

Roles of subdistrict health office personnel and village health volunteers in Thailand during the COVID-19 pandemic

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SUMMARY

In Thailand, 40 000 subdistrict health centre (SDHC) personnel and >1 million village health volunteers (VHVs) are responsible for primary healthcare of 23 million households in 75 032 villages. They were trained, made household visits, gave hygiene advice, participated in the 'Big Cleaning Day' campaign, produced cloth face masks, proactively identified high-risk visitors and monitored quarantined cases. 7.4 million Thais received basic education on hygiene, 1.3 million villagers joined the campaign and 3.6 million handmade cloth face masks were produced. In March 2020, 3.9 million households were visited, and 40 000 high-risk cases were detected. The intensity of proactive case findings increased to 12.6 million home visits and 834 000 cases were detected in April 2020. Almost 800 000 cases complied with the 14-day mandatory home quarantine, of which 3.6% developed symptoms suspected of respiratory tract infection. VHVs and SDHC personnel could efficiently contribute to the prevention and control of COVID-19 in Thailand.

BACKGROUND

COVID-19 infection has rapidly spread across continents and became pandemic.¹ It is a group of emerging infectious diseases caused by RNA coronavirus and can infect both humans and other wild animals.^{2,3} The novel SARS-CoV-2 causing lower respiratory tract disease was detected in humans in Wuhan, China in December 2020.⁴⁻⁶ The virus has molecular similarities with SARS and the Middle East respiratory syndrome.⁷ As of 1 February 2021, there were 103.69 million cases in 219 countries and territories, with 2 241 378 deaths.⁸ In the absence of specific antiviral drugs or vaccines, proper preventive measures, both at an individual as well as from a societal aspect, are the prime key success factors to fight against the virus.

The first case of COVID-19 infection in Thailand, and also the first case of COVID-19 infection imported from China, was reported in January 2020.^{9,10} Thailand initially ranked first among countries outside China in the number of COVID-19-infected cases.¹¹ It had been predicted that without proper stringent measures implemented, the number of COVID-19 infected cases in Thailand could have been as high as 400 000 cases by the end of 2021.¹² Interestingly, 1 year and a month after the country outbreak, the current number of COVID-19-infected cases in Thailand

was only 19 618 cases with 77 deaths.¹³ Thailand now ranks the 116th country concerning a total number of infected cases.⁸ This is in contrast to many other developed and developing countries where the number of COVID-19-infected cases has been climbing up exponentially. The success in controlling COVID-19 infection in Thailand could be due to several mechanisms driven by government agencies, health authorities, academic institutes and the public.

Thailand is an upper-middle-income country in the Southeast Asian region. As of December 2019, the household income per capita was US\$ 3707. The unemployment rates were between 0.75% and 0.83% during 2017–2020. With a population of 66 million and the size of the country as large as France, Thailand has a hierarchically structured healthcare system from the ministerial (national) level to the village level. Each of the 76 provinces of Thailand exclusive of Bangkok Metropolitan, has one tertiary-care provincial hospital, one secondary-care district hospital at each of 10–15 districts of each province and 1–2 subdistrict health centres (SDHCs) at each of 10–15 subdistricts of each district. The tertiary and secondary care has been provided by 1300 hospital facilities, 80% of which are government-owned. Tertiary care is provided by provincial hospitals, some of which are regarded as regional (referral) hospitals that could provide a higher level of care. Secondary care is provided by approximately 740 community hospitals that are categorised based on the number of beds (10, 30, 60, 90 and 120 or above).

In each SDHC, there are one to two community nurses, one to two public health officers, one dental care personnel and other assistants. Each SDHC is responsible for primary healthcare of 10–15 villages according to the size of the district. Each village consists of 50–100 households. There are >1 million village health volunteers (VHVs) all over the country, each of whom is responsible for primary healthcare of 10–15 households. The joint responsibility of SDHC personnel in collaboration with VHVs covers maternal and child health, vaccination programme, drug abuse, common infectious diseases like dengue haemorrhagic fever, leptospirosis, malaria, HIV, as well as non-communicable diseases including diabetes mellitus, hypertension, stroke, cardiovascular diseases and chronic kidney diseases.



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Table 1 Subdistrict health centre and village health volunteers in Thailand and their activities during the three phases of the COVID-19 pandemic

Number of Thailand population* (exclusive of Bangkok Metropolitan)	59 230 000
Number of provinces†	76
Number of districts‡	878
Number of villages§	75 032
Number of households§ (exclusive of Bangkok Metropolitan)	23 672 821
Number of subdistrict health centres§	9768
Number of public health technical officers§	25 752
Number of community nurses§	12 356
Number of village health volunteers§	1 039 729
Male:female ratio	1:04:00
Age distribution	
20–30 years	3.00%
31–40 years	12.00%
41–50 years	30.00%
51–60 years	35.00%
>60 years	20.00%
Number of household per SDHC personnel	621
Number of household per village health volunteer	22.8
Number of village health volunteers actively engaged in COVID-19 prevention programme	591 058
Activities in phase 1 (January–February 2020)	
Number of villagers received COVID-19 education programme	7 424 625 (12.5%)
Number of population attending the ‘Big Cleaning Day’ campaign	1 373 275 (2.3%)
Number of villagers trained for producing cloth face masks	800 000
Number of cloth face masks produced	3 626 950
Activities in phase 2 (1–26 March 2020)	
Number of households visited	3 887 667
High-risk cases detected in phase 2	
Villagers with fever or respiratory symptoms	10 810
Travellers from high-risk countries	16 010
Thai migrant workers from high-risk countries	13 430
Activities in phase 3 (26 March–30 April 2020)	
Number of households visited	12 607 136
High-risk cases detected in phase 3	
Workers returned from Bangkok or other provinces	576 972
Villagers with a history of exposure to the high-risk population	191 436
Thai migrant workers or other travellers from high-risk countries	66 467
High-risk cases under monitored home quarantine	799 894
Number of quarantined cases who subsequently developed symptoms	2890

*Total number of Thailand Population was based on the Worldometer (<https://www.worldometers.info/world-population/thailand-population/>).

†Number of population in Bangkok Metropolitan was retrieved from macro trends (<https://www.macrotrends.net/cities/22617/bangkok/population>).

‡Number of provinces and districts were based on the Department of Provincial Administration, Ministry of Interior (<https://multi.dopa.go.th/pab/news/cate9/view46>).

§Number of villages, households, subdistrict health centres, public health technical officers, community nurses and village health volunteers were retrieved from the Department of Health Service Support, Ministry of Public Health (http://www.thaiphc.net/new2020/news_detail/683).

CASE PRESENTATION

Thailand has established a well-structured primary healthcare system. There were about 40 000 healthcare workers across

the country (table 1), responsible for providing primary healthcare for a population of 3000–6000 on average. In addition to the healthcare workers, 1 039 729 VHVs have been proactively responsible for the primary healthcare of >23 million households locating in 75 032 villages. The VHV programme is managed and financed under the Primary Healthcare Division, Department of Health Service Support (DHSS), Ministry of Public Health. They are common villagers who volunteer to be paramedical personnel, taking care of 22.8 households per VHV. The ratios of households to that of SDHC personnel and VHVs were 621:1 and 22.8:1, respectively. The male-to-female ratio was 1:4 and the majority of them were aged 40–60 years (about one-fifth were older than 60 years). This system has been established in Thailand for more than four decades.¹⁴ The role and achievement of VHV and SDHC personnel have been described elsewhere.¹⁵ In brief, VHVs act as a connecting point between villagers and healthcare personnel at SDHC or district hospitals and are involved in providing primary care to each household. SDHC personnel and VHVs have been proven to be a very effective tool for grassroot primary healthcare approach on dengue haemorrhagic fever,^{16 17} leptospirosis,¹⁸ tuberculosis,¹⁹ infant mortality, diabetes,²⁰ hypertension²⁰ and chronic kidney disease. The purpose of the report is to describe the activities of SDHC personnel and VHVs during the COVID-19 crisis in Thailand.

Approaches

Since the beginning of the COVID-2019 outbreak in January 2020, DHSS has prepared the SDHC personnel and VHVs as such to be ready for controlling the spread of the infection. Owing to the presence of high-risk factors among VHVs, only 591 058 VHVs actively joined the COVID-19 prevention programme. They were assigned to make home-visit and give advice to villagers about maintaining good personal and public hygiene. They also received training on making cloth face masks and were instructed to organise public campaigns on cleanliness. The ‘Big Cleaning Day’ rallies were organised in the public area of each community across the country. A special registry programme was added to the DHSS’s website (www.thaiphc.net) for online registration of the assigned activities by SDHC personnel and VHVs.

The second phase occurred in early March 2020 when the number of COVID-19-infected cases in Thailand started to increase. ‘Door-knocking’ and ‘case identification’ campaigns were launched. The SDHC personnel and VHVs visited each household and advised on lifestyle changes to prevent COVID-19 infection, including eating hot food, using personal utensils during meals, frequent handwashing with soap or alcohol gel, wearing face masks, avoid smoking and alcohol drinking, and physical distancing. Also, they were assigned to identify high-risk individuals who were coming into their villages, based on the following operative criteria: (1) anyone with a fever, sore throat, persistent cough or breathing difficulty; (2) travellers from countries with confirmed COVID-19 cases (China, Hong Kong, and Macao SARs, Korea, Italy and Iran) and high-risk countries (Denmark, France, Germany, Japan, Netherland, Norway, Spain, Sweden, Switzerland, UK and the USA) and (3) Thai migrant workers who had returned home from those high-risk countries during the COVID-19 pandemic period. VHVs, in collaboration with the local civil administrative body, were assigned to monitor these high-risk cases at home at least twice a week for two consecutive weeks.

The third phase was in late March 2020 when the total number of COVID-19-infected cases in Thailand had surpassed 100

and it climbed up exponentially to reach 900 within 10 days.²¹ This worsening situation prompted the Thai government to declare an emergency decree on the COVID-19 situation, being effective from 26 March until 30 April 2020.²² A partial-yet-stringent lockdown policy was implemented nationwide. During this period, the SDHC personnel and VHVs were assigned to make more comprehensive identification of the high-risk cases who entering their villages, collaborate with the village chiefs to arrange a place for self-quarantine, monitor the cases under quarantine in the villages for 14 consecutive days and report about those who were suspected of symptomatic COVID-19 infection to the village chiefs and above.

Relevant changes

During the first phase, >7.4 million Thais (12.5% of the Thai population outside Bangkok) had received basic education on personal and household hygiene (table 1). More than 1.3 million villagers joined the Big Cleaning Day event whereas 3.6 million handmade cloth face masks were produced by the VHVs.

During the second phase, a massive exodus of labour forces from within and outside the country back to their hometown was observed. The SDHC personnel and VHVs had made about 3.9 million household visits (table 1) and detected 40 000 high-risk cases who entered their villages: individuals with a fever or respiratory tract symptoms (10 810 cases), travellers from high-risk countries (16 010 cases) and Thai migrant workers from high-risk countries (13 400 cases).

During the third phase, about 12.6 million home visits were made (table 1), and >834 000 cases were detected: 576 972 (70%) workers who had returned home from Bangkok or other provinces, 191 436 (22%) villagers with a history of exposure to the high-risk population and 66 467 (8%) Thai migrant workers or other travellers from high-risk countries. It was by law that all newcomers into the villages must have home quarantined for 14 days. Indeed, 799 894 cases (96%) had completed these processes. About 3.6% of the surveillance cases developed symptoms suspected of respiratory tract infection and were referred to district hospitals for further investigation.

GLOBAL HEALTH PROBLEM LIST

- ▶ COVID-19 pandemic has affected many low-income and middle-income countries including Thailand.
- ▶ The primary healthcare system at the community level has been well-established in many countries and could be beneficial for the prevention and control of the COVID-19 pandemic; however, research evidence and lessons learnt have been scarce.
- ▶ VHVs and SDHC personnel have a good understanding of local community dynamics and can efficiently contribute to the prevention and control of COVID-19 in Thailand.

GLOBAL HEALTH PROBLEM ANALYSIS

This case stresses the importance of primary healthcare, defined as ‘a system-wide approach to designing health services based on primary care, which is regarded as a means to help reduce medical expenditures and provide more effective and equitable care to populations’.^{23 24} The collaborative works of SDHC personnel and VHVs simultaneously reflected at least three main primary healthcare attributes—coordination, community orientation and professional personnel.²⁵ Given no specific antiviral drugs or vaccines for the COVID-19 infection, maintaining good personal and public hygiene, early identification, mandatory quarantine and self-isolation of the suspected case were crucial

for preventing the virus from spreading in the communities. These activities have been carried out by the SDHC personnel and VHVs in Thailand during the COVID-19 pandemic. Despite relatively limited medical knowledge, the VHVs have a good understanding of the local community dynamics. They have been proven to be effective and efficient tools in dealing with many communicable and non-communicable diseases including the current COVID-19 pandemic.

To keep the VHVs proactive, several incentives have been offered. Though at the beginning the VHVs worked for free, they had been offered a monthly salary of 600 baht (US\$20) which was recently raised to 1000 baht (US\$30). The VHVs usually received social recognition from the local community. Some VHVs are nominated for provincial and regional competitions; nationally recognised VHVs are entitled to prestigious awards, especially from the Thai Royal Family. Also, several leisure activities, parties and field trips sponsored by local health and non-health authorities are other types of incentives. Nevertheless, some of these incentives might be changed as a consequence of the pandemic.

Several challenges and solutions should be noted. First, the majority of VHVs received primary education, similar to the other villagers. Hence, the messages were designed to be short and poem-like in the Thai language: Kin Ron–Chon Klang–Yoo Hang–Lang Mue–Sai Nakak which means eat hot food, use a separate utensil, keep physical distance, wash hand and wear a mask, respectively. Second, face masks and alcohol gel were the basic yet essential protective equipment to be provided but they were considered scarce resources during the crisis. The face mask production skills of the VHVs would have been useless without the fabric material donated by the public in such a large quantity. Moreover, >1 million bottles of alcohol gel were donated to the VHVs and SDHC personnel by one of the largest beverage companies in Thailand. The use of face masks and alcohol gel by the VHVs not only conveyed the importance of personal and societal protection to the villagers but also promoted the self-esteem of the VHVs as role models. Third, although the Thai merits of giving had surpassed the fear of pandemic uncertainty, a special fund of 10 million baht donated by a philanthropist and another 1 million baht donated by the Bank for Agriculture and Agricultural Cooperatives was used for potential medical expenses that might incur to the VHVs who got infected from the fieldwork.

Learning points

- ▶ Village health volunteers and subdistrict health centre personnel have a good understanding of local community dynamics and can efficiently contribute to the prevention and control of COVID-19 in Thailand.
- ▶ Village health volunteers could be trained to provide basic hygiene education to the villagers, produce face masks and personal protective equipment, proactively identify cases, monitor the migration in and out of the community, as well as ensure compliance to the mandatory quarantine.
- ▶ Rapid and effective implementation of prevention and control of infectious disease pandemics at a national scale is possible if the basic infrastructure has been made available.

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