

Factors influencing performance and engagement of community health workers in maternal and child health service delivery: a systematic review of literature from low- and middle-income Asian Countries

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Summary

Background Despite their vital contributions, community health workers (CHWs) often face a range of complex challenges that undermine their work performance and engagement. These challenges, in turn, affect their ability to deliver maternal and child health (MCH) services effectively and sustain long-term commitment.

Methods A systematic review was conducted to identify factors influencing the performance and engagement of CHWs involved in MCH service delivery in Asia. We searched PubMed, EMBASE, and Scopus from inception to June 2025. Findings were organized using the socioecological model.

Findings A total of 30 studies were included. At the individual level, sociodemographic characteristics, skills, and personal motivations were key determinants. Interpersonal relationships, including support from family and colleagues, played a critical role in sustaining job commitment. Organisational factors—such as access to training, a supportive work environment, and adequate resources—also significantly influenced performance. At the community level, social dynamics and safety concerns were highlighted at the community level as necessary. At the health system level, funding mechanisms and policy environments shaped long-term engagement. Several strategies, including digital health innovations, were proposed to address these multilevel challenges.

Interpretation CHW performance and engagement are shaped by a constellation of personal, interpersonal, organisational, community, and systemic factors. The core challenges limiting CHWs' effectiveness often stem from a lack of knowledge, resources, and empowerment. Future research should explore how digital health solutions can be leveraged to overcome these foundational barriers and enhance CHW performance and engagement in MCH service delivery.

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Research in context

Evidence before this study

Maternal and child mortality continues to pose a significant public health challenge in low- and middle-income countries (LMICs) across Asia. Community health workers (CHWs) are essential frontline providers who bridge gaps in access to maternal and child health (MCH) services, particularly in underserved and rural communities. Despite their critical role, CHWs frequently face a multitude of challenges that hinder their ability to perform effectively and remain engaged over time. These challenges—ranging from limited training to inadequate resources—impact their performance and the sustainability of MCH service delivery. Prior studies have examined some of these factors in isolation or at the national level. Still, a regionally focused, comprehensive synthesis of factors affecting CHWs in Asian LMICs has been lacking.

Added value of this study

This is the first systematic review to comprehensively explore the factors influencing the work performance and engagement of CHWs delivering MCH services across Asian LMICs. Using the socioecological model, we analysed findings from 30 studies and identified 14 facilitators and 16 barriers across five domains—individual, interpersonal, organisational, community, and health system levels. Drawing from these, we synthesized three interrelated foundational issues that limit CHWs' effectiveness: insufficient knowledge, inadequate resources, and lack of empowerment.

Implications of all available evidence

Improving CHWs' performance and engagement requires addressing these foundational issues in a holistic and context-specific manner. Digital health solutions offer promising avenues to enhance training, streamline service delivery, and empower CHWs through better data use and communication tools. To maximise impact, policy efforts must focus on enabling supportive environments at all health system levels to ensure CHWs can thrive in their roles and deliver high-quality MCH services sustainably.

Introduction

Pregnancy and childbirth complications are among the leading causes of mortality and severe morbidity, placing a significant burden on mothers and their children.¹ In low- and middle-income countries (LMICs) across Asia, an estimated 85,000 women die each year due to complications related to pregnancy and childbirth, accounting for nearly 30% of global maternal deaths.^{2,3} The risk is even greater in rural areas, where maternal and child mortality rates are almost twice as high as those in urban settings.^{4,5} To address this urban–rural disparity, community health workers (CHWs) have been recognized as a vital strategy for expanding access to care in remote and underserved areas.^{6,7} CHWs are frontline public health providers who live in and serve their communities, enabling them to act as critical links between households and formal health systems.^{8,9} Historically, CHWs have been central in delivering primary healthcare, particularly in maternal and child health (MCH). Their responsibilities span the continuum of care—from providing antenatal services and identifying pregnancy-related complications to offering postnatal support. After childbirth, CHWs conduct follow-up visits to monitor newborns, support breastfeeding, and provide maternal health counselling. This continuity of care helps ensure better health outcomes for mothers and children.¹⁰⁻¹²

Despite their vital contributions, CHWs often contend with complex factors that influence their work performance and engagement. In this context, work performance refers to the degree to which CHWs effectively fulfil their assigned responsibilities in delivering community health services,¹³ while engagement reflects their motivation and commitment to their roles within the community.¹⁴ The relationship between work performance and engagement has been widely examined over time.¹⁵ Early insights from the Hawthorne studies revealed that work performance is heavily influenced by social factors—such as interpersonal relationships, institutional dynamics, cultural norms, and economic conditions—that shape an individual’s sense of belonging and participation in workplace decision-making.¹⁶ In addition to these social dimensions, ecological factors—such as the working environment, resource availability, and broader policy landscape—also play a critical role in determining productivity and sustaining engagement.¹⁷ Significantly, many of these influences extend beyond the health system itself. Thus, to effectively strengthen CHW programs, exploring and understanding the broader socioecological factors underpinning their performance and engagement is essential.

The challenges CHWs face in Asian LMICs remain insufficiently addressed. Existing literature primarily centres on African countries, whose sociocultural and health system contexts may not directly translate to the diverse and complex realities of LMICs in Asia.¹⁸⁻²⁰ Furthermore, much of the current research emphasizes the impact of CHWs on health outcomes, often overlooking the nuanced dimensions of CHWs’ work performance and engagement in service delivery.^{6,7,21} This narrow focus limits our understanding of the multifaceted socioecological influences that shape CHWs’ effectiveness and long-term commitment. To bridge this critical knowledge gap, this systematic review explores the socioecological factors influencing the work performance and engagement of CHWs delivering MCH services in Asian LMICs. A deeper understanding of these interacting factors is essential for informing

evidence-based policies and programmatic strategies to enhance CHWs' effectiveness, retention, and integration within health systems.

Methods

Registration and reporting

The protocol for this review was registered with PROSPERO (registration ID: CRD42023461721). The review also followed the reporting guidelines outlined in the Preferred Reporting Items for Systematic Reviews and Meta-Analyses Protocols (PRISMA-P) statement (Appendix 1).²²

Eligibility

This systematic review examined factors that motivate or hinder the work performance and engagement of CHWs delivering MCH services in LMICs in Asia, as defined by the World Bank classification of economies.²³ CHWs were identified according to the World Health Organization (WHO) definition, as described by Lewin et al.⁹ In this review, a CHW was defined as a health worker who: (1) performs tasks related to health service delivery; (2) has received context-specific training relevant to the intervention; and (3) does not possess formal tertiary education or a professional degree in a health-related field. MCH services were defined as those aimed at improving child health, supporting women's reproductive health, and promoting healthy pregnancies.⁹ Only studies published in English were included, with no restrictions on publication date. Eligible studies had to be empirical in nature, as assessed using the Mixed Methods Appraisal Tool (MMAT).²⁴ The inclusion and exclusion criteria were systematically structured using the Population, Intervention, Comparison, Outcome, and Study design (PICOS) framework (Appendix 2).

Information sources

Primary literature sources were identified through a structured search of electronic databases, including PubMed, EMBASE, and Scopus, to retrieve peer-reviewed articles published up to June 2025. The search strategy was developed in three phases. First, a preliminary search was conducted in PubMed to identify relevant keywords from titles, abstracts, and subject headings. These keywords and their synonyms were then used in a comprehensive search across all selected databases. Finally, the reference lists of eligible full-text articles were manually screened to identify additional relevant studies not captured in the database search. The search strategy was developed in consultation with a medical librarian to ensure accuracy and completeness. It incorporated a wide range of Medical Subject Headings (MeSH) terms and keywords related to community health workers and maternal and child health services (Appendix 3). Grey literature was also included to minimise publication bias and enhance the comprehensiveness and robustness of the review.

Article screening

Articles retrieved from each database were first imported into EndNote for citation management. Two reviewers trained in systematic review methodology (YFL and KS) independently screened titles and abstracts, followed by full-text reviews of potentially eligible studies based on the predefined inclusion criteria. Any discrepancies were resolved through discussion and consultation with a senior team member (HG). The entire screening process was documented using a PRISMA flow diagram.²⁵

Data extraction

Following full-text screening, two reviewers (YFL and KS) independently extracted data from the eligible articles. The extracted data were then compared and reconciled to produce a consensus version. A standardized data extraction form was developed based on the JBI Systematic Review Guidelines.²⁶ Extracted information included study characteristics (authors, publication year, country, study aim, design, sample size, and setting), multilevel facilitators and barriers influencing CHWs' performance and engagement in MCH service delivery, as well as suggested strategies for improvement.

Assessment of methodological quality

The methodological quality of included studies was assessed independently by two reviewers (YFL and KS) and cross-checked by a senior reviewer (HG) using the MMAT.²⁴ The MMAT provides design-specific criteria, with each item rated as 'Yes,' 'No,' or 'Can't tell.' An overall quality score was then calculated for each study, based on the number of criteria met. In line with previous approaches,²⁷ scores were assigned in 20% increments (e.g., 20%, 40%, up to 100%) depending on how many applicable criteria were fulfilled. Final scores were determined through consensus among the reviewers.

Data synthesis

A qualitative synthesis was conducted by summarizing the study characteristics and findings of all included studies. Quantitative data were concurrently subjected to a process of "qualitisation" to enable integration within the qualitative synthesis framework.²⁸ A framework method was employed to ensure a systematic and flexible approach to data analysis.^{29,30} Specifically, the socioecological model was adopted as the guiding analytical framework due to its emphasis on multilevel determinants influencing CHWs' performance and engagement.^{31,32} This model posits that individual, interpersonal, organizational, community, and health system-level factors each uniquely—and in combination—shape health service delivery outcomes.^{33,34} Two reviewers (YFL and KS) independently coded the data across the five levels of the socioecological model, with the coding process reviewed and validated by a third reviewer (HG). Thematic mapping was subsequently conducted to identify patterns, concordant and divergent findings, and relationships between themes and subthemes. Data interpretation was grounded in the objectives of the review and emergent findings, with synthesis refined through iterative team discussions.

Results

Characteristics of included articles

Figure 1 presents the PRISMA flow diagram outlining the stages of study identification, screening, and inclusion for this review. A total of 17,805 records were initially identified. After removing duplicates, screening titles and abstracts, and conducting full-text reviews, 30 studies met the inclusion criteria. Table 1 summarizes the key characteristics of these included studies. The studies were conducted across eight Asian LMICs, with the following distribution: India ($n = 13$), Bangladesh ($n = 5$), Pakistan ($n = 4$), Myanmar ($n = 3$), the Philippines ($n = 2$), Nepal ($n = 1$), China ($n = 1$), and Kyrgyzstan ($n = 1$).

No	Study	Country	Study aim	Study design	Sample size	Setting	Quality
35	Alam et al., 2012a	Bangladesh	To explore the relative importance of factors associated with the level of activity of Manoshi CHWs in Dhaka urban slums and make recommendations to improve their activity.	Mixed-method study	148 active community health workers 124 inactive community health workers	Urban slums	***
36	Alam et al., 2012b	Bangladesh	To better understand factors associated with Manoshi CHWs retention and consequently recommend strategies for increasing their retention.	Case-control study	542 retained community health workers 146 dropped out community health workers	Urban slums	****
37	Alam & Oliveras, 2014	Bangladesh	To gather evidence on any long-term effects of previously identified retention factors and to determine whether there are any new factors associated with Manoshi CHWs retention.	Prospective cohort study	422 retained community health workers 120 dropped out community health workers	Urban slums	****
38	Bhattarai et al., 2020	Nepal	To identify the factors associated with the child health service delivery by FCHVs.	Cross-sectional study	4302 female community health volunteers	Nationwide	***
39	Charantima th et al., 2023	India	To assess the experience of peer counsellors on a community-based intervention to improve rates of early breastfeeding.	Qualitative study	22 peer counsellors	Rural	****

40	Dykes et al., 2012	Pakistan	To explore and contextualize meanings, beliefs and practices surrounding maternal and infant nutrition and to use the findings to inform the development of a nutritional improvement program adapted to local needs.	Qualitative study	16 lady health workers	Rural	*****
41	Gopalakrishnan et al., 2021	India	To investigate the association between supportive supervision and community health worker performance in a large-scale nutrition program using multi-level models.	Longitudinal study	809 community health workers	Rural	****
42	John et al., 2020	India	To explore Anganwadi workers' perceptions of what and how individual, program, community, and organizational factors influence their performance.	Qualitative study	30 Anganwadi workers	Rural	*****
43	Kari & Angolkar, 2021a	India	To assess the knowledge and practice of birth preparedness and complication readiness among accredited social health activists.	Cross-sectional study	28 accredited social health activists	Rural	**
44	Kari & Angolkar, 2021b	India	To assess the knowledge of accredited social health activists regarding intranatal and postnatal care services.	Cross-sectional study	100 accredited social health activists	Rural	***
45	Khan et al., 2024	Pakistan	To determine the operational barriers impeding the smooth running of LHWs program in district Hangu.	Cross-sectional study	129 Lady Health Workers 7 Lady Health supervisors	Rural and urban	****

46	Li et al., 2012	China	To assess the current situation of the health system of rural health care and evaluating the clinical competency of village doctors in management of childhood illnesses prior to implementing integrated management of childhood illness program in remote border rural areas	Mixed-methods study	154 village doctors	Rural	*
47	Lonimath et al., 2023	India	To assess the performance of accredited social health activists under National Urban Health Mission project.	Cross-sectional study	130 accredited social health activists	Urban	*****
48	Mahajan & Kaur, 2022	India	To analyze the role of accredited social health activists in improving maternal health outcomes in the rural community	Cross-sectional study	57 accredited social health activists 420 mothers	Rural	**
49	Mondal & Murhekar, 2018	India	To identify the factors associated with low performance of accredited social health activists with respect to maternal care.	Case-control study	261 adequate performing accredited social health activists 261 low performing accredited social health activists	Rural	*****
50	Ngaya-An & Fowler, 2014	Philippines	To examine community health teams contribution to maternal and child health project	Qualitative study	21 community health teams	Rural	*****

51	Peterson et al., 2014	India	To investigate village health workers level of knowledge of treatment, risks, and prevention of complications of labor and delivery and to evaluate current teaching methods.	Qualitative study	18 village health workers	Rural	****
52	Puett et al., 2015	Bangladesh	To examine the interactions of structural barriers to community health workers quality of care at multiple levels, including supply-side issues from the government health system and demand-side issues of community resource constraints.	Qualitative study	83 community health workers	Rural	*****
53	Rabbani et al., 2016	Pakistan	To explore lady health supervisors motivating factors, with particular interest in how their views on supportive supervision contribute to the literature and inform on ways that community health worker programs can facilitate motivating supervisory relationships.	Qualitative study	29 lady health supervisors	Rural	*****
54	Rahman et al., 2010	Bangladesh	To explore the causes of attrition, as well as how community health workers attrition was analyzed and addressed by this community-based newborn care intervention in rural Bangladesh.	Mixed-methods study	69 community health workers	Rural	*

55	Rao et al., 2021	India	To assess the working condition of accredited social health activists, the extent and types of violence they experienced, and the corresponding perpetrators of this violence in two districts of Northern Karnataka	Mixed-methods study	396 accredited social health activists	Rural	****
56	Sarfraz & Hamid, 2014	Pakistan	To explore role of community midwives as home based skilled service providers and the challenges they face in provision of skilled maternal care.	Qualitative study	16 community midwives 27 lady health worker 30 lady health supervisors	Rural	*****
57	Shin et al., 2023	Kyrgyzstan	To understand community health workers activities in Kyrgyzstan migrant villages and their impact on individuals and communities.	Mixed-methods study	Survey questionnaire: 46 community health workers Reflection note: 10 community health workers	Rural	*
58	Shrivasta et al., 2023	India	To gain perspectives into the experiences of work stress, the related health symptoms, and the responses to stress among ASHAs in India.	Qualitative study	59 Accredited Social Health Activists	Rural	*****
59	Sommanus tweechai et al., 2016	Myanmar	To assess the socioeconomic profiles, contributions of community health workers to primary health care services and their needs for supports to maintain their quality contributions in rural hard to reach areas in Myanmar.	Cross-sectional study	715 community health workers	Nationwide	*****

60	Teela et al., 2009	Myanmar	To understand maternal health workers role in facilitating program and policy efforts to overcome critical delays and insufficient management of maternal complications linked to maternal mortality.	Qualitative study	Detailed case study: 14 maternal health workers Focus group discussion: 9 maternal health workers In-depth interviews: 18 maternal health workers	Rural	**
61	Thacker et al., 2013	India	To assess the attitudes and practices of frontline health workers in India regarding polio immunization in Uttar Pradesh and Bihar.	Cross-sectional study	720 auxiliary nurse midwives 722 accredited social health activists	Rural	***
62	Wahid et al., 2020	India	To characterize mechanisms in which accredited social health activists engage with, and are affected by the implementation of Bihar's community health workers program.	Qualitative study	20 accredited social health activists 32 women.	Rural	*****
63	Wangmo et al., 2016	Myanmar	To understand AMW's strengths, weakness and support needed, to better inform future policy decision in strengthening the AMW program in Myanmar.	Cross-sectional study	1185 auxiliary midwives	Rural	*****
64	Yamashita et al., 2015	Philippines	To understand postpartum healthcare services and to explore the challenges and motivations of maternal health service providers.	Qualitative study	13 Barangay health workers	Rural	****

Table 1: Characteristics of included studies

Critical appraisal

The MMAT evaluation revealed variability in methodological quality across the included studies. Thirteen studies (44%) met all quality criteria, with the majority (nine out of 13) being qualitative in design. However, the MMAT assessments identified concerns regarding the appropriateness of measurement tools used in quantitative and mixed-method studies. Specifically, seven of the twelve quantitative studies received a "no" or "can't tell" rating for measurement appropriateness, often due to the absence of validity or reliability testing. Furthermore, four of the five mixed-method studies did not adequately address or reconcile inconsistencies between their quantitative and qualitative findings. Full MMAT ratings for each study are provided in Appendix 4.

Multilevel perceived facilitators influencing CHWs' performance and engagement

Table 2 presents facilitators influencing CHWs' performance and engagement, organized according to the five levels of determinants in the socioecological model (a detailed description of each subtheme is provided in Appendix 5). Our review identified 14 key themes and 30 subthemes representing facilitators perceived by CHWs.

Personal level

CHWs' performance and engagement were influenced by sociodemographic characteristics, competencies, and intrinsic motivations. Older CHWs tended to be more confident regarding work performance, likely reflecting accumulated experience.^{59,63} Those with higher education demonstrated greater clinical competency, which was critical for effective performance and managing complex roles.^{44,47} In terms of engagement, CHWs from lower socioeconomic backgrounds showed strong commitment, potentially driven by limited alternative employment opportunities.³⁷ Beyond structural factors, personal motivations—such as a desire to make better use of time^{42,48,57} and the belief in generating good karma,⁵⁸ emerged as key drivers sustaining long-term dedication. This sense of purpose was further reinforced by professional commitment deeply rooted in altruistic values aimed at improving community health.^{39,42,48,50,53,54,57-59,62-64} The reliance on personal dedication suggests that CHWs derive satisfaction and value from their vocation in the absence of adequate structural support.^{36,37,39,45,48,53,54,57,58,62,64}

Interpersonal level

Interpersonal relationships, particularly family support and collegial solidarity, played a central role in sustaining CHWs' engagement. Encouragement and practical assistance from family members helped CHWs balance competing responsibilities.^{35,36,39,42,45,53,54,58} Collegial relationships fostered a sense of solidarity, facilitating knowledge sharing and emotional support, which contributed to a collaborative work environment.^{50,53,54,58,60,62} Supervision, when framed as mentorship rather than fault-finding, was

identified as a key factor enhancing performance.^{41,42,45,53,54,57,59,63} These findings highlight that the relational environments surrounding CHWs are critical for morale and sustained performance.

Organisational level

Access to high-quality, hands-on training was consistently associated with improved technical competence and confidence, particularly in delivering complex MCH services.^{35,39,53,57,60,62,63} Opportunities for career advancement, such as permanent appointments, further strengthened CHWs' motivation to remain in their roles.^{48,54} However, these organizational facilitators often depended on the availability of adequate resources. For instance, access to essential supplies directly influenced CHWs' ability to provide continuous care and maintain trust within their communities.^{38,39,45,47}

Community level

CHWs' engagement was profoundly influenced by the social dynamics within the communities they served. When their work was respected and valued, they reported higher morale and demonstrated greater commitment to their roles.^{36,37,39,53,58,59,62,63} Trust from community members—cultivated through consistent, positive interactions—was especially vital for CHWs working in culturally sensitive contexts.⁵¹ This trust granted CHWs legitimacy, helping them overcome community resistance and carry out their duties with greater confidence.

Health system level

Adequate funding and clear policies form the foundation for the sustainable functioning of CHWs. CHWs reported increased accountability, confidence, and more explicit role definitions when funding was secured.^{36,37,42,47,48,50,53,54,58,62} Recognition from the wider healthcare system also fostered a stronger professional identity and sense of appreciation.^{53,57} However, the available support did not meet CHWs' expectations in many instances. As a result, digital health innovations, such as mobile health (mHealth) platforms, have emerged as promising solutions to overcome some of these challenges. Beyond improving performance, these technologies also facilitate better integration of CHWs within the broader health system.^{38,62}

Multilevel perceived barriers influencing CHWs' performance and engagement

Table 2 summarizes the barriers influencing CHWs' performance and engagement across the five levels of the socioecological model. Appendix 5 provides a detailed description of each subtheme. Our review identified 16 key themes and 34 subthemes representing perceived barriers reported by CHWs.

Personal level

Barriers at the personal level frequently stemmed from gaps in foundational competencies and motivation. Limited education, lack of experience, and insufficient skills significantly hindered CHWs'

ability to provide high-quality MCH services.^{43-46,51,54} Competing priorities, particularly economic pressures, further undermined sustained engagement. Many CHWs prioritized income-generating activities or were forced to leave their posts due to life transitions such as relocation or family obligations.^{35,37,45,54,55,57,58,63} Importantly, these challenges were not simply individual shortcomings but often reflected broader systemic inequities. For example, caste-based social hierarchies in some settings limited access to CHW roles and undermined CHWs' perceived legitimacy, which, in turn, reduced community trust and lowered service uptake.^{38,42,45,51,58} These issues were further compounded by the widespread undervaluation of CHWs' contributions. Their roles were frequently viewed as informal, peripheral, or less professional, eroding their sense of identity and purpose within the health system.^{36,42}

Interpersonal level

Power dynamics within domestic and professional settings also influenced CHWs' ability to engage consistently. Many female CHWs encountered resistance at home, particularly in contexts where traditional gender roles constrained women's autonomy and mobility.^{35-37,45,53-55,57,58} In the workplace, engagement was further undermined by punitive supervision, lack of peer support, interpersonal rivalry, and rigid hierarchical management structures.^{36,42,49,51,54-56,60,62} These findings highlight that interpersonal barriers are deeply relational, often shaped by entrenched social norms and institutional hierarchies. Such environments erode trust, limit collaboration, and suppress CHWs' sense of agency, ultimately hindering their sustained performance and engagement.

Organisational level

At the organizational level, a pervasive misalignment between expectations and institutional support hindered CHWs' performance and engagement. CHWs were often tasked with expanded clinical and administrative responsibilities without sufficient on-the-job training.^{46,56,64} This role expansion—primarily driven by broader health workforce shortages,^{56,57,61,64} contributed to role confusion and diluted their professional identity.⁵⁴ In response to chronic understaffing, relaxed recruitment standards were frequently adopted, resulting in wide variability in CHW competencies.^{42,45,48,49,54,56,58,62} This inconsistency undermined program effectiveness and placed additional strain on more capable workers. Furthermore, resource constraints such as inadequate infrastructure and limited access to medical supplies impaired CHWs' ability to meet service delivery expectations, highlighting persistent institutional underinvestment despite growing responsibilities.^{42,45,46,49,50,52,53,56,57,58,61}

Community level

Community-level barriers were often deeply gendered and culturally entrenched. Negative community attitudes toward CHWs included disapproval, rudeness, and unrealistic expectations.^{37,45,54,55,57,58,61,64} Resistance to female CHWs was driven not only by community mistrust and misconceptions about their competencies,^{46,51,52,56,60,61} but also by sociocultural norms that questioned women's legitimacy in

public-facing roles.^{37,42,46,50,51,55,56,58,61} This dual rejection significantly undermined motivation and contributed to premature attrition. In some cases, female CHWs also faced harassment and violence, raising serious safety concerns that further discouraged their continued engagement.^{42,55,56,58}

Health system level

At the macro level, the structural undervaluation of CHWs was evident. Irregular remuneration and delayed incentives reflected a broader policy neglect.^{35,37,42,45-48,52-54,56-58,60,62} Limited programme funding further strained CHWs financially, with some covering out-of-pocket expenses for transportation and essential supplies.^{42,48,50,56,57,63} This deepened economic vulnerability—especially for unpaid volunteers—and reinforced their marginalization and lack of professional recognition within the health system.^{48,52,54,60} Corruption and mismanagement in fund allocation worsened these issues, highlighting how poor CHW engagement often stems from policy neglect and chronic underinvestment.^{40,50,52} The COVID-19 pandemic introduced additional barriers to MCH service delivery, as many CHWs reported heightened fears of infection—exacerbated by limited access to personal protective equipment (PPE)—which compromised their capacity and willingness to provide care.⁵⁸

Domain	Theme	Subtheme	Facilitator	Barrier
Personal	Sociodemographic characteristics	Level of education	44	46, 51
		Older age	59, 63	
		Socioeconomic status	37	
		Social group		38, 42, 45, 51, 58
		Domicile changes		35, 45, 63
	Skill and competence	Amount of work experience	47	46
		Clinical competency	41, 43, 51, 60	43, 44, 45, 46, 51, 54
		Level of confidence		45, 46, 57
	Personal motives and reasons	Desire for better use of time	42, 48, 57	
		Personal autonomy	45, 53, 54, 58, 60, 62	
		Personal experience	56	
		Prior engagement in community activities	35, 36, 38, 62	
		Perceived level of self-efficacy	39, 53, 59, 62, 63	45
		Perceived generation of good karma	58	
		Cognitive dissonance		50
	Professional dedication	Other competing commitments		37, 45, 54, 55, 57, 58
		Altruistic value	42, 48, 50, 53, 54, 57, 58, 59, 62, 63, 64	
		Professional development and achievement	39, 53, 54, 57, 62	
	Satisfaction	Job satisfaction	37, 39, 45, 54, 57, 64	
		Perceived level of valuation of their roles	36, 37, 48, 53, 62	36, 42

Interpersonal	Family relationship	Family attitude and support	36, 39, 42, 45, 53, 54, 58	35, 36, 37, 45, 53, 54, 55, 57, 58
	Collegial relationship	Support and collaboration within the workplace	50, 54, 58, 60, 62	45, 51, 55, 56
		Top-to-bottom supervision	41, 42, 45, 53, 54, 57, 59, 63	42, 45, 49, 54, 56, 58, 60, 62
		Workplace competition		36, 56, 58
Organizational	Training and development	Adequacy of on-the-job training	35, 39, 53, 57, 60, 62, 63	46, 56, 64
		Career growth and progression opportunity	48, 54	54
		Quality assurance and succession planning	45	
	Job context and demands	Nature of the job		54, 55, 58
		Perceived workload		42, 45, 48, 49, 54, 56, 58, 62
	Work environment and resources availability	Availability of resources	38, 39, 45, 47	42, 45, 46, 49, 50, 52, 53, 56, 57, 58, 61
		Availability of qualified manpower		56, 57, 61, 64
Infrastructure			42, 45, 46, 48, 50, 53, 54, 56, 57, 58, 59, 60, 61, 63	
Community	Social dynamics and cultural context	Communication		37, 56
		Community attitude and expectation	36, 37, 39, 53, 58, 59, 62, 63	37, 45, 55, 57, 58, 61, 64
		Community's level of trust	51	46, 51, 52, 56, 60, 61

		Prevailing societal norms and practices		37, 42, 46, 50, 51, 55, 56, 58, 61
		Level of health literacy in the community	45	40, 45, 61
	Safety and well-being	Harassment and violence		42, 55, 56, 58
Health system	Financial resource allocation	Availability and adequacy of financial remuneration	36, 37, 42, 47, 48, 50, 53, 54, 58, 62	35, 37, 42, 45, 46, 47, 48, 53, 54, 56, 57, 58, 62
		Availability of program funding	38	42, 48, 50, 56, 57, 63
	Guidance and policies	Availability of guidelines	42, 50	56, 58
	Recognition within broader health system context	Professional recognition and respect	53, 57	48, 52, 54, 60
	Economic inequality and vulnerable practices	Corruption		42
		Widespread poverty in society		40, 50, 52
	Public health emergency	Pandemic-induced challenges		58
	Technological integration	Potential of mHealth in improving care delivery	38, 62	

Table 2: Multilevel facilitators and barriers affecting the performance and engagement of community health workers

Multilevel recommendations to improve CHWs' performance and engagement

Table 3 presents nine key recommendations to enhance CHW performance and engagement (with detailed descriptions in Appendix 6). At the personal level, CHWs advocated for more personalised care models to foster deeper patient-provider relationships. This approach restored dignity and purpose to their roles, counterbalancing the routine, transactional nature of many CHW tasks. It also reflected a more profound aspiration for role legitimacy—an aspect often overlooked in conventional task-shifting models.³⁹ At the interpersonal level, vicarious learning emerged as a critical recommendation for skill development. CHWs emphasised the value of observing clinical practices performed by mentors and peers, which helped reinforce practical competencies and build confidence through real-world experiential learning.⁵¹ This form of guided exposure served a dual purpose: strengthening accountability through structured mentorship and supporting skill acquisition within established professional hierarchies.

Strengthening hardware (infrastructure and supplies) and software (skills and training) capacities was considered foundational at the organisational level. This included ensuring the consistent availability of essential equipment,^{52,59,63} diversifying resource channels,³⁹ and revising training schemes to better align with CHWs' roles and evolving responsibilities.^{51,52} In addition, non-financial incentives—such as improved workplace benefits and formal recognition—were identified as important mechanisms to enhance retention and morale.^{36,37} These priorities reflect a broader call to institutionalise CHW roles through tangible expressions of value and support.

At the community level, participants underscored the importance of demand-side interventions, including health education campaigns and social mobilisation efforts to reduce stigma and counter misinformation. Such approaches were seen as vital for reshaping community perceptions of CHWs, particularly in contexts where entrenched social hierarchies and gender norms eroded their legitimacy.⁴⁰ Fair remuneration and job security emerged as central concerns from a health system perspective. These were viewed not only as essential for sustainability but also as necessary conditions for ensuring dignity and equity in CHW engagement.^{36,37} Notably, digital health innovations—especially mHealth platforms—were identified as promising tools to help overcome persistent challenges such as limited access to knowledge, resource constraints, and structural disempowerment.^{38,39}

Domain	Theme	Recommendation
Personal	Shifting to personalised care pattern	39
Interpersonal	Vicarious learning from colleagues	51
Organisational	Optimising resource accessibility and availability	39, 52, 59, 63
	Enhancing staff benefits	36
	Improving organisational support	51, 52, 59, 63
	Increasing recognition of CHWs	36, 37

Community	Promoting social and behavioural change through community health education	40
Health system	Increasing remuneration and compensation schemes	36, 37
	Potential of integrating digital health technology	38, 39

Table 3: Multilevel recommendations to improve the performance and engagement of community health workers

Discussion

This is the first review to examine the multilevel determinants of CHWs' performance and engagement in MCH service delivery across Asian LMICs. Using a socioecological framework, we demonstrate that CHWs' performance and engagement are shaped by a complex interplay of reinforcing and interdependent contextual factors across multiple levels. Among these, the most fundamental barriers to effective functioning and sustained commitment can be broadly categorized into three core challenges: insufficient knowledge, inadequate resources, and lack of empowerment.

Insufficient knowledge

The knowledge gap observed among CHWs does not reflect a lack of ability but rather highlights systemic shortcomings within health systems that fail to provide adequate training and support. Despite their potential, CHWs are often underprepared to meet the demands of their roles due to insufficient investment in their development. In response to workforce shortages, many health systems recruit CHWs with varying levels of competence, often through relaxed recruitment criteria and compromised selection processes,^{43,44,46,51,54,65} As a result, new CHWs frequently enter service with skills misaligned to the demands of MCH care. Compounding this issue, CHWs are often assigned expanded responsibilities without corresponding training or support,^{56,57,61, 64} This practice stretches their limited expertise and places undue stress on an already overburdened workforce, potentially compromising the quality of care.^{66,67}

Limited training and a lack of opportunities to reinforce new knowledge in real-world settings exacerbate this challenge, raising concerns about the safety and effectiveness of MCH service delivery.⁶⁸ This problem underscores a broader shift in global health priorities—from expanding access to ensuring the quality of care—and raises questions about the capacity of the current CHW workforce to deliver safe and effective MCH services. To address this gap, we recommend implementing a competency-based onboarding program to build core MCH skills through practical, hands-on methods such as mentorship and simulation-based training (e.g., obstetric emergency response).^{69,70} This approach ensures CHWs demonstrate proficiency before assuming full responsibilities, fostering a more confident and capable workforce.⁷¹ Role assignments should be tailored to align with verified

competencies, improving role fit and service delivery. Furthermore, this model supports equity by prioritizing CHWs with lower baseline competencies for additional training and mentorship.^{72,73}

Inadequate resources

The assumption that CHWs are salaried government employees with sufficient resources is often misleading and fails to reflect the realities of their working conditions.²¹ Despite ongoing advocacy for fair compensation,⁷⁴ many CHWs—such as those in Cambodia and Indonesia—continue to operate as unpaid volunteers.^{75,76} While volunteer CHWs often value the opportunity to serve their communities, their decision is also influenced by expectations of future benefits. It is therefore critical to consider the opportunity costs they incur, both immediate and long-term.⁷⁷ Ignoring these factors can lead to underestimating the costs of scaling and sustaining CHW programs. Moreover, our review highlights widespread resource shortages in many settings where CHWs operate. For example, CHWs in several Asian LMICs reported lacking basic equipment such as blood pressure cuffs, hemoglobin tests, and clean delivery kits when attending to pregnant women.^{42,50,52,53,56,57,61} Even the most competent CHW cannot provide adequate care without access to essential tools and logistical support.

Operating at the “sharp end” of the health system, CHWs are often tasked with delivering critical services without the financial or material support necessary to succeed. This disconnect between expectations and support creates a motivation gap, undermining performance and long-term commitment.⁷⁸ Although CHWs are uniquely positioned to facilitate community health interventions, governments and donors have historically underinvested in them.⁷⁹ To strengthen the impact and sustainability of CHW programs, we recommend regular review and revision of remuneration policies and resource planning frameworks. Ensuring that CHWs are adequately compensated and equipped is not only a matter of fairness but a prerequisite for program effectiveness and long-term success.

Lack of empowerment

This review finds that the majority of CHWs delivering MCH services are women, who disproportionately experience disempowerment due to unfair labor conditions.^{42,47,48,54} In many low-resource contexts where poverty is widespread and employment opportunities for women are scarce, taking on CHW roles is often not a matter of choice but necessity.^{55,80} While the discourse of women’s empowerment is frequently used to justify the predominance of female CHWs, it can obscure the reality that women’s labor is routinely undervalued, particularly in settings marked by low literacy, high unemployment, and deeply entrenched gender norms.^{37,81} Patriarchal social structures further compound this disempowerment. In some communities, the idea of women providing MCH care is viewed as socially inappropriate or even shameful.^{55,82-84} Female CHWs may feel discomfort discussing sensitive topics like family planning with male household members and, in some instances, must obtain male permission before speaking with female relatives.^{37,55} These norms not only restrict their autonomy but also expose them to safety risks, including reports of physical and sexual harassment.^{42,55,56}

At a systemic level, female CHWs often occupy a marginalised position within health system hierarchies. Many report feeling “doubly rejected”—viewed as unqualified or redundant by some professional health workers, while also encountering skepticism or resistance from the communities they serve. For example, Olaniran et al. noted that nurse-midwives in several countries questioned CHWs’ competence and were reluctant to delegate responsibilities.^{11,65} These perceptions can undermine CHWs’ confidence and limit their role scope. Formalising CHW roles through equitable employment models that ensure fair compensation and labour protections is essential to address these challenges.⁸⁵ Integrating CHWs more fully into national health systems elevates their status and promotes recognition and respect comparable to that of formally trained healthcare professionals.

Recommendations: potential of mHealth app

While several recommendations have been proposed to address CHWs' challenges, these strategies are often fragmented and rely on multi-stage implementation. This review highlights the untapped potential of digital health solutions—particularly through an integrated mHealth app—to simultaneously address the three foundational barriers limiting CHWs’ performance and long-term engagement.

First, bridging knowledge gaps is critical. mHealth app features such as electronic learning resources and clinical decision support systems (CDSS) can deliver continuous education and real-time guidance to reinforce clinical competencies.⁸⁶ For example, through audio lessons, India’s Mobile Academy program has enabled CHWs to refresh their MCH knowledge flexibly. Such mobile interventions demonstrate how digital health tools can transform intermittent training into large-scale, continuous capacity-building.⁸⁷ At the same time, CDSS improves clinical decision-making by providing step-by-step protocols for the point of care. A recent study in Nigeria found that CHWs using CDSS with childhood illness guidelines significantly enhanced the completeness of child assessments.⁸⁸ These tools help reduce variability in care and support improved clinical outcomes.

Second, to address resource shortages and a lack of skilled manpower—what we term “not having enough”—an mHealth app with telemedicine functionality may be especially valuable. In many Asian LMICs, CHWs in remote villages often work without access to a doctor.^{56,57,61,64} Telemedicine networks allow CHWs to consult off-site physicians, enabling remote interpretation of ultrasound results or co-management of complicated pregnancies through video consultations. These platforms also facilitate remote patient engagement, reducing the need for in-person visits, saving time, and extending healthcare coverage to underserved areas.^{89,90}

Finally, mHealth tools may help improve labour conditions by enhancing transparency and accountability in CHW management. Digital platforms can track workloads and monitor working hours and payments, helping prevent overwork and reducing delays in remuneration that often lead to the exploitation of CHWs.⁹¹ By ensuring timely compensation and recognizing CHWs’ efforts, these systems may foster greater motivation and long-term commitment.⁹² Additionally, the COVID-19 pandemic disrupted community-based MCH service delivery and highlighted the vulnerability of

CHWs during health emergencies. Limited protective equipment and unclear protocols increased risks and fear. This further emphasizes the urgency of leveraging digital health—particularly telemedicine features—to ensure the continuity of essential services during future public health crises.⁹³

Limitations

The findings of this review should be interpreted in light of several limitations. First, the exclusive focus on studies conducted in Asian LMICs may limit the generalizability of the findings to other global regions, given differences in socioeconomic, cultural, and health system contexts. However, this deliberate focus enabled a more in-depth exploration of the unique challenges faced by CHWs in the Asian LMIC setting. Second, many included studies were rated low quality based on the MMAT. Nonetheless, no studies were excluded solely due to insufficient methodological detail, as all met the minimum threshold for inclusion. This may introduce some degree of uncertainty into the evidence base, potentially limiting the strength and definitiveness of the conclusions drawn. Despite these limitations, the review provides valuable insights into the multilevel factors shaping CHWs' performance and engagement in delivering maternal and child health services in resource-constrained settings.

Conclusion

In Asian LMICs, strengthening CHW programmes is essential to improve MCH service delivery. This review, guided by the socioecological model, identified three fundamental barriers limiting CHW performance and engagement: not knowing enough, not having enough, and not being empowered enough. These challenges stem from systemic shortcomings such as inadequate training, resource constraints, and inequitable working conditions. Addressing them requires integrated strategies beyond fragmented interventions, emphasising capacity building, fair compensation, supportive supervision, and gender equity. Digital health technologies—especially mHealth tools—offer promising solutions to bridge knowledge gaps, expand access to resources, and enhance accountability within CHW programmes. Future research should explore how these tools can be adapted and scaled in LMIC settings. Investing in CHW empowerment and sustainability is vital for achieving universal health coverage and improving health outcomes for women and children in the region.

List of tables

Table 1. Characteristics of included studies

Table 2. Multilevel facilitators and barriers affecting the performance and engagement of CHWs

Table 3. Multilevel recommendations to improve the performance and engagement of CHWs

List of figures

Fig.1 PRISMA flow diagram

List of supplementary files

Appendix 1: PRISMA checklist

Appendix 2: Study selection - Inclusion and exclusion criteria

Appendix 3: Search strategies for PubMed, Embase, and Scopus

Appendix 4. Summary of quality appraisal scores

Appendix 5. Multilevel perceived facilitators and barriers influencing the performance and engagement of community health workers

Appendix 6. Multilevel recommendations to improve the performance and engagement of community health workers

Declaration of interests

We declare no conflict of interest.

Author contributions

HG and SY conceptualised the study. HG and YFL designed the methods and wrote the original draft of the manuscript. HG, YFL and KS participated in data collection and analysis. SY supervised the study process. All authors contributed to the interpretation of the results, editing, and revising of the final manuscript. All authors had full access to all the data in the study and had final responsibility for the decision to submit for publication. All authors have read and agreed to the published version of the manuscript.

Data sharing

All data used in this study are from publicly available electronic databases. Analysis files can be shared upon a reasonable request to the corresponding author.

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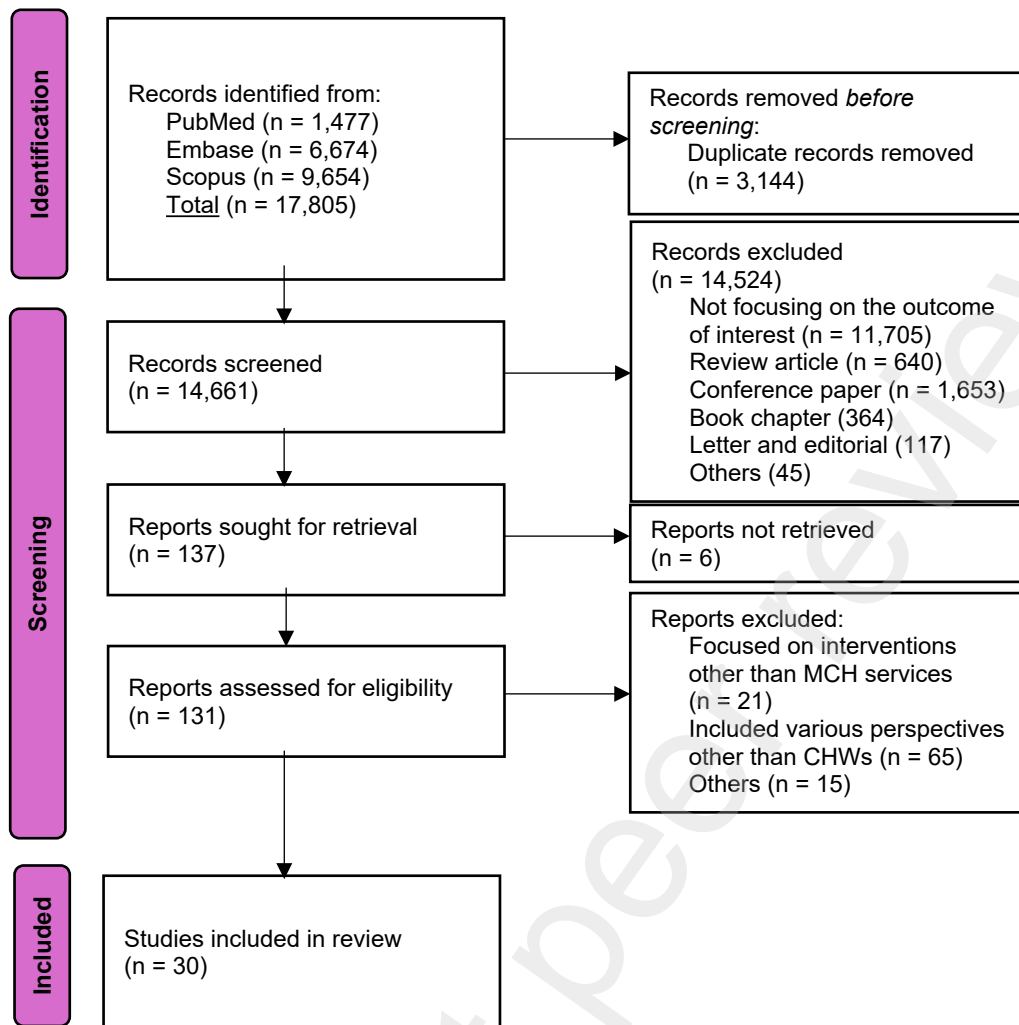


Fig.1 PRISMA flow diagram