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ORIGINAL RESEARCH

Physical and mental health of community health workers in Bolivia: Evidence from a large NGO-run program

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Abstract

Introduction: Community health worker (CHW) programs constitute an important component of the health workforce in Bolivia and other low- and middle-income countries. This study seeks to 1) describe the physical and mental health of volunteer CHWs in Bolivia and to 2) explore how individual demographic factors are associated with these health outcomes and 3) examine how CHWs perceived their work to affect their health.

Methods: This study used a mixed-methods design that included qualitative and quantitative data collection and analysis. Qualitative interviews were conducted with a purposive sample at five locations across Bolivia where Pro Mujer, a local NGO, is implementing a CHW program. A quantitative survey was distributed to participants from all CHW project sites. The quantitative survey and qualitative interview guide consisted of questions exploring CHW experiences, health effects, and perceived challenges.

Results: CHWs generally consider themselves to be in good physical health; however, challenges persist in accessing preventative healthcare services and screenings. Common barriers that CHWs face include long wait times and inconvenient hours. CHWs report applying the knowledge gained in their CHW role to their own lives and the lives of their families. CHWs report many mental health issues including anxiety, depression, and feeling tense, nervous and irritable in their daily activities. However, they also report feeling supported by peers and leaders and that serving others in their communities has lifted their mood and allowed them to leave behind their emotional struggles.

Conclusion: This study is the first to analyze the physical and mental health outcomes of volunteer CHWs in Bolivia. Interventions targeting access to preventative healthcare and greater psychological support are key to expanding the reach of CHWs.

Keywords: Community health workers, health systems, psychological distress, obesity, Bolivia

Abstract in Español at the end of the article

INTRODUCTION

Community health workers (CHWs) are a critical component of the health workforce in many Latin American countries [1]. CHWs are vital in their communities, supporting underfunded or overburdened healthcare systems and often working on a volunteer basis without compensation [2]. CHWs have grown in demand and significance within recent years, particularly in times of extreme illness, as countries rely on lay health workers to provide primary health care services that are lacking elsewhere [3]. Because they are members of the same communities they serve, CHWs are uniquely positioned to build trust and act as intermediaries between community residents and the formal healthcare system [1]. This unique role filled by CHWs is even more crucial in lower-resource countries with inequitable public health systems, such as Bolivia [4].

In response to the need for comprehensive healthcare, Bolivia enacted legislation in 2013 to establish a universal single-payer system, later implemented as the

Seguro Único de Salud (SUS) in 2019 [5]. SUS provides free healthcare for all Bolivians; however, the system presents major challenges that restrain access to public services, including insufficient funding, limited infrastructure, shortages of medical supplies and personnel, and gaps in accreditation and service coverage [6]. Rural populations, in particular, experience poorer health outcomes and significant health disparities compared to urban areas, largely due to poverty, lack of education and limited access to formal healthcare services [7,8]. In this context, CHW programs run by non-governmental organizations (NGO) are essential to ensuring all Bolivians have access to essential health services.

Despite their importance, the health of CHWs themselves is under-studied in Bolivia and across the world. CHW health matters as poor physical or mental health can undermine retention, service quality, and the effectiveness and sustainability of community-based health programs [9]. Conceptually, there are competing pathways through which participation as a CHW may influence health positively or negatively. On the one hand, health workers have been found to experience health benefits through increased health knowledge, social connectedness, and a sense of purpose associated with helping others [10,11]. On the other hand, healthcare work also involves high stress, long hours, and emotional labor, which may negatively affect physical and mental health of health workers [9,12,13,14]. These dynamics may be particularly salient among CHWs in low-resource settings where they are more likely to operate within constrained health systems and face personal economic difficulties [15]. Empirical evidence examining the factors associated with the physical and mental health of volunteer CHWs remains limited.

There are no studies in Bolivia and very few elsewhere that have assessed the physical or mental health of CHWs themselves. One study, conducted in Mali and Bangladesh, found that CHW well-being is influenced by motivational factors including the impact of their work, recognition from supervisors and their communities, receiving sufficient training, and adequate compensation [16]. Another study conducted in Fortaleza, Brazil analyzed a self-assessment of CHW knowledge of health issues, finding that 60% of CHWs felt their health knowledge had increased from participating in training courses [17]. A Rio Grande do Norte, Brazil study examined the quality of life of CHWs and identified strategies to improve their physical and mental well-being [18]. While the study does not identify factors that impact the health of CHWs, its findings are reported as suggestions of the support CHWs need including regularly seeing a psychologist, observing relaxation techniques and exercises, and the development of overall healthy habits [18]. Participants from this study mentioned that one of their important roles as CHWs is to promote a positive image of health by maintaining good health themselves [18].

This study seeks to 1) describe the physical and mental health of volunteer CHWs in Bolivia and to 2) explore how individual demographic factors are associated with these health outcomes and 3) examine how CHWs perceived their work to affect their health. The study focuses on CHWs affiliated with a large NGO, Pro Mujer, that provides under-resourced women across Bolivia with access to healthcare services, financial resources, and opportunities for personal and professional development. Pro Mujer's volunteer CHW program provides health education and chronic disease screening to women in underserved communities. The health and well-being of these volunteer CHWs is key to the program's success and is an objective of Pro Mujer's program. Pro Mujer has 215 trained CHWs in 8 locations across Bolivia, with volunteer CHWs being supervised by a paid nurse in each of the program sites. While CHWs do not receive financial compensation for their work, they receive funds to pay for their transportation and mobile phone expenses associated with their CHW work. Pro Mujer also provides groceries to CHWs a few times per year as a thank you gift.

Pro Mujer's volunteer-based CHW model reflects many features common to NGO-run CHW programs in low-resource settings. These findings will help inform Pro Mujer and other CHW programs as they consider how to design and manage programs that not only deliver high quality health services to patients but also produce positive health benefits among the workers themselves.

METHODS

Study design and setting

This study used a convergent mixed-methods design that collected quantitative and qualitative data concurrently and integrated the data during analysis to develop a comprehensive understanding of the physical and mental health of CHWs within the Pro Mujer organization in Bolivia. While the quantitative data allow us to quantify and summarize demographic and health indicators and examine associations between these variables, the qualitative data provide deeper insights into CHWs experiences and perceptions, particularly regarding the ways in which CHWs perceive their work to affect their health. As a large NGO-run CHW program operating across diverse Bolivian contexts, Pro Mujer provides an illustrative case for understanding the health of volunteer CHWs in under-resourced settings.

Ethical review

This study was approved by the Brigham Young University (BYU) Institutional Review Board and the Pro Mujer Ethics Committee.

Participants

Study participants included current CHWs participating in the Pro Mujer CHW program. Quantitative Surveys were administered across all CHW project sites with the objective of maximizing participation among CHWs. An overall participation of 85% was achieved.

Given the high response rate, the survey sample is considered representative of the overall CHW population, with minimal risk of sampling bias due to the limited number of non-participating individuals. Qualitative interviews were conducted with a purposive sample at five Pro Mujer locations across Bolivia - El Alto, Cochabamba, Tarija, Santa Cruz, and San Ignacio. The BYU research team worked with Pro Mujer administrative staff to determine target locations as well as identify and contact participants in the CHW program. Individuals from different geographic areas, social classes, and backgrounds were chosen intentionally by Pro Mujer staff in order to increase the diversity of opinions and experiences captured in the study. Participation in the study was voluntary and all CHWs provided informed consent prior to completing an interview or a survey. Permission to audio record interviews was obtained before collecting data.

Participants were informed that the research team is affiliated with an academic institution that is conducting a collaborative study with Pro Mujer. The participants were advised that the purpose of the study was to understand experiences, health, and wellbeing of CHWs in order to improve their program and their support system. All participants received a grocery incentive worth 80 Bolivianos, approximately USD 12, for completing a survey or interview.

Data collection

The Brigham Young University (BYU) research team, in collaboration with Pro Mujer leadership, developed a quantitative survey that consisted of 104 questions. The survey questions were based on a thorough review of the CHW and health survey literature and focused on demographics, physical and mental health, nutrition, and living conditions. Questions related to job satisfaction, motivation, and professional development were also asked and are reported in a separate companion paper. The survey was pilot tested with Pro Mujer nurses prior to deployment. The team also created a qualitative interview guide that was used to conduct semi-structured interviews that explored CHW experiences, health effects, motivation, and perceived challenges.

Data collection took place between April 25th and May 23rd, 2025. Quantitative data collection was conducted through a structured online survey (Qualtrics software) that was distributed in Spanish to all CHWs via WhatsApp. CHW participants completed the survey either at home or during meetings at the Pro Mujer offices. Qualitative data was collected through semi-structured interviews at Pro Mujer locations and over video call. Semi-structured interviews were conducted one-on-one in Spanish by two female Spanish-speaking BYU undergraduate students who had received extensive training in qualitative interview methods and had ongoing support from doctoral-level researchers. A formal relationship between BYU and Pro Mujer was established prior to the study. Pro Mujer administrative staff invited participants in study locations to attend meetings at Pro Mujer offices where they were invited by the research team to participate in an interview. While others were present in the building, interviews were all conducted in private offices where there was minimal possibility of being overheard. To minimize perceived coercion, Pro Mujer staff were not present during consent or data collection, and participants were informed that participation would not affect their standing in the program. Interviews lasted between 10 and 40 minutes each. Interviewers followed a semi-structured interview guide that allowed for open-ended responses.

Data analysis

Quantitative data were cleaned and analyzed using R studio, with Excel used for data cleaning and visualization. Summary statistics and graphical displays were generated for all survey variables. Chi-square tests of independence were conducted to examine associations between demographic characteristics and key categorical health variables. Age, education level, city, marital status, and race/ethnicity variables were condensed to simplify this analysis. Two new categorical variables were created: 1) psychological distress included all participants who reported feeling depression or anxiety over the past year, and 2) obesity included participants who had a BMI of 25 or higher based on self-reported height and weight. Statistical significance was assessed at $p < 0.05$. Multivariable logistic regression analyses were conducted using the same exposure and outcomes variables to account for confounding factors. Adjusted odds ratios and 95% confidence intervals were estimated. Multicollinearity was also evaluated. The risk of social desirability bias, due to self-reported height and weight data, is acknowledged.

Interviews were transcribed using TurboScribe before being verified and edited for accuracy by a member of the research team. The research team used both deductive and inductive approaches to analyze the qualitative data with assistance from DelveTool.ai qualitative data analysis software and ChatGPT (OpenAI, version 5.3). First, the research team created a qualitative codebook targeted towards answering the research questions with key codes derived from the literature. They then entered the initial codebook and interview transcripts into ChatGPT and asked the AI software to identify any additional emergent codes related to the study's objective. ChatGPT was used as a supplementary tool to suggest potential emergent codes; all final coding decisions were made by the research team. The research team carefully reviewed the AI-generated codes and added the relevant suggested new codes to the codebook to create a final version. The research team input the final codebook into DelveTool.ai with instructions to apply it to all the interview transcripts. Finally, one of the research team members reviewed all coded interviews to verify accuracy of DelveTool.ai coding. To enhance credibility and dependability, multiple members of the research

team reviewed coded transcripts, discrepancies were discussed, and analytic decisions were documented.

RESULTS

Characteristics of participants

A total of 183 CHWs, out of 215 active Pro Mujer CHWs, answered the online survey. The majority of CHW survey respondents (see Table 1) were younger than age 45 (73.4%), female (90.1%), and reported Spanish as their native language (90.2%). Other common native languages reported were Quechua (18.0%) and Aymara (15.9%). A large portion of CHWs (41.0%) identify as Indigenous (ex. Aymara, Quechua, Guarani) or Mestizo (32.0%) as their racial/ethnic description. Respondents resided in eight different Bolivian cities, with the largest portion (29.5%) living in El Alto. Nearly 20.0% of respondents had not completed secondary school, and 48.1% were married or cohabitating compared to 41.5% who were single.

Table 1. Demographics of the survey respondents (n=183).

Variable	n (%)
Age	
18-24	35 (19.7)
25-34	45 (25.4)
35-44	50 (28.2)
45-54	30 (16.9)
55-64	14 (7.9)
65+	3 (1.6)
Gender	
Male	17 (9.2)
Female	166 (90.1)
City of Residence	
El Alto	54 (29.5)
Cochabamba	30 (16.3)
Potosí	28 (15.3)
Tarija	26 (14.2)
San Ignacio	18 (9.8)
La Paz	10 (5.4)
Santa Cruz de la Sierra	13 (7.1)
San Julián	4 (2.1)
Highest Level of Education	
Primary (basic)	11 (6.0)
Secondary (intermediate and high school)	25 (13.6)
High school diploma (completed)	51 (27.8)
Higher education (bachelor's degree)	18 (9.8)
Technical (intermediate or advanced)	46 (25.1)
University student or graduate (i.e.some college)	29 (15.8)
Postgraduate (specialization, master's, doctorate)	3 (1.6)
Marital Status	
Single, never married	76 (41.5)
Married	46 (25.1)
Living with a partner (cohabiting)	42 (22.9)
Widowed	5 (2.7)
Divorced or separated	14 (7.6)
Ethnic background	
Indigenous (Aymara, Quechua, Guarani)	75 (41.0)
Mestizo	59 (32.0)
White/Caucasian	7 (4.0)
Afroboliviano	7 (4.0)
Other	9 (5.0)
Prefer not to say	26 (14.0)
Native Language	
Spanish	165 (90.2)
Quechua	33 (18.0)
Aymara	29 (15.9)
Guarani	1 (0.6)
Other	4 (2.2)

A total of 69 CHWs, from the locations listed in Table 2, participated in qualitative interviews. These individuals varied by age, profession, experience as a CHW, and socioeconomic background. No interview participant identifiers or demographics were recorded. Individuals were selected by local Pro Mujer administrative staff.

Table 2. Location of interview and number of participants.

Interview locations	Number of interviews conducted
Santa Cruz	16
San Ignacio	15
Tarija	14
Cochabamba	14
El Alto	10

Physical health

Overall, the physical health of Pro Mujer's CHWs appears stable. The participants self-reported their health with 8.7% reporting "excellent" health, 19.2% "very good", 43.7% reported "good", 27.3% reported "regular", and 0.5% reported "poor" health. Based on BMI calculations made from self-reported height and weight, 42.0% of the CHWs are a healthy weight, whereas 35.0% are overweight and 22.0% obese (including obesity and

severe obesity). The majority of CHW participants reported sleeping 7-8 hours per night (65.6%), and a large proportion reported engaging in physical activity 2-3 days per week (40.0%). Very few do not exercise at all (14.8%). Daily or weekly rates of smoking and alcohol consumption were very low. Only 1.0% of CHWs reported daily smoking habits, 7.0% reported smoking occasionally, and 92.0% reported never smoking. One percent of CHWs reported consuming alcoholic beverages once or more times per week, 55.0% reported occasional alcohol consumption, and 44.0% reported never consuming alcohol.

In the qualitative interviews, some CHWs discussed how their work as a CHW has positively affected their physical health by helping them implement healthy living principles for their lives and within their families. For example, one community health worker reported:

> *"You could say being a CHW has been positive. Because we've learned a lot, even gaining the knowledge needed to have a healthy life and a healthy diet. About food and physical activity. You could say it's all positive. Because that way we also put it into practice and bring it into the family environment, so that everyone can live a healthy life.* (CHW)"

The most frequently reported health issues include dental problems (22.0%), obesity (21.0%), vision problems (19.0%), cough with rapid breathing and higher fever (16.0%), diarrhea (11.0%), cough for more than 15 days (11.0%), and hypertension (7.0%). More serious chronic conditions were mentioned by fewer than 3.0% of respondents, including diabetes, gastritis, hyperthyroidism, gallbladder disease, tendonitis, anemia, and polycythemia.

Obesity was a particularly prevalent issue that was further discussed in qualitative interviews. While some CHWs mentioned struggling with their weight, others reported losing weight as a result of joining Pro Mujer. In a comment representative of many others, one CHW stated:

> *"Before coming here for the training, we were weighed. At first, they measured us, and I weighed 103 kilos. And I've lost weight; I'm now at 80 kilos. It motivated me. That's why my self-esteem has gone up a lot. It's helped me a lot. This project has supported me a lot. I've liked it, how we talked about healthy meals, about how we should eat. It's helped me, and I've put it into practice. And it's helped me a lot. It's been positive.* (CHW)"

While 9.0% of CHWs reported being victims of robbery, assault, or mugging in a public space over the past year, 75.0% reported not having experienced any form of violence, fraud, or abuse. In the qualitative interviews, many CHWs described experiencing a sense of empowerment from their involvement with Pro Mujer and explained that the organization encouraged them to distance themselves from abusive relationships. One CHW shared the following experience:

> *"Working with Pro Mujer has affected me positively. It helped me recognize the types of violence I was experiencing and that I didn't deserve them. It helped me understand that I need to love myself as a person, with my whole body, and accept myself as I am. It has motivated me emotionally to grow and to believe in myself.* (CHW)"

Access to care

Although 67.0% reported having at least some kind of medical insurance, CHWs experienced a number of barriers to accessing health care (see Table 3). When asked why they didn't go to a medical center to seek care for specific acute or ongoing conditions, nearly 40.0% of respondents said that long wait times were a major barrier.

Table 3. Barriers to accessing care.

When you get sick, what difficulties prevent you from receiving medical advice or treatment? (n=183)	n (%)
None	55 (30.0)
Getting money for treatment	41 (22.4)
Knowing where to go	37 (20.2)
Thinking that there may not be any medications available	31 (17.0)
Having to take transportation	20 (11.0)
Distance to medical services	19 (10.4)
Thinking that there may not be staff available	15 (8.0)
Not wanting to go alone	14 (7.7)
Thinking that there may not be female staff available	11 (6.0)
Getting permission to go	6 (3.3)

In the qualitative interviews, the CHWs discussed the limitations of health resources available to them. It was common for them to mention the need for better health insurance and medical care, and to suggest that perhaps Pro Mujer could do more to provide these services for them. For example, two CHWs said:

> *"I would like the institutions we work with to be a bit more concerned about our health, but at a basic, affordable cost, because we can't always afford it. Those of us who don't have insurance or who work independently don't have many resources to pay for all the medical tests that are requested, so because of the cost, we don't get them done.* (CHW)"
>
> *"As promoters, we don't currently have medical insurance. Maybe that's something they could also help us with.* (CHW)"

Among female CHWs aged 40 and older (age group recommended for mammograms in Bolivia), 36.4% have had a mammogram in the last two years, while 45.5% have never had one [19]. Similarly, 39.4% have had a clinical breast exam in the last two years, but 46.9% have never had a clinical breast exam (see Table 4). A large majority (84.0%) of female respondents of any age have been taught how to perform a self-breast exam by a healthcare professional. However, only 24.1% had performed one within the last month and 18.1% had never performed a self-breast exam. Screening for cervical cancer was less common with only 36.0% of female CHWs having had a pap smear or HPV test.

Table 4. Breast cancer screening among women aged 40 and older.

Question	Within 1 year or less n (%)	Between 1 and 2 years n (%)	More than 2 years ago n (%)	Never n (%)	I don't known (%)
When was the last time you had a mammogram? (n=66)	19 (28.8)	5 (7.6)	9 (13.6)	30 (45.5)	3 (4.6)
When was the last time you had a clinical breast exam (excluding a mammogram)? (n=66)	21 (31.8)	5 (7.6)	6 (9.1)	31 (46.9)	3 (4.6)

Regarding sexual and reproductive health, 75.4% of CHWs reported having been sexually active. During their most recent sexual encounter, 52.4% of sexually active CHWs reported using a form of birth control. The most commonly used birth control methods include condoms, implants, injections, and oral contraceptives. Only 14.0% of participants reported that they did not know where to obtain birth control or family planning services. The most frequently used places cited for obtaining contraceptives or family planning services were public hospitals (54.7%), public health centers (43.3%), other community health workers (29.3%), pharmacies (25.0%), and private clinics (23.6%).

In the qualitative interviews, participants mentioned learning about sexual and reproductive health during their role as a CHW. One CHW shared the following experience about her increased awareness of preventing sexual and reproductive health issues:

> "*By learning about these things, I've started going to the doctor and getting regular checkups, even things like Pap smears, because before I didn't understand anything about that. All those things, breast cancer and everything, I've learned about them, and it has helped me a lot personally.* (CHW)"

Mental health

Mental health symptoms were common among CHWs across work, family, and social contexts. Of the participants, 53.6% reported feeling nervous, tense, or irritable in their job within the past two weeks, and nearly half reported similar feelings in their family (46.5%) and social lives (45.4%). Among those who experienced these symptoms, approximately half reported that they interfered with daily activities. Similarly, during the previous two weeks, 39.3% of CHWs reported little interest or pleasure in doing activities they typically enjoy. Additionally, 7.65% reported having thoughts of self-harm or death within the last year.

When asked about mental health symptoms over the previous year, over one-third of CHWs reported symptoms of anxiety (38.3%) or depression (34.4%), and nearly one-third reported fatigue (30.1%) or insomnia (29.5%) (see Table 5). Despite these challenges, more than half of participants (55.0%) reported having a personal activity or space to support their emotional well-being. Notably, 78.0% indicated that they would be interested in receiving emotional support or guidance.

These findings were supported by the qualitative interviews. CHWs were asked about how their mental health had been affected by working as a CHW as well as the mental health support that Pro Mujer offers. In response, they expressed a desire for better mental health services, and some felt this need stemmed in part from the stress caused by their volunteer work. One CHW shared the following insights as to the emotional support they lack:

> "*I think that mental health care is what's missing. At the very least, there should be a professional, a psychologist or someone like that, to work with everyone. Because we know that, for example, here the work is very stressful, and sometimes that support is needed.* (CHW)"

Despite a lack of emotional support services, many CHWs reported their mental health symptoms were improved by their participation as a CHW. These CHWs were grateful for what they have learned from Pro Mujer and how it has helped their mental health. One CHW explained:

> "*Pro Mujer is not just about training us to support and help other women. They also help us, they help me, with my mental health, with the*

condition I live with and will continue to live with, because it's biological. It's something in the brain that I can't change with medication or anything else. I can improve it, yes, but I can't eliminate it. It's part of who I am. I've learned to live with it, and I know it will always be there. And it depends on me how I handle it and what I do to help myself, and Pro Mujer helps me help myself. (CHW)"

Table 5. Mental health symptoms experienced by CHWs

In the past year, have you experienced any of the following symptoms? (n=183)	n (%)
Anxiety	70 (38.3)
Depression	63 (34.4)
Insomnia	55 (30.1)
Fatigue	55 (30.1)
Irritability	54 (29.5)
Difficulty concentrating	36 (19.7)
Forgetfulness	35 (19.1)
None of the above	26 (14.2)

Some mentioned that the work was therapeutic to them and helped them relieve stress. For example, one CHW said:

"*Because, like I say, it's a stress relief. Many times, there's so much stress at home. Or at work. Or from selling, it's stressful. Very stressful. But when you go to work with the promoters and do the screenings, it's different. Yes. You de-stress. You feel calm. And you go home calm.* (CHW)"

Others appreciated feeling a sense of purpose in knowing they are providing important services to members of their community. One CHW stated:

"*Honestly, I feel very comfortable, I feel good, and I feel important as well. Because when you have depression, sometimes you feel so bad that you think you're not useful for anything. But when I come here, I feel that I am, that I'm useful. And that helps me a lot. Even though I can contribute by coming here and helping people, they also help me a lot. And I always tell people that I feel very grateful for that, for allowing me to be part of this, to be a leader and a promoter.* (CHW)"

Similarly, one CHW explained how focusing on serving others helped her forget about her own problems:

"*But since I became a community health worker, for me it's a stress reliever. Because instead of thinking about our own problems, we focus on helping others, and little by little our own problems resolve themselves, day by day. That's something I've learned a lot from.* (CHW)"

They also talked about the importance of the sense of community and support they get from their fellow CHWs. When asked how her mental health has been impacted by working as a CHW, one participant shared the following experience:

"*It has affected me positively. Before, I neglected myself a lot, I would forget about everything. I was in the hospital, sick and depressed. And since I've been here, it's a group where we support each other emotionally. By taking better care of myself, I'm doing better now, and I'm not as depressed anymore.* (CHW)"

Quantitative findings

Table 6 presents the prevalence of psychological distress and overweight/obesity according to different social variables. In the crude logistic regression models, marital status and ethnicity were associated with psychological distress, while age and marital status were associated with overweight/obesity.

In the multivariable logistic regression model, married participants had higher odds of psychological distress compared with those who were not married (OR = 2.69; 95% CI: 1.40–5.23). Non-Indigenous participants also had higher odds of psychological distress compared with Indigenous participants (OR = 2.05; 95% CI: 1.13–3.73).

For overweight/obesity, participants aged 45 years and older had higher odds compared with those younger than 45 years (OR = 2.33; 95% CI: 1.10–5.16). In contrast, participants who were not married had lower odds of overweight/obesity compared with married participants (OR = 0.50; 95% CI: 0.25–0.96).

DISCUSSION

Our study found that Pro Mujer's CHWs generally find themselves in good physical health. Most CHWs self-report having good to excellent physical health (72%), which is reflected in their habits, such as not smoking, not drinking alcohol or only drinking occasionally, engaging in physical activity like walking, and getting adequate sleep. This is a positive finding for Pro Mujer as they want CHWs to be role models in the communities they serve. The percentage of obesity of the CHWs (22%) is better than the national percentage of adult obesity in Bolivia in 2022 (28.7%) [20]. Qualitative findings support these results and indicate that Pro Mujer training and education has empowered CHWs to implement healthier lifestyle habits, improve physical well-being, and make informed decisions affecting their health and safety.

Table 6. Prevalence, odds ratios and adjusted odds ratios with 95% confidence intervals (CIs) for the association between social variables and psychological distress and overweight/obesity

	Psycological distress			Overweight /Obesity		
	n (%)	Crude OR (95%CI)	Adjusted OR (95% CI)	n (%)	Crude OR (95%CI)	Adjusted OR (95% CI)
Age						
<45	67 (51.5)	1	1	64 (49.2)	1	1
≥45	17 (36.2)	0.53 (0.27-1.05)	0.56 (0.26-1.20)	34 (72.3)	2.70 (1.31-5.57)	2.33 (1.10-5.16)
Education						
Secondary or less	13 (36.1)	1	1	22 (61.1)	1	1
More than secondary	76 (51.7)	1.89 (0.89-4.01)	1.55 (0.65-3.80)	79 (53.7)	0.74 (0.35-1.56)	1.10 (0.46-2.57)
Marital Status						
Married or cohabitating	31 (35.2)	1	1	57 (64.8)	1	1
Not married	58 (61.1)	2.88 (1.58-5.25)	2.69 (1.40-5.23)	4 (46.3)	0.47 (0.26-0.85)	0.50 (0.25-0.96)
Ethnicity						
Indigenous	30 (38.5)	1	1	42 (53.8)	1	1
Non-Indigenous	59 (56.2)	2.05 (1.13-3.73)	1.84 (0.95-3.60)	59 (56.2)	1.10 (0.61-1.98)	1.38 (0.72-2.67)

The physical health findings were not all positive. There is a gap in preventative screenings for CHWs. Of the female CHWs aged 40 and older, 45% have never had a mammogram and 46% have never had a clinical breast exam to detect breast cancer. Sixty four percent of the female CHWs have never had a Pap smear (Papanicolaou test) for cervical cancer detection. The World Health Organization's goal is for 70% to have breast cancer screening and cervical cancer screening, highlighting the need for better access to health services for the volunteer CHWs [21].

When it comes to seeking preventative health care or services when they are sick, there are many perceived barriers to receiving care including long wait times, inconvenient hours, thinking the medications are not available, lack of money, not knowing where to go, and the long distances. These challenges prevent over a quarter of the CHWs from receiving health care services. These same challenges were mentioned in the qualitative interviews where CHWs felt they would be better supported if they had access to these services through Pro Mujer or community partners, whether that be preventative health checks or Pro Mujer-funded medical services. They also feel like they would benefit from activities designed within the organization that support their physical health like exercise and dance classes. Organizations can help support their CHWs by providing meaningful non-financial incentives, including offering their volunteers the services and screenings they provide to the community and developing wellness programs designed to address the physical health of their workers.

Despite CHWs reporting some physical health challenges due to their role as a CHW, including exposure to sun, rain, thirst, or fatigue while on campaigns in rural areas, our qualitative findings suggest that working as a CHW is likely one of the factors contributing to favorable health among the CHWs themselves. As the CHWs bring health education, screenings, and improved health outcomes to the communities they serve, CHWs feel they have been able to apply the knowledge they gain in their volunteer work to their own lives and the lives of their families. This finding aligns with research on health workers in other settings that shows how working as a health worker can positively affect personal health. A study conducted in Florida showed that an increase in health literacy showed a significant association with physical function and less limitation in physical health activities [22]. Another study, conducted in Germany, showed that increased health knowledge is a statistically significant indicator of greater psychological well-being [23]. These ideas are reinforced by the findings in this study that show that training and health knowledge offered to CHWs can have a positive effect on their health outcomes.

Regarding mental health, many of the CHWs report feelings of being tense, nervous, irritable at work (54%), with family (46%) and in their social lives (45%) and these feelings have interfered with daily activities in about half of those who experience these feelings. More than a third also report anxiety, depression and fatigue. They would like to be supported through their organization to get therapy as needed (78% are interested in this kind of support). CHWs would benefit from their organization providing services to support their men-

tal health through therapy sessions, psychology, and education.

On the other hand, many CHWs reported that being a CHW improves their mental health. In their interviews, they described experiencing support from peers and leaders, an improved mood from serving others, and a sense of relief from their personal troubles. Similarly, our findings also show that Pro Mujer fosters recognition of domestic violence as well as promotes empowerment, self-worth, and emotional growth. Other research highlights the importance of purpose and community in living a healthy life. One study showed that people with the highest sense of purpose had better physical health and psychosocial outcomes, and a reduced risk of depression [24]. Another study conducted in Wisconsin, showed that individuals with a positive sense of community reported lower levels of depression and anxiety [25]. The CHWs participating in the Pro Mujer program conveyed these shared experiences of positive community engagement and sense of purpose that has helped improve their physical and mental health.

This study has a few important limitations. First, the study population includes only one CHW program, so the results should not be considered generalizable to other CHWs in Bolivia. There was no testing conducted to identify height, weight, or lifestyle habits; rather, many of the questions relied on self-reported information, increasing the risk of social desirability bias. These data would be more accurate if the health markers could be clinically verified, but the risk of bias is relatively low due to the anonymous nature of the questions. Self-reported mental health symptoms were combined to create a new psychological distress variable that is unique to questions asked in this study and not based on a validated scale. This study also lacked baseline knowledge of the lives of CHWs before participation with Pro Mujer. Given these limitations, this study could pave the way for future research in developing and implementing specific programs evaluated for impact in the lives of CHWs.

Conclusion

This study is the first to analyze the physical and mental health outcomes of volunteer CHWs. The CHWs exhibit relatively healthy behaviors, and participation in Pro Mujer improves self-efficacy, healthy habits, and a sense of community and purpose. However, important gaps are identified in CHWs' access to preventative health screenings, and obesity is determined to be of concern. Mental health challenges also persist. While working as a CHW can enhance psychological well-being, it can simultaneously cause stress. CHW participants desire interventions that promote health and improve access to needed services. Demographic variables, including marital status, age, and ethnicity, are associated with psychological distress and obesity, suggesting that interventions tailored demographically could also improve the physical and mental well-being of CHWs.

DECLARATIONS

AI utilization

AI tools were used as a supplementary aid to support qualitative coding. Further details are provided in the methods section.

Competing interests

The authors declare no competing interests.

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Author contributions

MM, YP, PMC, KH and JG contributed to the conception and design of the study as well as the data analysis. MM and YP carried out the data collection. All authors contributed to drafting, revising, and approving the manuscript.

Data availability

The authors confirm that the data supporting the findings of this study are available upon reasonable request.

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ABSTRACT IN SPANISH

Salud física y mental de los y las promotores/as de salud comunitarios en Bolivia: evidencia de un amplio programa implementado por una ONG

Introducción: Los programas de promotores de salud comunitarios (PSC) constituyen un componente importante del personal de salud en Bolivia y en otros países de ingresos bajos y medianos. Este estudio busca: 1) describir la salud física y mental de los/as PSC voluntarios en Bolivia; 2) explorar cómo los factores demográficos individuales se asocian con estos resultados de salud; y 3) examinar cómo los/as PSC perciben que su trabajo afecta su salud.

Métodos: Este estudio utilizó un diseño de métodos mixtos que incluyó la recolección y el análisis de datos cualitativos y cuantitativos. Se realizaron entrevistas cualitativas con una muestra intencional en cinco lugares de Bolivia donde Pro Mujer, una ONG local, implementa un programa de PSC. Además, se distribuyó una encuesta cuantitativa a participantes de todos los sitios del proyecto de PSC. Tanto la encuesta cuantitativa como la guía de entrevista cualitativa incluyeron preguntas sobre las experiencias de los/as PSC, los efectos en su salud y los desafíos percibidos.

Resultados: En general, los/as PSC consideran que tienen una buena salud física; sin embargo, persisten desafíos para acceder a servicios preventivos de salud y tamizajes. Entre las barreras comunes que enfrentan se encuentran los largos tiempos de espera y los horarios poco convenientes. Los/as PSC señalan que aplican los conocimientos adquiridos en su rol a sus propias vidas y a las de sus familias. También reportan diversos problemas de salud mental, incluyendo ansiedad, depresión y sentimientos de tensión, nerviosismo e irritabilidad en sus actividades diarias. Sin embargo, también refieren sentirse apoyados por sus pares y líderes, y que servir a otras personas en sus comunidades ha mejorado su estado de ánimo y les ha permitido dejar atrás sus dificultades emocionales.

Conclusión: Este estudio es el primero en analizar los resultados de salud física y mental de los/as PSC voluntarios en Bolivia. Las intervenciones orientadas a mejorar el acceso a la atención preventiva y a brindar mayor apoyo psicológico son clave para ampliar el alcance de los/as PSC.

Palabras clave: Promotores de salud, sistemas de salud, malestar psicológico, obesidad, Bolivia

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