers? And (4) What resources and support could enhance and sustain activities performed by CHWs to improve equity in health care access and wellbeing?

The research team used the Consolidated Criteria for Reporting Qualitative Research (COREQ) checklist, including the three domains (research team and reflexivity, study design, and analysis and findings) to report relevant aspects related to research team members, methods, context of the study, findings, analysis, and interpretations [34]. Participants received a $50 U.S. dollars gift card.

Data Analysis

Three independent Latinx bilingual (English and Spanish) research team members conducted the analysis using Atlas.ti web-based version 22. Using phenomenology and narrative methods, these team members (i.e., coders) documented the CHWs experiences using the five verbatim transcripts [33]. Following the procedure for reliability assessment for qualitative data [35], the coders conducted the analysis of the transcripts in the original language (i.e., Spanish). Two of these coders (one male and one female) participated in the project from its inception, including facilitating or observing the focus groups, while the third coder (female), was brought onto the project after the data were collected.

The coders used synthesized approaches that account for diverse theoretical perspectives [36, 37], beginning with line-by-line coding, identifying meaningful sets of words and phrases, aggregating them into categories, and finally clustering the categories into themes. The last step was to build an explanatory framework or pathway of categories and themes using an ecological systems theory lens [28, 33, 37].

The team used a stepwise triangulation strategy meaning that the three coders completed the coding steps separately; then, two coders discussed their coding frameworks by reducing the total number of codes to 30–40 and compiled codes into categories [38]. Subsequently, the third coder joined the discussion and reviewed the synthesized coding frame and categories. After reaching consensus, the three coders reworked the explanatory framework and wrote the results' section.

Following the COREQ checklist on the third domain, analysis and findings [34], to ensure that the coders' analyses and triangulation had captured the full range and depth of the narrative, the team shared the findings with CHWs who had participated in the focus groups. The CHWs provided feedback stating that the results accurately represented their voices.

Results

Twenty-seven CHWs who self-identified as Latinx participated in five focus groups, they represented three counties: County A (N = 11), County B (N = 11), and County C (N = 5). The majority of the participants were female (93%), the length of their experience as CHWs ranged from 3 months to 18 years with a mean of 9.6 years. Three interconnected major themes were identified with a set of corresponding categories (Fig. 1). Table 1 provides a larger number of selected quotes in the original language (Spanish) and the corresponding English translations.

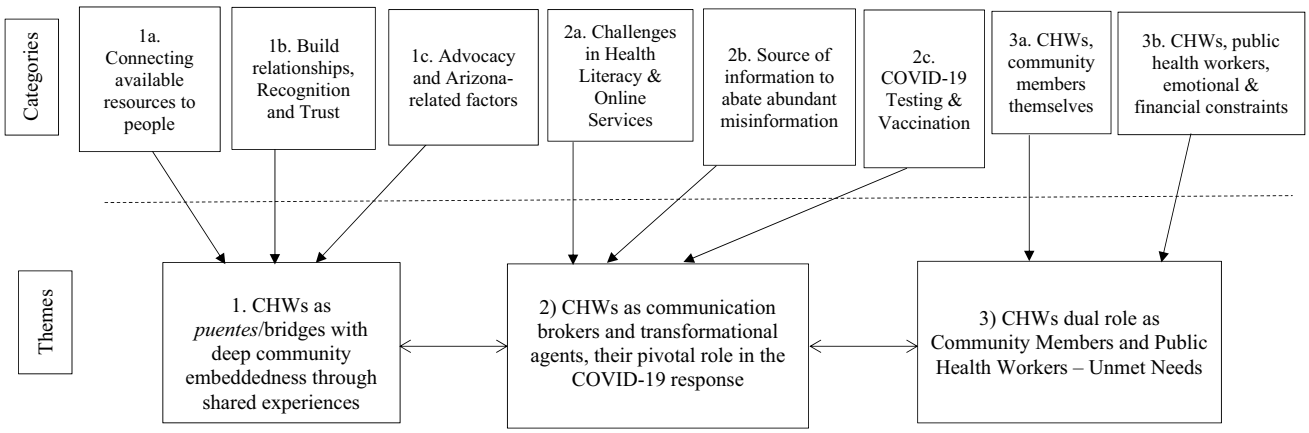

Fig. 1 Explanatory framework of categories and themes

Table 1 Themes and Categories from five Focus Groups with Community Health Workers (N = 27)

Theme 1. CHWs as *puentes*/bridges with deep community embeddedness through shared experiences	
Categories	Selected Quotes in Spanish from the *Promotoras* and the corresponding English translation
1a. Connecting available resources to community members	*"La Promotora de salud somos personas que tenemos que promover la confianza para los participantes, somos ese enlace, ese puente, esta conexión que hay entre los participantes, los clientes, los servicios sociales y los servicios de salud, donde hacemos también referimientos a los programas por los cuales las personas necesitan"* We [*Promotoras*] are people who promote trust among participants, we are the link, the bridge, the connection between participants, clients, social services and health care services, we also do referrals to programs according to individual needs *"Entonces por decir "oh mi papa no tiene aseguranza" y le decimos "sabes de una clínica que ve a la gente gratis. Aquí puede ir, aquí está el número de teléfono". O por decir, "Oh estoy embarazada y no tengo aseguranza. No califico, solo mis hijos califican". O, "sabes que, hay un programa que te puede ver gratis solo tienes que pagar tanto". Entonces nosotros estamos en la comunidad y buscando información para las personas que ayudamos y ya la tenemos para cuando ellos ya vienen con nosotros o en la conversación que ya estamos teniendo nosotros ya les podemos meter "o sabes que, no puede pagar el gas", "o nosotros tenemos un programa"* For example, [community members tell us:] "oh my dad doesn't have insurance" and we say "we know of a clinic that offers healthcare for free. Here you can go, here is the phone number". Or for example "Oh I'm pregnant and I don't have insurance. I don't qualify, only my kids qualify." Oh "you know what, there is a program that can see you, you just have to pay so much". So we are in the community and looking for information for the people we help and we already have it by the time they come with us or in the conversation that we are already having we can already put "oh you know what, you can't pay for gas", "oh we have a program *"Si no los podemos ayudar con un servicio, los podemos referir. Esa es la satisfacción, de saber que estamos haciendo las cosas y siempre respetando los límites que tenemos"* If we cannot help directly with a service, we can refer them. That is satisfying, knowing that we are doing our job and acknowledging our limitations

Table 1 (continued)

Theme 1. CHWs as *puentes*/bridges with deep community embeddedness through shared experiences	
Categories	Selected Quotes in Spanish from the *Promotoras* and the corresponding English translation
1b. Build Relationships, Recognition and Trust	*"Que ellos [miembros de la comunidad] confían en nosotros, ellos confían en las Promotoras. Qué bonito podernos acercar a ellos y decirles, "Mira, aquí está un poquito de ayuda para ti"* Community members trust us, they trust the Promotoras. It is satisfying to reach out and say "Hey, here is some help for you" *"Al principio que fue todo esto un caos, sin permiso de los jefes yo me iba a las gasolineras, al supermercado allí me veía con la gente para que me dieran los documentos, los hacía firmar y posteriormente metía sus documentos, trabajaba con ellos y después le decía, "Tal día, a tal hora ahí lo veo, le entrego sus documentos". Sentía que tenían confianza. Posteriormente así estuve trabajando para poder servirle a la comunidad. A mí me apasiona mi trabajo, y me gusta ayudar lo más que pueda, y no me importa si a veces me paso en tiempo, no me importa, porque lo que quiero yo es que el cliente esté contento con el servicio que nosotros proporcionamos."* At the beginning, when everything was chaotic, without permission from the bosses I went to the gas stations, to [supermarkets], there I met with people so that they could give me their documents, I had them sign and later I input their documents, I worked with them and later I told them, "I'll see you on such a day, at such a time, I'll give you your documents." I felt that they were confident. I was working like this to be able to serve the community. I am passionate about my work, and I like to help as much as I can, and I don't care if sometimes I spend too much time, I don't care, because what I want is for the client to be happy with the service we provide
1c. Advocacy and Arizona-related factors	*"Somos la voz de nuestros hermanos, de donde venga son como nosotros, ellos somos nosotros y nosotros somos ellos. Si ellos tienen injusticia, la injusticia es para todos, para nosotros también."* "We are the voice of our brothers [community members], wherever they come from they are like us, they are us and we are them. If they have injustice, injustice is for everyone, for us too." *"Vivimos en un área que estamos entre dos países y cuatro estados. Es difícil porque cada estado tiene sus reglas y más en Estados Unidos. En México es similar las reglas, las normas para todos, pero es otro país. …el punto donde nosotros estamos, estamos en frontera, el desafío y yo me puedo incluir en eso, sería el estar tanto tiempo encerrado, no poder visitar, no poder hacer esa vida social. Eso es la salud. Vas a México y allá te tienes que poner, por ejemplo, cuando están haciendo una línea para pasar a Estados Unidos de allá para acá no traen la máscara y en cuanto pisas suelo estadounidense te la tienes que poner. No entiendo, yo hasta lo he hecho, lo miras. Por lo mismo que somos un punto estratégico para infecciones, pero a lo máximo, por las culturas, por las tradiciones, por las reglas, por los gobiernos. Son dos países y cuatro estados. Está lo que es California, Arizona, Baja California y Sonora en México. Es difícil vivir en esta área."* "We live in an area between two countries and four states. It is complex because each state has its own laws in the U.S. In Mexico [in different states] rules are similar for everyone but it is another country… the place we are at, we are at the border and the challenge, which I experienced, is the isolation, I could not visit, I could not have social interactions. That is health. You go to Mexico and, for example, when you are in the crossing border line, you have to wear a facemask once you arrive to the U.S., but not in Mexico. I don´t understand that, but I have done that myself. We are a strategic point for infections, but given culture, traditions, rules, governments, it is complex. Two countries and four states, that is California, Arizona, and in Mexico, Baja California and Sonora. It is difficult to live in this area."

Table 1 (continued)

Theme 2. CHWs as communication brokers and transformational agents, their pivotal role in the COVID-19 response	
2a. Challenges in Health Literacy and Online Services	*"No solamente eso para las palabras como co-insurance, deductible. A veces la gente no entiende o piensan oh solamente tengo que pagar el plan, pero no, cuando vaya al doctor, ciertos planes van a tener que pagar cierto dinero hasta que llegues a cierta parte y luego ellos cubren o solo tienes que pagar $30 cuando veas al doctor. Y esa es otra cosa que también vemos que, en las personas, es muy difícil entender porque hay unas personas que no pueden escribir o leer. Si uno que puede escribir o leer no entiende, es más difícil para alguien que no puede hacer eso."* It's not just words like co-insurance, deductible [that are difficult to understand]. Sometimes people don't understand or they think "oh I just have to pay for the plan" but no, when I go to the doctor, for certain insurance plans you pay a certain amount of money until you get to a certain point and then they cover you, or you only have to pay $30 to the doctor. And there is another issue, we also serve people who cannot write or read and thus it is very difficult for them to understand. If we, who can write or read, do not understand, it is more difficult for someone who cannot do that *"En nuestras clases que damos educativas se tuvo que adaptar y tener el desafío de aprender a usar la tecnología, el teléfono, las vías de comunicación que empezamos a utilizar como el ZOOM. Eso fue un gran desafío al principio, lo recuerdo muy bien porque para mí fue uno de ellos"* We had to adapt our education sessions and were challenged to learn how to use technology, telephone, and communication tools which we began using like ZOOM. That was a big challenge in the beginning, I remember it very well since it was a challenge for me *"Mucha parte de la comunidad de aquí del condado no tiene acceso en ocasiones a la tecnología o no sabe porque hay mucha gente mayor que tampoco no tiene el conocimiento"* A lot of community members in this county do not have access at times to technology or they don't have the skills, especially a lot of older people do not know about technology

Table 1 (continued)

Theme 2. CHWs as communication brokers and transformational agents, their pivotal role in the COVID-19 response	
2b. Source of Information to Abate Abundant Misinformation	*"Opino que también hay personas que tienen temor, lo han especificado y dicho varias veces, el temor de ir a una clínica a verte si tienen o no tienen COVID, hacerse simplemente la prueba, porque piensan que tienen un costo muy elevado. Es donde ya entramos nosotros y le decimos. Como el otro día un señor me dice, "No sé si ir a hacerme la prueba porque no sé en cuánto me va a salir". Hay gente que económicamente eso es lo que piensa."* "I think that there are also people who are afraid, they have specified and said several times, the fear of going to a clinic to see if they have COVID or not, simply taking the test, because they think they have a very high cost. It is where we already enter and we tell him. Like the other day a man told me, "I don't know whether to go get tested because I don't know how much it's going to cost me." Some people think about their economy *"Cada semana que me toca estar en la radio en vivo, estarles diciendo a las personas, -Cuídense, protejan a sus hijos, usen el sanitizer, hagan esto, hagan acá-. También cuando salimos allá afuera, darle a la persona el cubrebocas, darles el sanitizer, darles todo lo que a ellos les pueda ayudar. Información donde venía, cómo cuidarse, qué era el COVID y todo esto. Son cosas muy satisfactorias también para nosotros, a pesar de estar en esta pandemia"* Once a week I go to a live radio talk show, and I tell the audience "Take care, protect your children, use sanitizer, do this and that-. Also, when we are out in the communities, we provide people with facemasks, sanitizer, all that may be helpful. Give them information about self-care, what was COVID and more. We were satisfied by doing this, despite the pandemic *"Yo a veces miro en social media, TikTok o lo que sea, dicen la información que no es de verdad. Las personas miran y dicen, "Esta persona dice que esto es malo, por eso no me quiero vacunar". Les pregunto muchas veces, "¿Es verdad eso o no?", y que busque más información"* Sometimes I browse in social media, TikTok or others, people there spread misinformation. Community members think "This person says that the vaccine is harmful, that is why I don't want to be vaccinated". I ask them to think if that information is true or not, and to look for more information

Table 1 (continued)

Theme 2. CHWs as communication brokers and transformational agents, their pivotal role in the COVID-19 response	
2c. COVID-19 Testing and Vaccination	*"[2am] Se nos quitó el frío y bien felices que nos fuimos a desayunar viendo a tanta gente que habíamos atendido. Más de 400 pruebas [COVID-19] se hicieron en esa madrugada y la gente que muchas veces ni tiempo tenía para acudir a una clínica, nosotros estuvimos ahí esperándolos [en la frontera]."* "[2am] The cold left us and we went to breakfast very happy knowing how many people we had assisted. More than 400 people [farm workers] were tested for COVID-19 that dawn, people who often had no time to go to a clinic for a test, we were there, waiting for them [at the border] *"Hemos tenido gente que hasta nos voltean los ojos, nos dicen cosas, pero si hay gente. Tuve una pareja que el señor "ay no no" y ya después él estaba más o menos hablando conmigo pera la esposa me dijo, "no, nosotros no" y le dije "está bien, si algún día gusta haga su, uhm do your research, learn about it don't just go off of what people tell you, y ya me puse a hacer otra cosa estaba hablando con otra gente y al ratito vino el señor y me dijo "ok, si nos vamos a vacunar". So, lo que hacemos es tener la conversación y si ellos no quieren es su decisión pero habla con su doctor, si tiene preguntas aquí está la enfermera, puede hablar con la enfermera y si así ha tendido yo gente que después dice "OK."* "We have had people who even turn their eyes at us, tell us things. I talked to a couple where the husband said "oh no no" and later he was more or less trying to talk to me but the wife told me, "no, we don't [want to get the vaccine]" and I said "it's fine, if one day you want to, uhm do your research, learn about it don't just go off of what people tell you". Then I started doing something else I was talking to another person and after a while the husband came and told me "ok, yes we are going to get vaccinated". So, what we do is have the conversation and if they don't want to, it's their decision but they may talk to their doctor, the nurse, we tell them to talk to the nurse and that's how I've had people who later say "OK"
Theme 3. CHWs dual role as Community Members and Public Health Workers: Unmet Needs	
3a. CHWs as Community Members	*"Nosotros entendemos cómo se sienten y lo que nos dicen porque lo oímos en nuestras propias familias, son cosas que oímos en la casa."* We understand how they feel [community members] and what they tell us because we hear it in our own families, these are issues that we hear at home *"yo lo miré [la falta de información o la desinformación], yo lo viví en mi familia, todo eso"* I witnessed the lack of information or misinformation, in my own family, all that

Table 1 (continued)

Theme 3. CHWs dual role as Community Members and Public Health Workers: Unmet Needs	
3b. CHWs as Public Health Workers, Financial and Emotional Constraints	*"En un momento si ocupamos [más Promotoras], podemos llamar a somos como 32, 40. El problema es los fondos. So, yo no puedo tener de 32 a 40 personas siempre. So, cuando hay fondos es cuando, por decir puedo llamar a los con quien cuento part-time y llamarles para poder trabajar. Entonces eso es una cosa dónde, aunque estemos chicos pues we are small but mighty. Es una cosa donde sí siempre estamos buscando fondos para poder hacer más."* Sometimes, if we need more *Promotoras*, we can call, we are like 32, 40. The problem is the funds. So, I can't always have 32 to 40 people. So, when there are funds is when, I can call those with whom I count part-time and call them to work. So even though we're a small group, we are small but mighty. It is something where we are always looking for funds to be able to do more *"Nosotros nos pasó una experiencia que fuimos a un lugar verdad, donde teníamos personas registradas y que casi todos se habían muerto esperando. Se habían registrado para esperar la vacuna y se murieron, y casi quería pues llorar. Íbamos de puerta en puerta, queríamos llorar."* We had an experience where we went to a place where we had people registered [for the vaccine] and almost all of them had died waiting. They had registered to wait for the vaccine and died, and I almost wanted to cry. We went from door to door, we wanted to cry." *"Justo ahorita que venía para acá me llamó una cliente llorando. Yo le dije 'voy a orar por usted'. Y me dijo, 'no ores por mí, ora por mi mamá'. Y yo uy. Ella [señala a otra Promotora] ya aprendió después de tantos años pero yo apenas, so, yo quería llorar. Pero si, escuchas tantas cosas de los clientes que sí te lo llevas a la casa. Tienes que aprender y cómo ellas ya tienen tantos años y yo apenas dos años yo digo 'ay', y luego yo le hablo a ella [señala a otra Promotora] 'amiga, no pude que hago. Yo quiero que califique porque necesita pero no tiene y se queda uno con la mente."* Just now that I was coming here a client called me crying. I told her 'I will pray for you'. And she told me, 'Don't pray for me, pray for my mom'. And I ugh. She [points to another *Promotora*] has already learned after so many years, but I barely know, I wanted to cry. But yes, you hear so many things from clients that you take home those emotions. You must learn and since they have already worked for many years and me barely two, I say 'oh', and then I talk to her [points to another *Promotora*] 'friend, I couldn't achieve that, what do I do. I want her to qualify because she needs it and doesn't qualify and that remains in my mind *"Yo creo que nos hacía falta una habladita así, hacía mucho que no hablábamos de nuestro trabajo. Porque se te olvida, muchas veces se te olvida y más cuando estamos viendo cosas tan feas como últimamente. Necesitas volver a las raíces, por qué estoy aquí y por qué hago lo que hago. Nomás es arremangarte."* I think we needed a little talk like this, it had been a long time since we talked about our work. Because you forget, many times you forget and more when we are seeing things as ugly as lately. You need to go back to the roots, why I am here and why I do what I do. It's just rolling up your sleeves

Theme 1. CHWs as *Puentes*/Bridges with Deep Community Embeddedness Through Shared Experiences

CHWs described themselves as *puentes*/bridges between the community and the larger healthcare and social service systems. CHWs highlighted their deep roots in their communities, mentioning that they are always actively searching for external resources and training to better serve community members with whom they share a myriad of contextual experiences.

Category 1a: Connecting Available Resources to Community Members

This category captures the range of roles that CHWs play in their communities by linking members to any resources they might need. The roles CHWs play vary based on the needs of the population served (e.g., farm workers, immigrants, older adults, families with children). A commonality mentioned by participants was their willingness to help community members with any issue they may have, even if it was outside of their established role. For example, prior to the COVID-19 pandemic, many CHWs were assisting members with health insurance applications. They often identified other patients' unmet needs and consequently guided them to the appropriate resources. If they did not have the answer, they would find it and connect patients to the appropriate resource.

> We [Promotoras] are people who promote trust among participants, we are the link, the bridge, the connection between participants, clients, social services and health care services, we also do referrals to programs according to individual needs.
> If we cannot help directly with a service, we can refer them. That is satisfying, knowing that we are doing our job and acknowledging our limitations.

Category 1b: Build Relationships, Recognition and Trust

Community members trust CHWs, they earned that trust from the strong relationships built by serving their communities over many years. CHWs stated that during the COVID-19 pandemic they were even more committed to their role. They spoke of a reciprocal relationship in which CHWs find community members and community members find them.

> Community members trust us, they trust the Promotoras. It is satisfying to reach out and say -Hey, here is some help for you.

Category 1c: Advocacy and Arizona-Related Factors

CHWs play an advocacy role with their community. Specifically, they described themselves as both advocates and activists, including advocating for community members' human rights. For example, CHWs went to Washington, D.C. to discuss women's reproductive rights, educate community members on their legal rights in the event of border patrol stopping them, or advocate for Haitians refugees arriving at the border. CHWs identified many SDoH specific to the Arizona context at the meso- and macro-levels. They described themselves as unique because they live and practice in Arizona, which prepares them to address context-specific situations, for example, the amplified challenges faced by immigrants and refugees.

> We are the voice of our brothers [community members], wherever they come from they are like us, they are us and we are them. If they have injustice, injustice is for everyone, for us too.
> We live in an area between two countries and four states. It is complex because each state has its own laws in the U.S. In Mexico [in different states] rules are similar for everyone but it is another country… the place we are at, we are at the border and there are challenges…

Theme 2. CHWs as Communication Brokers and Transformational Agents

This theme emphasizes the crucial role that CHWs play in community outreach during health emergencies, particularly engaging and informing the most vulnerable members within underserved communities. In the pandemic, the CHWs reported about their efforts to informing and assisting community members in getting tested and vaccinated through a variety of pilot and demonstration programs. They were adaptable to applying a variety of effective modalities and strategies, which were noticed by the health and social services contracting them.

Category 2a: Challenges in Health Literacy and Online Services

CHWs reported that many community members had limited understanding of how the U.S. healthcare system works, which made it increasingly difficult to navigate. Latinx community members commonly faced linguistic or literacy challenges (e.g., limited or lack of ability to read or write in Spanish and/or English), needing assistance to navigate offline and online healthcare services. Another salient topic was the lack of digital literacy for online health-related services. This was particularly relevant among older community members who, at times, would be on the phone for hours trying to sign up for testing or a vaccine appointment, as they did not know how to register online, had no access to a smart phone, computer, or Internet. It was also challenging for the CHWs to adapt/learn new digital skills.

> A lot of community members in this county do not have access at times to technology or they do not have the skills, especially a lot of older people do not know about technology.

Category 2b: Source of Information to Abate Abundant Misinformation

Throughout the pandemic, the CHWs reported that they functioned as a beacon of information for community members. CHWs were able to support public health efforts by providing accurate information to community members while also clarifying misinformation that circulated across their communities, addressing information gaps. The CHWs described that misinformation and lack of information, was consistently present in their communities and that it played a key role in people's hesitancy towards testing and especially towards vaccination. Misinformation included popular beliefs such as they needed to pay to get vaccinated, vaccines contain microchips, or that they cause death. CHWs were aware of the misinformation and the various sources it stemmed from (e.g., social media, family members), and they were ready to respond with the accurate yet limited information they had. Multiple CHWs described how they coped with misinformation and hesitancy, always with respect and empathy, and letting community members know that regardless of their decision the CHWs would be ready to support them in every possible way.

> Once a week I go to a live radio talk show, and I tell the audience "Take care, protect your children, use sanitizer, do this and that-. Also, when we are out in the communities, we provide people with facemasks, sanitizer, all that may be helpful. Give them information about self-care, what was COVID and more. We were satisfied by doing this, despite the pandemic.

Category 2c: COVID-19 Testing and Vaccination

At a time when it was crucial for community members to take the COVID-19 test, CHWs were a strong asset to the healthcare system. Some CHWs were trained on how to administer the COVID-19 saliva test while others supported community members to register online for testing, shared public health information or assisted with many other tasks (e.g., translation services in testing sites, filling out paperwork COVID-19-related or not). CHWs were instrumental in making testing and vaccination accessible to community members that for many reasons were excluded or unable to participate.

> The cold left us and we went to breakfast very happy knowing how many people we had assisted. More than 400 people [farm workers] were tested for COVID-19 that dawn, people who often had no time to go to a clinic for a test, we were there, waiting for them [at the border].

Theme 3. CHWs Dual Role as Community Members and Public Health Workers: Unmet Needs

CHWs were deeply engaged to serve community members in every possible way but they also reported that they had their own unmet needs, frustrations, and concerns. These included not having a seat at the public health table due to a lack of acknowledgment for their role, low or no compensation for their work, no reimbursement for out-of-pocket costs, and lack of professional development opportunities. They reported that the satisfaction they gained from helping others and the acknowledgement they received from community members offset some of their frustration.

Category 3a: CHWs as Community Members

Given that the CHWs in this study are also Latinx and share the same environment, they relate to their communities' struggles. CHWs noted that their community membership is as a source of strong empathy and deep understanding, but it also means that they face similar burdens in navigating the healthcare space as other Latinx members. A CHW described the irony of signing up patients for health insurance while she was uninsured herself. She faced the same contradiction; community members were earning too much income to qualify for insurance yet had too little to cover for their monthly expenses. Multiple CHWs detailed their experiences of taking loved ones to their medical appointments and having to miss days of work. One CHW took her mother to Mexico for medical care after she was not able to get the right treatment for her in Arizona.

> We understand how they feel [community members] and what they tell us because we hear it in our own families, these are issues that we hear at home.

Category 3b: CHWs as Public Health Workers, Financial and Emotional Constraints

At times, CHWs reported not receiving any compensation but they continued to work because of their commitment to assisting the community. They identified financial resources as important not only for their livelihood but also to strengthen their capacity to help the community. The CHWs' organizations in Arizona fund themselves through grants and contracts, and function based on what others can give them, the resources are inherently limited and unpredictable. One of the founders of a partner organization stated that there have been times in which they will forgo their compensation to ensure that their coworkers get compensated, as there is not always enough funding for all of them.

> Sometimes, if we need more Promotoras, we can call, we are like 32, 40. The problem is the funds. So, I

> cannot always have 32 to 40 people. So, when there are funds is when, I can call those with whom I count part-time and call them to work. So even though we are a small group, we are small but mighty. It is something where we are always looking for funds to be able to do more.

CHWs self-identified as frontline public health workers, serving vulnerable and resource poor communities, attending a broad arrange of unmet needs, and at an elevated risk of burnout. CHWs came across as highly empathetic individuals working in communities where stress is abundant, they mentioned that often they carry back home the negative emotions. COVID-19 generated highly emotional and traumatic situations. Whether it was listening to a community member expressing emotion over the death of a loved one, facing constant roadblocks in getting assistance for their patients, or having to spend time away from family to help the community, CHWs reported constant emotional constraints.

> We had an experience where we went to a place where we had people registered [for the vaccine] and almost all of them had died waiting. They had registered to wait for the vaccine and died, and I almost wanted to cry. We went from door to door, we wanted to cry.

CHWs unanimously identified the need for an increase in financial, training, and emotional support. CHWs expressed gratitude for the opportunity to narrate their experiences. Having a conversation with their peers and facilitators about their positive and negative experiences provided them with comfort and the sense that someone was listening. They stated that COVID-19 uncovered their resourcefulness and commitment but also exposed their unmet sustainability needs, which are not new but due to the pandemic they gained new urgency.

> I think we needed a little talk like this, it had been a long time since we talked about our work. Because you forget, many times you forget, and more when we are seeing things as ugly as lately. You need to go back to the roots, why am I here and why I do what I do. It's just rolling up your sleeves.

Discussion

The purpose of the study was to investigate and document the experiences of CHWs leading a COVID-19 testing model in Arizona. The findings support the notion that CHWs play a crucial *puente*/bridge role linking communities with the public health system. The CHWs' personal passion, public health training, and shared lived experiences made them ideal vehicles to connect the Latinx population with the healthcare and social services systems and many other resources. CHWs' multiple skills, insights, resiliency, and community trust made them a strong *puente*/bridge connecting underserved and vulnerable communities to the available services [18].

CHWs were recruited due to their previously proven efficacy [39] and their ability to curb the COVID-19 pandemic at the state, local, and national levels [19]. The findings of the present study confirmed that the CHWs' role is valuable to public health agencies, but also that it is valuable to the communities they serve. The findings went beyond the traditional efficacy studies [39] by describing in the CHWs' own voices the process and consequences of engaging in the COVID-19 pandemic.

Although advocacy emerged as its own category, it relates to all the other main roles CHWs play, connecting the micro, meso and macrosystems [30, 40]. The CHWs sense of belonging and shared identity nurtured and inspired their advocacy role. One sustains the other and together they become a source of commitment and inspiration for the CHWs to continue with their advocacy role. These findings expand on previous research about bridging, capacity-building, advocacy, and trust [41, 42].

Results highlight how CHWs conduct their work as communication brokers and transformational agents. CHWs were able to overcome misinformation and mistrust because of their demonstrated commitment to the wellbeing of their fellow community members. In agreement with previous studies [10–12], CHWs also identified challenges in COVID-19 preventive care due to limited health and digital literacy or limited access to services among Latinx community members. This is the reason why SDoH, such as access to Internet, need to be considered when analyzing health disparities among minority populations. Community members did not use online services as would have been expected because they had no access or did not know how to use online services. The CHWs demonstrated outstanding outreach to conduct COVID-19 testing among underserved populations. For instance, some of the testing events happened during the dawn to be able to serve groups such as farm workers at the border, who otherwise would not have had access to COVID-19 testing and/or accurate related information.

Findings also illustrate the dual role of CHWs as community members and public health workers, identifying the limited support CHWs receive while serving their communities, including their own closer social structures such as family members [25]. This is vital, as lower resource allocation can lead to lower levels of trust and respect from the community [42]. CHWs related to shared community struggles is an extension of previous research and contributes new insights into the tension that emerges between their sense of belonging, empathy, and physical and mental exhaustion [17]. We

also confirmed a fragmented and disease-specific approach to CHWs' interventions [43]. Depending on the disease condition *du jour*, CHWs may or may not be prepared for additional clinical responsibilities. Their potential to contribute to the wellbeing of Latinx communities is endless but future research needs to better elucidate the what, where, how and who of CHWs' engagement.

A lack of clear work protocols is a key barrier identified in the literature and supported by this study's findings. The limited guidelines that exist tend to describe only discrete tasks and do not take into consideration CHWs' engagement in care or multisectoral services to patients [44]. Institutions tend to integrate CHWs into healthcare systems like any other health care professional. This approach, participants mentioned, can lead them to engaging in unfamiliar tasks, having inadequate supervision, or experiencing burnout due to high caseloads or stressful situations.

On the other end of the spectrum, participants reported that existing protocols sometimes lead to an underutilization of their skillset by limiting their role to outreach efforts [45]. Participants identified their engagement in giving the COVID-19 saliva test and administering SDoH surveys as a natural progression of their involvement and professional development. This lack of role clarity and defused selection and performance evaluation practices can lead to high turnover and inconsistent performance of the CHWs [46, 47]. Although CHW interventions can be very cost-effective, hiring practices, turnover and the associated onboarding of new team members' training expenses can make CHW programs more expensive and less effective than they should be [48].

There has been a call for CHWs to focus more on upstream socioeconomic problems instead of clinical responsibilities, especially in areas with limited resources [22]. On the contrary, CHWs expressed a readiness to be more involved and suggested getting more clinical responsibilities such as administering testing. There may be a range of opinions on what the scope of practice for CHWs will look like and expanding on their roles may be key for their integration into the larger healthcare system [39]. This relates to an ongoing debate on whether CHWs should be generalists or specialists on one health outcome such as diabetes or COVID-19. CHWs should participate in that conversation, they have much to contribute.

In addition to physical health risks, CHWs identified mental health risks that come with doing their line of work amid a pandemic, where the need is high and resources for health and social services are low. The pandemic augmented the stressors CHWs typically face such as traumatic stress, compassion fatigue and increased mental health problems [17, 49]. Participating CHWs identified what outside observers might categorize as overidentification with patients' suffering. The CHWs effectiveness comes precisely from their ability to identify as members of the community, it is only natural that they would feel close to their neighbors and relatives. The lack of a professional safety net appears to be the issue not their strong engagement and commitment to respond to the need of vulnerable and underserved communities.

Implications and Recommendations

The results of this study call for an increase in resource allocation for CHWs' health/mental health, training, and equitable pay, which in turn will lead to improved community members outcomes. CHWs need additional support and training. As they gain more recognition and integration into public health agencies, their involvement in future research can contribute to developing strategies to address unmet needs. Improved compensation and professionalization through standardization, training, recognition, and more professional opportunities are a good starting point. Further research can delve into researching the unresolved generalist versus specialist predicament. In this study, CHWs see themselves as generalists, however this may not be the case for all CHWs. Therefore, it will be important to have CHWs from all communities and groups from a variety of settings represented in a multisite study with strong external validity.

The present study also has implications for public policy, healthcare delivery, health equity research, and an increased appreciation for the role that CHWs can play. Given the current state of CHW certification, this study may be useful in further supporting initiatives that aim to solidify certification. From a science of healthcare delivery perspective CHWs undoubtedly improve health care delivery through means that this study reinforces. CHWs connect with patients at a previously unforeseen level, can help improve the health of Latinx and other underserved populations, and they can reduce per capita costs.

Limitations

While the results of this study are not generalizable, future health equity research can use this study to further the research on CHWs. This study captured the lived experiences of CHWs but did not include the voices of the patients served by them. Participants' recruitment took place in three Arizona counties, with three specific CHW organizations, and only with the Latinx CHWs that agreed to participate. Thus, the results might not apply to CHWs outside of these groups. Another limitation is the possible sampling bias that is due to the recruitment strategy of snowball sampling. A different recruitment strategy may have led to different participants' composition. Lastly, a limitation with focus groups is the potential bias in results due to group influence. While focus groups have their strengths, there is the possibility that

participants may have shared more or felt more comfortable if placed in a traditional interview.

Conclusion

Overall, the identification of themes and categories made it clear that CHWs form a mighty group, they produce a hidden force that holds the community together. The insight they provided into their role is invaluable. The number of lives they have changed by providing resources that otherwise might have seemed impossible to attain for many is inspiring, and the resilience presented by these CHWs is contagious. There is no lack of passion for what they do, however, this does not make them immune from burnout. One crucial step is providing them with more resources and support as they become more integrated into the healthcare workforce.

The purpose of the study was to display the roles and experiences of CHWs toward Latinx communities in Arizona, and how the COVID-19 pandemic influenced them. Capturing the voice of the CHWs themselves was key, as little research had historically done this. From their responses, we identified eight categories grouped in three main themes: CHWs as *puentes*/bridges, CHWs as communicators and change agents, and CHWs as public health workers and community members. The themes documented that CHWs serve as a *puente*/bridge, a reliable and strong bridge that can uphold strong storms like the COVID-19 pandemic, but like any bridge it needs maintenance and care.

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Data Availability NA.

Code Availability NA.

Declarations

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Consent to Participate All participants consented before data collection according to ASU IRB requirements.

Consent for Publication All participants consented for publication.

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