

Potential of Village Health Volunteers (VHVs) in Preventing COVID-19 in Rural Thailand

Warangkana Chankong¹, Pajaree Polprasert²

¹School of Health Science, Sukhothai Thammathirat Open University, Muang Thong Thani, Chaengwattana Rd., Bangpood, Pakkret, Nonthaburi, Thailand

²Faculty of Management Science, Kamphaeng Phet Rajabhat University, Nakhon Chum, Mueang Kamphaeng Phet District, Kamphaeng Phet, Thailand

Abstract

Public health officers are vital workers for patient care in health facilities amid Thailand's COVID-19 outbreak. In addition to these workers, village health volunteers (VHVs) also maintain significant roles for such care in rural areas. These volunteers are community members working on health promotion, health surveillance, and disease prevention. This survey research aimed to investigate the potential of village health volunteers in preventing COVID-19 and compare their potential by obtained development, occupations, educational levels, ages, and experiences as VHVs. The samples were 2,184 VHVs in four regions of Thailand selected through multistage sampling. Data were analyzed by percentage, mean, standard ANOVA, and LSD multiple comparison test. Results revealed that 99.0% of the VHVs had high potential in preventing COVID-19 in communities, with the mean of potential on operations ranked the highest, followed by screening for key COVID-19 symptoms in communities. The comparison of potential in COVID-19 prevention revealed that VHVs exposed to different numbers of development sessions had different potential levels. More specifically, VHVs participating in more than five development sessions per year demonstrated higher potential than those participating in zero development sessions, 1-2 sessions per year, and 3-5 sessions per year. However, there was no difference in potential among the groups of VHVs participating in zero development sessions, 1-2 sessions per year, and 3-5 sessions per year. Furthermore, no difference in potential was identified among VHVs classified by occupations, educational levels, ages, and experiences as VHVs.

Keywords: COVID-19 Prevention, Potential, Village Health Volunteer.

INTRODUCTION

The report on confirmed cases infected with severe acute respiratory syndrome coronavirus 2 (SARS CoV-2) since the end of 2019 marked the beginning of a rapid and continuous global pandemic. The infection created severe repercussions that crippled many medical and public health systems, societies, and economies. The World Health Organization (WHO) officially announced that the new coronavirus outbreak became a "pandemic" on March 11, 2020, because it spread to more than 200 countries around the world, with cumulative reported global cases of Coronavirus Disease 2019 (COVID-19) reached nearly 23 million and over 800,000 casualties (Randolph & Barreiro, 2020; WHO, 2020b, Poovorawan, 2020).

Thailand detected the first confirmed COVID-19 case on January 13, 2020. Subsequently, the announcement of the Ministry of Public Health dated February 29, 2020, titled Designation and Main Symptoms of Dangerous Communicable Diseases (Issue 3) BE 2563 (2020), declared that COVID-19 was a dangerous communicable disease under the Communicable Diseases Act BE 2558 (2015) for the benefits of surveillance, prevention, and control.

Address for correspondence: Warangkana Chankong
Sukhothai Thammathirat Open University, Muang Thong Thani,
Chaengwattana Rd., Bangpood, Pakkret, Nonthaburi, Thailand
Email: warangstou@gmail.com

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Furthermore, the announcement indicated that Thailand has begun implementing public health measures to control the spread of COVID-19, such as international travel restrictions and screening at all immigration checkpoints. Furthermore, quarantine guidelines were mandated for travelers entering Thailand from countries designated as dangerous infectious disease zones. In terms of community prevention of diseases, village health volunteers (VHVs) usually take prominent roles and responsibilities. As a result, when COVID-19 invaded Thailand, VHVs remained the significant players. To combat the first wave of the outbreak in Thailand, preliminary lessons learned were extracted from teams from WHO, international organizations, and domestic institutions to prevent and control COVID-19. As a result, Thailand became successful in several dimensions, such as fast detection of incidents, work integration across agencies and sectors, effective communication, and monitoring of travelers in quarantine facilities (Bureau of Risk Communication and Health Behavior Development, Department of Disease Control, 2020). From these measures, Thailand gained global recognition for its superior COVID-19 prevention and control through a proactive measure where VHVs were assigned at the community level to take part in informing locals about news, providing recommendations, distributing knowledge, planning, carrying out public health development activities, and providing various public health services (e.g., health promotion, disease surveillance and prevention, door-knocking education, news notifications, screening for those at risk, and submitting name lists of individuals at risk to local health officers for close monitoring). Health promotion hospitals are responsible for providing potential development to VHVs for preventing COVID-19 in communities. The development consisted of preparation for operations, screening operations for key COVID-19 symptoms in communities, COVID-19 monitoring and surveillance, and result reporting (Department of Health Service Support, 2020).

Therefore, the investigation on the potential of VHVs in preventing the spread of COVID-19 was projected to offer insights beneficial to the enhancement of VHVs' potential development and the provisions of effective COVID-19 prevention. The formulation of the guidelines was projected to prepare and empower VHVs against future health concerns, emerging diseases, and health hazards. The guidelines were also projected to help strengthen local health networks, establish the primary care system, and lead to life quality improvement according to the Sustainable Development Goals (SDGs). This study will be useful for the prevention and control of the epidemic of emerging diseases. To prepare people in the community, which are VHVs. This article asked for opinions of VHVs about their own development methods from past lessons of COVID-19. Therefore, these will make countries with insufficient health personnel to control and prevent emerging diseases. able to develop public health volunteers to be ready to handle emerging diseases. This article asks for opinions of VHVs

about their experiences and problems in work as well as self-improvement guidelines from past lessons during the outbreak of COVID-19. So, it will be useful for Thailand and other countries with insufficient health personnel to control and prevent emerging diseases able to develop public health volunteers to be ready to deal with emerging diseases.

OBJECTIVES

1. To investigate the potential of village health volunteers in preventing COVID-19
2. To compare village health volunteers' potential by development, occupations, educational levels, ages, and experiences as VHVs
3. To examine guidelines for village health volunteers' potential development in preventing COVID-19

METHODS

Sampling and Procedures

In this cross-sectional survey research, quantitative and qualitative data were collected by interviews. The population was 591,058 VHVs in surveillance of the COVID-19 situation (Primary Health Care Information System, Primary Health Care Division, 2021). The samples were 1,820 VHVs, and the sample size was determined using Wayne's (1995) formula at the error of 0.01 and the proportion of 0.05, selected by multistage sampling from a province from each of the four regions. Probability proportional to size sampling was employed to determine the numbers of the samples to be chosen from each province, whereas districts and subdistricts were selected through simple random sampling. Furthermore, an extra 10% were added to the sample pool to compensate for possible incomplete returned data. Hence, the total samples were 2,184. In addition, qualitative data were collected from in-depth interviews with 20 VHV chairpersons, specifically comprising five from each of the four areas.

Instrumentation

Quantitative data were collected from questionnaires consisting of two sections: 1) demographics and 2) the potential of VHVs in preventing COVID-19. In the questionnaires, the potential of VHVs was investigated in four aspects: preparation for operations, screening operations for key COVID-19 symptoms in communities, COVID-19 monitoring and surveillance, and result reporting. Structured in-depth interviews were conducted to obtain qualitative data on ways to empower VHVs in preventing COVID-19.

The instrument was validated for quality by three qualified experts and yielded an Index of Item Objective Congruence (IOC) of 1.00 and Cronbach's alpha coefficient of 0.79. The questionnaires were administered online by coordinating with district public health offices in the target provinces. To

protect rights, the respondents were informed that this study was conducted with respect to privacy. Furthermore, they acknowledged that this study aimed to generate benefits, not create harm, and distribute justice. Such statements were in writing and the samples consented by action. Eventually, the study managed to obtain 2,114 completed returned online questionnaires.

The data were analyzed by descriptive statistics (i.e., in percentage, mean, and standard deviation) and inferential statistics (i.e., using ANOVA and LSD multiple comparisons. Moreover, the qualitative data were analyzed with content analysis.

RESULTS AND ANALYSIS

Demographics

The sampled VHVs returned 2,114 questionnaires, and demographics indicated that 88.3% were female and the rest were male. Their average age was 50.75 years, with the youngest and oldest persons at the ages of 21 and 84 years, respectively. Approximately a third (35.5%) were in the age range of 51-60. Most of them had upper secondary education or equivalent (34.8%), followed by primary education (29.5%). The respondents had the average experience as VHVs of 11.85 years, with the shortest and longest experiences of 1 and 40 years. Most of them were farmers (60.7%), followed by laborers (18%). Furthermore, most of them (47.7%) had participated in one or two potential development sessions on COVID-19 prevention in the past year, followed by more than five development sessions (23.0%). The average number of households that the VHVs visited in their areas to provide health education was 28.75 (see Table 1).

Table 1: Quantities and percentages of the samples by demographics

| Personal information | Quantity | Percentage |
|---|----------|------------|
| Sex | | |
| Female | 1867 | 88.3 |
| Male | 247 | 11.7 |
| Age | | |
| Lower than 31 years | 60 | 2.8 |
| 31-40 years | 273 | 12.9 |
| 41-50 years | 690 | 32.6 |
| 51-60 years | 750 | 35.5 |
| 61-70 years | 291 | 13.8 |
| Higher than 70 years | 50 | 2.4 |
| $\bar{x}=50.75$ S.D. = 9.95 Min. = 21 Max. = 84 | | |
| Education | | |
| Primary | 624 | 29.5 |

| | | |
|--------------------------------|-----|------|
| Lower Secondary or equivalent | 378 | 17.9 |
| Upper Secondary or equivalent | 736 | 34.8 |
| Associate degree or equivalent | 183 | 8.7 |
| Bachelor's degree or higher | 193 | 9.1 |

Work experience VHVs

| | | |
|-------------------|-----|------|
| 1-5 years | 479 | 22.7 |
| 6-10 years | 584 | 27.6 |
| 11-15 years | 478 | 22.6 |
| 16-20 years | 315 | 14.9 |
| 21-25 years | 140 | 6.6 |
| 26 years and over | 118 | 5.6 |

$\bar{x}=11.85$ S.D. = 7.59 Min. = 1 Max. = 40

Primary occupation

| | | |
|----------------|------|------|
| Farmer | 1283 | 60.7 |
| Laborer | 377 | 17.8 |
| Trader | 237 | 11.2 |
| Businessperson | 106 | 5.0 |
| Housewife | 52 | 2.5 |
| Unemployed | 59 | 2.8 |

Participation in potential development for COVID-19 prevention in the past year

| | | |
|-------------------------|------|------|
| None | 215 | 10.2 |
| 1-2 sessions | 1008 | 47.7 |
| 3-5 sessions | 405 | 19.2 |
| More than five sessions | 486 | 23.0 |

Number of local households visited to provide knowledge

| | | |
|----------------|-----|------|
| Lower than 11 | 875 | 41.4 |
| 11-20 | 648 | 30.7 |
| 21-30 | 129 | 6.1 |
| 31-40 | 90 | 4.3 |
| Higher than 40 | 372 | 17.6 |

$\bar{x}=28.75$ S.D. = 41.76 Min. = 2 Max. = 300

Potential of village health volunteers in preventing COVID-19 in communities

VHVs’ potential in preventing COVID-19 in communities was assessed through dimensions of preparation for operations, screening operations for key COVID-19 symptoms in communities, COVID-19 monitoring and surveillance, and result reporting. Results revealed that 99.0% of the VHVs had high potential in preventing COVID-19 in communities, whereas the remaining 1.0% had moderate potential, and none had low potential (see Table 2). More specifically, the mean of potential on operations ranked the highest ($\bar{x} = 4.609$), followed by screening for key COVID-19 symptoms in communities ($\bar{x} = 4.5260$), preparation for operations ($\bar{x} = 4.4918$), and COVID-19 monitoring and surveillance and result reporting ($\bar{x} = 4.4535$), respectively.

Table 2: Quantities and percentages of the samples by potential in preventing COVID-19

| Potential in preventing COVID-19 | Quantity | Percentage |
|----------------------------------|----------|------------|
| Low | 0 | 0.00 |
| Moderate | 22 | 1.0 |
| High | 2,092 | 99.0 |

$\bar{x} = 81.49$ S.D. = 7.22 Min = 38.0 Max = 90.0

Table 2: Potential of village health volunteers in preventing COVID-19 by obtained development, occupations, educational levels, ages, and experiences as VHVs

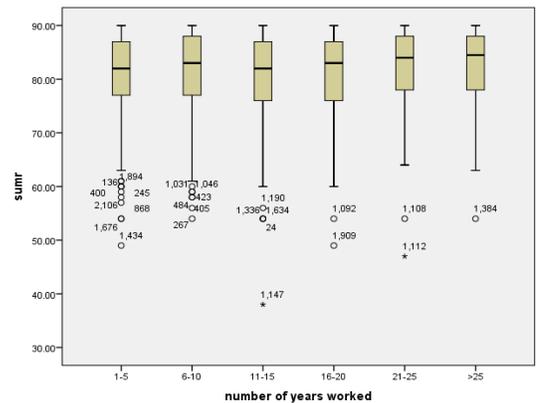
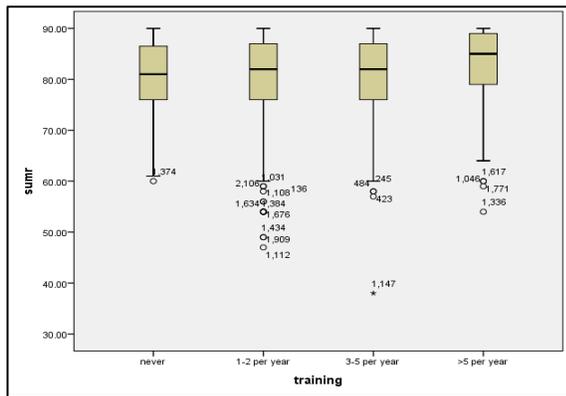
| | df | SS | MS | F | p-value |
|-----------------------------|------------|------|---------|--------|---------|
| Obtained development | | | | | |
| Between groups | 2471.097 | 3 | 823.699 | 16.118 | <0.0001 |
| Within groups | 107829.364 | 2110 | 51.104 | | |
| Total | 110300.462 | 2113 | | | |
| Occupation | | | | | |
| Between groups | 377.972 | 5 | 75.594 | 1.450 | .203 |
| Within groups | 109922.490 | 2108 | 52.145 | | |
| Total | 110300.462 | 2113 | | | |
| Education | | | | | |
| Between groups | 12.809 | 4 | 3.202 | 0.061 | 0.993 |
| Within groups | 110287.653 | 2109 | 52.294 | | |
| Total | 110300.462 | 2113 | | | |
| Age | | | | | |
| Between groups | 303.692 | 5 | 60.738 | 1.164 | .325 |
| Within groups | 109996.770 | 2108 | 52.181 | | |
| Total | 110300.462 | 2113 | | | |
| Experiences as VHVs | | | | | |
| Between groups | 267.735 | 5 | 53.547 | 1.026 | .401 |

The potential of village health volunteers in preventing COVID-19 by obtained development, occupations, educational levels, ages, and experiences as VHVs

The comparison of VHVs’ potential in preventing COVID-19 by obtained development suggested that VHVs exposed to different numbers of development sessions had different potential levels. More specifically, VHVs participating in more than five development sessions per year demonstrated higher potential than those VHVs participating in zero development sessions, 1-2 sessions per year, and 3-5 sessions per year ($\bar{x} = 83.45, 80.41, 80.94, \text{ and } 81.10$, respectively). Nonetheless, no difference in potential was identified among the VHVs participating in zero development sessions, 1-2 sessions per year, and 3-5 sessions per year.

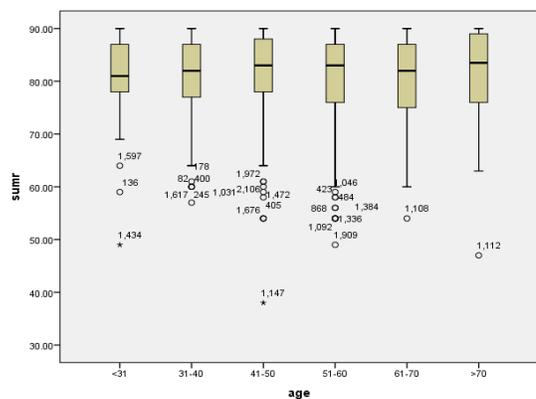
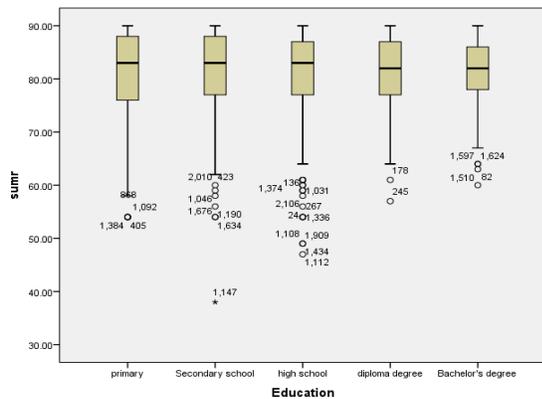
Furthermore, based on key characteristics, the VHVs working as traders demonstrated the highest potential ($\bar{x} = 81.83$), followed by farmers ($\bar{x} = 81.63$). The highest levels of potential were found among those with a bachelor’s degree or higher ($\bar{x} = 81.67$), in the age range of 41-50 years ($\bar{x} = 82.01$), and had 11-15 years of experience working as VHVs ($\bar{x} = 82.23$). Nevertheless, the potential had no significant difference when analyzed by ANOVA (see Table 2 and Figure 1-5).

| | | | |
|---------------|------------|------|--------|
| Within groups | 110032.727 | 2108 | 52.198 |
| Total | 110300.462 | 2113 | |



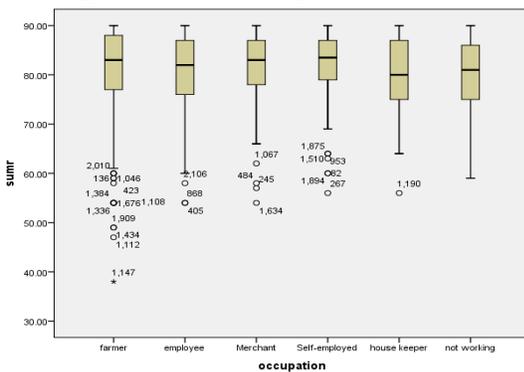
Mean potential of VHVs by obtained development

Mean potential of VHVs by work experiences



Mean potential of VHVs by educational levels

Mean potential of VHVs by ages



Mean potential of VHVs by occupations

Figure 1-5 Differences in VHVs' potential by obtained development, occupations, educational levels, and years serving as VHVs

Guidelines for village health volunteers' potential development in preventing COVID-19

The interviews with the VHVs on empowerment guidelines for enhanced COVID-19 prevention covered three core issues as follows:

The development of VHVs' potential: COVID-19 is a disease that requires prevention strategies to be adapted based on situations. Therefore, it is vital to continue providing training for VHVs operating in the field, and each area should consider resorting to an online approach for such development.

Community members: Although VHVs might know their community members well, these members, especially senior citizens, children, and migrant workers, might not always follow VHVs' recommendations because they might have been exposed to various news and COVID-19 is still an incurable disease. Hence, community leaders or health officers should work with VHVs when going on field visits. Hence, another sound strategy is to rely on family members or employers to help with

communication. Visualization or use of images could also help enhance comprehension, promote understanding, cultivate conscience on social responsibility, and encourage compliance with disease prevention guidelines.

Management: Since different areas might manage the COVID-19 prevention variously when it comes to using public relations materials, each area should assess local situations and employed centralized communication. Public relations centers should be established to inform the public about areas at risk within communities. Reports on those entering areas at risk should be created and distributed to VHVs so that they could initiate a home visit or provide appropriate long-term care. Furthermore, communities should be strengthened by establishing community-level detention facilities through the involvement of all sectors.

Equipment and financing: Because preventive field operations against COVID-19 are unlike other epidemics prevention operations. Therefore, a sufficiency survey should be conducted, and appropriate procurement of materials and equipment necessary for VHVs' operations and self-protection should be provided. Moreover, COVID-19 insurance, vaccination, and technological solutions should be offered to support these operations.

CONCLUSION AND DISCUSSION

The results revealed that 99.0% of the VHVs demonstrated high potential in preventing COVID-19 in communities. A possible explanation is that the Ministry of Public Health designated VHVs as the primary mechanism in preventing locally spread COVID-19 following the Department of Health Service Support's notification of MOPH 0705.03/W68 dated March 3, 2020, and the Ministry of Public Health's notification of MOPH 0705.03/W153 dated March 6, 2020 (Department of Health Service Support, 2020). Furthermore, VHVs had already been active in community disease prevention before COVID-19 and consistently been through operational monitoring. Therefore, their potential in preventing diseases was robust due to the nature of their operations. When reviewing years of experience serving as VHVs, it was found that the average was 11.85 years, and this figure reflects how extensively VHVs had accumulated professional experience over time. As a result, their potential was high. Furthermore, VHVs are volunteer workers elected by villagers in each house group (Department of Health Support Services, 2011). Thus, they are loved, familiar with, and aspired to take care of their community members. Since COVID-19, VHVs became active in leading changes in health behaviors among community members, clarifying bad news, spreading the good news, recommending health services, coordinating public health missions, relieving people's suffering, and acting as positive role models (Department of Health Service Support, 2011). Timely mobilization to villages, provision of knowledge, and experiences in infectious disease surveillance of VHVs all contributed to

the robust responses of the country's health services to prevent the spread of COVID-19 (Kaweenuattayanon, 2021).

The comparison of VHVs' potential in preventing COVID-19 by obtained development, occupations, educational levels, and experiences as VHVs revealed that only differences in obtained development resulted in different potential. This could be because COVID-19 is an emerging disease, and the world lacks established knowledge of the outbreak, prevention, and recommended actions. In addition to having no solid treatment approaches, infection occurs easily (Poovorawan, 2020). As a result, VHVs with constant development tended to demonstrate higher potential than those with lower or no exposure to development. This notion is consistent with QingMiao et al. (2021), a study on responses to COVID-19, using a case study of volunteers in Chinese communities. The study reported that there was cooperation among locals, civil society, community members, and regional government agencies in the integration of public services, experienced local volunteers taking significant roles, and long-standing cooperation between volunteers and government agencies. The study provided insights into the role of volunteerism and participation in China's volunteer responses to the pandemic. Moreover, a study in the UK on the development of community volunteer potential showed that trained community health workers (CHW) were able to do well in community health missions (Andy Haines et al., 2021). In terms of vital primary care for communities against the COVID-19 pandemic, it was found that processes of work and provision of primary care were restructured to allow CHW to continue developing their activities. It is necessary to guarantee proper working conditions and consistent provisions of training and education (Souza EA, Prado NMBL, Teixeira CFS, 2020). Furthermore, it was also found that VHVs working as traders, graduated with a bachelor's degree or higher, in the age range of 41-50 years, and had 11-15 years of experience working as VHVs demonstrated high potential. This discovery is consistent with several studies in Thailand and abroad (Souza EA, Prado NMBL, Teixeira CFS, 2020; Andy Haines et al., 2021; Tejavaddhana et al., 2020; Nawsuwan, Singwiratham, and Damsangsawat, 2020; Kaweenuattayanon, N, Pattanarattanamolee, R, Sorncha, N, & Nakahara, S., 2021)

However, some interesting insights emerged from the interviews. The VHVs suggested empowerment strategies for enhanced COVID-19 prevention that were congruent with those derived from the quantitative data, which included the provision of training and information to VHVs operating in the field, each area resorting to consistent development by engaging in development via online platforms, community leaders or health workers coordinating with VHVs on every community visit, collective conscience built to enhance the potential of VHVs, adequate management and support of supplies necessary for operations and protection given to VHVs, and confidence in the safety of working life fostered

by providing life insurance to cover for COVID-19, infections and COVID-19 vaccines.

Thailand's VHVs were recruited from within each community. Therefore, they will have a good understanding of the community context and their role is to act as a middleman connecting people in the community with health personnel due to insufficient health personnel. Although VHVs are trained in basic health and disease prevention in the community, COVID-19 is an emerging disease treatment guidelines or symptoms of the disease are still unclear. Therefore, VHVs will help communicate with people in the community, including surveying people who are at risk of contracting COVID-19. During the COVID-19 outbreak, Thailand was able to quickly and effectively prevent and control the spread of infectious diseases at the national level with VHVs because VHVs were people in the community who could create participation of the people in taking care of their own health, their families and their communities, which all VHVs have been trained by public health officials and work with dedicated for the people in the village and in Thailand there are VHVs scattered in every area. The proportion is 1 VHV taking care of 10-15 households. The World Health Organization has appreciated that Thailand can control disease quickly because there are public health volunteers. VHVs have a role in leading the implementation of health development and the quality of life of the people in Village/community as change agents with the following responsibilities;

1. Be a public health correspondent between officials and people in the village. Make appointments for neighbors to receive public health services and notify public health news.
2. Be a person who gives advice and transfers knowledge to neighbors and family health leaders.
3. Monitor and prevent public health problems in the village together with public health officials.
4. Be a leader in inviting neighbors to participate in community health development activities and develop quality of life

IMPLICATION FOR PRACTICE

Relevant agencies should be responsible for the consistent provision of potential development for VHVs, considering the current dynamism in epidemiological knowledge of care and treatment. Practical training is vital for enhancing COVID-19 prevention in communities so that VHVs could carry out missions properly. They are needed because they reside in the areas and understand community contexts. In addition, key suggested policies for improving the potential of VHVs in preventing community diseases included reinforcing morale and motivation by providing life insurance and vaccines to VHVs against COVID-19 infections and supplying equipment necessary for operations and self-protection. However, further exploration of the professional dimension of VHVs is needed. Further studies

are suggested to explore success factors of COVID-19 control actions in communities; the integrated collaboration between families, community members, and health workers in preventing COVID-19; and success stories of areas where COVID-19 prevention could be contained.

This study will be useful in preparing VHVs to cope with emerging diseases. The VHVs work without compensation, thus reducing the cost of hiring public health personnel to work in the area and importantly. VHVs are people in the community and have a selection process to be representatives, so they are accepted by people in the community, communication or coordination with people in the community quickly and well. During severe COVID-19 outbreaks, Thailand's health facilities are inadequate. VHVs will inform those at risk of infection and coordinate care for patients during the time when the patients are quarantined at home. And VHVs have a role in monitoring and reporting to public health personnel if there is a severe condition, the patient will be helped to be transferred to a hospital.

The success factor in providing primary care services in Thailand from this study is VHVs who has basic knowledge of health and being a member of the community working with health personnel, especially in cases where there are limited numbers of health personnel. VHVs can build understanding with the community to reduce the spread of infection and reduce public panic. This includes acting as an intermediary between health officials and communities, conducting surveys of at-risk people with health officials, screening and follow up with migrants entering the community. However, they must be developed in response to public health emergencies.

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