

Full Title: Exploring Local Health Knowledge and Access: Focus Group Findings from Community Health Workers in Pader District, Uganda

Short Title: Community health knowledge in Northern Uganda

Author byline

Brett R. Albee, MPH¹, Atiya Patrick Kasagara MBChB², Denis Otema², Olanya Denish MBChB²,

Isaac V. Faustino, MS³, Dhatri Abeyaratne⁴, Shayna D. Cunningham PhD⁵, Rogie Royce

Carandang, PhD⁶, Felix Bongomin, MBChB⁷, Daniel S. Ebbs, DO, MS⁸

Affiliations

1. Yale University School of Public Health, New Haven, CT, USA
2. Northern Uganda Medical Mission, Pader, Uganda
3. Department of Emergency Medicine, Yale School of Medicine, New Haven, CT, USA
4. Yale University School of Medicine, New Haven, CT, USA
5. Department of Public Health Sciences, University of Connecticut School of Medicine, Farmington, CT, USA
6. Department of Health, Behavior, and Society, University of Texas School of Public Health San Antonio, San Antonio, TX, USA
7. Department of Medical Microbiology and Immunology, Faculty of Medicine, Gulu University, Gulu, Uganda
8. Department of Pediatrics, Yale University School of Medicine, New Haven, CT, USA

1 **Abstract**

2 In Northern Uganda, communities continue to face significant health challenges driven
3 by a legacy of conflict, poverty, and structural health system challenges. Community health
4 workers (CHW) play a critical role in rural districts like Pader, where access to formal care
5 remains limited. This study explores CHWs' perspectives on community health needs, barriers
6 to care, and priorities for strengthening CHW-led service delivery. Six focus group discussions
7 (7-9 participants each) were conducted with 46 CHWs from across Pader District using a semi-
8 structured topic guide. The guide explored eight key domains: general health, health
9 maintenance, modern versus traditional medicine, nutrition, maternal and infant health,
10 environmental factors, malaria practices, and feedback for the CHW program. CHWs identified
11 malaria, maternal and child health complications, and a rising burden of non-communicable
12 diseases as key community concerns. Major barriers to care included long distances to health
13 facilities, drug stockouts, and inadequate transportation. Although communities had strong
14 awareness of disease symptoms and prevention strategies, financial hardship and service
15 limitations undermined preventive practices and timely care-seeking behavior. CHWs
16 emphasized their growing role as trusted frontline providers but highlighted the need for tools,
17 transportation, ongoing training, supportive supervision, and formal recognition to fulfill their
18 responsibilities effectively. CHWs in Pader District navigate complex structural and resource
19 constraints while serving as trusted liaisons between communities and the formal health
20 system. Their insights point to actionable strategies, such as improved supply chains,
21 transportation, training, and inclusion in program planning, that are vital for building equitable
22 and effective community health systems in post-conflict settings.

23 **Keywords:**

24 Community-based care, community health workers (CHW), health access disparities,
25 implementation science, interpretative phenomenological analysis (IPA), malaria, Northern
26 Uganda, post-conflict health systems, rural health

27 **Introduction:**

28 Rural and post-conflict regions across sub-Saharan Africa continue to face entrenched
29 health disparities driven by poverty, geographic isolation, and the long-term impacts of political
30 instability. Northern Uganda exemplifies these challenges, particularly in districts like Pader,
31 which report some of the country's poorest health outcomes despite national progress [1].
32 Fragile health systems, limited infrastructure, and under-resourced facilities continue to
33 constrain service delivery and undermine health equity in these regions. Decades of armed
34 conflict, most notably the insurgency led by the Lord's Resistance Army, devastated Northern
35 Uganda's health system, displacing over 1.8 million people and disrupting access to basic
36 services [2]. While peace has been restored since the mid-2000s, the region remains burdened
37 by chronic poverty, underdeveloped infrastructure, and institutional mistrust.

38 Community health workers (CHWs) play an essential role in extending the reach of the
39 health system in rural and post-conflict settings. As trusted members of their communities,
40 they serve as critical liaisons between households and formal health services, helping to bridge
41 gaps in access and rebuild trust in a health system still recovering from the effects of conflict
42 and chronic under-resourcing [3]. However, CHWs often operate in highly constrained
43 environments, with chronic supply shortages, limited training, and a lack of formal recognition

44 [3]. Despite their importance, little is known about how CHWs in post-conflict settings perceive
45 the health concerns of their communities, the systemic constraints they face, or the supports
46 they require to deliver effective care. Existing national health surveys, such as the Uganda
47 Demographic and Health Survey, provide important district-level data, but are limited in their
48 ability to capture the lived realities at the village level where health decisions are made and
49 barriers are most acute [4]. This gap in understanding limits the ability of health programs to
50 adapt to local needs.

51 This study addresses this gap by exploring the experiences and perspectives of CHWs in
52 Pader District, Northern Uganda to (1) identify local health priorities, (2) examine barriers to
53 care and health-seeking behaviors, and (3) generate CHW-informed recommendations to
54 strengthen CHW-led service delivery. Findings will inform the design of a CHW-led community
55 health assessment tool and offer actionable insights for strengthening community health
56 systems in similarly under-resourced, post-conflict settings.

57 **Materials and Methods:**

58 *Study Design and Setting*

59 This qualitative descriptive study was guided by the interpretive paradigm and
60 conducted in collaboration with the Laro Kwo Project, a community-based health initiative
61 operating in Pader District, Northern Uganda. The Laro Kwo Project was established in 2016
62 through a partnership between local leaders, Ugandan health professionals, and international
63 collaborators, with the aim of strengthening grassroots healthcare delivery in post-conflict

64 Northern Uganda. The program trains and supports CHWs to deliver basic health education,
65 screening, and referral services at the village level [6].

66 Focus group discussions were conducted in six sub-counties where the Laro Kwo Project
67 is active: Awere, Pader Town Council, Pukor, Puranga, Kilak, and Pajule. At the time of data
68 collection, the program had trained over 150 CHWs, who were distributed across these six sub-
69 counties. This study forms part of a larger mixed-methods evaluation of the Laro Kwo Project.
70 The interpretive paradigm allowed for an in-depth understanding of CHWs roles and
71 experiences within the broader health system and local community context.

72 *Study Population*

73 CHWs were selected through purposive sampling to ensure diverse representation
74 across gender, age, program experience, and geographic location. Recruitment was facilitated
75 by the program coordinator and CHW leaders from each sub-county. Each sub-county
76 represents a group of CHWs with differing years of experience, and diversity in geographic area.
77 CHWs were included in the study if they were over 18 years of age and had been active
78 participants in the Laro Kwo Project for at least 6 months.

79 *Data Collection*

80 Six focus group discussions (FGDs) with a total of 46 participants were conducted
81 between November 20 and 28, 2024. One FGD was held in each of the six sub-counties where
82 the Laro Kwo Project operates. Participants in each FGD were drawn from the same sub-county
83 to ensure localized perspectives and to facilitate open discussion among familiar peers. Each
84 group included 7 to 9 participants and sessions lasted between 90 and 120 minutes.

85 The FGD guide was developed collaboratively by the research team in partnership with
86 Ugandan collaborators, including CHWs and local leaders, to ensure cultural relevance and
87 alignment with community priorities. The guide included open-ended questions across eight
88 domains: general health, health maintenance, modern versus traditional medicine, nutrition,
89 maternal and infant health, environmental factors, malaria knowledge and practices, and
90 program recommendations (Appendix 1).

91 The FGDs were co-facilitated by the co-principal investigators—one from the United
92 States and one from Northern Uganda—alongside the Laro Kwo Project’s local research and
93 program coordinator, who played a key role in planning, logistics, and translation. Discussions
94 were moderated in English, with real-time translation into Acholi when needed, to ensure
95 clarity and comfort for all participants. Facilitators took detailed field notes, capturing both
96 direct quotations and contextual observations.

97 *Data Analysis*

98 Data were analyzed using a interpretative phenomenological analysis (IPA) [7]. Two
99 members of the research team, the co-principal investigators (BA and APK), independently
100 reviewed and open-coded notes from the FGDs to create the initial codebook. We first assigned
101 codes to meaningful phrases and then assigned text with similar meaning to the same codes.
102 Next, we collected similar codes into different categories where we assigned themes and sub-
103 themes. The codebook was refined through team discussions to resolve any discrepancies.
104 Themes were developed inductively and organized around both the domains from the guide
105 and themes that arose from the discussion participants. Illustrative quotes were selected to

106 represent key findings. The study methods adhered to the Consolidated Criteria for Reporting
107 Qualitative Studies (COREQ) [8]. A complete checklist is included (Appendix 2).

108 *Ethical Considerations*

109 This study was approved by the Yale University Institutional Review Board
110 (IRB#2000038006) and the Gulu University Research Ethics Committee (GUREC-2024-854), and
111 also received formal authorization from the Pader District Government Health Department.
112 CHWs were enrolled in focus groups from 11/20/2024 to 11/28/2024. Verbal informed consent
113 was obtained from all participants after receiving consent forms and expressing comprehension
114 of study. A program coordinator and co-PI documented consent after acknowledging
115 comprehension of study in either Acholi or English.

116 **Results:**

117 Table 1 summarizes participant characteristics. The participants ranged in age from 29
118 to 58 years old, and spanned the entire lifetime of the Laro Kwo Project; one group included
119 the first CHWs to join the program in 2016, and another group included the most recent CHWs
120 to join just six months prior. Almost one third of all CHWs within the Laro Kwo Project were
121 represented in the focus groups, with 46 participating out of 150 total CHWs.

122 **Table 1. Focus Group Participant Characteristics**

Focus group setting	Number of Participants	Number of Males (%)	Average Age (years)	Years of experience in Laro Kwo Project

Puranga	7	6 (86)	45.6	5
Awere	7	7 (100)	41.7	6
Kilak	8	6 (75)	51.4	8
Pajule	9	7 (78)	37.8	0.5
Pader Town Council	7	3 (43)	43.4	3
Pukor	8	6 (75)	38.3	3

123

124 Participants provided rich and multidimensional accounts of health dynamics within
 125 their communities, encompassing both clinical priorities and the sociocultural contexts that
 126 shape care-seeking practices. IPA analysis yielded key insights into the social and structural
 127 determinants of health in the region, as well as the evolving roles, experiences, and challenges
 128 faced by CHWs in bridging community needs with formal health services (Table 2). The
 129 following themes emerged: community health concerns, healthcare quality and access, and
 130 knowledge versus practice.

131 **Table 2. Main themes from FGD analysis**

Theme	Sub-category	Summary
Community Health Concerns	Infectious Diseases and Malaria	Malaria is hyperendemic; repeated yearly infections are common across all age groups; diarrheal disease,

		pneumonia, TB, HIV/AIDS also concerns
	Rising Chronic Diseases	CHWs report increasing cases of hypertension, diabetes, ulcers, and sickle cell; limited screening and management capacity.
	Maternal and Child Health	Frequent pregnancies, delivery complications, and child and mother under-nutrition especially in rural areas.
	Mental Health and Conflict Legacy	Emotional distress and depression linked to post-conflict trauma; stigma limits open discussion. Limited recognition of PTSD or anxiety
Healthcare Quality and Access	Geographic Barriers to Access	Villages located 5–20km from facilities; transport unaffordable; roads impassable during rains.

	Drug and Supply Shortages	Government health centers face regular stockouts of malaria RDTs, antimalarials, and essential drugs.
	Inconsistent Quality of Care	Clinics are understaffed and overburdened; patients often experience long waits and limited follow-up.
	Reliance on CHW in underserved areas	CHWs are often the only accessible providers but lack supplies, transport, and advanced clinical training.
Knowledge versus Practice	Health Literacy and Preventative Care	Knowledge of symptoms and prevention exists but preventive care is rarely sought; routine screening is minimal. Bed net use is inconsistent due to limited supply or alternative uses.
	Nutrition and Food Insecurity	Nutritional awareness exists but cannot be practiced due

		to poverty and limited food variety.
	Water Purification and Sanitation Practices	Villagers know how to purify water but often do not practice it, citing inconvenience and cost.
	Traditional Medicine Use	Herbal remedies are used out of necessity due to lack of access to formal care; CHWs see a shift toward modern medicine when accessible.
Program Feedback	Access to Essential Supplies	Consistent lack of medical supplies like gloves and masks, drugs like paracetamol and antimalarials, and job aids like flashlights and tablets
	Transportation Support	Long distances and physical demand of walking limits CHW effectiveness. Bicycles requested most, though fuel

		stipends or emergency motorbikes would also help
	Training, Supervision, and Professional Development	More refresher trainings, wider range of advanced skills, and more consistent supportive supervision from coordinators
	Recognition and Inclusion	CHWs value symbolic recognition like uniforms, certificates for completing trainings, and public acknowledgement from local officials. They would like to be more involved in programmatic planning and decision making.

132

133 *Community Health Concerns*

134 CHWs across all focus groups identified a wide range of health conditions affecting their
 135 communities, with malaria consistently described as the most pervasive and urgent concern.
 136 Participants reported that nearly every household experiences multiple malaria episodes each
 137 year, with children under five and pregnant women particularly vulnerable to severe illness.

138 One male CHW with 8 years of experience noted, “*Everyone here has had malaria many times,*
139 *even in the same year. It is just normal now*” (Kilak). Seasonal variation was noted, with
140 increased cases during the rainy season.

141 Beyond malaria, CHWs identified diarrheal diseases, pneumonia, tuberculosis, HIV, and
142 intestinal worms as common challenges. Maternal and child health concerns, including frequent
143 pregnancies, malnutrition, and complications during childbirth, were particularly acute in
144 remote areas. Noncommunicable diseases such as hypertension, diabetes, epilepsy, and
145 cervical cancer were also mentioned with increasing frequency, though CHWs emphasized the
146 lack of screening and awareness. Mental health issues, especially depression and emotional
147 distress linked to the long-term effects of conflict, were noted as widespread but rarely
148 addressed due to stigma and limited access to specialized care. Across all conditions, CHWs
149 pointed to delayed care-seeking and inadequate access to health services as key contributors to
150 poor outcomes. The burden of disease, they stressed, was compounded by systemic and
151 structural barriers that are addressed in subsequent themes.

152 *Healthcare quality and access*

153 Across all focus groups, CHWs described significant and persistent barriers to accessing
154 timely and appropriate healthcare. These barriers were largely structural, stemming from
155 geographic isolation, inadequate transportation, and chronically under-resourced health
156 facilities. CHWs described a context in which health facilities are typically located 5-7 kilometers
157 from most villages, with some communities situated up to 20 kilometers away. Hospitals, which
158 are essential for emergency and advanced care, are often located even farther, making access

159 nearly impossible for many, particularly during urgent situations. Participants emphasized that
160 many individuals are simply too ill, too impoverished, or both, to make such journeys.
161 Transportation options are limited, motorbikes and bicycles are scarce, and most families
162 cannot afford the cost of fuel, transport fares, or even mobile phone airtime to request
163 assistance. While an ambulance system was recently introduced and viewed positively by
164 CHWs, it still requires patients to cover fuel costs, which presents a barrier for many. Poor road
165 infrastructure further compounds the problem, with unpaved, unlit roads that become
166 impassable during the rainy season.

167 Access to treatment is similarly constrained. Government health centers frequently run
168 out of artemether-lumefantrine, the recommended first-line therapy, and private pharmacies,
169 though better stocked, are unaffordable for many. CHWs expressed concern about declining
170 drug efficacy and poor adherence, with some patients taking incomplete courses or saving
171 doses for future illness. One CHW, who joined the LKP 6 years prior, noted, “People are taking
172 the drugs, but they don’t always get better. We think the medicine is not working like it used
173 to” (Awere).

174 Reaching a facility, however, does not guarantee quality care. Government-run health
175 centers offer services at no cost, but they are often under-resourced and understaffed.
176 Essential medications are frequently out of stock, and staff shortages can lead to long wait
177 times and overburdened healthcare workers, potentially compromising the quality of patient
178 interactions. CHWs noted that drug shipments typically arrive only once per quarter and are
179 rapidly depleted. In contrast, private clinics and pharmacies tend to have more reliable
180 supplies, but their services are financially out of reach for most community members. As a

181 result, patients may visit multiple facilities in search of treatment or ration medications to make
182 them last, a strategy that, while understandable, contributes to poor health outcomes and may
183 exacerbate problems such as antimicrobial resistance.

184 *Knowledge versus practice*

185 CHWs reported that health knowledge within communities varied widely, with limited
186 awareness of preventive care and widespread delays in seeking formal healthcare services.
187 Many community members reportedly wait until illness becomes severe before visiting a clinic,
188 often bypassing early intervention opportunities. One female CHW explained, "*People only go*
189 *[to the clinic] when it is already bad. They don't check their health unless something is*
190 *wrong*" (Pader Town Council). Preventive services, such as blood pressure monitoring or cancer
191 screening, are rarely sought or available outside district hospitals.

192 Even when individuals possess some knowledge about disease prevention, economic
193 hardship and systemic limitations often prevent them from acting on this knowledge. CHWs
194 described a consistent disconnect between knowledge and practice. For example, while many
195 families are aware of the importance of nutrition, balanced diets are often unattainable due to
196 food insecurity and poverty. "*They know they should eat a balanced diet,*" one CHW noted, "*but*
197 *they just eat what is available*" (Pajule). Diets are dominated by inexpensive staples such as
198 maize and beans, with limited access to animal protein or fresh produce. Seasonal shortages
199 further restrict food availability, and some households intentionally reduce their food intake in
200 order to sell more crops to cover school fees or healthcare costs.

201 Despite high community awareness of malaria symptoms and the importance of early
202 treatment, CHWs described frequent barriers to effective prevention and care. Insecticide-
203 treated bed nets are often insufficient in quantity, distributed infrequently, or repurposed for
204 other uses such as fishing. Proper use and installation are inconsistent, with minimal guidance
205 provided. Some CHWs also reported that discomfort caused by treated nets, such as
206 headaches, discourages regular use.

207 Similar gaps were observed in water purification and hygiene practices. While many
208 villagers understand the importance of purifying drinking water, they often view the process as
209 unnecessary or burdensome. CHWs explained that boiled or treated water is seen as an extra
210 step rather than a necessity. As one participant put it, *“People know how to purify water, but*
211 *they say it’s a waste of time”* (Puranga). Most households rely on wells, boreholes, or untreated
212 surface water, with piped water available only in towns and bottled water largely unaffordable.

213 Traditional medicine use was widespread, often driven by necessity rather than cultural
214 preference. CHWs described the use of herbal remedies such as blackjack flower, neem leaves,
215 and mango bark to treat common ailments like malaria, gastrointestinal issues, and wounds.
216 While some CHWs acknowledged their potential therapeutic value, they also expressed concern
217 that these practices can delay access to formal care or result in adverse effects when used
218 improperly. Nonetheless, participants noted a gradual shift toward biomedical care, especially
219 when CHWs are able to offer guidance and referral. As trusted figures within their
220 communities, CHWs increasingly serve as informal first points of contact for basic care and
221 health education. Many reported being approached for advice, blood pressure checks, and
222 symptom interpretation, even though they often lack the training or resources to provide direct

223 treatment. Another CHW explained how some people treat them as doctors, even though their
224 main responsibility is referring them to clinics.

225 *Feedback for Laro Kwo Project*

226 CHWs across all focus groups shared detailed, experience-based recommendations for
227 strengthening the Laro Kwo Project and enhancing their ability to serve their communities
228 effectively. Their feedback emphasized the need for both material support and systems-level
229 improvements that reflect their essential role within the health system. These
230 recommendations were grounded in the daily challenges CHWs face and reflect both material
231 needs and systemic gaps that limit their effectiveness. A common and urgent concern was the
232 lack of access to essential medical supplies. CHWs described being expected to deliver care and
233 assess patients without having basic resources such as malaria rapid diagnostic tests,
234 antimalarials, paracetamol, amoxicillin, and zinc. These tools were consistently framed not as
235 supplementary aids, but as core necessities for fulfilling their roles. Several CHWs also
236 emphasized the need for basic equipment such as first aid kits, disposable gloves, and
237 headlamps, particularly for nighttime visits or emergencies. To support documentation and
238 data management, many CHWs requested the provision of waterproof storage bags for paper
239 records, which are frequently damaged during the rainy season. Some also proposed more
240 innovative solutions, including equipping CHWs with tablets or mobile phones preloaded with
241 reference materials, reporting templates, and referral tracking tools. Given the increasing
242 access to smartphones and mobile data in the region, CHWs viewed digital solutions as both
243 feasible and transformative.

244 Transportation was another major theme. CHWs working in remote areas described
245 walking for hours each day to visit households, accompany patients to health centers, or
246 retrieve supplies. The absence of reliable transport severely limited their reach and contributed
247 to physical exhaustion and burnout. Bicycles were the most frequently requested form of
248 support, although some also proposed fuel stipends or emergency motorbike transport options
249 for urgent referrals.

250 Training and professional development were cited as critical to both the quality of care
251 and CHW motivation. Participants called for more regular refresher trainings on foundational
252 skills, such as identifying malaria danger signs and measuring vital signs, as well as expanded
253 instruction in areas like maternal and child health, nutrition, mental health, and emergency
254 care. Several CHWs expressed a desire to participate more actively in outreach and education
255 initiatives and requested training in public speaking, recordkeeping, and community
256 engagement strategies. This desire for growth was coupled with calls for stronger, more
257 consistent supervision. Many CHWs reported infrequent contact with program staff and
258 described a sense of isolation from program leadership. They advocated for monthly
259 supervisory visits, quarterly review meetings, and more open channels of communication. A
260 female CHW from Pukor shared, *“Sometimes it feels like we are forgotten. We need someone to*
261 *come and ask how we are doing.”* Participants emphasized that supervision should be
262 collaborative and supportive, offering guidance, feedback, and encouragement rather than
263 strict oversight. Recognition, both financial and symbolic, emerged as a powerful theme. While
264 CHWs acknowledged the limitations of program budgets, many advocated for more predictable
265 stipend disbursements, subsidized healthcare for themselves and their families, or

266 performance-based incentives. Others stressed the value of symbolic recognition in building
267 legitimacy and community respect. Uniforms, certificates, or public acknowledgment at
268 community gatherings were cited as low-cost but highly meaningful gestures. As another
269 participant explained, *“Even just a uniform shows people that we are real health workers. It*
270 *builds respect”* (Awere).

271 Finally, CHWs expressed a strong desire for further involvement in program design and
272 implementation. They emphasized that their intimate knowledge of community dynamics,
273 barriers, and behaviors positions them as vital partners in shaping interventions that are both
274 feasible and culturally appropriate. Participants called for consultative meetings, feedback
275 loops, and opportunities to contribute to decision-making. This inclusion, they argued, would
276 foster greater accountability, strengthen motivation, and ultimately improve the impact of the
277 program.

278 **Discussion:**

279 This study explored the experiences and perspectives of CHWs across Pader District,
280 Northern Uganda, with the aim of understanding community health priorities, barriers to care,
281 and opportunities to strengthen CHW-led service delivery. The findings reveal a landscape
282 marked by high disease burden, entrenched structural barriers, and persistent resource
283 limitations, but also one in which CHWs are trusted, committed, and increasingly positioned as
284 central actors in advancing community health [9].

285 Malaria is hyperendemic in the region and remains the leading cause of morbidity and
286 mortality, especially among children under five and pregnant women, with CHWs describing

287 near-universal exposure across all age groups and repeated infections throughout the year [4].
288 While community awareness of malaria symptoms and the need for early treatment was high,
289 prevention and treatment remain compromised by inconsistent access to bed nets, stockouts of
290 antimalarials, and emerging concerns about treatment efficacy. These findings align with
291 existing literature on the challenges of sustaining effective malaria control in resource-
292 constrained settings where health infrastructure is limited and prevention tools are
293 inconsistently distributed [10,11]. In addition, CHWs identified a growing burden of non-
294 communicable diseases such as hypertension, diabetes, and cervical cancer. Yet, access to
295 screening and early diagnosis remains minimal, and public awareness is limited. These trends
296 echo broader shifts in disease burden observed across sub-Saharan Africa, where fragile health
297 systems are now grappling with a dual burden of infectious and chronic diseases [12].

298 The study underscores the profound impact of poverty, distance, and inadequate
299 infrastructure on health-seeking behaviors. CHWs reported that many community members
300 delay care due to long travel distances, lack of transportation, and the unaffordability of private
301 services. Even when patients reach health centers, they often encounter stockouts,
302 overburdened staff, and fragmented service delivery. These barriers are well-documented in
303 rural health systems globally and reflect longstanding health equity challenges that
304 disproportionately affect underserved communities [5,13,14]. Additionally, the mismatch
305 between community knowledge and actual health practices, particularly in nutrition, preventive
306 care, and water sanitation, highlights the limitations of information-based interventions in the
307 absence of structural change. CHWs noted that economic constraints, seasonal food shortages,

308 and inadequate service coverage prevent families from acting on health knowledge, reinforcing
309 the importance of addressing upstream social determinants.

310 A central theme emerging from this study is the dual burden carried by CHWs: they are
311 deeply embedded in their communities and highly trusted, yet they operate with limited tools,
312 support, or recognition. CHWs are often the first point of contact for health concerns,
313 particularly in remote areas, but they are not equipped with the diagnostic tools, medicines, or
314 transportation needed to respond effectively. The erosion of community trust due to these
315 limitations was noted repeatedly. Nonetheless, CHWs demonstrated resilience, adaptability,
316 and a strong commitment to serving their communities. They expressed a desire for greater
317 training, meaningful supervision, and inclusion in decision-making, factors known to contribute
318 to CHW motivation, retention, and program sustainability [15,16]. Their recommendations
319 reflect both practical resource needs and a call for systemic inclusion, suggesting that effective
320 CHW programming must go beyond task allocation to include workforce empowerment,
321 partnership, and recognition.

322 The findings of this study have important implications for community health program
323 design. First, health system strengthening efforts should prioritize reliable supply chains for
324 diagnostics and essential medicines, particularly in high-burden settings like Pader District.
325 Second, investments in transportation, such as bicycles or travel stipends, can significantly
326 enhance CHW reach and effectiveness in geographically dispersed communities. Third, digital
327 tools offer an opportunity to improve CHW data management and referral systems, provided
328 they are accompanied by training and support. Equally important are non-material
329 interventions: regular supportive supervision, recognition of CHW contributions, and

330 meaningful inclusion in planning and feedback mechanisms. These strategies have been shown
331 to enhance CHW performance and foster a sense of ownership and accountability [17]. Finally,
332 the findings point to the need for integrated programming that addresses both infectious and
333 non-communicable diseases, bridges health literacy with structural support, and builds trust
334 between communities and health systems.

335 This study offers several important strengths. First, it captures the voices and lived
336 experiences of CHWs across a range of settings in Pader District, providing a nuanced
337 understanding of health challenges and systemic barriers from the perspective of frontline
338 providers. The use of focus group discussions enabled rich dialogue, allowing participants to
339 build on one another’s insights and highlight shared concerns and priorities. Second, the study
340 was designed and implemented in partnership with local collaborators, enhancing cultural
341 relevance, contextual sensitivity, and ethical rigor. Finally, the integration of community
342 perspectives into the analysis and interpretation of findings supports the development of
343 grounded, actionable recommendations to inform program improvement and policy at the
344 district level and beyond.

345 In addition to its strengths, this study has several limitations. Findings are specific to
346 Pader District and may not be generalizable to all regions of Uganda. Focus group dynamics
347 may have influenced participant responses, with potential for social desirability bias.
348 Additionally, while CHWs are deeply knowledgeable about community health, their
349 perspectives may not capture the full range of community experiences, particularly among
350 groups less engaged with the CHW system.

351 **Conclusion:**

352 Community health workers in Pader District play a vital role in addressing persistent
353 health challenges in rural Northern Uganda. Their experiences reveal a high burden of both
354 infectious and non-communicable diseases, alongside structural barriers such as limited access
355 to care, medicine stockouts, and inadequate infrastructure. Despite these obstacles, CHWs
356 remain trusted figures in their communities and serve as essential connectors between
357 households and the formal health system. Strengthening CHW programs requires not only the
358 provision of basic tools, transportation, and regular training, but also supportive supervision,
359 consistent stipends, and symbolic recognition. Equally important is the inclusion of CHWs in
360 program planning and decision-making, ensuring that interventions are grounded in local
361 realities. Future directions should focus on implementing and evaluating scalable interventions
362 that respond directly to CHW-identified needs like mobile reporting tools, improved supply
363 chains, and peer mentorship networks. Further research should examine the impact of these
364 changes on CHW motivation, service quality, and health outcomes. Policymakers and
365 implementing partners must prioritize CHW voices and leadership to build resilient,
366 community-centered health systems in Uganda and similar settings.

367 **Acknowledgements:**

368 I would like to sincerely thank Drs Ebbs and Bongomin, who graciously invited me to join
369 their research team and connected me to incredible collaborators in Uganda, for their
370 invaluable guidance and feedback throughout this project. I would also like to extend much
371 gratitude to DHO Dr. Oyoo Benson, Bosco, David, Jacob, as well as the rest of the NUMEM team

372 and my friends in Pader, none of this work would have been possible without their important
373 input and hospitality every day.

374

375 **References:**

376 1. Dolan C. Understanding War and Its Continuation: The Case of Northern Uganda. PhD
377 Thesis, University of London; 2005.

378 2. Vindevogel S, Wessells M, De Schryver M, Broekaert E, Derluyn I. Dealing with the
379 consequences of war: Resources of formerly recruited and non-recruited youth in
380 Northern Uganda. *J Adolesc.* 2012;35(5):1133–1140.

381 doi:10.1016/j.adolescence.2012.02.013

382 3. Rokhideh M. Peacebuilding and psychosocial intervention: the critical need to address
383 everyday post-conflict experiences in northern Uganda. *Intervention.* 2017;15(3):215–
384 229.

385 4. Uganda Bureau of Statistics (UBOS). Uganda Demographic and Health Survey 2022.
386 Volume 1. Kampala, Uganda: UBOS; 2023.

387 5. Uganda Ministry of Health. Annual Health Sector Performance Report 2022/2023.
388 Kampala, Uganda: MoH; 2023. Available from: <https://www.health.go.ug>

389 6. Ebbs D, Benson O, Jasicki S, McCollum S, Cappello M. The Laro Kwo Project: A train the
390 trainer model combined with mobile health technology for community health workers
391 in Northern Uganda. *PLOS Glob Public Health.* 2023;3(5):e0001290.

- 392 7. Smith JA, Flowers P, Larkin M. Interpretative phenomenological analysis: theory,
393 method and research. 2nd ed. London: SAGE Publications Ltd; 2022.
- 394 8. Tong A, Sainsbury P, Craig J. Consolidated criteria for reporting qualitative research
395 (COREQ): a 32-item checklist for interviews and focus groups. *Int J Qual Health Care*.
396 2007;19(6):349–357. doi:10.1093/intqhc/mzm042
- 397 9. Perry HB, Zulliger R, Rogers MM. Community health workers in low-, middle-, and high-
398 income countries: an overview of their history, recent evolution, and current
399 effectiveness. *Annu Rev Public Health*. 2014;35:399–421. doi:10.1146/annurev-
400 pubhealth-032013-182354
- 401 10. World Health Organization. World malaria report 2024. Geneva: WHO; 2024. Available
402 from: <https://www.who.int/publications/i/item/9789240083275>
- 403 11. Bennett A, Bisanzio D, Yukich JO, Mappin B, Fergus CA, Lynch M, et al. Population
404 coverage of artemisinin-based combination treatment in children younger than 5 years
405 with fever and *Plasmodium falciparum* infection in Africa, 2003–2015: a modelling study
406 using data from national surveys. *Lancet Glob Health*. 2017;5(4):e418–e427.
407 doi:10.1016/S2214-109X(17)30076-1
- 408 12. Gouda HN, Charlson F, Sorsdahl K, Ahmadzada S, Ferrari AJ, Erskine H, et al. Burden of
409 non-communicable diseases in sub-Saharan Africa, 1990–2017: results from the Global
410 Burden of Disease Study 2017. *Lancet Glob Health*. 2019;7(10):e1375–e1387.
411 doi:10.1016/S2214-109X(19)30374-2

- 412 13. Kruk ME, Gage AD, Arsenault C, Jordan K, Leslie HH, Roder-DeWan S, et al. High-quality
413 health systems in the Sustainable Development Goals era: time for a revolution. *Lancet*
414 *Glob Health*. 2018;6(11):e1196–e1252. doi:10.1016/S2214-109X(18)30386-3
- 415 14. Tashobya CK, Ssengooba F, Oliveira-Cruz V. Health systems reforms in Uganda:
416 processes and outputs. In: *Health Systems Reforms in Developing Countries: Making*
417 *Health Systems Work*. Geneva: World Health Organization; 2006. p. 141–162.
- 418 15. Scott K, Beckham SW, Gross M, Pariyo G, Rao KD, Cometto G, et al. What do we know
419 about community-based health worker programs? A systematic review of existing
420 reviews on community health workers. *Hum Resour Health*. 2018;16(1):39.
421 doi:10.1186/s12960-018-0304-x
- 422 16. Kok MC, Dieleman M, Taegtmeier M, Broerse JEW, Kane SS, Ormel H, et al. Which
423 intervention design factors influence performance of community health workers in low-
424 and middle-income countries? A systematic review. *Health Policy Plan*.
425 2015;30(9):1207–1227. doi:10.1093/heapol/czu126
- 426 17. Ballard M, Bancroft E, Nesbit J, Johnson A, Holeman I, Foth J, et al. Prioritising the role of
427 community health workers in the COVID-19 response. *BMJ Glob Health*.
428 2020;5(6):e002550. doi:10.1136/bmjgh-2020-002550