BMJ Global Health

Three decades of community health workers in primary healthcare delivery in Rwanda: evolution, impact and policy lessons

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To cite: Hezagira E, Gashema P, Harelimana JdD, *et al*. Three decades of community health workers in primary healthcare delivery in Rwanda: evolution, impact and policy lessons. *BMJ Glob Health* 2025;**10**:e021339. doi:10.1136/bmjgh-2025-021339

Handling editor Seema Biswas

► Additional supplemental material is published online only. To view, please visit the journal online (https://doi.org/10.1136/bmjgh-2025-021339).

Received 7 August 2025
Accepted 5 November 2025

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ABSTRACT

Background Community health workers (CHWs) have been instrumental in the delivery of primary healthcare (PHC) services in Rwanda since 1995, with their responsibilities expanding from basic health promotion to integrated community case management. This study explored the evolution, contributions, challenges and policy implications of Rwanda CHW programme over the past three decades.

Methods A qualitative descriptive study was conducted across 15 districts in Rwanda, using in-depth interviews with 46 purposively selected CHWs and key informants. Data were analysed thematically using Braun and Clarke's framework, supported by NVivo software.

Results The majority of CHWs were female (65.2%) and had completed primary education (71.7%). CHWs exhibited extended knowledge on PHC services delivery, including maternal and child health, family planning, diagnosis and treatment of malaria, management of tuberculosis (TB), nutrition, non-communicable diseases and outbreak response. Lived experience from the pioneers of CHWs revealed how community-based health services were gradually embraced and highlighted CHW's significant contribution to managing HIV and TB. Key enablers of CHW effectiveness revealed by the study included supportive local leadership, community trust, positive community feedback, performance-based financing and participation in local development cooperatives. The study also highlighted the digitalisation of reporting tools and continuous advanced trainings as essential strategic recommendations to strengthening CHWs' service delivery.

Conclusion CHWs have significantly contributed to the transformation of Rwanda's health system and remain key to advancing universal health coverage. Continued investment in scaling up of existing digital tools and continuous trainings will be key to enhance CHWs' performances and sustain the progress in community health programmes.

WHAT IS ALREADY KNOWN ON THIS TOPIC

⇒ Community health workers (CHWs) are vital for expanding primary healthcare access in low-income and middle-income countries.
⇒ For 30 years, Rwanda's CHW programme has improved maternal and child health and proven vital in managing outbreaks.
⇒ Evidence on the long-term evolution and policy impact of CHW programme remains limited.

WHAT THIS STUDY ADDS

⇒ Presents the first comprehensive qualitative analysis of Rwanda's 30-year CHW programme evolution.
⇒ Identifies key enablers of success: strong leadership, community trust and performance-based financing.
⇒ Provides actionable policy insights to strengthen CHW training, logistics and digital health reporting systems.

HOW THIS STUDY MIGHT AFFECT RESEARCH, PRACTICE OR POLICY

⇒ Strengthens integration of CHWs into primary healthcare and epidemic response systems.
⇒ Supports CHW motivation and retention via structured incentives and cooperative empowerment models.
⇒ Informs policy reforms to build sustainable, trusted CHW programmes globally.

INTRODUCTION

For over a century, community health workers (CHWs) have played a pivotal role in delivering primary healthcare (PHCs) services, contributing to essential public health initiatives such as health education and vaccination for small pox, among other essential interventions.[1] Unlike physicians, nurses and other formally trained medical professionals, CHWs typically receive limited formal education, yet they are vital in bridging the gap

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between communities and health systems by delivering essential health services at community level.[2,3] Despite their informal training, CHWs have consistently ensured that grassroots health services are accessible, acceptable and responsive to the community needs.[4]

The 1978 Alma-Ata Declaration expedited the widespread recruitment, training and deployment of CHWs, inspiring many countries in the early 1980s to establish national CHW programmes.[5] However, as lessons from earlier experiences were often overlooked, many programmes were undersupported, experienced high attrition and by the late 1980s, the momentum for CHW initiatives had declined.[6] Community-based health professionals were essential for delivering fundamental services under this transformative global health policy.[7] CHWs are recruited and trained based on national country priority, as are their supervisory frameworks, scope of practice, remuneration structures and levels of accountability, employing a contextualised practical model tailored to each country.[8,9]

A growing body of evidence demonstrates that CHWs effectively tackle diverse community health challenges.[10] They have contributed to the reduction of infant morbidity and mortality, the enhancement of vaccination coverage, the promotion of exclusive breastfeeding and the improvement of health outcomes for patients with TB, acute respiratory infections, diarrhoea, malnutrition and malaria.[11–14] CHWs advocate for health-seeking behaviours, disease preventative education and community mobilisation, alongside treatment and preventative efforts.[15]

Low and middle-income countries (LMICs) have leveraged on CHW programmes to mitigate persistent shortage of formally trained health personnel, especially in rural and underserved areas.[16,17] Rwanda's CHW programme represents a notable example of a community-based model that has significantly strengthened grassroots health service delivery. Initiated by the Ministry of Health (MoH) in 1995 in the aftermath of the 1994 Genocide against the Tutsi, the programme began with approximately 12 000 cell-level volunteers primarily focused on health education and promoting care-seeking behaviour. In 2005, the programme transitioned to a village-based model and introduced integrated community case management (iCCM) for children under 5, increasing the CHW workforce to 45 000. By 2018, the programme had grown to approximately 58 567 CHWs distributed across 14 873 villages, averaging four CHWs per village, while adopting a polyvalent model that significantly broadened the scope of health services delivered at the community level.[18,19] For expanding it rich in awareness and health promotion, the Rwandan Government, through the MoH and local administrative structures, has leveraged monthly community work initiatives (Umuganda) and citizens assemblies (Inteko z'Abaturage) as platforms for health promotion and education.[19,20] The rapid expansion and institutionalisation of CHWs within PHC systems underscore the need for focused research into the factors that motivate individuals to join, remain committed to and perform effectively in these roles. The motivation of CHWs influences their performance and retention, hence affecting the sustainability and effectiveness of community health programmes (CHPs). Motivation enhances effort, service quality, reduces attrition and lowers recruitment and training costs.[21] As Rwanda continues to reinforce health systems, it is evident that CHWs are the backbone of PHC. This study provides essential insights into three decades of CHW experience in Rwanda's PHC delivery, highlighting their evolution, impact, challenges and offering actionable policy recommendations to enhance the resilience and equity of Rwanda's health system.

MATERIALS AND METHODS

Study design

This study employed an exploratory qualitative design, using semistructured in-depth interviews to investigate how CHWs contribute to improving health outcomes, their motivations and challenges they faced. A qualitative approach was used to capture lived experiences, perceptions and the contextual factors that influence CHWs' roles in Rwanda's health system.

Study areas

The study was conducted from 1 to 31 May 2025, across 15 purposively selected districts in Rwanda. These districts were selected to represent a mix of urban, semiurban and rural areas, ensuring inclusion of CHWs operating in varied socioeconomic, geographic and healthcare delivery contexts. Online supplemental figure 1 depicts sampled districts and corresponding health centres.

Study population

The study population consisted of active CHWs currently working under Rwanda's decentralised health system, participants included CHWs providing maternal and child health services, community-based disease surveillance, health promotion, home-based care and those serving as heads of CHW cooperatives.

Sampling and recruitment

A purposive sampling strategy was used to recruit CHWs with diverse backgrounds and experiences, including variation in years of service, geographic area, gender, type of services delivered. Participants were invited to participate in the study through local health facility coordination. The sample size was controlled by saturation point[22] and was reached after interviewing 46 CHWs.

Key informant interviews

Face-to-face interviews with key informants were conducted by our trained health professionals. PG (MSc in Global Health and Infectious Diseases, PGI MSc in Clinical Trials and EH Master in Public Health and all researchers were male). Interviews were conducted with each CHW at the premises of each health facility,

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to explore personal motivations, contributions and barriers (online supplemental file 1). Before conducting the interview, verbal consent was obtained from the participants to record the conversations, and all participants were informed the duration of interview, which was ranging between 15 and 20min. All interviews were audio-recorded, transcribed verbatim and translated into English, and interview guides were developed and pilot-tested to ensure cultural relevance and clarity.

Reflexivity

The authors had prior professional experience within Rwanda's health system but no supervisory roles over the participating CHWs. To reduce bias, data collection was conducted by trained research assistants, and reflexive notes were maintained to ensure interpretations were grounded in participants' views.

Data analysis

Transcripts were analysed using thematic analysis guided by Braun and Clarke's six-step framework.[23] Coding was conducted using NVivo software, and inductive approach was applied to allow themes to emerge from the data, supported by illustrative quotes, investigator triangulation was employed to enhance analytical rigour, with at least two researchers independently coding and discussing discrepancies.

Credibility and confirmability

Credibility was strengthened through member checking with a subset of CHWs and peer debriefing within the research team. Independent coding by two authors, followed by discussion to resolve discrepancies, further enhanced confirmability of the findings.

RESULTS

Saturation point reached after interviewing 46 CHWs in 15 districts. 65.2% were females and 34.8% were males. Most participants were aged between 41 and 60 years, with the largest group (39%) aged between 41 and 50. The majority had extensive experience, with over two-thirds serving more than 10 years. The most of CHWs completed primary school (71.7%), while 28.3% had secondary education. CHWs serve on different roles, 74% were regular CHWs, 15% were the leaders (president) of CHWs and 11% served as cell coordinators. Detailed information on the key informants is available in table 1 and online supplemental file table 2 consolidated criteria for reporting qualitative research (COREQ).[24] Analysis revealed five major themes and each accompanied by relevant coding and narrative synthesis as described below.

Table 1 Demographic characteristics of key informants

Characteristics	Category	n=46	Percentage
Age groups	20–30	0	0.0
	31–40	11	24
	41–50	18	39
	51–60	13	28
	>61	4	9
Sex	Female	30	65.2
	Male	16	34.8
Years of experience as community health workers (CHWs)	1–5	8	17.3
	6–10	10	21.7
	11–15	10	21.7
	16–20	11	24
	21–25	2	4.3
	>26	5	11
Location	Rural	30	65.2
	Semiurban	9	19.5
	Urban	7	15.2
Education level	Primary	33	71.7
	Secondary	13	28.3
Community health workers role	President of CHWs	7	15
	Cell coordinators	5	11
	Community health workers	34	74

Evolution of CHWs scope of practice

This theme highlights the dynamic evolution of CHW roles over the past 30 years, shaped by health system priorities and community needs. CHWs reported that their scope has continuously expanded and aligned with national health strategies, and each transition was supported by relevant training. Starting in 1995 with a single volunteer per cell focused on health education and facility delivery promotion, CHW numbers and responsibilities have gradually increased. Key milestones include the introduction of binomes and Maternal Health facilitator (*Animatrice de Sante Maternelle*) (ASM) (2005–2008), expansion into iCCM, nutrition, family planning and maternal health (2008–2010), and the addition of Water, sanitation and Hygiene (WASH) and a fourth CHW for health promotion per village by 2018. By 2025, all CHWs were trained under a polyvalent model, covering HIV, mental health, first aid and non-communicable diseases (NCDs). Online supplemental figure 2 summarises these major transitions in CHW scope and structure over time.

Live experience from the CHW pioneer

> CHWs' roles in Rwanda have evolved from community mobilization and referral (1995) to providing comprehensive, polyvalent services, including malaria treatment, maternal-child health, HIV counseling, NCD awareness, nutrition, and outbreak response, supported by ongoing training and performance-based incentives RWNK-CHW-001- 30 Years' experience as CHW in rural areas in Rwanda

Models of community health service delivery

This theme explores the diverse models of health service delivery at the community level, highlighting

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how many CHWs respond to immediate community needs such as malaria, pneumonia and maternal–child health while other services like family planning, nutrition, NCD awareness and health education are delivered through scheduled appointments. These delivery models are essential for timely follow-up, reducing community health burdens and improving overall health outcomes. The theme is systematised into two key subthemes.

Fixed appointment

> We have a set schedule for activities like child growth monitoring and family planning, and home visits are planned with specific CHWs assigned. But since we live in the village, community members can reach us anytime for help GIT-CHW-001- 11 years' experience as CHWs in rural area in Rwanda.

On-demand services

> CHW services don't always follow fixed schedules. Illnesses like malaria, diarrhea, or pneumonia are treated on demand, while services like family planning are scheduled in advance. KINY-CHW-001- 6years of experience as CHW in Urban area in Rwanda

CHWs' motivation and testimonies

This theme highlights the key motivations and personal testimonies that drive CHWs in their daily work. A significant number of participants cited community trust rooted in being elected by fellow villagers as a primary source of motivation, closely linked to patriotism and supportive leadership. The life-changing impact of their work, such as improved hygiene and community behaviour change, further reinforces their commitment. Despite most CHWs lacking formal medical training and having only primary education, gaining knowledge and being respected often referred to as 'doctor' in the village provides a sense of pride and purpose. Economic empowerment through cooperatives and government support, along with financial incentives through performance-based financing (PBF) scheme, were also identified as a strong motivation. Subthemes under this category are summarised in online supplemental figure 3.

Community trust

> The most important thing is the trust that people in the community have in you. We meet often and share kindness and warmth. I work as a Community Health Worker (CHW), not as a career, but as a way to help develop and improve our community. CYANK-CHW-001-13 years of experience as CHW in rural area of Rwanda

Supportive leadership

> Meeting the President of Rwanda, H.E. Paul Kagame, made us feel recognized and valued, reinforcing our motivation and commitment as CHWs. MUH-CHW-001- 17years of experience as CHWs in semi-urban areas

Community feedback and behaviour changes

> I supported a TB/HIV co-infected patient who delayed care due to family stigma. With daily medication support, he completed treatment, recovered, and returned to work. KIV-CHW-001-11 years of experiences as CHW in Semi-urban areas in Rwanda.

Knowledge and skills

> My passion for community health fuels my strength, empowering me to learn, serve, and guide others toward the care they need. MAS-CHW-003- 17 years of experience as CHW in Urban area in Rwanda

Social economic development (cooperative)

> I have been a CHW since 1997. In 2003, we started a Performance-Based Financing (PBF)-supported cooperative, using 30% of funds for households and reinvesting 70% to grow. We expanded from patient care to coffee farming, agriculture, and a CHW-owned company. Today, the cooperative owns a house worth 500M RWF equivalent to 345000 USD, land with a small forest, involves 19 health centers, and collective shares have grown from 18 to 25M RWF HAN-CHW-003-28 years of experience as CHWs in Rural area in Rwanda

Incentives (performance-based financing)

> I am motivated to serve as a CHW because this program supports citizens like me. I feel responsible to help my community, and the trust and respect I receive—even being called 'doctor'—gives me pride. Also, government recognition through Performance-Based Financing (PBF) inspires me to keep going KAB-CHW-001- 30 years of experience as CHW in urban area in Rwanda

Challenges in the implementation of CHW programmes

This theme highlights key barriers to the effective implementation of CHW programmes, organised in one subtheme. Significant proportion of CHWs identified the burden of a paper-based reporting system, citing difficulties in managing multiple registries and compiling monthly reports, suggesting a need for digitalisation of community health services.

Systemic and logistical barriers

> Despite challenges such as time-consuming paper reports and occasional rainy conditions without proper gear, we remain committed because the community trusts us and the government has entrusted us with this responsibility BYUM-CHW-001- 13 years of experience as CHWs in rural area in Rwanda

CHWs' recommendations for programme improvement

This theme captures CHWs key recommendations to the MoH for enhancing their performance and service delivery. Participants emphasised the need to digitalise reporting systems and equip CHWs with smartphones, tablets or computers. They also called for continuous training opportunities, as many have not received formal training for their assigned roles.

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Digitalisation of CHW tools and reporting systems

> We recommend the Ministry of Health upgrade the reporting system by replacing paper logbooks with digital tools like smartphones or tablets. This would improve efficiency, ensure data accuracy, and prevent loss—since paper records are easily damaged, especially during fieldwork. KINY-CHW-003- 17 years of experience as CHW in urban area in Rwanda

Access to continuous and formal training

> Although we have received various trainings, regular refresher sessions, especially under the expanded polyvalent model are crucial to maintain our knowledge, motivation, and improve performance. MUB-CHW-001- 17 years of experience as CHW in rural area in Rwanda

DISCUSSION

This qualitative study aimed to explore the perspective of CHWs on the evolution, resilience, key motivators and strategic role the CHW programme in Rwandan PHC systems. The saturation of themes across 46 diverse participants reveals a community health workforce deeply embedded in their communities, motivated by intrinsic and extrinsic factors, and guided by a dynamic set of roles that has evolved systematically since 1995.

The study revealed that the CHW programme has undergone a substantial transformation in CHWs' roles since 1995, with continuous task shifting aligned to evolving national health priorities in Rwanda. These findings were also reported in other LMICs, where community-based platforms are leveraged to extend essential services, such as iCCM, family planning and more recently, NCD prevention and mental healthcare.[25 26]

In early 2023, Rwanda's MoH transitioned to a polyvalent CHW model where existing services were extended the scope of CHW roles to include HIV counselling, mental health, behaviour change communication and epidemic response. This shift represents a strategic adaptation to address the health workforce shortages and community-level demand. Notably, this model aligns with the MoH's 4×4 strategy, which aims to quadruple the healthcare workforce within 4 years as a means of strengthening PHC.[27] It also supports the National Strategy for Transformation, which prioritises the scaling up and professionalisation of CHWs to improve community-level service delivery.[28]

Our study reported the CHW service delivery models combine scheduled (family planning and community nutrition) and on-demand approaches such as malaria treatment, effectively balancing planned preventive care with urgent curative interventions. This hybrid model underscores CHWs' responsiveness and highlights their strategic role in achieving universal health coverage (UHC) through community-level access.[29 30]

The motivation among CHWs was emerged as a multidimensional concept grounded in community trust, national recognition, community testimonies and behaviour changes, and socioeconomic advancement. Interestingly, community trust rooted in election by local residents emerges as a primary intrinsic motivator, which is further reinforced by national recognition, exemplified by interactions with high level leadership and symbolic events like presidential visits and live experience of direct observed therapy for patient followed by CHWs. These findings are consistent with existing literature that highlights intrinsic motivation, peer recognition and community accountability as key determinants of CHW performance.[31–33] Personal testimonies articulate how respect, a sense of purpose ('doctor' identity), and witnessing the tangible health improvements in their communities serve as potent motivators. Additionally, PBF and economic empowerment through cooperatives augment motivation by providing financial incentives and socioeconomic mobility, contributing to retention and performance stability.

Despite the well-established Rwanda's community healthcare systems, structural and operational challenges persist. CHWs reported heavy paperwork burdens, logistical constraints such as inadequate transportation support, stock outs of essential supplies. Workload overload, compounded by expanding responsibilities, threatens CHWs' capacity to maintain quality and enthusiasm. These systemic challenges are consistent with global evidence on CHP emphasising the urgent need for digital health solutions, logistical support and systemic reforms to streamline reporting and supply chains.[14 34 35]

CHWs strongly advocated for the scaling up of the current digitalisation system to effectively carry out their activities and streamline workflow. The recently launched pilot of Artificial Intelligence (AI)-powered digital platforms in Rwanda was identified as promising innovation to modernise community health management.[36] Transitioning from paper-based records to digital tools could radically improve data accuracy moving from aggregated data to personal data, timeliness and ease of reporting, as advocated by WHO and global partners.[37] Additionally, CHWs emphasised the need for continuous training to build their capacity and confidence in executing their expanding roles. They also highlighted the importance of sustained and predictable financing, especially through strengthened PBF to enhance motivation, service quality and operational stability, aligning with findings from other studies on training needs and PBF impact.[15 21 34 38]

In summary, Rwanda's community health system exemplifies an adaptive, community-centred model that capitalises on supportive local leadership, community ownership and multisectoral collaboration. To ensure scalability and sustainability of this model, reinforcing systemic infrastructure, digital health integration, continuous training and formal motivational structures are crucial. Such investments will secure CHWs' central role in Rwanda's journey towards UHC, strengthened community resilience and improved health outcomes.

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Contributors EH and PG contributed equally to the study design, data collection, data analysis, interpretation and drafting of the initial manuscript. JdDH, EES and PGI contributed to the study design, data analysis and critical review of the first draft. IM, AU, FS, FR, AT, JU and SM participated in the study design and reviewed the first draft. CMM contributed to the study design, provided critical input on the initial draft and reviewed the final manuscript. CMM serves as a guarantor of the work. The corresponding author confirms that all listed authors meet the authorship criteria, have approved the final version of the manuscript, and that no qualifying contributors have been omitted.

Funding The authors have not declared a specific grant for this research from any funding agency in the public, commercial or not-for-profit sectors.

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Competing interests None declared.

Patient and public involvement Patients and/or the public were not involved in the design, or conduct, or reporting, or dissemination plans of this research.

Patient consent for publication Not applicable.

Ethics approval Authorisation for data collection was obtained from the Rwanda Biomedical Centre. A formal request from the Community Health Program under the Maternal, Child, and Community Health Division was submitted to district hospitals and health centre administrators. Informed consent was obtained from all participants after reading the consent forms aloud. Participants were assured of confidentiality and anonymity, with no responses linked to individual identities. To further ensure data security, transcripts and audio recordings were stored in password-protected files accessible only to the research team. All hardcopy materials were kept in locked cabinets, and identifiers were removed during transcription to prevent any link to individual participants. Participants gave informed consent to participate in the study before taking part.

Provenance and peer review Not commissioned; externally peer-reviewed.

Data availability statement Data are available upon reasonable request.

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