POLICY BRIEF
Vol. 6, No. 1 2019

Asia Pacific Observatory
on Health Systems and Policies

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Policy options based on
the findings of the COACH study

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Policy options based on the findings of the **CO**mbating noncommunicable diseases in **A**sia by engaging **C**ommunity **H**ealth workers in the management and prevention efforts: strategies, approaches and practice (the COACH study)

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Use of community health workers to manage and prevent noncommunicable diseases
Policy brief Vol. 6, No. 1 2019
ISBN 978-92-9022-708-3

Suggested citation. Abdullah AS, Rawal LB, Choudhury SR, Baral S, Jiang L, Sha T et al. Use of community health workers to manage and prevent noncommunicable diseases. New Delhi: World Health Organization Regional Office for South-East Asia; 2019.

Cataloguing-in-publication (CIP) data. CIP data are available at http://apps.who.int/iris/.

Printed in India

Contents

Authorship and acknowledgments

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Special thanks to the research support staff (Hongfei Long, Wenting Huang, Weixi Jiang and Niying Li) of the Global Health Research Center at Duke Kunshan University for their support in completing the project activities. We also express our sincere appreciation to every person who attended our stakeholders' meetings and/or participated in the in-depth interviews and focus group discussions, and provided valuable insights and information.

The authors are grateful to the three independent reviewers on behalf of the Asia Pacific Observatory on Health Systems and Policies (APO): Dr Rajani R Ved (Advisor and Officiating Executive Director, National Health Systems Resource Centre, India), Professor Mohammad Abul Faiz (former Professor of Medicine and Director-General of Health Services, Bangladesh) and Dr Anand Krishnan (Professor, Centre for Community Medicine, All India Institute of Medical Sciences, India).

The authors acknowledge funding from the Asia Pacific Observatory on Health Systems and Policies.

Acronyms and abbreviations

BRAC	Bangladesh Rural Advancement Council
CC	community clinic
CHC	community health centre or commune health centre
CHW	community health worker
CMA	community medical assistant
COACH	COmbating noncommunicable diseases in Asia by engaging Community Health workers
COPD	chronic obstructive pulmonary disease
CVD	cardiovascular disease
DALY	disability-adjusted life year
DGHS	Directorate General of Health Services
EBPHS	Equalization of Basic Public Health Services
EPI	Expanded Programme on Immunization
FCTC	(WHO) Framework Convention on Tobacco Control
FGD	focus group discussion
FCHV	female community health volunteer
GDP	gross domestic product
HA	health assistant
HFMC	Health Facility Management Committee
ICT	information and communication technology
IDI	in-depth interview
KII	key informant interview
LMICs	low- and middle-income countries
MNCH	maternal, neonatal and child health
MOH	Ministry of Health
NCDC	Non-Communicable Diseases Centre

NCD	noncommunicable disease
NGO	nongovernmental organization
NHFPC	National Health and Family Planning Commission
NHSS	Nepal Health Sector Strategy
OOP	out of pocket
PEN	(WHO) Package of Essential Noncommunicable disease interventions
PHC	primary health care
PHCC	primary health care centre
SDG	Sustainable Development Goal
STEPS	STEPwise approach to surveillance
UHC	universal health coverage
UN	United Nations
UZHC	upazila health complex
VD	village doctor
VHW	village health worker
WHO	World Health Organization

Part 1. Policy brief

A. Purpose of this policy brief

Noncommunicable diseases (NCDs) have been increasing rapidly and are now the major cause of disease burden and deaths in the Asia Pacific region. This rising disease burden has challenged health systems in countries of the region and could hamper achievements of the Millennium Development Goals. This has raised concerns among policy-makers about the need to identify innovative approaches to control NCDs and meet the health needs of the public. Strengthening primary health care (PHC) services and the workforce to deliver such services has been considered as an option to address the growing need of services for NCDs. Community health workers (CHWs) have increasingly been recognized as a frontline health-care workforce to support government actions to combat NCDs. However, the role of CHWs within the PHC system is not well defined. To provide policy-makers with a package of options to engage CHWs in NCD care, this policy brief summarizes CHW-led programmes, describes challenges to integrating CHW-led NCD programmes and make recommendations. The development of this policy brief was based on experiences in four countries of the region – Bangladesh, China, Nepal and Viet Nam. However, it is worth emphasizing from the outset that our study is not designed to be representative of the four countries but exploratory in nature.

B. What is the problem?

B1. Why should we address noncommunicable diseases in the Asia Pacific region?

Chronic NCDs accounted for 66.7% of total deaths in the South-East Asia and 86.9% in the Western Pacific regions in 2017 (IHME, 2019). At the beginning of the century, these figures were 48.4% for the South-East Asia and 78.9% for the Western Pacific regions. This corresponds to a

37.7% increase in the South-East Asia and 10.2% increase in the Western Pacific regions during this period (2000–2017) (IHME, 2019). By 2030, NCDs will account for up to 72.5% and 87.2% of all deaths in the South-East Asia and Western Pacific regions, respectively (WHO, 2013). This increase in NCD-related mortality and morbidity would negatively affect overall socioeconomic development of the countries and pose a threat to achieving the Sustainable Development Goals (SDGs), by 2030.

The rapid economic growth and epidemiological and societal transition in many Asia Pacific countries encouraged environmental and lifestyle changes that trigger an increase in NCDs. However, health-care systems of most of the countries in the region are not yet prepared to mitigate this growing burden of NCDs. Addressing this growing threat would require a multifaceted approach and collaboration among professions and institutions that have traditionally worked separately. PHC systems would face significant pressure to address the growing needs of patients with NCDs. Ensuring an equitable supply of PHC services to populations in need, particularly those in remote or rural locations, is a challenge for governments in many countries. The scarcity of health-care facilities, lack of trained medical professionals, and long distances between the community and the nearest health facility underscore the need for alternate models of service delivery so that each sector of the public can be reached with the necessary services and affordable medications.

The four countries that were considered in this report are already experiencing a growing burden of NCDs and related challenges to health systems. Table 1 summarizes the causes of death due to NCDs and related conditions in 2017 compared to 1990 in the four selected Asian countries. The data suggest that the proportion of mortality due to major NCD conditions has increased substantially in all four countries between 1990 and 2017. Similarly, the pattern of death due to all NCD conditions has also changed during the past two decades. Further, the proportion of disability-adjusted life years (DALYs) due to NCDs has increased substantially in all four countries between the years 1990 and 2017.

Table 1. Deaths and DALYs due to NCDs and related conditions in four countries of Asia (%), 1990 and 2017

Category		Bangladesh		China		Nepal		Viet Nam	
		1990	2017	1990	2017	1990	2017	1990	2017
Deaths due to	All NCDs	31.4	73.2	71.8	89.5	30.8	66.1	62.4	79.0
	Cardiovascular disease (CVD)	9.8	36.1	27.6	41.9	11.2	27.0	27.5	33.2
	Diabetes mellitus	0.7	3.9	0.8	1.5	0.7	2.9	2.4	3.9
	COPD and other lung diseases	4.0	7.5	14.5	9.3	4.9	10.0	3.2	4.8
DALYs due to NCDs		23.2	62.5	58.0	82.6	22.5	58.7	50.5	74.3

COPD: chronic obstructive pulmonary disease; DALY: disability-adjusted life year; NCD: noncommunicable disease
Source: IHME, 2019

C. What do we know so far?

C1. What health systems measures have been taken to prevent and control NCDs in the four selected countries?

Many countries in the Asia Pacific region have health-care systems that were designed to deal with maternal and child health and communicable diseases. However, in recent years, many countries have taken a variety of initiatives to address the growing burden of NCDs, including formulation of NCD multisectoral action plans, development of national NCD guidelines and action plans for the prevention and control of tobacco, harmful use of alcohol, etc. Many of the low and low- and middle-income countries (LMICs) in the region have also started phase-wise implementation of the World Health Organization (WHO) package of essential noncommunicable disease interventions (PEN) for PHC in low-income settings.

Despite the dominance of the NCD burden globally, the financial commitment to combating the pandemic of NCDs is low compared to other programmes. For example, NCDs cause 60% of DALYs and 70% of global deaths, yet they receive less than 2% of overseas development assistance for health (Allen, 2017). By contrast, HIV/AIDS accounts for 3% of global DALYs, yet receives 30% of global funds. Further, many developing countries still do not allocate funds for NCD line items in their health budgets. In 2011, during the United Nations (UN) High-Level Meeting on NCDs, participating countries responded to this persistent gap by committing to "explore the provision of adequate, predictable and sustained resources, through domestic, bilateral, regional and multilateral channels, including traditional and voluntary innovative financing mechanisms". The SDGs also stress domestic responsibility for financing, because a flow of overseas NCD funding seems increasingly unlikely.

All four countries in the review have strengthened their policy interventions through developing national plans for the prevention and treatment of NCDs. However, different countries have focused on different areas. While Bangladesh is focusing on NCD corners with a dedicated health-care team and equipment, China is more focused on multisectoral action, which is linked with financing drivers. In the case of Nepal, the focus is on integrating NCD management by including some of the medicines into the Impoverished Citizen Treatment Fund and through the adaptation of WHO PEN nationwide. For Viet Nam, the focus is on developing trained human resources, screening for common NCDs and delivery of care at the grassroots levels.

C2. What NCD-related health services are provided by CHWs across these four countries?

CHWs are known by various names, such as community health educator, lady health worker, village health worker, health aide, outreach worker, peer health educator and peer leader. In this brief, we use the word CHWs to include all the different nomenclatures. The WHO Study Group defines them as follows: "CHWs should be members of the communities where they work, should be selected by the communities, should be answerable to the communities for their activities, should be supported by the health system but not necessarily a part of its organization, and have shorter training than professional workers" (WHO, 1989: p.6).

Currently, most CHWs in these four Asian countries focus on the prevention and control of communicable diseases, and provision of immunization, reproductive, neonatal, maternal and child health services, and nutritional support. However, given the rapidly increasing burden of NCDs in these four selected Asian countries, their governments have taken initiatives at the service level to tackle the burden of NCDs. In these countries, CHWs are one of the key drivers for delivering PHC services in general as well as NCD-related services. There are several commonalities among these countries in terms of the services CHWs deliver, the population they serve, the training they receive, and the approach to implementation of the health and NCD services that they deliver (Table 2). In Bangladesh, CHWs are trained in basic NCD screening skills; several NCD pilot interventions are also in progress with a major focus on promoting healthy lifestyles and reducing the prevalence of common risk factors through a community-based health-care approach. In China, CHWs engage in health education and counselling for common NCDs, mainly diabetes and hypertension, during their community visit. They also participate in elderly health management by encouraging the elderly to undergo an annual health check-up. In the case of Nepal, CHW-delivered NCD services are confined to only general consultation, health education and counselling; however, in some PHC facilities where diagnostic facilities and doctors are available, CHWs help in the screening and diagnosis of common NCDs. In Viet Nam, in some programmes, CHWs participate actively in identifying the at-risk population for hypertension, encouraging them to visit community health centres for screening and participating in measuring blood pressure. Although many of these programmes are not evaluated, there are some reports underscoring the effectiveness of CHW-led programmes in these countries. CHWs were found to be effective in screening for high blood pressure, promoting health counselling (Chowdhury et al., 2016; Neupane

Table 2. NCDs and related services provided by CHWs (comparison across four countries)

NCDs and related services	Bangladesh	China	Nepal	Viet Nam	Remarks
Basic health recording and documentation	X	X	X	X	Usually done for general health services, but NCDs are now included
Screening for common NCDs (hypertension and diabetes)	X*	X	X#	X	Depending on the programme-oriented training they receive
Diagnosis and basic management of common NCDs (hypertension and diabetes)	X*	X	X#	X	Depending on the skill level of CHWs and the programme-oriented training they receive
Improving medication adherence (programme oriented)	-	X	-	X	Depending on the programmes being implemented
Health education and counselling (promotion of physical activity, tobacco control)	X	X	X	X	No data on the effectiveness of these programmes
Salt intake reduction	-	X	-	X	-
Mental health screening and self-management	-	-	-	X	-
Documentation of NCD-related services	X	X	X	X	-

Notes: * Depending on subdistricts where NCD corners are being established and NCD programmes are being implemented; # depending on the programme districts where WHO PEN is being implemented.
Source: Compiled by the authors

et al., 2018) and managing diabetes (Browning et al., 2016). In other settings, CHWs provided support for cardiovascular risk management (Yan et al., 2014), and delivered counselling on reducing tobacco smoke exposure and stopping smoking (Abdullah et al., 2015). However, wider adaptation of some of these locally relevant, effective programmes within existing health-care delivery systems has not yet progressed as a priority.

C3. What are the difficulties in and challenges to engaging CHWs in NCD control?

While all four countries have already engaged or are planning to engage CHWs to deliver NCD services, difficulties and challenges also remain. The level and type of challenges that CHWs faced in delivering NCD-related services varied depending on the country, the health system, the programmes within which the CHWs were working and wider socioeconomic factors that influenced how CHWs were perceived by and engaged in the community. For example, CHWs in Bangladesh and China, who received the required training and necessary equipment, such as a blood pressure monitor or glucometer, were confident of delivering basic NCD-related services. In contrast, CHWs in Viet Nam and Nepal, who were not adequately trained and did not have the necessary equipment, were less confident and lacked the skills to deliver NCD-related services. The key challenges identified were as follows:

- The inadequate number of CHWs within a catchment area required them to engage in multiple tasks without any defined scope of work.
- CHWs did not receive (e.g. in Nepal for female community health volunteers [FCHV]) or received inadequate (e.g. in Viet Nam for village health volunteers [VHWs]) remuneration packages for their work. There was also a lack of system-level integration of CHWs' tasks, and inadequate societal or official recognition.
- Lack of continued capacity-building, lack of mentoring and career advancement opportunities prevented CHWs from making a long-term commitment and encouraged frequent job changes.
- Limited knowledge hindered the delivery of basic health education to the public. Many CHWs receive disease-specific training (i.e. blood pressure measurement for hypertension) rather than comprehensive training that covers several common NCDs (i.e. hypertension, diabetes, mental health).
- CHWs in most places of these countries lacked the skills to use information and communication technology (ICT) to facilitate delivery of health services and collect health data. While CHWs in

Bangladesh and China had some experience in using ICT, CHWs in Nepal and Viet Nam were not exposed to ICT use or related training.

- Lack of a coordination mechanism within the primary care systems prevented CHWs from referring at-risk community members to higher-level health facilities for secondary or tertiary care.

D. Policy options for countries to consider

Taking into account the available literature as well as the four country case studies on engaging CHWs for NCD prevention and control, the following policy options have been recommended. However, each recommendation must be considered within the context and the health system of the specific country.

1. **Need for concerted actions to develop a multisectoral approach to combatting NCDs and their common risk factors**

   1.1. There is a need to develop and execute policies and strategies that emphasize effective multisectoral planning and collaboration for NCD management. These should consider the engagement of CHWs to ensure continuity of care within the chronic care model, thus improving access to health care to achieve universal health coverage (UHC).

   1.2. It is suggested that CHWs' NCD-related activities be aligned with other community-based or PHC-based programmes to maximize population reach and multisectoral collaboration.

   1.3. Countries should consider the adaptation of WHO PEN within the national NCD control policy to ensure efficient delivery of NCD services. Within the framework of WHO PEN (or other similar in-country NCD control programme), trained CHWs could screen at-risk populations, deliver basic counselling, prescribe medications following the guidelines and make referrals to upper-level health facilities, as appropriate. While adapting the WHO PEN, coordination between it and other successful CHW-led programmes within the current health system (e.g. tuberculosis control programme) may help remediate potential system-level barriers and suggest strategies to engage and retain CHWs in the WHO PEN programme.

2. **Need to strengthen CHWs' capacity to deliver NCD-related services**

   2.1. It is suggested that the technical capacity and skills of CHWs be enhanced to ensure the availability of trained human resources

for the delivery of necessary NCD prevention and care services at the community level. Any training for CHWs should be locally relevant and consider the required level of specialization for the specific tasks. As the qualifications of CHWs vary across and within countries, special attention must be paid while designing the nature and depth of CHWs' training.

2.2. There is a need to increase CHWs' skills in using ICT. ICT-related training would help CHWs to overcome some of the barriers that they face in the field, such as lack of appropriate tools to provide NCD services and collect data, and limited access to training and supervision.

2.3. There is a need to strengthen the incentive mechanism for CHWs to motivate them to deliver community-based NCD services and care. Incentives could involve career development pathways, supportive supervision and mentoring, monetary incentives and performance incentives.

3. Need for action-oriented initiatives by the authorities in primary health care systems

3.1. *Restructuring of the primary health care system.* Countries may consider restructuring or enhancing the existing PHC system to ensure efficient delivery of NCD-related services. A restructured PHC system would need to consider CHWs as members of the PHC team led by physicians, nurses and paramedics (or medical assistants). Restructuring should also consider establishing an effective referral mechanism, to be facilitated by CHWs, for those needing care for NCDs at the secondary and tertiary levels.

3.2. *Types of NCDs to be managed by CHWs.* There is a need to identify the types of NCDs that would be managed by CHWs. Given the diverse background of CHWs across settings, this would require consultation with CHWs and the relevant authorities. Developing prevention as well as service delivery guidelines for CHWs, specific to common NCDs and their risk factors, would ensure appropriate delivery of services by CHWs.

3.3. *Ensure basic equipment for CHWs.* Equipping CHWs with essential toolkits (stethoscope, blood pressure monitor, thermometer and glucometer) would increase professional confidence among them and facilitate early detection and timely referral of NCD cases.

Part 2. Working paper

1. Introduction

1.1 Noncommunicable diseases in Asia Pacific: a growing public health problem

Chronic noncommunicable diseases (NCDs) are a major cause of disease burden and mortality in the Asia Pacific region. In 2017, NCDs claimed 66.7% of total lives in the South-East Asia Region and 86.9% in the Western Pacific Region (IHME, 2019). At the beginning of the century, these figures were 48.4% for the South-East Asia and 78.9% for the Western Pacific regions. This corresponds to a 37.7% increase in the South-East Asia and 10.2% increase in the Western Pacific regions during this period (2000–2017) (IHME, 2019). Further, it is projected that NCDs will account for up to 72.5% in the South-East Asia and 87.2% of all deaths in the Western Pacific regions of WHO by 2030 (WHO, 2013). The rapid increase in mortality and morbidity in the region due to NCDs will not only worsen the health situation of the general population but also affect overall socioeconomic development, posing a threat to achieving the Sustainable Development Goals (SDGs) by 2030 (UN, 2017). The impact of NCDs on national economies, communities, families and individuals is enormous (Biswas et al., 2016; Mirelman et al., 2016). The three major NCDs – cardiovascular diseases, diabetes and cancer – constitute the Asia Pacific region's biggest NCD challenges. The total number of disability-adjusted life years (DALYs) lost due to these three diseases was significantly higher compared to other NCDs. The increasing burden of chronic NCDs makes a huge dent in health systems' resources in countries of the Asia Pacific region. The goals of care for those with chronic conditions are not to cure but to enhance functional status, minimize distressing symptoms, prolong life through secondary prevention and enhance the quality of life (Grumbach, 2003). The growing recognition of multiple needs among patients with NCDs has encouraged many countries to explore new approaches to health-care

delivery, which can provide appropriate support to patients in a timely manner and with minimal financial cost.

NCDs have become a public health threat for many countries in the region, including Bangladesh, China, Nepal and Viet Nam, which is due to the much faster economic growth, and epidemiological and societal transition over the past decade (WHO, 2014a). However, health-care systems of these countries are not yet prepared to mitigate this growing burden of NCDs. Addressing this growing threat from NCDs would require a multifaceted approach and collaboration among professionals and institutions that have traditionally worked separately. Ensuring an equitable supply of primary health care (PHC) services to populations in need, particularly those in remote or rural locations, is a challenge for governments of low- and middle-income countries (LMICs) in the Asia Pacific region. The scarcity of health-care facilities, lack of trained medical professionals (i.e. doctors, nurses) and long distance between the community and the nearest health facility underscore the need for alternate models for service delivery to reach each sector of the public with the necessary services and affordable medications.

Bangladesh, with a population of over 164.7 million in 2017 (World Bank, 2019), is experiencing a rapid increase in the number of deaths and disabilities due to NCDs (Biswas et al., 2016; WHO, 2011a). Based on the estimate made by the Global Burden of Disease Study (2017), the proportion of deaths due to NCDs in Bangladesh increased from 31.3% in 1990 to 73.2% in 2017 (IHME, 2019), presenting a major challenge to Bangladesh's health-care system (Biswas et al., 2017). Further, the proportion of the population 65 years and older rose from 4.5% in 2000 to 6.6% in 2015, suggesting an increase in the proportion of NCDs (World Bank, 2011). The National NCD Risk Factor Survey 2010 reported that, overall, 77.4% of adults had two or more risk factors for NCDs, and another 28.3% had three or more risk factors (WHO, 2011a). In the 2013 STEPwise approach to surveillance (STEPS) survey, 76% of adults had two or more, 37% had three or more and 12% had four or more risk factors for NCDs (Zaman et al., 2015). These proportions were mirrored in a survey of those living in slum areas of Dhaka, Bangladesh (two or more risk factors: 79.7%; three or more risk factors: 25.4%) (Rawal et al., 2017). Also, according to the STEPS survey 2013, 26% of adults were overweight, 44% were current smokers of any form of tobacco, 38% had low physical activity, 93% did not consume adequate fruits and vegetables, and 21% had elevated blood pressure (Zaman et al., 2015).

The **Peoples Republic of China**, with the largest population size in the world (1.39 billion in 2017) (World Bank, 2019), is currently facing a rapid increase in the burden of chronic NCDs. Stroke, ischaemic heart disease, cancers and chronic obstructive pulmonary disease (COPD) are now the leading causes of premature death in China, and the burden of these diseases is substantial (Liu et al., 2013). In 2017, NCDs accounted for 89.5% of all deaths in China and 82.6% of the total disease burden (IHME, 2019). The number of Chinese living with NCDs has been increasing dramatically, and the number of people with diagnosed NCDs was over 260 million in 2012, making NCDs a major public health threat to the country (China CDC, 2012). In 2012, the prevalence of hypertension and diabetes among adults was 25.2% and 9.7%, respectively. The prevalence of COPD was 9.9% among adults aged 40 years and above (NHFPC, 2015). The age-standardized incidence of cancer in China was 186.5 per 100 000 population in 2014, with lung cancer (at 50 per 100 000) and breast cancer (at 29 per 100 000) accounting for the largest numbers among men and women, respectively (Chen et al., 2018).

Nepal, with a population of 29.3 million in 2017 (World Bank, 2019), is also facing challenges from the growing burden of NCDs. According to the World Health Organization (WHO), an estimated 60% of total deaths in Nepal (between the ages of 30 and 70 years) are attributable to NCDs and NCD-related conditions (WHO, 2014b). The age-standardized death rates and DALYs from NCDs are higher than those for communicable diseases. NCDs account for more than 44% of deaths and 80% of outpatient contacts. In a hospital-based cross-sectional survey, the overall prevalence of NCDs was 31%, and included COPD (43%), CVDs (40%), diabetes mellitus (12%) and cancer (5%). The majority of CVD cases were hypertension (47%) followed by cerebrovascular accident (16%), congestive cardiac failure (11%), ischaemic heart disease (7%), rheumatic heart disease (5%) and myocardial infarction (2%) (Bhandari et al., 2014). In recent years, with the drop in the poverty level among the general population in Nepal, the adoption of unhealthy behaviours (i.e. smoking, physical inactivity) is also on the increase, fueling future rises of NCDs in the long run. According to the STEPS survey 2013, 17.7% of the adult population were overweight and 4% were obese, 17.4% currently consumed alcohol, 18.5% were current tobacco users and only 1.1% had the minimum recommended intake of fruits and vegetables per day (Aryal et al., 2013). Further, only 0.4% of adults were free of any NCD risk factors; 84.5% had one to two risk factors, and 15.1% had three to five risk factors.

Viet Nam, with a population of 95.5 million in 2017 (World Bank, 2019), is a country with outstanding economic gains in recent decades. Viet Nam is also experiencing a rapid switch from infectious diseases to a high and growing burden of NCDs. According to the Global Burden of Disease Study 2017, 478 943 deaths were attributed to NCDs, accounting for 79% of the total deaths in Viet Nam (IHME, 2019). The proportion of NCD-related DALYs increased by 23.8 percentage points between 1990 (50.5%) and 2017 (74.3%). The top four causes of death in Viet Nam are all NCDs: cancer, stroke, heart disease and COPD. Prevalence of high-blood pressure, COPD, asthma, diabetes and cancer are all increasing at alarming rates. Viet Nam is also suffering from a high prevalence of NCD risk factors, including tobacco smoking, alcohol consumption, physical inactivity and unhealthy food habits. Almost half (47.4%) of the Vietnamese men and 1.4% of women above 15 years of age were smokers in 2010 (MOH-V et al., 2010). The STEPS survey 2015 showed that 77.3% of men and 11% of women consumed alcohol in 2015 (MOH-GDPM, 2016). More than a quarter (28.1%) of Vietnamese adults are physically inactive, and 57.2% do not consume enough fruits and vegetables. Overweight and obesity among adults (aged 18–69 years) is 15.6%, with a significantly higher prevalence among urban (21.3%) compared to rural dwellers (12.6%) (MOH-GDPM, 2016).

1.2 Health systems responses to chronic NCDs in the selected four countries

The need to address the rising burden of NCDs is increasingly being acknowledged globally, as reflected by the discussions of the 2011 World Health Assembly (WHO, 2011b) and the convening of the UN High-Level Meeting on NCDs in September 2011 (UN, 2011). Within this context, the literature on NCD control is rapidly evolving, with various approaches being proposed for LMICs. Despite the weak and fragile health-care systems of many LMICs in the Asia Pacific region, in recent years, countries have taken several initiatives to address the growing burden of NCDs. It is increasingly being recognized that successful planning, implementation and management of NCDs can be achieved only with well-functioning health-care systems with adequate financial resources. The SDGs stress domestic responsibility for financing; a flow of overseas funding for NCDs seems increasingly unlikely (UN, 2017). In LMICs, however, in general, a large proportion of health care is financed privately through user fees charged at the point of care. Some countries use insurance schemes that cover the cost of healthcare providers and facilities while the cost of

medicines is covered by the patients themselves. This applies to selected countries of the Asia and Pacific region, such as Bangladesh, Nepal and Viet Nam. Determining how existing health systems can be better adapted or strengthened to cope with the rising burden of NCDs requires an understanding of how the systems and NCDs interact. Countries of the Asia Pacific region, including Bangladesh, China, Nepal and Viet Nam, are signatories to the 2011 UN Political Declaration on Prevention and Control of NCDs (UN, 2011). Following that resolution, countries have developed NCD policies and plans according to their own context as well as multisectoral action plans on NCD prevention and control.

The Government of **Bangladesh,** in recent years, has taken several initiatives to combat chronic NCDs at the health systems, institutional and community levels. A national NCD plan has been developed, and a dedicated Non-Communicable Diseases Centre (NCDC) has been established at the Directorate General of Health Services (DGHS) within the Ministry of Health and Family Welfare (DGHS, n.d.). To provide NCD services at the doorstep, one of the key initiatives the government has taken since 2012 is to establish NCD corners in *upazila* health complexes (UZHCs). These NCD corners, in parallel with the existing services in UZHCs, provide NCD and related services. However, these NCD corners face a shortage of trained health-care providers, lack of basic supplies and logistics, lack of equipment and medication, and problems in proper recording and reporting. Although health services, including those for NCDs, are delivered primarily by the public sector, the non-State sector (for profit and not for profit) also delivers preventive and curative NCD services. For example, there are many semi-government diabetes treatment centres across the country managed by the Bangladesh Diabetic Association. These centres provide preventive as well as treatment and follow-up services for diabetes. In Bangladesh, health systems financing is characterized by increasingly high out-of-pocket (OOP) payments with minimal allocation from the government budget. OOP expenditure in Bangladesh is considered to be one of the highest among countries of the Asia region. Over the past 15 years, the total government health expenditure as a percentage share of the gross domestic product (GDP) has remained stable at around 3%, which is among the lowest in Asia.

In **China**, the National Health and Family Planning Commission (NHFPC), together with several departments, has been taking joint action to curb the high incidence of chronic diseases and continuously improve the health status of residents. The priority is to integrate the prevention and treatment of chronic diseases into the public policy within government-

led programmes and with interdepartmental collaboration. The Chinese government is also focusing on the establishment of a chronic disease prevention and control system with equal emphasis on both traditional Chinese medicine and western medicine. In recent years, the government is actively promoting a comprehensive prevention and control strategy for chronic diseases, with a major focus on promoting services for health education and promotion at all levels. For example, the national healthy lifestyle campaign currently covers over 80% of the counties and districts in the country. Also, to improve the monitoring network for chronic diseases, the NHFPC carries out cause-of-death surveillance, follows up patients on cancer register and monitors nutrition and chronic disease status. In line with these national- and provincial-level health systems initiatives, the government is also taking several other national- and local-level initiatives, such as (i) the Equalization of Basic Public Health Services (EBPHS) policy, 2009 (MOH-China, 2009), (ii) China's chronic disease prevention and control workplan (2012–2015 years) (MOH-China, 2012), (iii) Healthy China 2030, issued in October 2016, and (iv) medium- and long-term plan for the prevention and treatment of chronic diseases in China (2017–2025), issued on 22 January 2017 (General Office of the State Council, 2017). China's health-care system is mostly based on public sector financing. The total health expenditure as a percentage share of GDP increased from 3.5% in 1995 to 6.4% in 2017 (NBS-China, 2018). The per capita health expenditure increased from US$ 42.4 in 2000 to US$ 398.3 in 2016 (WHO, 2019).

The Government of **Nepal**, over the past two decades, has taken several initiatives to respond to the growing problem of NCDs. Smoking in public places has been banned since early 1992 and, in 1999, the government banned advertisements for alcohol in the electronic media. Following that, in 2001, the government introduced specific provisions for the sale, distribution and consumption of alcohol. In 2006, Nepal ratified the WHO Framework Convention on Tobacco Control (FCTC) (WHO, 2003), following which the Tobacco Products (control and regulatory) Act was developed in 2011. As part of implementing the WHO FCTC, a policy to have a bigger graphic health warning on all packages of tobacco products was incorporated in 2015.

Programmes for the prevention and control of NCDs were included in the Nepal Health Sector Support Programme II (2010–2015), with a focus on developing and scaling up mental health projects and training health cadres at the district level (MOHP, 2010). The Nepal Health Sector

Strategy (NHSS) III (2015–2020) has incorporated NCD prevention and control as priority areas (MOHP, 2015), and these aspects of NCDs are now reflected in the National Health Policy 2014 (MOH-GON, 2014), NHSS III (2015–2020) and universal health coverage (UHC) plans. In 2014, Nepal developed the national Multisectoral Action Plan for the Prevention and Control of NCDs (2014–2020) (GON, 2014). The Action Plan has twelve priority thematic areas: (i) cardiovascular diseases; (ii) COPD; (iii) cancer; (iv) diabetes mellitus; (v) oral health; (vi) mental health; (vii) road traffic injuries; (viii) tobacco; (ix) alcohol; (x) unhealthy diet; (xi) physical exercise and healthy behaviour; and (xii) air pollution. The Action Plan also emphasizes health systems strengthening to improve systems for early detection and management of NCDs and their risk factors. Actions under this area aim to strengthen health systems (especially the PHC system) by implementing the WHO Package of Essential Noncommunicable disease interventions (PEN) for PHC in low-resource settings (WHO, 2010). Currently, under the NCD plan, the phase-wise implementation of WHO PEN is under way in selected districts of Nepal. Like many LMICs, the public and private sectors are the main providers of health services in Nepal. Public sector health care in Nepal is mostly funded by the Government of Nepal. The total government health expenditure as a percentage share of GDP increased from 1.3% in 2005/2006 to 1.6% in 2011/2012 (MOH-GON, 2016). The per capita expenditure on health increased from US$ 18.6 in 2005/2006 to US$ 36 in 2011/2012. However, household OOP payment accounts for a significant proportion (56.3%) of overall health spending in Nepal (MOH-GON, 2016).

Viet Nam has demonstrated consistent commitment to containing the NCD epidemic in the past two decades. In 2002, the Ministry of Health (MOH) of Viet Nam issued Decision No. 77/2002/QD-TTg, approving the National Program on Prevention and Control of Non-contagious Diseases in the 2002–2010 period (GOV, 2002), and subsequently ratified five separate disease-specific vertical projects that were included in the overall national NCD programme: the National Mental Health Programme (started in 2000), the National Cancer Control Plan (started in 2006), the National Hypertension Programme (started in 2008), the National Diabetes Project (started in 2008), and the National Chronic Respiratory Disease Programme (started in 2011) (WHO, 2011c). In 2010, a decision was made to establish a mission for NCD prevention and control governed by the Department of Preventive Medicine under the MOH (GOV, 2010). Some major initiatives in these vertically run

NCD control projects include: (i) strengthening population awareness about NCD prevention and control; (ii) training and developing human resources; (iii) screening for early detection of NCDs; (iv) managing and treating patients according to the established guidelines; (v) developing grassroots-level care guidelines; (vi) integrating with commune health activities; and (vii) rehabilitating the disabled and reducing disability. The Government of Viet Nam has also, in recent years, strengthened policies and regulations on the prevention and control of NCD risk factors, with inclusion of both the health and non-health sectors. These policies and regulations are focused on prevention and control of tobacco, reduction in the harmful use of alcohol, promotion of a balanced diet and adoption of healthy behaviours such as regular physical activity. In March 2015, the Prime Minister ratified Decision No. 376/QD-TTg, approving the National Strategy for Prevention and Control of NCDs for the period 2015–2025 (GOV, 2015), with a significant focus on community-based NCD risk factor control, disease prevention and early detection via multisectoral integration (Bui et al., 2016; MOH-GDPM, 2016). It also included community-based health promotion and disease prevention as a key solution to combating NCDs in the next decade. The implementation of this new national NCD strategy will have a significant impact on the process of achieving the NCD targets of SDG Goal 3 in the 2030 Agenda (UN, 2017). The State and non-State sectors are the major health service providers in Viet Nam. The total health expenditure as a percentage share of GDP was 6% in 2013 and the total per capita health expenditure was US$ 113 (Tuan, 2016). Although government funding covers most of the health-care expenditure in Viet Nam, household OOP payment (44.3%) is also significant (Tuan, 2016).

1.3 Community health workers (CHWs): a frontline health-care workforce in primary care settings

According to the literature, CHWs are known by various names, including community health-care provider (CHCP) or *shasthya shebika* in Bangladesh; CHW or village doctor in China; village health worker (VHW) or female community health volunteer (FCHV) in Nepal; and VHW or CHW in Viet Nam. The umbrella term "community health worker" embraces a variety of community health aides who are selected, trained and work in the communities from which they come. A widely accepted definition as proposed by a WHO Study Group is: "Community health workers should be members of the communities where they work, should be selected by the communities, should be answerable to the communities for their

activities, should be supported by the health system but not necessarily a part of its organization, and have shorter training than professional workers." (WHO, 1989: p.6). Lewin et al. (2005: p.2) in their Cochrane review defined CHWs as: "any health worker carrying out functions related to health care delivery; trained in some way in the context of the intervention; and having no formal professional or paraprofessional certificated or degreed tertiary education".

CHWs live close to the community and are easily accessible to the public. Engagement of CHWs has improved frontline health service delivery in different parts of the world, in particular, for those programmes related to the prevention and control of communicable diseases, immunization services, reproductive health, maternal and child health, HIV/AIDS prevention and care, and nutrition promotion (CDC, 2015). CHWs can play a critical role in addressing the growing need for health services delivery by acting as the primary contact for a range of services, from disease screening to initiation of essential treatment to referral to the nearest health facility. As part of a continuum of health care, the role of CHWs in the transformed PHC is well described in the literature (Brownstein et al., 2007; CDC, 2015; Witmer et al., 1995). These describe various aspects of CHWs' engagement in health-care delivery, such as: (i) programme models led by CHWs; (ii) impact and value of CHWs in preventing and managing chronic diseases; (iii) policies needed to build capacity for an integrated and sustainable CHW workforce in public health; (iv) resources needed; (v) extracting information from international programmes and experiences; and (v) measuring and evaluating the impact of CHW-led programmes in the local context.

Engaging CHWs for the delivery of health services and health promotion interventions is increasing in LMICs and has proven to be effective (Dudley et al., 2003; Goldhaber-Fiebert et al., 2003). CHWs provide opportunities for easy implementation of health promotion interventions within the existing health-care service delivery channels without engaging new personnel with whom families have had no prior contact. Several countries in the region (i.e. Bangladesh, China, Nepal and Viet Nam) have delivered different public health programmes through CHWs, which are reported to be effective (Islam et al., 2002; Jokhio, Winter & Cheng, 2005; Kotecha, Nirupam & Karkar, 2009; Mishra et al., 2015). However, scaling up these programmes and integrating them within the existing health-care delivery system has not progressed as a priority. Scaling up of locally relevant effective programmes would require leadership support and

proper engagement with the political system, national-level stakeholders and the MOH.

The current health-care systems of countries in the Asia Pacific region are not well prepared to mitigate the growing burden of NCDs. The scarcity of health-care facilities, lack of trained medical professionals (i.e. doctors, nurses), and long distances between the community and the nearest health facility underscore the difficulties of current health-care systems. To achieve UHC, countries would require restructuring of the traditional health-care delivery system to address the disparities that exist in the health-care workforce between urban and rural and remote regions. Countries would also need to take a multifaceted approach to health-care delivery and promote collaboration among professions and institutions that have traditionally worked separately. In general, physicians at primary care level, inadequate in numbers in many regional countries, are the first point of contact and the main providers of health care for individuals with NCDs. Shifting justified tasks to CHWs would create a tiered response and improve public access to PHC for NCDs. Evidence shows that engaging CHWs in the delivery of PHC can potentially result in cost and physician time savings without compromising the quality of care or health outcomes of patients (Islam et al., 2002; Jokhio, Winter & Cheng, 2005; Kotecha, Nirupam & Karkar, 2009; Mishra et al., 2015). However, the health workforce will need to be re-engineered along with restructuring of health systems. This would include training of CHWs in new skill sets, providing them with disease-specific screening and management protocols and, where possible, giving CHWs the ability to prescribe from a restricted list of medications, in consultation with physicians.

While countries in the region are committed to offering universal access to essential health services for NCDs, few have identified alternate options to supplement the existing PHC delivery system to improve access to care. Information on the training of CHWs, the process to deliver interventions through CHWs, and the effectiveness of CHW-led interventions could be an option for many regional countries. Identification of a range of approaches that have been used by CHWs in selected countries, and understanding the facilitators and barriers to their implementation process can provide policy-makers and practitioners with a portfolio of options to engage CHWs in addressing the growing demand for NCD-related health-care services within a given policy context.

2. Methodology

The overall objective of this study was to examine a full range of public health programmes that used CHWs, and review the implementation processes of the CHW-led programmes in operation in four selected Asian countries (i.e. Bangladesh, China, Nepal and Viet Nam) and elsewhere. The study considered the advantages and disadvantages of bundling NCD care and control within these other programmatic models in order to develop recommendations for informed policy-making.

To achieve this overall objective, we took a common methodology framework across the four countries. These included: (i) situation analyses through desk/literature review; (ii) stakeholders' meetings; and (iii) exploratory studies to collect in-country data. To analyse the data obtained from both the situation analyses and exploratory studies conducted in the four selected countries of Asia, we used the framework method as recommended by Gale et al. (2013), with some modifications, for a thematic analysis of the cross-country data, because it is appropriate for synthesizing, comparing and contrasting large-scale textual data across cases using a multidisciplinary research team.

Details of the methodological approaches are included in Appendix A.

3. Results: Potential for engaging CHWs for NCD prevention and control in the Asia Pacific region

3.1 General health-related programmes delivered by CHWs

Through the situation analyses and various methods of data collection from CHWs, policy-makers and stakeholders, we found that CHWs in the study countries are engaged in the delivery of diverse public health services and health promotion activities. These are outlined below according to the countries.

Bangladesh. CHWs in Bangladesh are those health cadres working in public sector health facilities. They include CHCP, assistant health inspector, health inspector, health assistant (HA) and family welfare assistant. These CHWs receive some form of formal training, with the duration ranging from 12 weeks for CHCPs to over 3 years for health inspector. The services provided by these CHWs vary according to their category and include: (i) basic services and health education for maternal and child health; (ii) Integrated Management of Childhood Illnesses (IMCI); (iii) reproductive health and family planning services; (iv) Expanded Programme on Immunization (EPI); (v) nutritional education and micronutrient supplementation; (vi) health education and counselling; and (vii) treatment of minor ailments, common diseases and first aid. In some regions, CHWs also work at community clinics (CCs) to facilitate outreach PHC services in a given catchment area as a part of community engagement. In recent years, CHWs in some areas have also started providing screening services for common NCD conditions, especially random blood glucose testing for those at risk of developing diabetes, and providing health education and counselling services. However, there is no formal referral and follow-up mechanism from one health facility to another and it is up to the patient to choose which health facility to go to for further management or follow up.

China. CHWs in China are health workers who work in community health centres (CHCs) as CHWs or at village health clinics as village doctors. The village doctors who receive an average of 3 years of junior college education with 1 year of practice training are considered as CHWs and also receive 15 credits (equivalent to 45–90 hours) for training as a continuous education programme during the course of their public services. The general health services provided by CHWs range from basic health recording and documentation, to health education and services for various health problems, including maternal, neonatal and child health (MNCH), reproductive health, and infectious and communicable diseases. In accordance with the provisions of the National Basic Public Health Service Code, 2009, CHWs are also engaged in providing health services to manage the health of elderly people, patients with hypertension, type 2 diabetes mellitus, severe mental health illnesses, infectious diseases, and reporting and treatment of public health emergencies (MOH-China, 2009).

Nepal. CHWs in Nepal comprise people who receive some level of either formal or informal training. The former category includes HAs, community medical assistants (CMAs), auxiliary health workers and nurses; the latter category includes FCHVs. The duration of training of the former category ranges from 12 months to 3 years, whereas FCHVs receive informal training for a few days to a few weeks, depending on the programme that they are assigned to. CHWs mostly offer preventive services at the community level. However, they also provide curative services in the outpatient department and at emergency medical services; health education on family planning, nutrition, immunization, safe motherhood; and other services according to the need of various health programmes. CHWs are also responsible for recording and timely reporting of data to the District Health Office. At the village level, where FCHVs are available, they provide health education on healthy lifestyles (i.e. healthy diet, physical activity, smoking cessation) under certain programmes. FCHVs also provide basic advice and counselling on common NCDs, in particular, hypertension and diabetes.

Viet Nam. CHWs in Viet Nam, known as VHWs, are those who have a background of simple literacy and receive an average of 6 weeks of training, particularly focused on providing three major services: (i) immunization, (ii) MNCH; and (iii) family planning. These VHWs deliver general health services to the community through outreach visits to the villages in their catchment areas. Within the immunization services,

VHWs focus on providing communication and counselling services to community members, which consumes most of their time. VHWs are also responsible for sending reminders to families about the immunization schedule and hold a monthly meeting to manage the population records in the village as well as data reporting. The most common type of direct communication between VHWs and community members is through household visits, which is very effective and highly appreciated by community members.

3.2 NCD-specific programmes delivered by CHWs

Our findings show that CHWs in the study countries deliver the following NCD-related services.

Bangladesh. In public sector health facilities, CHCPs at CCs provide health education and awareness about the risk factors for NCDs. They are also trained in basic NCD screening such as measuring blood pressure and blood glucose levels. In areas where WHO PEN project was piloted, domiciliary health workers were trained and given the responsibility of screening for hypertension and diabetes. The DGHS has taken initiatives to incorporate these NCD screening services into the ongoing health and information reporting systems. Several other initiatives are also ongoing in the non-State sector. For example, BRAC (Bangladesh Rural Advancement Council) has initiated NCD pilot interventions in three subdistricts with a major focus on promoting healthy lifestyles and reducing the prevalence of common NCD risk factors through a community-based health-care approach. BRAC is also implementing NCD screening and basic care in over 50 districts through CHWs, with a focus on blood pressure measurement, testing of blood glucose (random blood sugar level), weight measurement and provision of health education.

China. NCDs and related services being delivered by CHWs in China range from maintaining patients' health records to screening, early diagnosis, health education and counselling on NCDs, basic NCD care, assisting medical doctors in NCD management, referral for further treatment and health education on adopting a healthy lifestyle. For maintenance of health records, all individual health and related information is collected throughout the catchment area and properly maintained within the CHCs. Health education and counselling is another service CHWs provide to patients when they visit the health facility, and to community members during community visits. Elderly health management is mainly through an annual health check which the elderly are encouraged to undertake to

help detecting NCDs and other relevant conditions. This form of care is more common in economically developed areas than in underdeveloped areas. In some specific programmes, trained CHWs participate in screening to detect those with hypertension and diabetes (Browning et al., 2016; Yan et al., 2014).

Nepal. At the PHC centre, where basic laboratory facilities are available and medical doctors are posted, common NCDs are diagnosed and necessary drugs provided when available. However, at the health post level and below, where no laboratory facilities are available, NCD services are usually confined to general consultation, health education and counselling. When CHWs feel that adults may be at risk for developing or have already developed NCDs, they are referred to district-level health facilities for further investigation and necessary consultation. At the village level, where FCHVs are available, they provide health education and are involved with campaigns to raise awareness on health-related issues, including NCDs. In recent years, there have been initiatives from the non-State sector in terms of engaging CHWs, particularly FCHVs, for monitoring blood pressure and screening for diabetes at the community level. These initiatives are still in the pilot phase.

Viet Nam. NCDs and related services provided by CHWs in Viet Nam are primarily focused on screening, detection, and prevention and control of hypertension. CHWs actively participate in disseminating health education and information messages to community members through organizing health education and promotion sessions. CHWs participate actively in hypertension screening at CHCs, and their tasks include: (i) preparing a list of people at risk of hypertension; (ii) informing and inviting them to CHCs for screening and examination; (iii) participating in measuring blood pressure; and (iv) inviting people who missed the first round to have their blood pressure measured. CHWs also deliver support services to ensure regular examination and management of hypertension in the community.

3.3 Difficulties and challenges in engaging CHWs for NCD control and prevention

Through the situation analyses and different approaches to data collection, several challenges and barriers to engaging CHWs have been identified across the four Asian countries (Table 3). Many of these challenges are similar, in terms of workload, inadequate training, poor system-level

support and inadequate remuneration, whereas challenges that are *different* are the delivery of services and availability of resources. The challenges are elaborated briefly below by country.

Bangladesh. Based on stakeholder discussions, five major barriers have been identified. These include: (i) lack of a clear job description to deliver NCD services; (ii) gaps in the capacity of CHWs to function well; (iii) inadequate health systems support to deliver NCD- and related services in an organized manner; (iv) inadequate delivery of essential drugs for common NCDs at the CC; and (v) lack of awareness of NCD risk factors among community members. These challenges are further explained below.

First, the CHW's job description primarily involves providing services for communicable diseases, MNCH care, nutrition, immunization, and health education and counselling services. To date, no clear job description that would involve NCD services has been given, though in recent years, CHWs have begun providing basic preventive and care services for those with NCDs. Second, CHWs are currently multitasking and are responsible for both administrative as well as technical tasks. Furthermore, apart from those in the pilot sites, CHWs are not yet trained in screening for NCDs or provide basic NCD care, which hampers them from providing NCD services. This may require the provision of focused training on NCDs and making available the necessary equipment, supplies and medicines. Third, CHWs identified low health systems' priority and a lack of standard operating procedures for NCD prevention and care, a barrier to provide NCD services at community-level health facilities. So far, there are no specific policy documents prioritizing NCD care and services as core activities of health facilities. Fourth, additional CHWs are needed at UZHCs or CCs with diverse backgrounds to deliver team-based care and referral services. Fifth, CHWs reported frequent delays in the delivery of medication supplies for common NCDs (i.e. hypertension and diabetes) at the CC from subdistrict hospitals. This has hampered service delivery to community members and caused dissatisfaction among the public. CHWs also identified lack of awareness of risk factors for and symptoms of NCDs, and delay in seeking care by patients as other barriers to NCD care and services at the community level.

Table 3. Summary of the difficulties and challenges in engaging CHWs in NCD control across the four countries

Country	Challenging issues
Bangladesh	1. Lack of a clear job description to deliver NCD services 2. Gaps in the capacity of CHWs to function well 3. Inadequate health systems' support to deliver NCD- and related services in an organized manner 4. Inadequate delivery of essential drugs for common NCDs at the community clinic 5. Lack of awareness on NCD risk factors among community members
China	1. Gaps in the capacity and skills of CHWs to deliver NCD services 2. Inadequate resources to deliver NCD- and related services through community health facilities 3. Lack of motivation of CHWs to deliver NCD services
Nepal	1. Lack of appropriate NCD policy guidelines 2. Insufficient trained human resources 3. Inadequate logistics, supplies and medications 4. Lack of laboratory facilities 5. Inefficient referral mechanisms 6. Unavailability of systematic recording and reporting systems
Viet Nam	1. Budgetary and financial difficulties 2. Shortage of trained human resources 3. Lack of basic medical equipment 4. Inadequate logistical support, supplies and medications

Source: Compiled by the authors

China. Three major barriers were identified to the potential engagement of CHWs in NCD prevention and control efforts in China. These are: (i) gaps in the capacity and skills of CHWs to deliver NCD services; (ii) inadequate resources to deliver NCD- and related services through community health facilities; and (iii) lack of motivation of CHWs to deliver NCD services. These challenges are elaborated below.

First, CHWs are trained in a traditional fashion, with pre-service education focused on diagnosis and curative services to patients

rather than preventive services. The training predominantly focuses on the diagnosis of cases using basic and advanced equipment and technologies, and appropriate treatment for the conditions. Although their training includes information on preventive medicine, community health, health education and promotion, there is little emphasis during the training on these topics. Second, lack of adequate resources – financial, human and physical – is another major challenge to engaging CHWs for NCD prevention and control efforts in China. China's health-care system is mostly public sector based, with almost no private capital investment. Government funds are issued for programmes under the umbrella of the policy strategy of EBPHS. These EBPHS-sponsored programmes are mostly for planning and implementing a designated package of public health services but, in general, government grants are not adequate to sustain the normal functioning of community health services. Third, lack of motivation of CHWs is another barrier, which is primarily due to poor financial incentives and heavy workload.

Nepal. Several key barriers were identified, both at the systems and service delivery levels in Nepal. These include: (i) lack of appropriate NCD policy guidelines; (ii) insufficient trained human resources; (iii) inadequate logistics, supplies and medications; (iv) lack of laboratory facilities; (v) inefficient referral mechanisms; and (vi) unavailability of systematic recording and reporting systems. These challenges are discussed below.

First, inadequately trained human resources at health facilities (both in terms of availability as well as training) has been a major barrier to NCD prevention and control efforts in Nepal. Unavailability of the required number of trained CHWs at health facilities often results in increased workload for the existing staff, thus affecting the effective delivery of health services, including NCD services. Second, the currently (2016–2018) ongoing phase-wise pilot implementation of WHO PEN in over 36 districts has brought opportunities to develop strategies for NCD prevention and control efforts in Nepal. However, inadequate supply or unavailability of free essential drugs in health facilities has been a major concern, and constant shortage of drugs at health facilities is common. This often forces patients to buy the drugs from private pharmacies, thus adding to the high OOP payments. Third, inadequate equipment for NCD screening and diagnosis, and unavailability of laboratory facilities often compel CHWs to refer patients to district-level health facilities or to private health facilities for further investigation and necessary care and

management. This often results in community members gradually losing trust in CHWs and the services provided by community-level health facilities.

Viet Nam. Several key barriers to engaging CHWs in the delivery of NCD services have been identified. These include: (i) budgetary and financial difficulties; (ii) shortages of trained human resources; (iii) lack of basic medical equipment; and (iv) inadequate logistical support, supplies and medications. These challenges are explained below.

NCD case management services delivered at the district and community levels usually lack a variety of resources, such as human, physical and financial resources, compared with central-level hospitals and centres. In addition, access to preventive interventions for the general population has not been reinforced yet, except for engaging in mass media campaigns, with little effort being made to assess the actual change in population-level awareness or behaviour. Inadequate compensation for the services provided by CHWs is also frequently reported.

3.4 Facilitating and enabling factors in engaging CHWs in NCD control and prevention

Many of the facilitating factors identified across countries are *similar*, in terms of programme development and service delivery, whereas there are *differences*, in terms of programme development approach, packaging of health services, capacity and training background of CHWs, as well as CHWs' roles and responsibilities.

Bangladesh. The Government of Bangladesh has initiated several NCD prevention- and management-related initiatives. Policies and guidelines have been developed on the prevention and control of NCDs at the systems level, an NCD control unit at the DGHS has been created to primarily look after NCD issues, an NCD prevention and control programme has been implemented, NCD corners have been introduced at subdistrict-level health facilities (UZHCs), and a number of initiatives have been implemented to increase prevention and control measures at the community level. In recent years, a few important drugs for NCDs have been added to the essential drugs list and these essential drugs have been made freely available at community health facilities. In addition, private health-care facilities and some nongovernmental organizations (NGOs) have also taken a few initiatives for NCD prevention and care services,

such as screening, early detection, diagnosis, treatment, referral, and health education and counselling.

China. Several facilitating factors exist at the systems and policy levels, which include general policy development to support NCD control programmes, collaboration across relevant government agencies, development of national policy guidelines, and initiation of provincial and national demonstration projects for comprehensive prevention and control of NCDs. The Chinese government in recent years introduced a number of policy guidelines, such as *Guideline for construction of national demonstration area for comprehensive prevention and control of chronic and non-communicable disease* (2009); implementation of a multifaceted policy strategy (EBPHS) to strengthen the public health system and support UHC (2009); *Regulation of National Demonstration Area for Comprehensive Prevention and Control of Chronic and Non-Communicable Disease* (2011) and *Evaluation manual of national demonstration area for comprehensive prevention and control of chronic diseases* (2012). With the major focus on NCD prevention and control, the government introduced the first national guideline on the subject "China National Plan on NCD Prevention and Treatment (2012–2015)". In 2016, the government issued "Healthy China 2030". Achieving Healthy China 2030 has been put as one of the top political agenda items by the government in 2016, Healthy China 2030 sets goals for the control of NCDs, and aims to have a 30% reduction in premature deaths caused by major NCDs. In January 2017, the government issued the "Medium-to-Long Term Plan for China for the Prevention and Treatment of Chronic Diseases (2017–2025)". Several demonstration areas for comprehensive prevention and control of NCDs have also been established at the provincial or regional levels to encourage the commitment of the local government to NCD prevention and control.

Nepal. In recent years, the Government of Nepal has given priority to the development and implementation of NCD policies and plans, NCD guidelines and implementation of specific NCD interventions such as WHO PEN in the PHC setting. Government initiatives are being taken to translate policy into practice at the community level, where NCD services are being delivered by CHWs. For example, the active participation of the Health Facility Management Committee (HFMC) has led to effective planning and implementation of various health programmes and efficient running of the health facility as a whole. The leadership of HFMC has also improved retention of trained CHWs, availability of supplies and medication, basic

equipment and diagnostic services, and setting up a referral mechanism, as well as a proper recording and reporting mechanism. The government initiative to fulfil vacant positions in all health facilities by recruiting and deploying new health cadres has been another facilitating factor. Despite the limited financial and social benefits that CHWs receive from the government, they have shown a high level of interest and commitment to serving people in the community.

Viet Nam. At the systems level, several policies and strategies have been developed. They include initiatives to build the NCD service delivery capacity of CHWs, the national strategy for prevention and control of NCDs over the period 2015–2025 with a strong focus on multisectoral collaboration in community-based initiatives to prevent NCD risk factors, and the engagement of CHWs in the planned implementation of WHO PEN in Viet Nam. At the service delivery level, CHWs are confident in the extension or expansion of their role to include promotion of healthy lifestyles, screening for and early detection of common NCDs, and referral, care and follow up. CHWs are interested in and have commitment to learning about the prevention and control of NCDs, and are willing to implement the knowledge and skills for the benefit of community members. There have also been initiatives by the government to fill all vacant positions at community-level health facilities, so that health- and NCD-related services could be delivered effectively. Further, the supply of logistics, necessary equipment and medication for NCD detection and treatment is also a government priority.

3.5 Commonalities and differences in engaging CHWs for prevention and control of NCDs across the four countries

The governments of these four countries have taken initiatives at systems and service delivery levels, such as the development and implementation of several NCD-related policies and action plans. CHWs in these countries are one of the major providers of health- and NCD-related services. The countries have several commonalities in terms of the services that CHWs deliver, the population they serve, training they receive, and the implementation approach(es) to health and NCD services. Some of the common *general health services* that CHWs deliver in these countries include basic health recording and documentation, health education and counselling, reproductive health and family planning, EPI services, reporting and treatment of infectious diseases, in particular, HIV and tuberculosis, nutritional education and micronutrient supplementation,

treatment of minor ailments, first aid and basic care for injury. However, there are some differences in terms of the training they receive or the services they deliver. For example, CHWs in China are well trained with organized training and certificate programmes, which is not the case for CHWs of the other countries.

In terms of *NCD-related services* that CHWs deliver, commonalities exist across the four selected countries of Asia. These include screening and basic management of common NCDs, health education and counselling, support for medication adherence, and recording and reporting of the NCD services they deliver. The extent of NCD services that CHWs deliver in these countries varies, which may partly be due to the varied length and quality of training CHWs receive, as well as the logistics and supplies available at health facilities to deliver NCD- and related services.

While highlighting the commonalities and differences across these countries, the following relevant issues were identified:

1. ***CHWs and their educational background.*** Differences were identified in how CHWs were defined. China and Bangladesh considered village doctors and CHCPs, respectively, as CHWs; they have a certain educational background and receive a certain duration of training. However, the VHWs in Viet Nam and FCHVs in Nepal have no specific level of education and receive only a few weeks of training, which is mostly project specific. Therefore, the limited capacity of these CHWs and variation in skills between CHWs across countries need to be considered to determine the approaches to and types of service delivery by these CHWs. In Nepal, cadres such as HAs and CMAs, who have a certain level of formal education, are also considered as CHWs. Therefore, the approach to capacity-building and the service delivery mechanism for these different types of CHWs should be different from those well-trained groups mentioned above. These differences in qualifications of CHWs within and across countries must be carefully taken into account while considering the delivery of NCD interventions by engaging CHWs in these countries.

2. ***Capacity-building and service delivery package.*** CHWs need specific sets of training to build their capacity according to their educational background and existing roles and responsibilities in health facilities. For example, there are two different sets of CHWs (i.e. trained CHWs and FCHVs) in Nepal and their roles also differ in terms of delivering general public health- and NCD-related services. Therefore, the

package for capacity-building and NCD service delivery needs to take this into account while planning to engage CHWs for NCD prevention and control.

3. ***Specific roles of CHWs.*** Differences also exist in terms of educational background and capacity of CHWs to deliver NCD services. These differences need to be considered while designing NCD service packages to be delivered by CHWs.

4. ***Bundled versus stand-alone NCD-focused interventions.*** CHWs within the current service environment are given too many responsibilities to fulfil. There was skepticism as to whether CHWs within the current setting would be able to take up the additional role of delivering NCD services. Also, even if CHWs are given the task of delivering NCD services within the current setting, these services may not be effective in terms of meeting the needs of people at risk for developing NCDs and those who would need care and management. Alternatively, the possible option discussed was to create a new set of CHWs, who would primarily perform the role of delivering NCD services at the health facility as well as community levels. This will, however, add an economic cost to government health systems, but needs cost analyses and a broader discussion to determine the benefits of creating a stand-alone set of CHWs to effectively serve people in need of NCD and related services.

4. Policy options for countries to consider

This monograph highlights the potential for engaging CHWs in delivering community-based NCD services in four selected countries of Asia: Bangladesh, China, Nepal and Viet Nam. While it is not ideal for a country to copy exactly the same strategies from another country, experiences learned in a country could be referenced and adapted after addressing contextual barriers. The following are some of the overarching policy options for countries to consider.

4.1 Country contextual factors. All these countries face a rapid increase in NCDs and related morbidities among their populations. Their governments have taken several initiatives at systems and service delivery levels to address the growing burden of NCDs, such as policy formulation, development of guidelines and strategies, allocation of resources, training and capacity development, assurance of logistics and supplies, and delivery of NCD services at the community level. Engaging CHWs has been a priority for delivering NCDs and related services in these countries and training to CHWs has been provided to a certain extent. However, CHWs in Nepal (particularly FCHVs) and VHWs in Viet Nam have only a basic level of general education, followed by a very short duration of training, which is not specific to NCD prevention and control. Therefore, the role of CHWs in delivering NCD services varies across these countries. On the other hand, other cadres of CHWs, for example, HAs in Nepal and Bangladesh or CMAs in Nepal, receive formal education plus training and are capable of discharging health- and NCD-related services.

Given the contextual differences and variation in the roles and responsibilities of CHWs across these countries, particularly in discharging health and related services, it was evident that there is a high potential for engaging CHWs for NCD prevention and control efforts in these countries. Developing the capacity of CHWs, defining the scope of

work with appropriate incentives, assurance of adequate funding, supply of logistics and medication, equipment and laboratory facilities, and infrastructure development were the common aspects that emerged in all four countries as key areas that would need careful attention to accelerate NCD prevention and control initiatives. These will also determine how CHWs could potentially be engaged as members of the PHC delivery team, though not in isolation (*see* section 4.3), in discharging NCD services through different levels of primary care settings and community-based services, which are important and integral parts of the PHC system in these countries.

4.2 Capacity-building of CHWs. CHWs are already playing a key role in the delivery of public health services, including a few NCD-related services in these four Asian countries. Capitalizing on their experiences, CHWs could deliver more NCD-related services. However, building the capacity of CHWs to deliver quality NCD-related services should be a priority. Consideration should be given to implementing an NCD training programme to build CHWs' capacity for delivering common NCD-related services, in keeping with the local circumstances and CHWs' qualifications. If countries already have a training programme for CHWs, an NCD module could be added within the existing training materials; otherwise, a separate NCD module should be developed and implemented. The training should also focus on teaching CHWs how to use information and communication technology (ICT), as ICT is not commonly used by CHWs in these four countries. ICT-related training would help CHWs to overcome some of the barriers that they face in the field, such as lack of appropriate tools to provide services and collect data, and limited access to training and supervision. With an ICT tool, trained CHWs would be able to clarify or communicate with other primary care team members about NCD-related queries raised by the public and discharge accurate information in a timely manner. Any training for CHWs should consider country contextual factors and the capacity and qualifications of CHWs to determine the nature of training that CHWs (or a specific category of CHWs) would need, and the type of services that they would be able to deliver. It is suggested that any training should be coupled with plans for rigorous evaluation. If countries in the region proceed to adapt the WHO PEN (*see* section 4.4), all these capacity-building elements can be incorporated within WHO PEN implementation to deliver team-based care for NCDs. Besides training to build capacity, developing a service delivery guideline for CHWs specific to common NCDs (i.e. diabetes, hypertension, cancer, mental illness and COPD) and their risk factors (i.e. tobacco use, harmful use of alcohol, physical

inactivity and unhealthy diet) would ensure appropriate delivery of NCD services by CHWs.

4.3 Recognizing the central role of CHWs. To ensure delivery of NCD services at the grassroots level, it is suggested that CHWs be recognized as frontline members of the PHC team. As these countries are restructuring their current PHC systems to combat the growing burden of NCDs, this might be the right time for them to take such an initiative. Establishing CHWs as a recognized frontline health-care workforce to deliver basic NCD services and coordinate referral to secondary and tertiary care, supported by qualified mentors and a well-developed ICT system, would increase productivity and motivation among CHWs. Establishing a performance-based evaluation system for the work of CHWs is a promising approach that could be explored. Strengthening multisectoral collaboration in NCD prevention and control by aligning CHWs' activities with other community-based or PHCC-based health-care programmes is recommended. All these strategies would require strong commitment from PHC systems and their leadership to ensure their sustainability.

4.4 Adaptation of WHO PEN. To address the growing challenge of NCDs, countries should consider wide adaptation of WHO PEN within the national NCD control policy. The scale up of WHO PEN implementation, which has been pilot-tested in these four countries, opens up opportunities for engaging CHWs in the PEN programme. Within the framework of PEN (or other similar in-country NCD control programme), trained CHWs could screen at-risk populations, deliver basic counselling, prescribe medications following the guidelines, and refer to upper-level health facilities, as appropriate. While adapting PEN, coordination between PEN and other CHW-led successful programmes within the current health system (i.e. tuberculosis control programme) may help remediate potential system-level barriers and suggest strategies to engage and retain CHWs in the PEN programme.

Limitations of this study

This report focused on exploring the potential of engaging CHWs for the prevention and control of NCDs in four selected countries of the Asia and Pacific region; therefore, caution may needed to extrapolate the findings to the whole region. Mainly qualitative data were gathered for this report and quantitative data were not collected. Moreover, the report focused mainly on CHWs and did not include the views of those skilled health-care professionals (i.e. doctors, nurses) working in the PHC setting.

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Appendices

Appendix A: Details of the methodology used in the study

A.1. Methodological details

To achieve the study objectives, the following approaches were taken as a common methodology framework to conduct country-specific studies in the four selected countries of Asia.

a) ***Situation analyses through desk/literature review.*** Four country teams independently searched and reviewed relevant articles published online and the grey literature. Further, the country team also hand-searched and reviewed all relevant reports, guidelines, policy and strategy documents available in the respective countries. The members of the local WHO offices (Division of NCDs), Department of Health's Center for NCD Control, Association of CHWs (local or regional, if any), researchers working in the field and other relevant organizations were also contacted where available. The study team also conducted general web-based searches for additional resources and key stakeholders, and the grey literature. The desk review and review of the relevant literature was primarily focused on (i) identifying a full range of NCD care- and control-related interventions, and (ii) evaluation of model programmes to identify different factors, including system- and service delivery-level factors, cost-related information, and sociodemographic information relevant to the potential of engaging CHWs for NCD service delivery. The information gathered was also focused on assessing the process and outcome measures leading to NCD service delivery.

b) ***Investigator and key personnel meeting.*** We conducted a 2-day workshop in the city of Kunshan, China, in which all project investigators participated and key personnel were invited (i.e. health policy-

makers and programme managers, researchers, NCD specialists, NGO representatives and lead CHWs who could act as key informants) from the four participating countries – Bangladesh, China, Nepal and Viet Nam. The focus of the workshop was: (i) to provide participants with an overview of the project and anticipated outcomes; (ii) to share the initial findings of the situation analyses and incorporate suggestions for further review and data collection; and (iii) to plan writing of the relevant sections of country-specific reports and/or manuscripts.

c) ***Exploratory studies.*** To supplement the findings of the review and situation analyses studies, we conducted exploratory studies, such as in-depth interviews (IDIs), key informant interviews (KIIs) and focus group discussions (FGDs) with CHWs (participants ranged in number from 6 to 10) and policy-makers in the respective countries. The exploratory study was focused on determining (i) CHWs' current practices related to general health service delivery and NCD-related programmes; (ii) barriers to and facilitators of CHW-led programmes; (iii) views on engaging CHWs in the delivery of NCD programmes and services; (iv) feasible systems that would enable CHWs to screen for NCDs and deliver risk reduction interventions for common NCDs or facilitate appropriate referral; and (v) feedback on the training and financial needs for CHWs to deliver interventions for common NCDs. These exploratory studies were conducted by trained research personnel under the supervision of the in-country principal investigator.

d) ***Final workshop with investigators and key personnel.*** At the final stage of the project, we held a 2-day workshop with investigators and key personnel in Kathmandu, Nepal. The key personnel included health policy-makers and programme managers, representatives of development partners (i.e. WHO), lead CHWs, researchers, NCD specialists and NGO representatives. The focus of the workshop was to review all the findings and country-specific draft reports and draft recommendations to engage CHWs in the delivery of NCD-related health programmes for further consultation and possible consideration for future potential studies and/ or pilot interventions.

Table A1 presents a summary of the country-specific exploratory interviews and meetings conducted among different groups of participants to gather relevant data.

Table A1. Summary of the exploratory studies conducted among different groups of participants in selected countries of the Asia Pacific region

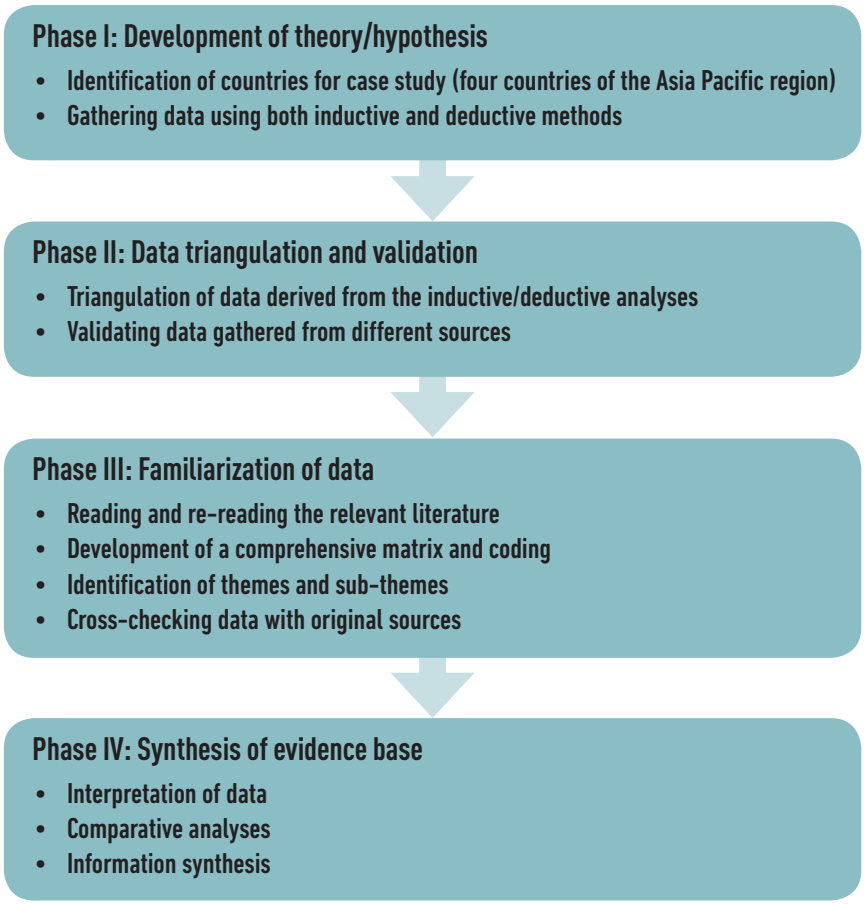
Countries	IDIs/KIIs	FGDs	Consultation meeting/s
Bangladesh	- 14 KIIs with policy-makers, subdistrict-level health managers and CHWs	- 4 FGDs with CHWs, in rural (n=2) and urban settings (n=2)	- 1 consultation meeting with policy-makers, managers, researchers, academicians and CHWs
China	- 10 IDIs with policy-makers, managers and CHWs in rural (n=4) and urban (n=6) settings	- 4 FGDs with CHWs, in rural (n=2) and urban (n=2) settings	- 1 consultation meeting with policy-makers, managers, researchers, academicians and CHWs - 1 meeting with investigator and key personnel
Nepal	- 5 IDIs with CHWs, both in urban (n=3) and rural (n=2) areas - 3 IDIs with policy-makers and health managers	- 2 FGDs with CHWs, both in rural areas	- 1 consultation meeting with policy-makers, managers, researchers, academicians and CHWs - 1 meeting with investigator and key personnel
Viet Nam	- 13 IDIs with policy-makers and health managers	- 4 FGDs with CHWs, in rural (n=2) and urban (n=2) settings	- 2 stakeholder meetings with CHWs and health managers

CHW: community health worker; IDI: in-depth interview; KII: key informant interview; FGD: focus group discussion

A.2. Qualitative data analyses using framework analyses

For a thematic analysis of the data obtained from both the situation analyses and exploratory study conducted in the four selected countries, we used the framework method as recommended by Gale et al. (2013), with some modifications. This method is appropriate for synthesizing, comparing and contrasting large-scale textual data across cases using a multidisciplinary research team. The framework approach identifies commonalities and differences in qualitative data before focusing on relationships between different parts of the data, thereby seeking to draw descriptive and/or explanatory conclusions clustered around themes.

Fig. 1. Analytical framework describing the process of evidence synthesis for data analysis



Source: Adapted from Gale et al., 2013

The framework method was developed by researchers Jane Ritchie and Liz Spencer in the United Kingdom in the late 1980s for use in large-scale policy research (Ritchie & Lewis, 2003). It is now used widely in health-related research. During the country-level analyses of the four selected countries, we followed the four major steps of the framework method: (i) transcription; (ii) familiarization with the interview; (iii) coding; and (iv) developing an analytical framework. The other key steps of the framework method were also used, which are: (i) familiarizing oneself with the contents through reading and re-reading of relevant reports and guidelines; (ii) identifying the themes and subthemes; (iii) charting data into the framework matrix according to the themes/subthemes; and finally, (iv) data validation and interpretation. The relevant reports and documents of the four countries were read multiple times to become familiar with the information. The common themes relevant for engaging CHWs for NCD prevention and control were identified and discussed extensively with other team members during the country-level and cross-country-level stakeholder meetings for further suggestions or necessary changes. To identify the areas, themes and subthemes, a spreadsheet was used to generate a matrix and the information extracted from a review of the relevant documents and exploratory study of the four countries was entered into the matrix.

The detailed matrix was shared with the study team members for further reading, reflection and identification of key thematic areas for further consideration. As per this comprehensive review and discussion of the findings incorporated in the matrix, five key themes were identified. These were (i) general health-related programmes delivered by CHWs; (ii) NCD-specific programmes delivered by CHWs; (iii) difficulties in and challenges to engaging CHWs for NCD control and prevention; (iv) facilitating and enabling factors in engaging CHWs for NCD control and prevention; and (v) commonalities and differences in engaging CHWs for NCD prevention and control across the four Asian countries. Details of these themes have been described in the Results section. Further, we searched and reviewed a number of published and unpublished policy and programme documents related to the engagement of CHWs for NCD programmes and used the information wherever necessary.

Appendix B: Moderator's guide for focus group discussions

Moderator's guide
(Generic – to be modified by each country. The guide was translated/back-translated into the local languages)

Focus group discussions (FGD) of:
community health worker/village health worker

[*Notes in these parentheses are for the moderator – not to be read out loud*]

Consent process
Consent forms for focus group participants must be collected in advance or before the start of the discussions.

Introduction
Hello. Thank you for coming.

My name is _____ [*Moderator's first name*] and I will lead the group discussion today. This is Dr _____ [*name to be determined*] who is working on this project and will help to take notes of our discussion.

You have been asked here today because of your experience as community/village health workers. For the next 60 to 90 minutes you will be part of a focus group. In a focus group, a group of people comes together to talk about a specific topic or to look at something and give their ideas. In a focus group, people are brought together to think out loud about the topic and share their honest opinions.

As the moderator, I get to ask the questions, but I am not an expert on the topic. I am simply leading the group for the researchers.

OK. In today's group discussion we will talk about your experiences in providing community-based services for different programmes. We will also focus on noncommunicable disease (NCD) prevention and control. As a *community/village health worker* you get to see and interact with patients or family members of patients who are at risk for different types of NCDs. Therefore, you may have insights and opinions that doctors don't have. **As we have described in the consent form, we are not asking**

you to disclose any personal or sensitive information and you don't have to speak up and say anything if you choose not to.

Usually when we get into the conversations, plenty of ideas come up, and people can get quite involved in the discussion. So, the only rule is, give everyone his or her turn to speak. I will not be taking many notes. I want to listen and talk with you. Therefore, I'm going to audio-record this session. I can then go over it later and remember what all of you have discussed.

This research will be conducted in a **confidential manner** and your personal information will be guarded and not given to anyone. Focus group discussions are not confidential as other participants may talk about what is said. We cannot guarantee that what you say will not be repeated by someone else in this study. We will not use your name or anything that identifies you in any publication of results of the focus group discussions.

At the end of this session, please fill out this form so that you can get a gift package at the end of today's focus group.

This meeting is going to last approximately 60 to 90 minutes. May I begin?

Warming up

- I'd like us to go around the room and have each of you tell us your first name and how long you have worked as a community health worker (CHW).

FGD guide

I. Roles and responsibilities as a community health worker

- What are your basic responsibilities as a CHW?
- Everyone finds some parts of their job satisfying and rewarding, and everyone has some things they don't find satisfying or rewarding. For now, let's focus on the things you **like** and find satisfying and rewarding about your role as CHW. I'd like you to focus specifically on your interactions with patients.
    - Probe – e.g. Could you tell me more about…?

OK. Thank you.

- And what about the interactions with community members/ patients that you think are not so satisfying and should be improved or corrected? Can you tell us about some of those situations?

OK. Thank you.

II. Overall services that you provide as a CHW

- What is the range of services you usually provide as a CHW?
  - Probe – e.g. polio vaccinations, health education, AIDS education…
  - Probe – Could you tell me more about how you perform…?
- Have you provided health-care services and preventive interventions for diabetes, cardiovascular diseases, hypertension or other NCD-related diseases?
  - Probe – Could you tell me more about how you perform…?
- What are the other health services do you usually offer?
- Do you feel satisfied with your current
  - workload?
  - working conditions?
  - income?
    - Probe – Could you tell me why you feel satisfied and why not?
- What are the difficulties that you face in your current job as a CHW?

III. NCD prevention and control

NCDs are common in Bangladesh/China/Nepal/Viet Nam. We are trying to develop some policies to improve access to and the quality of NCD prevention and control at the community level.

- How much of a problem do you think NCDs are?
- How do you think NCDs affect someone's health?
  - Probe – What about the impact on their family's quality of life?
- How does the importance of NCD compare with other health problems that you work on in terms of how much attention it gets from doctors and health workers?
- What role do you think CHWs can play in helping to prevent NCDs?

IV. Response to proposed new role of CHWs for NCDs

Now I'd like to hear your ideas about a specific role that is focused on NCD prevention for CHWs. Some of you may be doing something like what I'm about to describe.

We are thinking about engaging CHWs to offer brief counselling and basic care for common NCDs (i.e. diabetes, hypertension) and their risk factors (i.e. physical inactivity, smoking).

Our plan is to create a system in community health centres. CHWs, upon receiving training, would be responsible for conducting screening for NCDs and delivering risk reduction interventions for common NCDs. CHWs can refer complicated cases to doctors or the nearest health-care facilities.

Before I ask you what you think about this idea, do you have any questions about what I just described?

- What are your reactions to this idea?
  - Probe – What do you like about the idea? What don't you like?
- What do you think will be the difficulties or challenges in making this work?
- What do you think other CHWs like you would think about this programme?
- What would you need to take on this role?
  - Probe – What kind of training would you need? How much time would you need to finish this kind of training?
  - Probe – Do you think your monthly income should increase after engaging in this programme? Do you have any expectations in terms of incentives?
- What is an acceptable workload per day for you if you are engaged in this kind of programme?
- What ideas do you have to make this work?
- How confident are you that you could carry out this role?
  - Probe – Do you see yourself filling this role?
- What do you think will be the reaction of community members to this programme?
  - Probe – What would be the things they like? What would be the things they are not likely to be interested in?
- Do you think this idea will reduce the burden of providing NCD care on health systems?

Does anyone have anything else that they'd like to say, perhaps something that we did not get to talk about?

[*If so, pursue as time allows.*]

[*If not, thank and dismiss.*]

I would like to thank you all for your active participation in today's discussion.

Appendix C: In-depth interview guide

Interviewer's guide
(Generic – to be modified by each country. The guide was translated/back-translated into the local languages)

In-depth interview of:
policy-maker/public health administrator

Note to interviewer

- *Notes in parentheses [ ] are for the interviewer – not to be read out loud.*
- *Ask each question as stated in the interview guide. If the participant states that he/she does not really know the answer, write "DK" ("Don't know").*
- *Most questions request the participant to specify or explain further. Please probe appropriately to obtain the underlying reasons. Interviewers are encouraged to probe in the case of open-ended questions. Use the spaces provided and the margins or the back pages of the interview guide if more space is needed.*
- *In some instances, a respondent may decline to answer a specific question. If so, write down "Declined," then ask the respondent if it is okay to ask the next question. If the respondent agrees to continue, be sure to ask the next applicable question based on "Skip" instructions.*

Consent process

- Consent forms for in-depth interviews must be collected before proceeding with the interview.

Introduction

Good morning Sir/Madam [*or as appropriate*]. Thank you very much for making time for this interview.

My name is [i*nterviewer's first name*] and I will be your interviewer today. I work for the researcher from National Heart Foundation Hospital & Research Institute, Bangladesh/Fudan University School of Public Health, China/HERD International, Nepal. We are interviewing policy-makers and public health administrators regarding the role of community health workers (CHWs) in prevention and control programmes for noncommunicable diseases (NCDs) in Bangladesh/China/Nepal/Viet Nam.

You have been invited today because of your experience as a policy-maker/public health administrator.

In today's interview, we will talk about the role of CHWs in providing community-based services for different programmes. We will also focus on the prevention and control of NCDs such as hypertension, diabetes and heart diseases. As a policy-maker/administrator, you have experience in comprehensive decision-making and community health management, so you may have more opinions about the role of CHWs and how to integrate them into different health-care programmes. **As we discussed in the consent form, we are not asking you to disclose any personal information or sensitive information and you don't have to speak up and say anything if you choose not to**.

Usually when we get into the conversations, plenty of ideas come up. I want to listen and talk with you so I will not be taking many notes. Therefore, I'm going to audio-record this session. I can then go over it later and recall what you said.

This research will be conducted in a **confidential manner** and your personal information will be guarded and not given to anyone.

At the end of this session, please fill out this form so that you can receive a gift package at the end of this meeting.

This meeting is going to last approximately 45 to 60 minutes. May I begin?

Warming up

- First, I'd like to know your first name and your role in this institution/centre.

I. Overall services provided by CHWs

- What are the health-care services currently provided by community health workers (CHWs) who serve in your institution/centre?
  - Probe – e.g. health education, health promotion, AIDS education, vaccination…
- What are the NCD-related health-care services and preventive interventions currently provided by the CHWs who serve in your institution/centre?
  - Probe – e.g. for diabetes, cardiovascular diseases, hypertension…
- What are the other health services they usually provide?

- How do you involve them in providing those health-care services?
- What guidelines do they need to follow?
    - Probe – In your opinion, what are the most important aspects of these guidelines? What could be improved?
- What is your opinion on their general workload?
    - Probe – Which tasks should be retained and which ones should be changed?
- What types of training do CHWs receive in general?

OK. Thank you.

II. NCD prevention and control

NCDs are common in Bangladesh/China/Nepal/Viet Nam. We would like to know your opinion on this problem and what has been done to improve access to and the quality of CHW-led NCD prevention programmes at the community level.

- How much of a problem do you think NCDs are in the district where you are working and in your country overall?
- How does the importance of NCDs compare with other health problems?
- What role do you think CHWs can play in helping to prevent and control NCDs?
- What policies are you taking to strengthen the role of CHWs in NCD prevention and control?
    - Probe – In your opinion, what are the most important aspects of these policies? What could be improved?
- What kind of NCD-related training programmes have been established for CHWs?
    - Probe – How do CHWs react to these activities?

OK. Thank you.

III. Response to the proposed new role of CHWs for NCDs

Now, I'd like to hear your ideas about a specific role for CHWs focused on NCD prevention.

We are thinking about engaging CHWs to offer brief counselling and basic care for common NCDs (i.e. diabetes, hypertension) and their risk factors (i.e. physical inactivity, smoking).

Our plan is to create a system in community health centres. CHWs, upon receiving training, would be responsible for conducting screening for NCDs and delivering risk reduction interventions for common NCDs. CHWs can refer complicated cases to doctors or the nearest health-care facilities.

Before I ask you what you think about this idea, do you have any questions about what I just described?

- What are your reactions to this idea?
  - Probe – What do you like about the idea? What do you think could be improved?
- What do you think will be the difficulties or challenges in making this work?
  - Probe – In your opinion, what can be done to address these challenges?
- What kind of training would you provide for CHWs to make this work?
- How do you think CHWs would react to this programme?
  - Probe – In your opinion, what could be the things they like? What could be the things they would not be interested in?
- In your opinion, what would CHWs need to take on this role?
  - Probe – What factors would influence their job satisfaction and motivation?

    e.g. equipment and supplies, workload, working conditions, transportation, payment…
- What do you think about assigning extra NCD prevention tasks to currently working CHWs?
  - Probe – Will the workload be acceptable to them? Do you think there is a need to hire extra CHWs to specifically focus on NCD care?
- According to the current situation of NCDs in Bangladesh/China/Nepal/Viet Nam, what do you think are the most feasible tasks if you are to involve CHWs in NCD prevention and control programmes?
- In addition to what I have just described, what applications or future plans do you have in mind?
- Do you have anything else that you'd like to say? Perhaps something that we did not get to talk about?

[*If so, pursue as time allows*.]

[*If not, thank and dismiss*.]

I would like to thank you for your participation in today's interview.

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- The Philippines (2011; 2018)
- Mongolia (2013)
- Malaysia (2013)
- New Zealand (2014)
- Lao People's Democratic Republic (2014)
- The Republic of the Union of Myanmar (2014)
- Solomon Islands (2015)
- The Kingdom of Cambodia (2015)
- Bangladesh (2015)
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- The Kingdom of Tonga (2015)
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- The Kingdom of Bhutan (2017)
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ISBN-13 978 92 9022 708 3

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