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# Acceptability of community health worker-led hypertension care with independent prescribing in rural Lesotho: a mixed- methods study

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## Abstract

# Background

Task-shifting to lay community health workers (CHWs) has been shown to extend access to hypertension care. However, in most studies prescribing authority remained with nurses or physicians. Whether lay CHWs can independently prescribe antihypertensive treatment, and whether this is acceptable to patients, remains poorly understood. Two cluster-randomised trials nested within the Community-Based chronic Care Lesotho (ComBaCaL) cohort demonstrated the safety and effectiveness of CHW-led hypertension management with independent prescribing supported by a mobile clinical decision support system (CDSS). We assessed the acceptability of this model among participants enrolled in the two trials.

# Methods

This mixed-methods study was guided by the Theoretical Framework of Acceptability (TFA). A structured survey covering the eight TFA constructs and valued aspects, concerns, and recommendation intent regarding CHW-led hypertension management was administered to participants in the intervention arm of the trials. In-depth interviews were conducted with participants purposively sampled across different care pathways. Quantitative data were summarised descriptively, qualitative data were analysed using deductive content analysis, and findings were integrated during interpretation.

# Results

A total of 322 participants completed the survey after a median of 576 days (IQR 531–603) of exposure to the intervention, and 20 were interviewed. The median age was 66 years (IQR 55–74); 254 (78.9%) were female. Overall, 200 participants (62.1%) received CHW-led antihypertensive prescribing throughout follow-up. Acceptability of CHW-led hypertension care was very high (97.2%, 313/322), including CHW-led prescribing (96.9%, 312/322). Interviews highlighted trust in CHWs and the convenience of home-based care. Most participants understood the intervention and were confident it had improved their hypertension management; this confidence appeared reinforced by participants' awareness of CHW training, supervision, and the digital CDSS. The main concerns were personal or family conflict with the CHW and confidentiality concerns, rather than concerns about CHW competence.

# Conclusions

CHW-led hypertension care with independent prescribing was highly acceptable among participants in rural Lesotho. High acceptability supports the feasibility of implementing this model beyond research

settings, although attention to confidentiality and interpersonal relationships will be important for successful scale-up.

# Trial registration:

ClinicalTrials.gov NCT05684055, registration date 13 January 2023.

## Background

Hypertension is a leading contributor to the global burden of cardiovascular diseases and premature mortality, accounting for approximately 10 million deaths annually, with a disproportionate burden in low- and middle-income countries[1]. Despite the availability of effective and affordable treatments, blood pressure control rates remain poor, particularly in rural populations where access to health services is most constrained[2].

In Lesotho, nearly two-thirds of the population live in rural and mountainous areas[3]. The prevalence of hypertension among adults is estimated at 21.6%[4]. Despite the provision of free health consultation and medication at primary health facilities, access to hypertension care remains constrained by distance, transport cost, lack of awareness and shortage of skilled health professionals. Most essential health services, including hypertension care, are routinely available at health facilities only with few community outreach activities[5]. These barriers contribute to persistently low detection, treatment and blood pressure control rates[6].

Task-shifting to community health workers (CHWs) has been proposed as a strategy to extend the reach of essential health services, including hypertension care[7,8]. As trusted community members, CHWs in Lesotho and similar settings are well positioned to deliver community-based services[9,10]. Previous randomised trials across low- and middle-income countries have shown that CHW-led interventions can improve blood pressure control through screening, monitoring, adherence support, medication delivery and linkage to facility-based care[11,12]. However, in most previously evaluated models, prescribing authority remained with nurses or physicians, and CHWs functioned as adjuncts to professional health workers rather than independent providers. This limits scalability and constrains timely treatment initiation, monitoring and adjustment in settings where trained clinical staff are scarce.

Two recent large-scale cluster-randomized trials nested within the Community-Based chronic Care Lesotho (ComBaCaL) cohort in rural Lesotho provide evidence that appropriately trained and equipped lay CHWs who are assisted by a mobile clinical decision support system (CDSS) safely and effectively provide hypertension care, including independent prescribing and titration of antihypertensive treatment[13,14]. This model offers an opportunity to substantially expand access to hypertension care in underserved areas. Whether such an expanded CHW role is acceptable to patients, however, remains unknown.

Demonstrating effectiveness alone is insufficient to justify scale-up. Acceptability is a critical determinant of whether an effective intervention will be adopted, sustained, and recommended in routine practice. This is particularly relevant when CHWs assume independent prescribing authority, a role that exceeds traditional CHW practice and may raise concerns about competence, safety, and social dynamics. In this study, we assess the acceptability of CHW-led hypertension care with independent prescribing among participants in two cluster-randomised trials in rural Lesotho using the Theoretical Framework of Acceptability (TFA)[15].

## Methods

# Study design and setting

This mixed-methods study was nested within two cluster-randomised trials comparing CHW-led hypertension management, including CDSS-assisted independent prescription and titration of antihypertensive treatment versus referral to usual facility-based care. Their design and primary results have been published previously[12–14], and the study setting has been described in detail elsewhere[16]. Lesotho's primary healthcare system is organized around nurse-led health centers who provide comprehensive primary healthcare services. The country has an established CHW program with approximately one CHW per village. In routine care, CHWs provide health promotion and prevention services alongside linkage to facility-based care with a focus on maternal and child health, as well as HIV and tuberculosis care. No regular services for non-communicable diseases, such as hypertension, are provided by CHWs.

The ComBaCaL cohort includes inhabitants of 103 randomly selected rural villages in the districts of Butha-Buthe and Mokhotlong in northeastern Lesotho, with one CHW per village elected by the community according to national policies. In all villages, CHWs conduct community-based hypertension screening supported by a mobile CDSS among cohort participants aged 18 years or older. Participants with hypertension identified by their CHWs, either through self-reported antihypertensive treatment use or through blood pressure measurement, are enrolled in the trials. The first trial enrolls participants with uncontrolled hypertension (≥ 140/90 mmHg) while the second trial enrolls participants with treated and controlled hypertension (< 140/90 mmHg). Half of the villages (n = 52) were randomised to the intervention group of the two nested trials. In intervention villages, CHWs offer CDSS-supported hypertension care, including independent prescribing, titration, and, if clinically indicated, de-escalation of a fixed-dose antihypertensive combination pill (amlodipine/hydrochlorothiazide 5mg/12.5mg or 10mg/25mg). Participants are free to accept or decline the hypertension treatment offered by their CHWs at any time. CHW-led prescribing was the default model of care for participants who were clinically eligible and accepted treatment from their CHW. Participants who declined CHW-led antihypertensive prescribing, or who were not eligible because of contraindications, side effects, or more complex treatment needs, were referred to the nearest health facility and received bimonthly home-based follow-up visits from their CHW. In control villages, participants with hypertension are referred to

routine facility-based care with six-monthly check-ups by their CHWs. The primary outcome of both trials was blood pressure control defined as < 140/90 mmHg after 12 months. Among participants with uncontrolled blood pressure at baseline, the intervention led to a significant improvement in blood pressure control at 12 months, while the intervention was non-inferior in maintaining blood pressure control among those already controlled at baseline[13,14]. Although primary analyses of both trials have been completed, long-term follow-up is ongoing to assess effectiveness and sustainability. A parallel trial within the same cohort evaluates a similar CHW-led model for diabetes care[17,18].

To explore how CHW-led, CDSS-supported hypertension care with independent prescribing was perceived by participants, we employed a convergent mixed methods design. Quantitative and qualitative data were collected concurrently, analysed separately, and integrated during interpretation to provide a comprehensive understanding of retrospective acceptability.

## Theoretical framework

The survey questionnaire and interviews guides were informed by the TFA developed by Sekhon et al, which conceptualises acceptability as a multifaceted framework encompassing eight constructs: affective attitude, burden, ethicality, intervention coherence, opportunity cost, perceived effectiveness, self-efficacy and general acceptability[15,19]. The TFA informed questionnaire development, interview guides, and data analysis, with constructs adapted to the context of CHW-led CDSS-supported hypertension care and independent prescribing.

## Eligibility and sampling

Participants who were enrolled in one of the two hypertension trials at least six months prior to the survey date were eligible for participation. A minimum follow-up of six months was required to ensure participants had sufficient exposure to the intervention to meaningfully assess its acceptability.

We used a sequential cluster sampling approach across the 52 intervention villages. Before data collection, the villages were arranged in a computer-generated random sequence. Research teams visited villages according to this predetermined order and approached participants enrolled in the two hypertension trials who were available during a single survey visit. Participants enrolled in the trials for less than six months were subsequently excluded. This approach ensured probability-based selection of clusters while remaining feasible within field resource constraints.

The planned sample size for the hypertension acceptability survey was 260 participants. This was calculated to estimate the proportion of participants reporting overall acceptability of the intervention with a two-sided 95% confidence interval and a margin of error of ± 5%, assuming approximately 800 eligible participants and using the conservative assumption of a 50% expected proportion. Data collection was conducted concurrently with a parallel acceptability survey among participants in the

diabetes trial. Because the diabetes cohort was substantially smaller, additional villages were visited to achieve the required diabetes sample size. Eligible hypertension participants encountered during these additional field visits were also enrolled, resulting in a final sample of 322 participants from 46 of the 52 intervention villages, exceeding the calculated minimally required sample size.

Participation in the survey was covered by the written informed consent obtained at enrolment into the ComBaCaL cohort.

To capture a broad range of experiences related to acceptance of CHW-led antihypertensive prescribing, participants were categorized into four subgroups according to their care pathway during the trial follow-up: 1) participants who received CHW-led prescribing throughout follow-up until the acceptability survey (CHW continuous), 2) participants who received CHW-led prescribing initially but subsequently switched to facility-based prescribing at least once, regardless of the reason (CHW to facility), 3) participants who received facility-based prescribing throughout follow-up (facility continuous), and 4) participants who initially received facility-based prescribing but subsequently switched to CHW-led prescribing (facility to CHW).

For the qualitative component, five participants per subgroup were purposively selected to ensure representation across all four care pathways. Participants selected for in-depth interviews were approached separately and provided written informed consent prior to participation. Sample size was guided by the principle of information power, whereby the narrowly defined study aim, use of an established theoretical framework, and inclusion of participants representing distinct care pathways were considered sufficient to generate rich information relevant to the research question.

## Data collection

Quantitative data were collected through a structured survey administered between 13 May 2025 and 29 July 2025. Participants' baseline characteristics were obtained from the ComBaCaL cohort database. The questionnaire was informed by the eight constructs of the TFA and adapted to the context of CHW-led hypertension care with independent prescribing in rural Lesotho. Prior to implementation, the questionnaire was reviewed by researchers familiar with the ComBaCaL project and the Lesotho health system context. The final questionnaire comprised eight items corresponding to the TFA constructs, and two items assessing participants' willingness to recommend CHW-led hypertension screening and diagnosis and CHW-led antihypertensive prescribing. The items were rated on a five-point Likert scale. Additional multiple-choice questions explored perceived values and concerns related to the intervention, as well as reasons for accepting or declining CHW-led antihypertensive prescribing. The full questionnaire is provided in Additional File 1. For participants who received facility-based prescribing, the recorded reason for receiving facility-based rather than CHW-led prescribing was extracted from the trial database at the first documented visit at which facility-based prescribing was recorded.

Trained research assistants fluent in Sesotho and English administered the survey during household visits using a password-protected tablet-based application.

For the qualitative component the interview guide was structured around the eight TFA constructs and included additional questions exploring participants' reasons for accepting or declining CHW-led antihypertensive prescribing, experiences with the intervention, and perceptions of community-based and facility-based hypertension care. The full interview guide is provided in Additional File 2.

All interviews were conducted in Sesotho by trained researchers (TIL and PM) who were not involved in the delivery of hypertension care. Open-ended interview guides were developed in English and translated into Sesotho by bilingual research staff. Interviews were conducted in private settings, typically in participants' homes, to ensure comfort and confidentiality. Interviews lasted 30–45 minutes. All sessions were audio-recorded with participants' consent. Recordings were transcribed verbatim in Sesotho by trained research assistants and subsequently translated into English. Translations were reviewed for accuracy by a bilingual team member prior to analysis.

# Data analysis

In line with the convergent mixed-methods design, quantitative and qualitative data were analysed independently and subsequently integrated during interpretation.

Descriptive statistics were used to summarize quantitative data. Responses to Likert-scale items were collapsed into three categories (positive, neutral, and negative) to facilitate presentation and interpretation. Categorical variables were reported as absolute numbers and percentages; continuous variables as medians with interquartile ranges (IQR) where appropriate. Baseline characteristics of survey participants were compared descriptively with those of the overall intervention trial population. All analyses were performed using STATA version 16.0 (StataCorp, College Station, TX). Figures 2 and 3 were created using Microsoft Excel (Microsoft Corporation, Redmond, WA, USA).

For qualitative data analysis, a deductive content analysis was applied, guided by the TFA[20–22]. An analysis matrix based on the eight TFA constructs was developed and used to organize and code the data. Codes were subsequently grouped into categories to identify patterns and variations within and across domains. To allow identification of themes not captured by the TFA, open coding was additionally applied. Coding and interpretation were conducted collaboratively by four researchers (TIL, AW, PM, and JB), and discrepancies were resolved through discussion and consensus.

## Results

# Participants' characteristics

At the time of the survey, a total of 1643 non-pregnant participants with hypertension were enrolled in the two cluster-randomized hypertension trials across 103 ComBaCaL cohort villages. Of these, 821

were enrolled in 52 intervention villages. Sequential cluster sampling resulted in 329 participants being approached across 46 intervention villages. Seven participants who had been enrolled in the trials for less than six months were excluded, leaving 322 participants in the quantitative analysis (Fig. 1).

**Figure 1. Flowchart of participant selection for the quantitative survey**

The median age was 66 years (IQR 55–74), 254 (78.9%) were female, 41 (12.7%) were living with diabetes, and 224 (69.6%) were receiving antihypertensive treatment at baseline (Table 1). Participants had been exposed to the intervention for a median of 576 days (IQR 531–603) before completing the acceptability survey. Baseline characteristics were similar to those of the overall intervention trial population (Additional File 3, Table S1).

Table 1
Characteristics of survey participants.

| Characteristic | Overall (N = 322) |
|---|---|
| Age, years, median (IQR) | 66 (55–74) |
| Female sex, n (%) | 254 (78.9) |
| District, n (%) | |
| Butha-Buthe | 167 (51.9) |
| Mokhotlong | 155 (48.1) |
| Living with diabetes, n (%) | 41 (12.7) |
| Receiving antihypertensive treatment at baseline, n (%) | 224 (69.6) |
| Time from trial enrolment to acceptability survey, days, median (IQR) | 576 (531–603) |
| Care pathway, n (%) | |
| CHW-led prescribing throughout | 200 (62.1) |
| CHW-led prescribing initially, then switched to facility | 64 (19.9) |
| Facility-based prescribing throughout | 27 (8.4) |
| Facility-based prescribing initially, then switched to CHW | 31 (9.6) |

Table 1 Legend: IQR = interquartile range. Care pathways were derived from all study visits completed between trial enrolment and the acceptability survey.

Overall, 200 (62.1%) participants received CHW-led antihypertensive prescribing throughout follow-up, 64 (19.9%) initially received CHW-led antihypertensive prescribing but later transitioned to facility-based prescribing at least once, 27 (8.4%) received facility-based prescribing throughout follow-up, while 31 (9.6%) initially received facility-based prescribing but later transitioned to CHW-led prescribing. Baseline characteristics were broadly similar across the four care pathway groups, although participants who

initially received facility-based prescribing tended to be older and all were receiving antihypertensive treatment at baseline (Additional File 3, Table S2).

## Acceptability by TFA construct

# Affective attitude

Quantitative findings indicated high levels of comfort with CHW-led hypertension care (Table 2). Qualitative interviews similarly reflected positive emotional responses, characterised by confidence, comfort, and trust. Participants frequently described feeling comfortable receiving hypertension care from CHWs and valued being able to discuss their health concerns openly with someone they knew and trusted within their community.

*"I was very comfortable because I was given the medication by the health care worker [CHW] from my village whom whenever I am sick even if it is in the middle of the night I get help from them."* – 83-year-old male.

*"She's someone people can feel free to talk to ... and she is also confidential."* – 60-year-old female

Although some participants initially expressed scepticism about receiving hypertension care from CHWs, this uncertainty generally resolved after direct experience with the intervention. Overall, participants described positive emotional experiences with CHW-led hypertension care, characterised by comfort, reassurance, and increasing confidence over time.

Table 2
Summary of quantitative acceptability findings according to the Theoretical Framework of Acceptability and recommendation intent of CHW-led hypertension management.

| **Affective attitude** | **Positive n (%)** | **Neutral n (%)** | **Negative n (%)** |
|---|---|---|---|
| | **312 (97.0)** | **0 (0.0)** | **10 (3.1)** |
| Burden | 311 (96.6) | 1 (0.3) | 10 (3.1) |
| Ethicality | 317 (98.4) | 5 (1.6) | 0 (0.0) |
| Intervention coherence | 318 (98.8) | 2 (0.6) | 2 (0.6) |
| Opportunity cost | 254 (78.9) | 2 (0.6) | 66 (20.5) |
| Perceived effectiveness | 318 (98.8) | 2 (0.6) | 2 (0.6) |
| Self-efficacy | 299 (92.9) | 8 (2.5) | 15 (4.7) |
| Overall acceptability | 313 (97.2) | 1 (0.3) | 8 (2.5) |
| Recommendation of CHW-led hypertension screening and diagnosis | 316 (98.1) | 4 (1.2) | 2 (0.6) |
| Recommendation of CHW-led antihypertensive prescribing | 312 (96.9) | 7 (2.2) | 3 (0.9) |

Table 2 Legend: Responses to the original five-point Likert scale were collapsed into positive, neutral and negative categories for presentation. For the opportunity cost construct, response categories were reverse-coded so that positive responses indicate that participants did not perceive CHW-led hypertension care as interfering with other priorities. The distribution of responses according to the original five-point Likert scale is provided in Additional File 3 (Table S3). The original questionnaire is provided in Additional File 1.

# Burden

Quantitative findings indicated that participants perceived little burden associated with CHW-led hypertension care (Table 2). Qualitative interviews consistently attributed this to the convenience of receiving hypertension care within their own communities. Participants described reduced travel distances and transport costs, less physical effort, shorter waiting times, and easier access to care, particularly when illness, older age, or limited mobility made travelling to health facilities difficult.

*"When the village worker [CHW] came with the medication, I thought it is important because I did not have to use money for transport the medication was brought to me so I was satisfied that I no longer have to travel to get the medication because sometimes I would not even succeed."* – 51-year-old female

Several participants also emphasised the time saved by avoiding travel and long queues at health facilities. Overall, participants consistently described the proximity and convenience of CHW-led care as

substantially reducing the effort required to access hypertension services.

# Ethicality

Quantitative findings indicated that participants perceived CHW-led hypertension care as fair and appropriate (Table 2). Qualitative interviews similarly suggested that the intervention aligned well with community values and norms. Participants frequently described CHWs as trusted members of their communities whose role in providing hypertension care was viewed as a natural extension of their existing responsibilities. No participants reported cultural or religious objections to receiving hypertension care from CHWs.

*"The people think it is good."*- 83-year-old male.

Several participants further highlighted that CHWs were known and trusted members of their communities who had been selected through established community processes, reinforcing perceptions that CHW-led hypertension care was fair and acceptable.

# Intervention coherence

Quantitative findings indicated that participants had a strong understanding of CHW-led hypertension care (Table 2). Qualitative interviews similarly demonstrated that participants understood how the intervention operated and the respective roles of CHWs and health facilities. Participants accurately described the services provided by CHWs, including blood pressure measurement, explanation of results, medication provision, and follow-up visits.

*"She explains. Now I understand when we do something and why."* – 61-year-old female.

Participants further understood that CHWs worked within the broader health system rather than independently. They recognised that CHWs received appropriate training, sought supervisory support when needed, and referred patients to health facilities when care exceeded their scope of practice.

*"Yes, because he is not acting on his own; he has been getting help from people above him."* – 49-year-old female.

Overall, participants demonstrated a clear understanding of both the services provided by CHWs and the mechanisms that ensured safe delivery of community-based hypertension care.

# Opportunity cost

Quantitative findings indicated that most participants did not perceive CHW-led hypertension care as interfering with activities that were important to them (Table 2), which qualitative interviews attributed to the proximity of the service provision and the flexibility of scheduling visits around participants' own routine.

*"She asks me on time about my schedule so it is easier to arrange time."* – 60-year-old female.

Nevertheless, 66 participants (20.5%) reported that participation in CHW-led care required them to give up activities that were important to them. Qualitative interviews suggested this reflected the time commitment of regular home-based visits, which sometimes meant interrupting daily activities when the CHW arrived.

*"When she arrives, I stop everything I was doing, even if I was about to go somewhere I stop."* – 73-year-old female

# Perceived effectiveness

Quantitative findings indicated that participants perceived CHW-led hypertension care as effective (Table 2). Qualitative interviews similarly suggested that participants believed the intervention improved hypertension management, with many describing better blood pressure control and positive treatment outcomes.

*"My high blood [pressure] has really been controlled"* – 39-year-old male.

Participants also described that CHW-led care helped them better understand hypertension management, including the importance of regular blood pressure monitoring and adherence to treatment recommendations.

A small number of participants reported neutral or negative experiences, including a lack of noticeable improvement or medication-related side effects that prompted referral to a health facility. These experiences were uncommon and generally reflected appropriate referral to facility-based care following clinical concerns rather than dissatisfaction with CHW-led hypertension care.

# Self-efficacy

Quantitative findings indicated that most participants were confident in their ability to follow guidance provided by CHWs (Table 2). Qualitative findings suggested that encouragement and ongoing support from CHWs strengthened participants' confidence in managing their hypertension and adhering to treatment recommendations.

*"I felt brave and encouraged because the CHW seemed determined."* – 63-year-old female.

Some participants also described how previous experience with facility-based hypertension care facilitated engagement with CHW-led services, as existing knowledge and routines could be applied within the community-based model.

*"It was easy because I already had rules from the clinic for my condition."*- 73-year-old female.

Overall, participants described feeling confident in engaging with and adhering to hypertension care delivered through the CHW-led model.

# Overall acceptability and recommendation intent

Overall acceptability of CHW-led hypertension care was very high, and almost all participants indicated that they would recommend both CHW-led hypertension screening and diagnosis and CHW-led antihypertensive prescribing to others (Table 2). Qualitative findings reinforced this strong endorsement. Participants frequently described CHW-led hypertension care as beneficial, convenient, and expressed a clear desire for the services to continue within their communities.

*“I would recommend that they go to the CHW.”* – 62-year-old female.

Overall, participants consistently supported the continuation and wider implementation of CHW-led hypertension care.

# Valued aspects of CHW-led hypertension care

Figure 2 presents the aspects of CHW-led hypertension care that participants valued most. The most frequently reported benefits related to improved access and convenience. Reduced travel burden was the highest-ranked attribute (281/322, 87.3%), followed by flexible service hours (275/322, 85.4%), reduced or no waiting time (255/322, 79.2%), and the commitment of service providers (253/322, 78.6%). Easy accessibility of service providers was also highly valued (241/322, 74.8%).

*"It is very easy because often times he is always available, we even play football together. He's local and always available."* – 39-year-old male.

**Figure 2. Valued aspects of CHW-led hypertension care reported by participants (N = 322)**

Interpersonal and relational factors were similarly important. Participants frequently identified local understanding (235/322, 73.0%), friendliness and respectfulness (231/322, 71.7%), competence (226/322, 70.2%), and trustworthiness and honesty (223/322, 69.3%) as valued characteristics of CHW-led care.

Participants also valued the participant-centred nature of the intervention, including personalised follow-up visits (225/322, 69.9%) and sufficient time for explanations (205/322, 63.7%). Community engagement (192/322, 59.6%) and reduced stigma within the community (171/322, 53.1%) were additional perceived benefits.

Notably, the digital clinical decision support system (CDSS) ranked among the most frequently valued aspects of CHW-led hypertension care (244/322, 75.8%), alongside several of the highest-rated service characteristics.

# Concerns about CHW-led hypertension care

Figure 3 summarises participants' reported concerns regarding CHW-led hypertension care. The leading concerns related to interpersonal relationships within the community and treatment safety.

**Figure 3. Reported concerns regarding CHW-led hypertension care (N = 322)**

Personal or family conflicts with CHWs were the most frequently reported concern (47/322, 14.6%), followed by confidentiality (36/322, 11.2%) and fear of side effects or other treatment-related issues (35/322, 10.9%). Participants who described treatment-related concerns mostly referred to medication side effects or a preference for alternative treatment options. As one participant explained:

*"If she had a different medication from the one she is currently providing, I did not have any issues getting treatment from her."*-61-year-old female

Other concerns were reported less frequently and included inconsistency in service provision (19/322, 5.9%) and limited access to resources, including potential stock-outs of medications and supplies (16/322, 5.0%). Relatively few participants expressed concerns regarding the quality of care, including CHW competence (12/322, 3.7%), lack of integrated care (11/322, 3.4%), lack of continuity (11/322, 3.4%), or increased stigma within the community (6/322, 1.9%). Overall, concerns centred on social relationships and medication safety rather than on the competence of CHWs to provide hypertension care.

# Care pathways between CHW-led and facility-based prescribing

In-depth interviews explored the reasons underlying different care pathways. Participants described initiating, continuing, declining, or transitioning between CHW-led and facility-based hypertension care based on convenience, clinical experiences, and changing health needs over time.

# Received CHW-led prescribing throughout follow-up

Participants who continuously received CHW-led antihypertensive prescribing described high satisfaction, primarily driven by convenience, proximity, and home-based follow-up. CHW-led care was often perceived as equivalent to facility-based care, with added benefits of accessibility and personalized support.

*“The facility is far but here the services were brought to our homes.”* – 73-year-old female.

Improved blood pressure control and positive relationships with CHWs further reinforced continued engagement.

*“My blood pressure was not manageable but ever since I started working with him it is now very manageable.”* – 62-year-old female.

# Received CHW-led prescribing initially but later transitioned to facility-based prescribing

Among the 64 participants who initially received CHW-led prescribing but subsequently received facility-based prescribing, 10 (15.6%) required more complex antihypertensive treatment, five (7.8%) reported

intolerance to amlodipine/hydrochlorothiazide, and 49 (76.6%) declined further CHW-led prescribing. Qualitative interviews illustrated some of the clinical reasons for transitioning, particularly medication side effects or ongoing blood pressure concerns.

*"…I had to stop them because I was getting swollen but after getting medication from the clinic, the swelling stopped."* – 61-year-old female.

Most participants remained positive about CHW-led prescribing despite subsequent switch to facility-based prescribing. For some, this transition reflected changes in work-related mobility rather than concerns about the care itself.

*"She does not have a chance when I am in Mapholaneng and she is in the village, she cannot bring me any medication because it is far, that is why I decided to go back to the clinic."* – 56-year-old female.

# Received facility-based prescribing throughout follow-up

Among the 27 participants who received facility-based prescribing throughout follow-up, 14 (51.9%) required more complex antihypertensive treatment, one (3.7%) had documented intolerance to amlodipine/hydrochlorothiazide, and 12 (44.4%) declined CHW-led prescribing. Among participants who declined CHW-led prescribing, qualitative interviews identified several personal and contextual reasons for preferring facility-based care, including employment and proximity to the workplace. Some participants' previous positive experience with the health facilities, influenced their decision not to transition to CHW-led care.

*"Maybe in the near future (switch to CHW-led care), I am happy with the clinic"* – 41-year-old female.

Some participants acknowledged the training received by CHWs; however, they remained concerned about their professional expertise relative to nurses, particularly the potential for prescribing or medication errors.

*"What if she mixed our medication?"* – 72-year-old male.

# Initially received facility-based prescribing but later transitioned to CHW-led prescribing

Among the 31 participants who initially received facility-based prescribing but subsequently transitioned to CHW-led prescribing, seven (22.6%) initially required more complex antihypertensive treatment, three (9.7%) had documented intolerance to amlodipine/hydrochlorothiazide, eligibility for CHW-led prescribing could not yet be determined in six (19.4%) because an additional blood pressure measurement was required, and 15 (48.4%) initially declined CHW-led prescribing. Qualitative interviews suggested that subsequent transitions to CHW-led prescribing reflected changes in participants' circumstances and willingness to receive community-based care. Participants described declining

mobility, visual impairment, and increasing difficulty accessing health facilities, while convenience and reduced travel costs were important reasons for subsequently accepting CHW-led care.

*"I was still good visually during that time, that is why I chose to start at the facility but when I realized that I could not anymore, I started with the CHW."*- 63-year-old female.

Across all four care pathways, participants expressed support for continuation of CHW-led hypertension services. Several participants also expressed a wish for the CHW role to expand beyond hypertension, mentioning family planning, tuberculosis, and minor illnesses as services they hoped CHWs could eventually provide. One participant indicated that a broader range of available medications would encourage continued engagement with CHW-led care.

*"I think family planning, TB minor conditions like flu and headaches are some of the services they can be equipped with so that when one has a headache, they can just go to the community health worker."* – 55-year-old female.

Overall, care pathways were dynamic and reflected a combination of clinical eligibility, participant preferences, and changing access needs over time. Facility-based prescribing could result from more complex treatment needs or intolerance to the fixed-dose combination, temporary inability to determine eligibility for CHW-led prescribing, or participants declining CHW-led prescribing. Transitions in both directions further indicated that care pathways could change as clinical circumstances and participant preferences evolved. Qualitative findings suggested that participants did not necessarily view CHW-led and facility-based care as competing models, but rather as components of the broader hypertension care system.

*"The services are the same except for measuring the waist."* – 49-year-old female.

# Discussion

In this mixed-methods evaluation among participants of two cluster-randomized trials in rural Lesotho, we found very high acceptability of CHW-led hypertension care with independent prescribing, across all constructs of the TFA. Recommendation intent exceeded 96% for both CHW-led hypertension screening and diagnosis and CHW-led antihypertensive prescribing. Qualitative findings highlighted trust in CHWs and the broader care model, improved access, and perceived effectiveness as key factors underpinning participants' experiences. Participants particularly valued reduced travel burden, flexible service hours, and reduced waiting times, while the digital CDSS was also among the most frequently valued aspects of care. While concerns were reported by a minority of participants, these centred predominantly on personal or family conflicts with CHWs, confidentiality, and treatment-related concerns, rather than on the competence of CHWs to provide hypertension care.

These findings extend beyond acceptability of CHW-led monitoring or adherence support, which has been evaluated previously[11,23,24]. Participants in this study experienced a model in which lay CHWs,

without formal clinical training, independently diagnosed hypertension and initiated, titrated, and de-escalated antihypertensive therapy. Almost two-thirds of participants received CHW-led antihypertensive prescribing throughout trial follow-up, despite being free to choose facility-based prescribing or discontinue CHW-led prescribing at any time. This substantial uptake of an unfamiliar care model suggests that participants were willing to entrust hypertension management to lay CHWs and highlights the potential of CHW-led prescribing to reduce reliance on facility-based services while preserving patient choice and access to facility-based care when preferred or clinically required. Given that CHWs in Lesotho do not routinely provide hypertension services, our findings suggest that the boundary of what people consider an acceptable CHW role may be wider than commonly assumed in the task-shifting literature, provided adequate structural safeguards are in place.

Trust emerged as an important mechanism underpinning acceptability, and it appeared to be reinforced by both interpersonal and structural factors. Many participants described trusting their CHWs because they were known, community-selected members, consistent with prior evidence that trust and social embeddedness are key drivers of intervention uptake[25]. However, the qualitative data pointed to a more specific mechanism: participants did not trust CHWs simply as community members but explicitly linked their confidence in prescribing decisions to the existence of structured training, supervision, and the digital CDSS guiding CHWs through diagnosis and treatment. As one participant explained, CHWs *"still report to their supervisors, which indicates that they don't do this on their own."* This suggests that the broader system of training, supervision, and decision support may have provided a visible structure of accountability that helped legitimise an expanded CHW role in the eyes of patients. Notably, although qualitative interviews more commonly highlighted the training, supervision, and support structures surrounding CHW-led care than the technology itself, the CDSS was among the most highly valued features of the intervention in the quantitative survey. While this study was not designed to evaluate the CDSS itself, this finding suggests that digital decision support may serve a dual function in task-shifted chronic disease care, supporting CHWs' clinical performance while also contributing to patients' confidence in the safety and structure of care delivered by CHWs.

The high perceived effectiveness reported here is consistent with and may partly be explained by participants' awareness of measurable improvement in hypertension management. Prior randomised trials from South Africa and Asia have shown improved blood pressure control and treatment adherence with CHW-led, CDSS-guided management[11,26]. Our underlying trials similarly demonstrated improved blood pressure control among participants with uncontrolled hypertension and maintained control among those with treated, controlled hypertension at baseline, including appropriate de-escalation of therapy where clinically indicated[13]. Most participants demonstrated a clear understanding of how CHW-led, CDSS-assisted hypertension care worked. This high intervention coherence is similar to findings from other acceptability studies where clarity and understanding of the intervention strengthened confidence and engagement[25,27,28].

Low burden and opportunity costs were also important drivers of acceptability. Reduced travel distance, flexible service hours, shorter waiting times, and home-based follow-up were consistently identified as

advantages of CHW-led over facility-based management, consistent with evidence from rural low- and middle-income settings showing that decentralised community-based care reduces financial, geographic, and time-related barriers to access[28–32]. Similar benefits have been reported in decentralised HIV and tuberculosis care models, where CHW involvement improved retention and continuity of care while reducing pressure on health facilities[33–36]. Although one-fifth of participants reported that participation in CHW-led care required them to give up activities that were important to them, this likely reflects the time commitment associated with regular home-based follow-up visits rather than dissatisfaction with the intervention itself. Qualitative interviews suggested that participants generally considered these interruptions acceptable given the flexibility of scheduling and the convenience of receiving care closer to home.

An important additional insight of this study concerns the dynamic, bidirectional nature of care pathways observed over follow-up. While most participants remained in CHW-led care throughout, others transitioned between CHW-led and facility-based prescribing in both directions. These pathways reflected a combination of clinical eligibility, participant preferences, and changing access needs. Qualitative findings further suggested that transitions towards CHW-led care could be motivated by mobility limitations, transport costs, and other barriers to accessing health facilities. Participants did not necessarily frame CHW-led and facility-based care as competing alternatives but as components of a broader care system that could be accessed as circumstances changed. These findings suggest that participants valued the flexibility to move between community- and facility-based care as their clinical or personal circumstances evolved. These findings support the view that CHW-led hypertension management should be embedded within a continuum of care rather than positioned as a substitute for facility-based services and underscore the importance of strong referral and supervision structures to facilitate continuity of care across community- and facility-based services. Some participants went further, expressing an unprompted wish for the CHW role to expand beyond hypertension to conditions such as family planning, tuberculosis, and minor illnesses; while based on a small number of participants, this suggests that positive experiences with this model may shape broader expectations of community-based care.

Despite high overall acceptability, some concerns were reported. Notably, personal or family conflict with the CHW was the single most frequently cited concern (47/322, 14.6%), followed by confidentiality (36/322, 11.2%) and side effects or other treatment-related concerns (35/322, 10.9%). These findings suggest that interpersonal relationships and treatment-related issues remained important considerations for a minority of participants, despite high overall confidence in CHW-led care[37–40]. Comparable ethical and social concerns have also been reported in acceptability studies of diagnostic and treatment interventions, where privacy, trust, and psychological impact influence patient engagement[25,27,38,41]. That interpersonal conflict, rather than clinical competence, emerged as the leading concern is notable given the expanded prescribing role evaluated here. Although these concerns were expressed by a minority of participants, they underscore the importance of training CHWs on their professional roles and responsibilities, clear confidentiality safeguards, accessible alternative care

pathways, and robust supervision structures that provide both participants and CHWs with access to external support when interpersonal conflicts arise. Such safeguards help preserve patient choice and accountability and may become increasingly important as CHWs assume greater clinical responsibility within the communities in which they live and work.

This study has several strengths. It is among the first to systematically assess acceptability of CHW-led hypertension care, including independent prescribing, using the TFA, strengthening interpretability and comparability across settings. The mixed-methods design allowed integration of quantitative and qualitative data, while implementation of the intervention within the existing community health worker system strengthened the relevance of the findings for potential implementation in similar settings. Acceptability was assessed following prolonged exposure to the intervention rather than in a hypothetical or pilot scenario. Furthermore, participants from all four care pathways were included, providing perspectives from participants with different patterns of exposure to CHW-led prescribing, including those who transitioned to or remained in facility-based care. The underlying trials were nested within a population-based cohort with near-complete enrolment and hypertension screening of adults in the study villages, providing broad coverage of the population with hypertension from which trial participants were drawn. Baseline characteristics of survey participants were broadly similar to those of the overall intervention trial population, further supporting the representativeness of the sample with respect to measured characteristics.

Several limitations should be acknowledged. Acceptability was assessed after prolonged exposure to the intervention and may not fully capture initial scepticism or concerns relevant to early implementation. Social desirability bias may also be relevant, given that CHWs are community-elected and personally known to participants. Although data were collected by research staff who were not involved in delivering the intervention, participants may nevertheless have been reluctant to express criticism of CHWs or the care model. This may have led to underreporting of concerns, particularly around interpersonal conflict and confidentiality. In total, 322 intervention participants completed the survey. While this exceeded the planned sample size and participants were broadly comparable to the overall intervention trial population with respect to measured baseline characteristics, selection bias cannot be excluded because participation depended on availability during the survey visits. Qualitative interviews, although purposively sampled to capture all care pathways, were based on a relatively small number of participants. Finally, the study was conducted in two rural districts of Lesotho and focused exclusively on participant perspectives; findings may not generalise to urban settings or health systems with different CHW structures, and the perspectives of CHWs, supervisors, or facility staff were not assessed.

# Conclusions

CHW-led hypertension care with independent prescribing was highly acceptable among participants in rural Lesotho. This study extends existing evidence on community-based hypertension care by demonstrating that participants largely accepted the expansion of lay community health workers' roles

to include independent prescribing of antihypertensive treatment. The findings further suggest that successful implementation of such models requires attention not only to the clinical intervention itself but also to how it is implemented, including appropriate training, supervision, digital decision support, referral pathways, and the social dimensions of community-based care. These findings complement the demonstrated clinical effectiveness of this model and contribute to the evidence base needed to guide the implementation and evaluation of CHW-led hypertension care in resource-constrained settings.

# Abbreviations

- CDSS
Clinical decision support system
- CHW
Community health worker
- ComBaCaL
Community-Based chronic Care Lesotho
- IQR
Interquartile range
- TFA
Theoretical Framework of Acceptability

# Declarations

### Ethics approval and consent to participate

This study was conducted as part of the ComBaCaL programme. The two underlying cluster-randomised trials, including this nested acceptability study were approved by the National Health Research and Ethics Committee of Lesotho (ID 102–2022 and nested amendment). In addition, the Ethics Committee Northwest and Central Switzerland provided a statement confirming that the trials met all ethical requirements for a Swiss research project (ID AO_2022_00074). Village chiefs provided oral consent for their village's participation, and all participants provided written informed consent prior to participation, including consent for participation in the in-depth interviews where applicable. The study was conducted in accordance with the principles of the Declaration of Helsinki.

### Consent for publication

Not applicable. Quotations included in this manuscript are anonymised and do not contain identifying information.

# Competing Interests

FG and NDL are guest editors of the BMC Public Health collection “Community based approaches to hypertension screening, monitoring, and management” to which this manuscript is submitted. They were not involved in the editorial handling or peer-review decision. All other authors declare that they have no competing interests.

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# Author Contribution

TIL, FG, FR, AA and NDL conceptualized the study and design. PM and TIL conducted the qualitative interviews. TIL curated, analysed, and interpreted the data with support from NL, MMor, FR, FG, GSS, MR, AW, PM, JB and NDL. TIL drafted the first version of the manuscript. RG, MK, MS, IA, MMap, MMok, MMat, and TK were responsible for the local implementation of the ComBaCaL cohort and provided infrastructure support for this study. ML, LS, and MT ensured alignment with national health priorities and policies and provided health system infrastructure support for implementation. All authors reviewed the manuscript and approved submission of the final version.

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# Data Availability

The datasets generated and analysed during this study are available from the corresponding author on reasonable request.

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# Figures

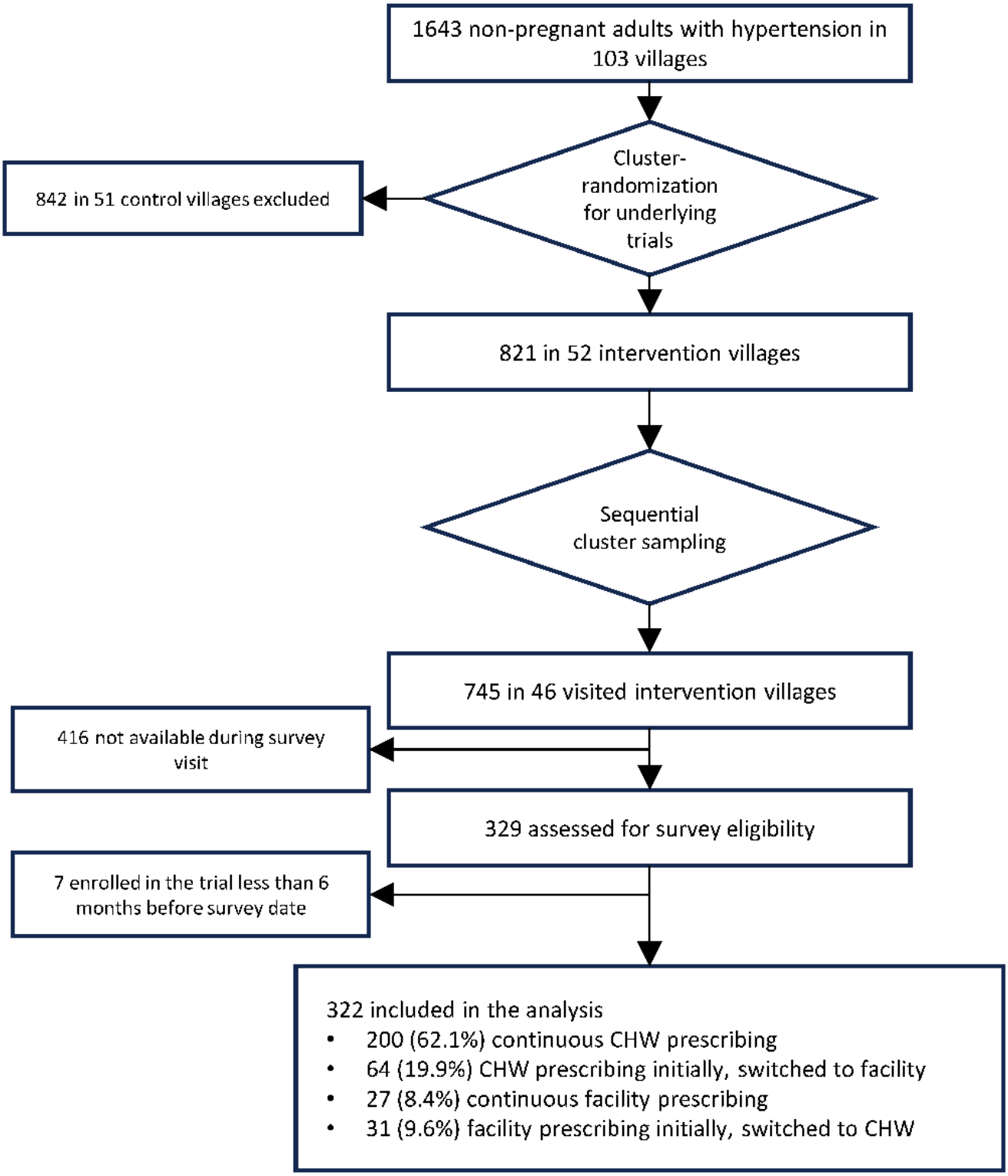



**Figure 1**

**Flowchart of participant selection for the quantitative survey**

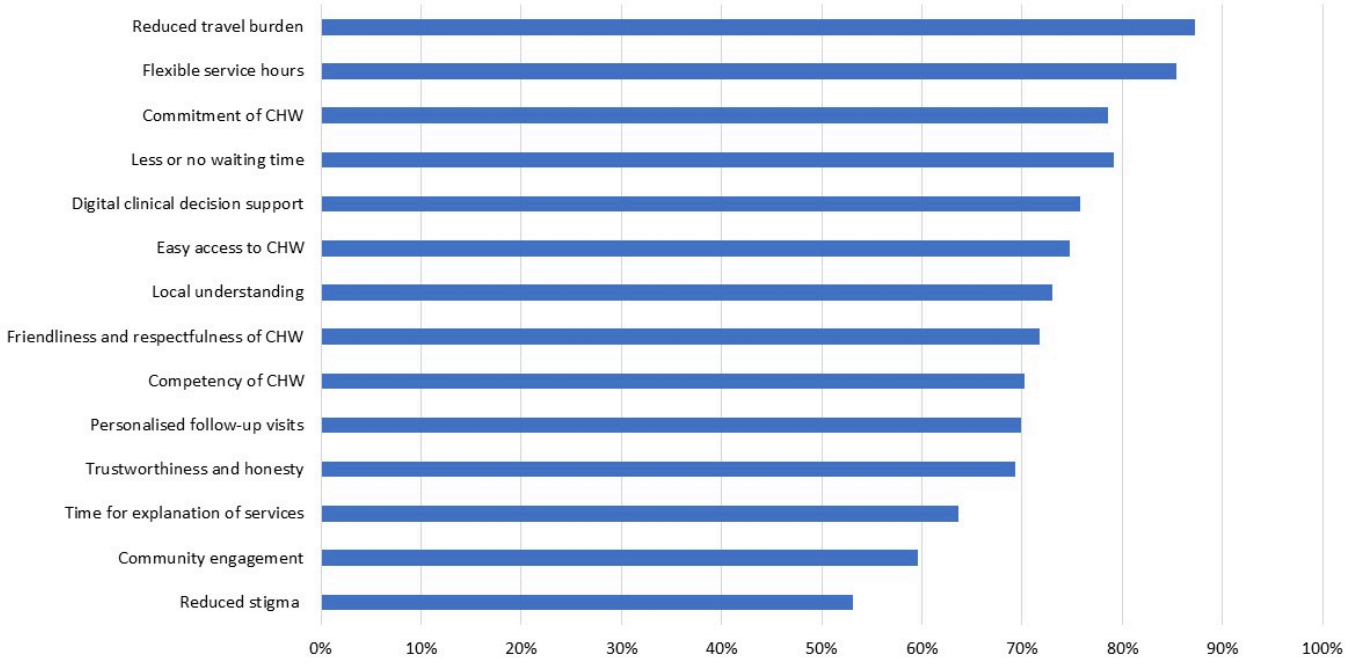



Figure 2

**Figure 3: What the participants (%) most concerns for hypertension services provided by the CHWs.**

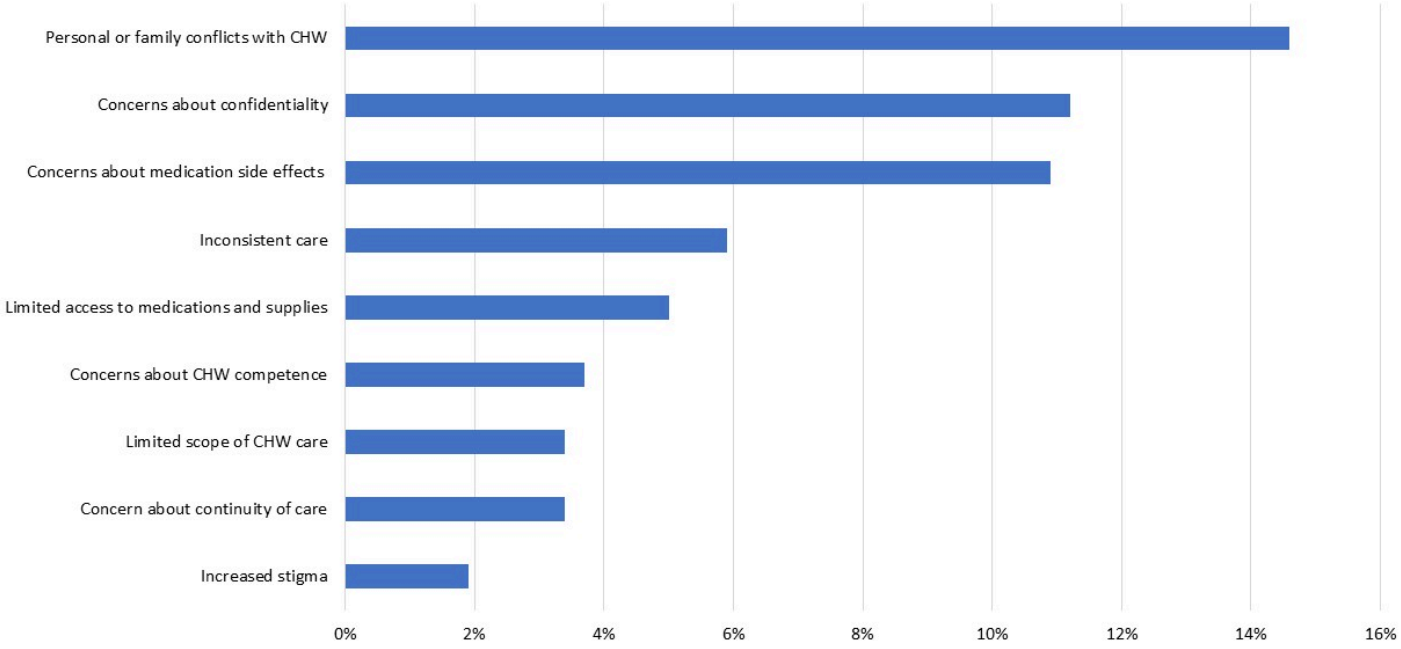



Figure 3

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