

[ORIGINAL RESEARCH ARTICLE]

## Community Health Workers in Nepal: A Systematic Review of Their Role in Health System Strengthening

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### Abstract

Community Health Workers are vital in strengthening Nepal's healthcare system, particularly in underserved rural and remote regions, significantly reducing mortality rates and achieving national health goals. The paper aims to systematically evaluate the literature on CHWs' role in health system strengthening in Nepal, examining their characteristics, impact, motivations, and challenges. A mixed-method systematic review was conducted using PubMed, Research4life, and Google Scholar databases. Eight studies (5 qualitative, 1 quantitative, and 2 mixed methods) were analyzed using the Mixed Method Appraisal Tool 2018 and thematic analysis. Five major themes emerged: (1) Socio-demographic characteristics - CHWs are predominantly female volunteers with varying educational backgrounds; (2) Evolving roles - expanding beyond traditional maternal and child health to include non-communicable diseases; (3) Motivation factors - driven by community service and professional development opportunities; (4) System integration - serving as crucial intermediaries between communities and healthcare facilities; and (5) Implementation challenges - including limited resources, insufficient training, and inadequate incentives. While CHWs are essential to Nepal's healthcare system, particularly in delivering culturally competent primary health services, there is a critical need for sustainable support mechanisms. Enhanced capacity-building initiatives, improved supervision systems, and appropriate incentives are necessary to retain

experienced CHWs and maximize their impact. Investment in CHW programmes is crucial for strengthening Nepal's health system and achieving better community health outcomes, especially in rural areas.

**Keywords:** community health workers, role, health system strengthening, Nepal, female community health volunteers, primary health care

## INTRODUCTION

Community Health Workers (CHWs) are essential in delivering primary healthcare services in resource-poor settings of low- and middle-income countries (LMICs) (Pallas et al., 2013). Often referred to as village health workers, community health promoters, and lay health workers (Bhutta et al., 2010). They are the first contact point for providing essential public health services and linking the communities with health facilities (NIH, 2014).

Across most LMICs, there is renewed interest in the promotion of CHWs, because CHWs can build trust and rapport with community members, as well as support the development of healthcare plans that are acceptable to people (Njeru et al., 2021). Community health workers are key ingredients for a successful health system to function, and their utilization in health care provision is increasing worldwide. They are also viewed as important contributors to achieving sustainable development goals, universal health coverage, and national-level health goals and targets.

They are a cornerstone of Nepal's health system. Following the federalization, the local government health system relies heavily on community health workers, who lead preventive, promotive, and curative activities at the community level (Shrestha et al., 2021). In Nepal's healthcare system, CHWs consist of full-time paid personnel, such as Auxiliary Health Workers (AHW) and Auxiliary Nurse Midwives (ANM), as well as voluntary Female Community Health Workers (FCHVs) (Williams, 2020). Each peripheral health facility in Nepal serves a catchment population typically numbering 5,000 to 10,000 people (Williams, 2020). The country's healthcare infrastructure is strengthening, and each ward now has at least one healthcare facility, which could be a health post or a Community Health Unit (Unit), and each has at least one full-time AHW or ANM (Update, 2020).

FCHVs are Nepal's most important primary health care professionals at the grassroots level; however, they are local women with low education who volunteer in all wards within the government system. According to Annual Report 2077/078, 49481 FCHVs work actively in all the villages of Nepal and are supported by facility-based health workers (DOHS, 2021; Khanal et al., 2011).

Nepal has emerged as a global leader among low-income countries in reducing the under-5 mortality rate, pregnancy-related mortality ratio, and fertility rate, mainly due to the contributions of community health workers, particularly the FCHVs (Khanal et al., 2011). Despite facing challenges like political, geographic, social, and economic factors, CHWs have been instrumental in providing various health services at the grassroots level cost-effectively. Their efforts have significantly contributed to achieving various health system objectives such as preventive, promotive, curative, and protective health services (Hermann et al., 2009). Because of the ability to reach community health workers at the grass root level at a relatively low cost despite different challenges such as political, geographic, social, and economic, CHWs have been crucial players in providing preventive, promotive, curative, and protective health services and means for achieving a wide range of health system objectives (Hermann et al., 2009). However, there is no

evidence-based synthesis of the role of community health workers in strengthening the health system of Nepal.

CHWs do not operate in isolation; they are influenced by the broader cultural and political environment in which they work. Changes in the health sector, adoption of strategies like IMCI, and progress in community-based nutrition programs have sparked renewed interest in the potential contribution of CHWs. Health sector reform has altered the supervisory structure within health systems and given more autonomy to peripheral health facilities. The IMCI strategy, for instance, equips CHWs with the skills to assess and treat mild and moderate childhood illnesses, enabling them to fulfill a curative role, as demanded by communities (Organization, 2020). Additionally, characteristics of CHWs, such as their age, gender, ethnicity, and economic status, influence their reception in the community and effectiveness (Packard, 2016). In the complex service delivery environment, what specific role can CHWs play?

Therefore, this systematic review aimed to assess and synthesize the literature that has focused on the role of community health workers in strengthening the health system in Nepal.

## **DATA AND METHODS**

We chose the mixed-method systematic review because it incorporates the results of primary studies that use qualitative, quantitative, and mixed methods (Sandelowski et al., 2012). We included observational studies (qualitative, quantitative, and mixed methods) to assess the role of community health workers in strengthening the health system in Nepal. Review, case reports, case series, and conference abstracts were not included in the review.

### **Eligibility Criteria**

The following list of inclusion criteria is based on the review's objectives: Published in English Primary studies using mixed-methods, qualitative, and quantitative methods. Study participants included community health professionals who operate in the community to deliver various health services in the healthcare system, such as Health Assistants, Auxiliary Health Workers, Auxiliary Nurse Midwives, Skilled Birth Attendants, Staff Nurses, and Female Community Health Volunteers.

### **Information Sources and Search Strategy**

A digital search was carried out using e-databases like Google Scholar, Research4life, and PubMed. Three keywords related to the study's goal were used in the search strategy design: 1) Role or contribution, (2) Community Health Workers, and (3) Strengthening Nepal's healthcare system.

The research question was phrased in the SPIDER form: Community Health Workers (Sample), Health System Strengthening (Phenomenon of Interest), survey (Design), Role of Community Health Workers (Evaluation) qualitative, quantitative, and mixed method (Research type)

“Role”, “Contribution”, "Community Health Volunteers", "Community Health Workers", "Health System Strengthening," and "Nepal" are synonyms and derivatives of the keywords used to find relevant articles in the search database. Boolean operators such as AND and OR were used to separate the keywords.

The steps of building the search strategy in PubMed with the keywords and their synonyms are:

(((((Role [Title/Abstract]) OR (Contribution [Title/Abstract])) OR (Role of Community Health Workers [Title/Abstract])) OR (Community Health Workers

[Title/Abstract])) OR (Health System Strengthening [Title/Abstract])) OR (Strengthening of Health services [Title/Abstract])) AND (Nepal [Title/Abstract]) and similar strategies were used to search the article from Google scholar.

### **Study Selection and Data Extraction**

The selection procedure was carried out in three steps after the search strategy and database were finished:

1) Duplicate screening. 2) Title/abstract screening. and 3) Full-text screening. The literature title and abstracts were thoroughly searched and selected for the study. Records of the studies were managed electronically using Zotero 5.0 (*Zotero | Your Personal Research Assistant*). The citation was initially exported to Zotero, the duplicates were eliminated, the remaining literature categories were eliminated, and then screened by title/Abstract. All included records' full-text articles were examined and compared to the inclusion criteria. PRISMA guidelines were followed during the study selection procedure.

The following information was taken from the included studies using the pre-designed research characteristics form: author and study setting; the purpose of the study; study types; sampling method; data collection method; study participants; sample size; outcome; result; and comments.

### **Quality Assessment**

The paper is a mixed-method systematic review. We utilized the Mixed Methods Appraisal Tool (MMAT), version 2018 to assess the methodological quality of the selected studies, as it is designed explicitly for qualitative, quantitative, and mixed methods (Hong et al., 2018). The MMAT includes a five-item checklist for different study designs with “yes”, “no”, and “can’t tell” response options, which aligns with the criteria for this review. This tool consists of two sections: screening questions and explanation phase. For this review, we used a Microsoft Excel spreadsheet template with a yes, no, and cannot tell answer system to assign a score, followed by an explanation column to justify the quality assessment score. We reviewed the quality of eligible studies for reliability purposes. All articles that met the inclusion criteria were retained even if they were methodologically weak based on the quality assessment, as they still had the potential to offer new and valuable insights in a relatively underexplored field. We did not exclude studies from the review based on the outcome of the quality assessment.

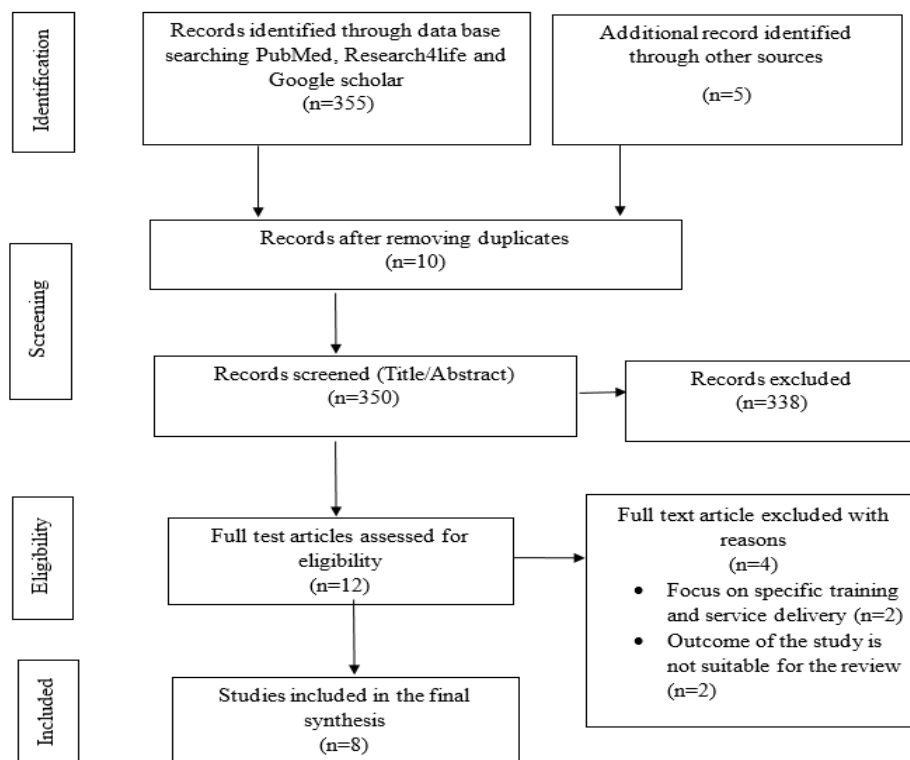
### **Data Synthesis**

A thematic analysis was performed to extract evidence on the role of community health workers in strengthening the health system from the included studies. We carefully reviewed the result section of each study, generating an initial list of codes inductively without any pre-established themes. Codes with similar concepts were grouped into subthemes and broader themes. The coding process and subsequent categorization of concepts into themes were facilitated using Excel.

## **RESULT AND DISCUSSION**

### **Study Selection**

The process and result of study identification are outlined in a PRISMA flow diagram (Fig. 1), adapted from “Preferred Reporting Items for Systematic Reviews and Meta-Analyses: The PRISMA Statement” (Moher et al., 2009). The search retrieved 355 records through PubMed, Research4Life, and Google Scholar and five from other sources. After reviewing the duplicates from Zotero, the title and abstract of each study and 338 articles were excluded. A total of 12 articles were reviewed for eligibility. Of these, 4 were excluded for reasons, while eight articles were included in the review.

**Figure 1***PRISMA Flow Chart*

### Study Characteristics and Quality Appraisal

The review includes 8 articles: five qualitative, (Neupane et al., 2015), (Panday et al., 2017), (Lee, 2020), (Tan et al., 2020), (Rawal et al., 2020), two mixed methods (Omer et al., 2020), (Dhital et al., 2021) and one quantitative study (Amano et al., 2014). The included studies were conducted in different 11 districts of Nepal and none of the studies were conducted in the mountain regions. All of the included studies were conducted between 2014 and 2021. Most of these studies investigated the role of FCHVs in different health service provisions. Most studies collected data from FCHVs, Community health workers, and health officials and some included service seekers too.

All the included studies used a cross-sectional design. Among the eight studies, five studies used qualitative methods. All five studies have used in-depth interviews and focus group discussions, and three of them also used Key Informants' Interviews (KII) in addition to In-depth Interviews (IDI) and Focus Group Discussions (FGD). The study participants include FCHVs, Community Health Workers (ANM, AHW, HA), Health officials, service seekers, and NGO representatives. The characteristics of the included study are presented in Table 1 below.

The quality of the included studies was assessed using the Mixed Methods Appraisal Tool 2018. Each study was evaluated on methodological rigor, with scores ranging from 3 to 5, indicating a fair to good caliber. These scores reflect strong methodological quality, though limitations, such as small sample sizes and inadequate descriptions of mixed-method approaches, were noted in several studies.

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<b>First author and setting</b>	<b>The objective of the study</b>	<b>Study types</b>	<b>Sampling method</b>	<b>Data collection method</b>	<b>Participants</b>	<b>Sample size total</b>	<b>Results</b>	<b>Comments</b>	<b>MMAT Scores</b>
Omer et al. (2020) Palpa, Saptari and Morang District	To analyze the actual and potential role of FCHVs for VL elimination program as well as community awareness of the disease (VL) and protective measures	Mix method study	Purposive sampling	In-depth interview (IDI) and Focus Group Discussion (FGD)	Female Community Health Volunteers (FCHVs)	18 – IDI 2 – FGD	Education and awareness activities in the community. Early detection of the suspected cases as well as educating the villagers about the disease. Refer to a health facility as soon as possible after noticing symptoms.	Only two focus group discussions with a small number of participants from three research districts were conducted. The rationale for adopting the mixed-method was not stated clearly.	3
Neupane et al. (2015) Lekhnath Municipality, Kaski	To explore literacy and motivation among FCHVs and their potential role in the management of hypertension at the community level.	A cross-sectional, qualitative study	Purposive sampling	Focus Group Discussion (FGD)	Female Community Health Volunteers (FCHV)	5 – FGD (69 FCHVs)	FCHVs showed high levels of readiness to take on the task of spreading awareness about hypertension and other non-communicable diseases.	As stated in the objective about potential roles, it has not been mentioned clearly in the findings.	4
Dhital et al. (2021) Morang District	To assess the effect of the FCHV's intervention one year after its completion, in terms of FCHV knowledge retention and their community counseling activities in Morang district, Nepal	Mixed method study	Purposive sampling	Interview Focus group discussion Key informant interview		Interview- (206 FCHVs) (300 Post-Partum mothers) 4 - FGD (40 FCHVs) 6 – KII (Ph.D., Sr. PHA, Doctor, Nurse, Health facility in charge)	The intervention increased the knowledge of the FCHVs. They were able to raise awareness in communities about post-partum family planning a year after the intervention. After a period of engagement, the FCHVs' enthusiasm gradually waned. It is due to a lack of consistent support and oversight from the health facilities in charge and the FCHV's focal person.		5

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<p>Panday et al.(2017) Sarlahi and Dhading</p>	<p>To explore the role of FCHVs in maternal healthcare.</p> <p>The provision in two regions: the Hill and Terai</p>	<p>Cross-sectional, Qualitative study</p>	<p>Purposive sampling</p>	<p>In-depth interview (IDI) and Focus Group Discussion (IDI)</p>	<p>FCHV</p>	<p>20 – IDI (FCHVs) 11 – IDI (Health Workers) 26 – IDI (Service users)  4- FGD (FCHVs)</p>	<p>Shared key health messages through monthly health mothers' group meetings and referred women for health checks. Hill region FCHVs receive regular help from health centers. They do duties such as assisting with births, delivering medicines, administering pregnancy tests, and raising awareness. The lack of monetary incentives is the major challenge.</p>	<p>For the proposed research questions, in-depth interviews and focus group discussions are appropriate data collection methods. For the triangulation of data, they also included the service users. The researcher was personally involved in the data gathering, coding, and analysis. For qualitative analysis, thematic analysis was performed. Quotes are provided to justify themes and there were clear links between data sources, collection, analysis, and interpretation.</p>	<p align="center">5</p>
<p>Lee (2020) Chautara Sangachowk gadi Municipality</p>	<p>To investigate the engagement and satisfaction of FCHVs on MHS among village mothers in hill and mountain regions.</p>	<p>Qualitative study</p>	<p>Snowball sampling</p>	<p>Key informant interview, Focus group discussion</p>	<p>FCHVs Midwives Village Mothers NGO focal person</p>	<p>6 – KII (3 FCHV, 2 Midwives, 1 NGO focal person)  11 – IDI (Village mothers)</p>	<p>Because FCHVs are the village's closest and most trusted people, mothers used to openly discuss their personal lives, including family planning methods, with them. In addition, mothers are pleased with the services provided by FCHVs. Home visits, Monthly mother's group meetings, and other activities from FCHVs have a positive effect on maternal and child health. The use of technology has made it easier for FCHVs</p>	<p>The study, which was limited to hilly areas, used a small sample size. The focus group had only three participants, which may not have been enough to gather detailed information.</p>	<p align="center">3</p>

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							to carry out activities and provide services, all while improving community health. FCHVs identified key challenges such as a lack of refresher training, a location for a monthly mothers' group meeting, and an incentive for both FCHVs and the program.		
Amano et al.(2014) Dhanusha District	To assess the impact of community-based activities implemented by FCHVs on neonatal mortality in the Dhanusha district	Cross-sectional, Quantitative study		Structured Interview	FCHVs and Mothers	205 FCHVs –	All FCHVs can use spring scales to identify low birth weight and very low birth weight newborns, and the majority can define LBW and VLBW management protocols.	A cross-sectional study was conducted as part of a randomized control trial. It made no mention of the sampling strategy or the number of mothers interviewed to assess the FCHV's performance. A mixed-method approach would be appropriate to better answer the research question.	4



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<p>Rawal et al. (2020) Kathmandu, Dhading, Nuwakot, and Nawalparasi</p>	<p>To explore the barriers and facilitators of engaging CHWs in delivering NCD-related services in Nepal.</p>	<p>Qualitative study</p>	<p>Purposive sampling</p>	<p>Consultation on the meeting, KII, IDI, FGD</p>	<p>Government official, Policy makers, CHWs</p>	<p>24 - consultation on meeting with the government official 4 - FGD (2 - rural CHWS and 2 urban CHWs, FCHV n=27) 3 - KII (Policy Maker centrallevel) IDI - 5 CHWs</p>	<p>CHWs provide NCD services such as screening for common NCDs, health education and counseling, assistance with early diagnosis, recording and reporting of NCD services, and patient referral when necessary.  In the health facilities, community health workers diagnosed hypertension and referred suspected cases of other problems to other facilities for early detection and management.</p>		<p>5</p>
<p>Tan et al. (2020) Kavre District</p>	<p>To collect comprehensive insights from multiple stakeholders to understand their awareness of hypertension and its treatment and to assess the feasibility of FCHV participation in community-based hypertension management in Nepal</p>	<p>Quality time</p>	<p>Convenience sampling</p>	<p>In-depth interview, Focus Group Discussion</p>	<p>FCHVs, Health Workers, Hypertensive patients, Health officials</p>	<p>1 - FGD (8 FCHVs) 17 - IDI (4-FCHVs, 9 people with hypertension, 4 - Health officials)</p>	<p>Health workers and health officials were confident in FCHV's potential to take responsibility for community-level hypertension management. FCHVs were ecstatic and had already begun sharing information with the community based on what they learned from meetings despite the lack of formal training.  For FCHVs, the biggest obstacles were a lack of adequate medication and financial incentives.</p>		<p>5</p>

## **Role of Community Health Workers in Health System Strengthening**

Thematic analysis was used to synthesize evidence on the role of community health workers in health system strengthening, and five themes were identified by reading all the findings of the studies.

### **Theme 1: Socio-demographic Characteristics of CHWs**

Almost all of the studies that were included had Female Community Volunteers (FCHVs) as a participant where most of the FCHVs were experienced (10-20 years) (Omer et al., 2020) and illiterate or barely literate (Amano et al., 2014). In Terai region, health services were relatively accessible for FCHVs, taking half an hour to reach on foot, compared to the hill region, where the walking distance to the nearest health facility ranged from 40 minutes to six hours (Panday et al., 2017).

### **Theme 2: Motivation and Challenges Faced by CHWs**

The primary motivators for CHWs included the trust they built within their communities, a sense of empowerment from volunteering, and a desire to contribute to their community's health and well-being (Neupane et al., 2015), (Panday et al., 2017), (Lee, 2020). They were also confident enough to work on new problems like non-communicable diseases, mental health issues, and other non-health problems. They believe they have demonstrated similar abilities to tackle communicable diseases, maternal and child health problems, family planning, etc. (Neupane et al., 2015).

*“FCHVs have been providing health information to pregnant women and mothers in their communities. This has resulted in a significant change. On the whole, FCHVs play a great role in the reduction of maternal and neonatal deaths.”* (Panday et al., 2017).

*“The FCHV gave me iron and calcium tablets, and she visited my house to check my condition. I was satisfied, and I was able to be concerned about my pregnancy more.”* (Lee, 2020)

However, many studies identified significant challenges, such as a lack of consistent training, supervision, and financial incentives. For instance, (Lee, 2020; Neupane et al., 2015; Panday et al., 2017), CHWs expressed satisfaction in helping mothers with maternal health issues but struggled with inadequate refresher training and incentives.

### **Theme 3: Current Role of CHWs**

CHWs have been instrumental in extending primary healthcare services to rural areas (Omer et al., 2020). Studies by (Neupane et al., 2015) highlighted that FCHVs are ready to take on tasks such as raising awareness about hypertension and other NCDs, which signals their expanding role beyond traditional maternal and child health services.

*“During the mothers' group meetings, educate the women about hypertension in general, how to avoid it, how to tackle it with regular consumption of medication, to get blood pressure monitored at regular intervals, taking advice from the doctor on whether to take the medication or to manage the problem on their own (Neupane et al., 2015).”*

FCHVs play a crucial role in providing regular primary health services in communities. For that, continued supervision monitoring and refresher training would help maintain knowledge and sustain progress in the long term (Dhital et al., 2021).

*“There has been no follow-up or refresher orientation for FCHVs. It would be better if they could receive such a refresher course every 6 months. It would also have been helpful if the (government) health office would follow-up and monitor the FCHV activities regularly even though the project has ended”* (Dhital et al., 2021).

#### **Theme 4: Evolving Role in NCD Management**

The studies by (Rawal et al., 2020) and (Tan et al., 2020) Reveal the increasing role of CHWs in managing non-communicable diseases such as hypertension. CHWs have begun to take on responsibilities beyond their initial training, such as community-level screening and counseling for NCDs, which are becoming a more prominent health concern in Nepal. However, the effectiveness of CHWs in this expanded role is hindered by the lack of necessary tools and training, as noted by (Amano et al., 2014), who highlighted CHWs' difficulties in managing low birth weight in newborns due to a lack of adequate support.

*“Yes, I think they can do it. They are in regular contact with the people of their area. If they identify someone with high BP, they can go to their house and measure their BP for 4–5 days, even if the patients are physically incapable of doing so”* (Tan et al., 2020).

#### **Theme 5: Challenges to CHW Program Sustainability**

Despite their contributions, the sustainability of CHW programs faces several hurdles. The lack of adequate supervision, as indicated by (Dhital et al., 2021), was a significant factor leading to waning enthusiasm among CHWs over time. (Omer et al., 2020) Also, it pointed out the limited number of refresher training and the absence of consistent monitoring, which could further erode the efficacy of CHWs in their evolving roles.

### **CONCLUSION**

The systematic review demonstrates that Community Health Workers are indispensable to Nepal's healthcare system, particularly in rural and remote areas with limited access to formal healthcare. While CHWs have proven effective in delivering essential health services, they face significant challenges, including resource constraints, insufficient training, and inadequate support systems. Policy interventions should focus on four key areas to maximize their impact: (1) strengthening comprehensive training programs, (2) establishing robust supervision mechanisms, (3) implementing sustainable incentive structures, and (4) facilitating better integration into the formal health system.

Future research should focus on FCHVs and other CHWs working at the grassroots level, from health posts to outreach clinics in the local government areas. Similarly, it examines the long-term sustainability of CHW programs, evaluates effective incentive mechanisms, and assesses digital health tools' impact on service delivery. Investment in these areas and local-level governance addressing social and economic barriers will enhance CHWs' ability to contribute to Nepal's healthcare system. This strategic approach will improve community health outcomes and advance the country's progress toward universal health coverage, ultimately creating a more equitable and resilient health system for all Nepalese citizens.

#### **Conflict of Interest**

The authors confirm no conflicts of interest related to this article.

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