Health Promoting Behaviors of COVID-19 Prevention among Village Health Volunteers at Uthai Thani Province, Thailand

Chunika Jamjumrus, MSc[*a]

Abstract

This survey research aimed to study personal, predisposing, enabling, and reinforcing factors and health promoting behaviors of COVID-19 prevention among village health volunteers (VHVs). The sample size was determined using Krejcie and Morgan's formula yielding the samples of 510 participants. The PRECEDE model was used as the conceptual framework to analyze the determinants of health promoting behaviors for COVID-19 prevention. Data were collected using questionnaire developed by the researcher. The instrument was validated by 3 public health experts. The reliability of the instrument was tested yielding Cronbach's alpha coefficients of predisposing, enabling, and reinforcing-factor sections at 0.83, 0.81 and 0.83, respectively. The data were analyzed using descriptive statistics and Pearson's product moment correlations for relationships among studied variables.

Among the 510 samples responded, there were 362 females (70.98%) with 148 males (29.02%). Most of the samples aged between 31-40 years old (67.1%) and slightly over half were singles (50.1%). Correlation tests showed that monthly income (p=0.015) was significantly associated with health promoting behaviors of COVID-19 prevention while age (p=0.486) and work experience (p=0.987) had no significant relationship. The findings also indicated that independent variables including predisposing, enabling, and reinforcing factors were significantly associated with health promoting behaviors of COVID-19 prevention among VHVs with p=0.001, 0.000, and 0.000, respectively.

The findings from this study supported the importance to promote participations in disease prevention among VHVs. It was also suggested that notification and information sharing systems are essential especially during the COVID-19 pandemic and that the systems will allow people working in this field gain knowledge and promote health promoting behaviors of COVID-19 prevention effectively.

Keywords: Health promoting behaviors; COVID-19; Village health volunteers

---

[*] Instructor, Department of Community Health, Faculty of Public Health, Ramkhamhaeng University

[a] Corresponding author: Chunika Jamjumrus Email: j.chunika@gmail.com

Received: Jul. 14, 21*; *Revised: Aug. 15, 21*; *Accepted: Aug. 15, 2021; Published Online: Sep. 22, 21
DOI: https://doi.org/10.14456/rhpc9j.2021.46

Introduction

Coronavirus disease 2019 or COVID-19 is currently spreading worldwide with continuously increasing number of patients around the world, including Thailand.[1] World Health Organization (WHO)[2] declared COVID-19 an epidemic on March 11, 2020 with 731,453 cases and 34,660 deaths globally.[3] Infection is caused by exposures to secretions and droplets that contain the virus. The incubation period of the disease ranges from 2-14 days. The virus predominantly attacks the patients' respiratory system resulting symptoms such as fever, restlessness, coughing, sore throat, breathless including symptoms in other system such as diarrhea. More severe cases are due to the development of pneumonia and most COVID-19 deaths are due to the infections affect both lungs causing respiratory failure.[4]

The prevention and control of COVID-19[5,6] is effective through health promoting behaviors such as hand washing with water and soap, mask wearing especially in public and high-risk areas. Mask wearing technique can be done by first wearing a layer of surgical mask and then wearing cloth mask without gaps around the mask to avoid outside secretions and not touching the outer parts of the mask. Additional measures include using alcohol-based hand sanitizer when hand washing is not possible, covering your mouth and nose while coughing or sneezing, avoiding contact with infected persons, eating cooked hot food, avoiding crowded places, wearing protective equipment in case of close contacts, and not sharing personal items with others.[6]

Village health volunteers (VHVs) is the forefront personnel in the prevention and control of COVID-19 pandemic. VHVs are community residents assigned as an intermediary between health professionals and community residents. They are trained by the Ministry of Public Health's curriculum and their responsibilities include no fewer than 10 households per one VHV. Many roles that VHVs take during the pandemic include gathering data regarding community residents returning from high-risk locations, providing health information, providing medical assistants according to the Ministry's guidelines, distributing protective equipment, coordinating activities such as health promotion events, assisting with the home quarantine for high risk or suspected cases, etc.[7]

Uthai Thani is a province in the central Thailand. The province experiences increasing COVID-19 cases due to incoming patients from other places since the outbreak of Covid-19.[8] Therefore, VHV's have played a key role in prevention and control of the COVID-19. These responsibilities put them in high risk during this outbreak. Therefore, it is necessary for them to have appropriate health promoting and disease prevention to maintain good health and can provide services to their community until the end of the

pandemic. With rationales provided previously, it is important to examine health promoting behaviors of COVID-19 prevention among Village Health Volunteers in this study.

This study aimed at surveying the determinants of health promoting behaviors of COVID-19 prevention using the PRECEDE model developed by Green and Kreuter[9-10] as a conceptual framework. The PRECEDE model is comprised of predisposing, enabling, and reinforcing factors related to behaviors.[9] Perceived operational risk opportunities, perceived disease severity, and perceived of organization were selected as the predisposing factors. Well-being environment and access to basic consumer needs variables were selected as the enabling factors. Lastly, perceived COVID-19 information and the government/private sector emphasize on COVID-19 prevention variables were selected as the reinforcing factors. The study's conceptual framework is shown in Figure 1.

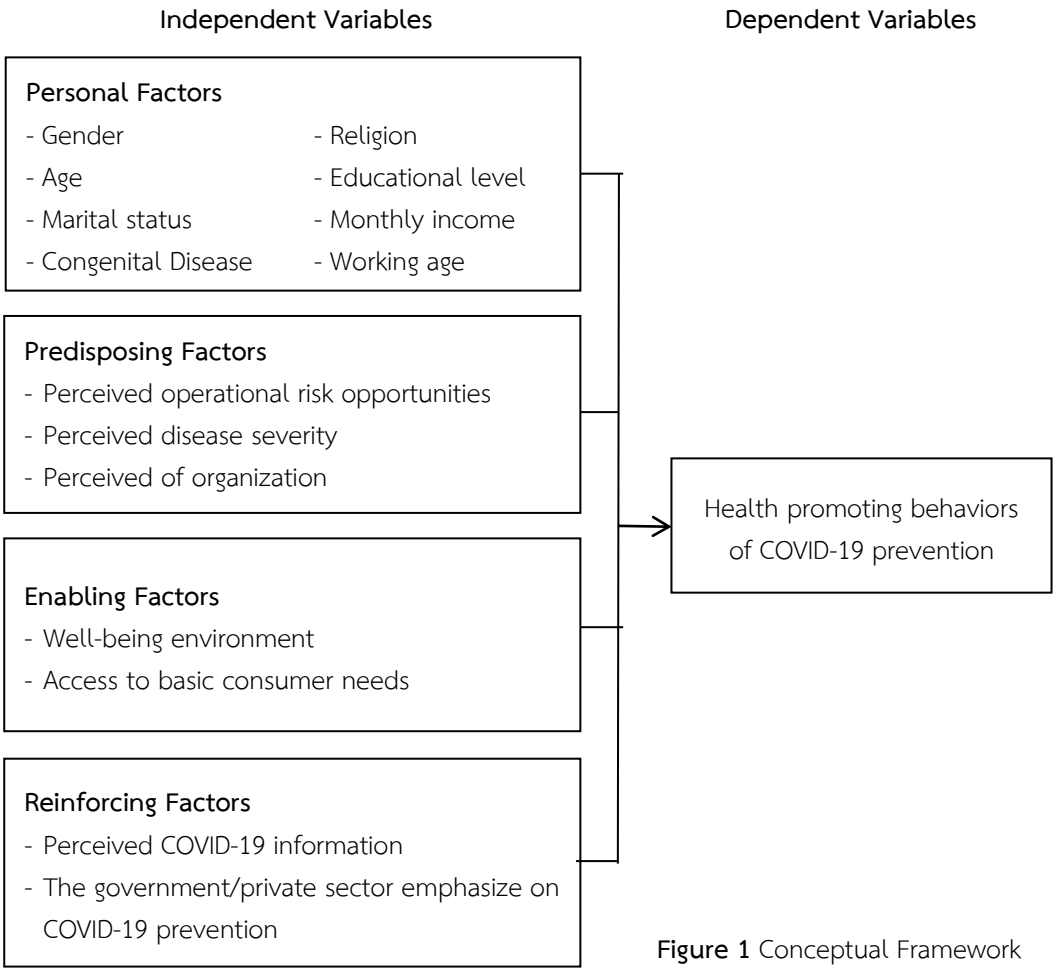

Figure 1 Conceptual Framework

Research Objective

To study factors related with health promoting behaviors of COVID-19 prevention in village health volunteers.

Research Hypotheses

1. Personal factors are related with health promoting behaviors of COVID-19 prevention in village health volunteers.
2. Predisposing factors are related with health promoting behaviors of COVID-19 prevention in village health volunteers.
3. Enabling factors are related with health promoting behaviors of COVID-19 prevention in village health volunteers.
4. Reinforcing factors are related with health promoting behaviors of COVID-19 prevention in village health volunteers.

Methods

This cross-sectional survey research studied personal factors, predisposing factors (perceived operational risk opportunities, perceived disease severity and perceived of organization), enabling factors (well-being environment, access disease prevention equipment and activities to promote disease prevention), reinforcing factors (perceived COVID-19 information and government/private sector emphasize on COVID-19 prevention) and health promoting behaviors of COVID-19 prevention in village health volunteers (VHVs).

Population and samples

Population of this study included 6,857 VHVs in Uthai Thani province who were registered in Department of Health Service Support's database.[8] Sample size was determined using Krejcie and Morgan formula[11] yielding the minimum number of 364 samples. Due to data collecting during COVID-19 situation, the researchers collected the data using questionnaire through the Google Forms. Due to the possibility of incomplete questionnaires, the researchers increased the samples by 50 percent (182 additional samples), resulting the total 546 samples in this study. The samples were randomly selected from the population. At the end of the data collection process, there were 36 incomplete questionnaires, providing the final sample size of this study at 510 samples.

Research Instrument

Instrument used in this study was the questionnaire developed from conceptual framework by the researcher based on PRECEDE Model.[9] The questionnaire was consisted of 5 sections as follows:

Section 1 Personal factors with 8 closed-ended questions asking the following: gender, age, marital status, education level, religion, average monthly income, and existing medical conditions

Section 2 Predisposing factors containing 3 parts:

- Part 1 Perceived operational risk opportunities of COVID-19 (10 items)
- Part 2 Perceived disease severity of COVID-19 for (10 items)
- Part 3 Perceived of organization to control operation of COVID-19 (10 items)

Section 3 Enabling factors containing 2 parts:

- Part 1 Wellbeing environments (5 items)
- Part 2 Access to basic consumer needs (5 items)

Section 4 Reinforcing factors containing 2 parts:

- Part 1 Perceived COVID-19 information for 5 items
- Part 2 Government/private sector emphasis on COVID-19 prevention (5 items)

Responses for sections 2 to 4 used a rating scale adopted from Likert's scale[12] with 5-level responses ranging from strongly agree, agree, uncertain, disagree and strongly disagree (choosing only 1 answer). Scoring for questions with positive and negative messages is shown as follows:

	Positive message	Negative message
Strongly agree	5	1
Agree	4	2
Uncertain	3	3
Disagree	2	4
Strongly disagree	1	5

Section 5 Health promoting behaviors of COVID-19 prevention (10 items)

This section measured frequency of behaviors practiced in different 5 levels: most practice, high practice, moderate practice, low practice, and lowest practice (choosing only 1 answer). Scoring for questions with positive and negative messages is shown as follows:

	Positive message	Negative message
Most practice	5	1
High practice	4	2
Moderate practice	3	3
Low practice	2	4
Lowest practice	1	5

Results from each part in sections 2-5 can be interpreted in 3 levels: high, medium, and low. Each level was determined using the highest possible score (5 points) minus the lowest possible score (1 point), then divided by the desired measurement level according to Best's concepts.[13] The criteria for scoring were divided into three levels: scores ranging from 3.67-5.00 were considered high level, while scores ranging from 2.34-3.66 were considered medium level, and 1.00-2.33 considered low level.

Research Instrument Quality Measures

Quality of the questionnaire was controlled through validity and reliability of research instrument. Content validity was checked through a panel of 3 experts and assessed for relevant contents, wording, format and completeness of instruction. Responses from the experts were provided in terms of Index of item objective congruence (IOC) with scoring criteria[14] as follows: Congruent = +1, Questionable = 0, and Incongruent = -1. Items with IOC of 0.75 or above were selected for the questionnaire.

Reliability of the questionnaire was then tested a group of 30 persons with similar characteristics to the intended samples. The results showed the Cronbach's alpha coefficient of 0.82 and was considered reliable.

Data Analysis

The data analysis was performed using computer statistical software packages. Descriptive statistics to describe nature of the data obtained from the samples included frequencies, maximums, minimums, percentages, means, and standard deviations. Inferential statistics used to analyze relationships between factors in this study was done using Pearson's product moment correlation coefficients.

Protection of Human Research Participants

The researcher projected was reviewed and approved by the Human Research Ethics Committee of Ramkhamhaeng University (approval number xd-0181/62). After approval, representatives of VHVs in each area were contacted and online questionnaire was collected through links to the questionnaire’s Google Forms sent via Line Group application. All samples were informed to voluntarily answer the questions with all the rights to stop answering at any time without any consequences to the respondents. Upon receiving the responses, the researchers checked for the completeness of the returned questionnaires. The data collection was concluded after receiving 546 completed questionnaires yielding the response rate of 93.41 percent.

Results

Demographic Characteristics

Results on the demographic characteristics of the total 510 VHVs participated in this study showed that the average age of the participants was 38.0 years (SD=9.06), and more than half of them were female (71.0%). Slightly over half (50.1%) of the participants were single; about two-third (67.3%) had bachelor's degrees and the vast majority (99.2%) were Buddhism. In terms of monthly income, most of the participants (89.4%) earned 10,000-30,000 Baht/month. Most of the VHVs did not have existing medical condition (80.0%). Work experiences of the participants ranged from 11-20 years (43.33%), followed by 1-10 years (37.26%), and over 31 years (6.08%); with an average work experience of 13.0 years (SD=6.53). The minimum and maximum work experiences are 1 and 35 years respectively. Results were shown in Table 1.

Table 1 Demographic characteristics of the respondents (n=510)

Characteristics	n	%
Gender		
Male	148	29.00
Female	362	71.00
Age		
31-40	342	67.10
41-50	45	8.90
51-60	68	13.30
60 and over	20	10.70
Min = 20, Max = 65, Mean (SD) = 38.0 (9.06)		
Marital status		
Single	257	50.10
Married	252	49.40
Divorced	1	0.20
Education		
Bachelor degree	343	67.30
Over bachelor degree	35	6.90
Vocational certificate/	132	6.27
High vocational certificate		

Table 1 (cont.) Demographic characteristics of the respondents (n=510)

Characteristics	n	%
Religion		
Buddhism	506	99.20
Christian	1	0.20
Islam	3	0.60
Monthly income (Baht)		
10,000 – 30,000	456	89.40
30,001 – 50,000	40	7.84
50,001 – 70,000	14	2.76
Existing medical condition		
Yes	102	20.00
No	408	80.00
Work experiences (Year)		
1-10	190	37.26
11-20	221	43.33
21-30	68	13.33
Over 30	31	6.08

Predisposing Factors of COVID-19 Prevention

Predisposing factors of COVID-19 prevention were consisted of 3 parts: perceived operational risk opportunities of COVID-19, perceived disease severity of COVID-19, and perceived of organization to control operation of COVID-19. The results showed that almost all participants reported having a high level of predisposing factors (97.6%) with the rest (2.40%) being at a moderate level. The average score of the predisposing factors was 4.41 (SD=1.33) with the minimum score was 2.95 and the maximum was 5.00. Results were shown in Table 2.

Table 2 Level of predisposing factors of COVID-19 prevention (n=510)

Level	n	%
High level (3.67-5.00)	498	97.60
Moderate level (2.34-3.66)	12	2.40
Low level (1.00-2.33)	0	0.00
Total	**510**	**100.00**

$\bar{X}$ = 4.41, SD=1.33, Min=2.95, Max=5.00

Enabling Factors of COVID-19 Prevention

Enabling factors of COVID-19 prevention were consisted of 2 parts: well-being environment and access to basic consumer needs. The results showed that most of the participants reported having the enabling factors at a high level (94.7%), with the rest being in a moderate level (5.3%). The average score of the enabling factors was 4.75 (SD=0.59) with the minimum score was 2.80 and the maximum was 5.00. Results of these factors were shown in Table 3.

Table 3 Level of enabling factors of COVID-19 prevention (n=510)

Level	n	%
High level (3.67-5.00)	483	97.70
Moderate level (2.34-3.66)	27	5.30
Low level (1.00-2.33)	0	0
Total	**510**	**100**

$\overline{X}$ = 4.24, SD=0.59, Min=2.80, Max=5.00

Reinforcing Factors of COVID-19 Prevention

Reinforcing factors of COVID-19 prevention were consisted of 2 parts: perceived COVID-19 information and the government/private sector emphasize on COVID-19 prevention. The results showed that the majority of the participants reported having the reinforcing factors at a high level (70.4%), with the rest being in a moderate level (29.6%). The average score of the enabling factors was 4.12 (SD=0.49) with the minimum score was 2.41 and the maximum was 5.00. Results of these factors were shown in Table 4.

Table 4 Level of reinforcing factors of COVID-19 prevention (n=510)

Level	n	%
High level (3.67-5.00)	359	70.40
Moderate level (2.34-3.66)	151	29.60
Low level (1.00-2.33)	0	0
Total	**510**	**100**

$\overline{X}$ = 4.12, SD=0.49, Min=2.41, Max=5.00

Health Promoting Behaviors of COVID-19 Prevention

The results showed that health promoting behaviors of COVID-19 prevention among VHVs were at a high level (477 persons, 93.53%) with the rest being in a moderate level (33 persons, 6.47%). The average score of the health promoting behaviors of COVID-19 prevention was 4.39 (SD=0.45) with the minimum score was 2.67 and the maximum was 5.00. Results of these factors were shown in Table 5.

Table 5 Health promoting behaviors of COVID-19 prevention (n=510)

Level	n	%
High level (3.67-5.00)	477	93.53
Moderate level (2.34-3.66)	33	6.47
Low level (1.00-2.33)	0	0
Total	**510**	**100**

$\bar{X}$ = 4.39, SD=0.45, Min=2.67, Max=5.00

Relationships between Factors and Health Promoting Behaviors of COVID-19 Prevention

It was found from the study that age and work experiences were not significantly related with health promoting behaviors of COVID-19 prevention (r=0.033, p=0.486 and r=–0.001, p=0.987, respectively). Monthly income was significantly related with health promoting behaviors of COVID-19 prevention (r=0.119, p=0.015).

The predisposing factors of COVID-19 prevention, including perceived operational risk opportunities of COVID-19, perceived disease severity of COVID-19 and perceived of organization to control operation of COVID-19, were significantly related with health promoting behaviors of COVID-19 prevention (r=0.170, p=0.001).

The enabling factors of COVID-19 prevention, including well-being environment and access to basic consumer needs, were significantly related with health promoting behaviors of COVID-19 prevention (r=0.194, p=0.000).

The reinforcing factors, including perceived COVID-19 information and the government/private sector emphasize on COVID-19 prevention, were significantly related with health promoting behaviors of COVID-19 (r=0.250, p-value=0.000). Results were shown in Table 6.

Table 6 The relationship between personal factors, predisposing factors, enabling factors, reinforcing factors and health promoting behaviors of COVID-19 prevention (n=510)

Factor	Health Promoting Behaviors of COVID-19 prevention	
	r	p-value
Personal Factors		
Age	0.033	0.486
Monthly income	0.119	0.015*
Work Experience	-0.001	0.987
Predisposing Factors	0.170	0.001*
Enabling Factors	0.194	0.000*
Reinforcing Factors	0.250	0.000*

*significant at p=0.05

Discussions

The findings of this show that VHVs who were the respondents aged between 31 and 40 years old, along with quite high educational level and high monthly incomes when comparing with minimum wages in Thailand.

Predisposing factors of COVID-19 prevention including perceived operational risk opportunities of COVID-19 found at a high level showed that VHVs have been following information and preventive measures about COVID-19 due to high-risk perceptions of the pandemic situations. VHVs have been working daily in health promotion, disease screenings, distributing protective equipment such as surgical and cloth masks and face shields. Being close to the situations certainly help build awareness and concerns regarding the situations as well as importance of prevention measures. Additionally, the results showing a significant relationship between predisposing factors and health promoting behaviors of COVID-1 9 prevention showed the level of importance VHVs have in providing health care services such as health promotion, health prevention, treatment, etc. These actions definitely led them to gain high perceptions about health promoting behaviors of COVID-1 9 prevention. The findings was consistent with a previous study by Niumnoi et al.[15] which found that workers in the factor lines would wear personal protective equipment to prevent them from exposures to hazardous substances.

Enabling factors of COVID-19 prevention being at a high level among VHVs showed that the group had high potential of enabling factors such as good sanitary residence, clean drinking water for consumption, good living environments together with nutritious food. The

enabling factors being significantly related with health promoting behaviors of COVID-19 prevention also showed that the environmental supports VHVs had during COVID-19 pandemic were sufficient and in-turn helped supporting their preventive behaviors. However, it was also a report of some difficulties in acquiring protective equipment such as surgical masks and alcohol gel during the shortage. The shortage and increased in prices of protective equipment requires the government actions to make the protective equipment available for effective control of the disease.

The participants' reinforcing factors of COVID-19 prevention were also at a high level. It was found that the participants received most information from Internet and television, thus the most effective channel to distribute information regarding the situations and prevention measures as prescribed by the government. The reinforcing factors were also significantly related with health promoting behaviors of COVID-19 prevention and it showed that thorough perception regarding COVID-19 among the participants.

The participants' health promoting behaviors of COVID-19 prevention being at high level showed that VHVs not only were able to appropriately practice the preventive measures at the personal level, but also could provide instructions to their villagers whom they were responsible of. It was also found that some preventive measures such as using medium spoons while always eating and wearing surgical or cloth masks whether being inside or outside their house were regularly practiced while touching their eyes, nose and mouth was often done due to their old habits. Therefore, personal measures should be highlighted and informed regularly in the media campaigns.

Recommendations

Recommendations on applications of the research findings

1. According to the research findings from this study, program to promote predisposing, enabling, and reinforcing factors should be developed to help targeted participants to improve health promoting behaviors of COVID-19 prevention. Other factors such as selected personal factors should also be considered including in the program to provide even more effective results.

2. VHVs should get support to participate in any time to improve their knowledge and skills. Notification and information sharing system to increase health promoting of COVID-19 prevention should be promoted.

3. Public health organizations should provide co-learning space to educate the prevention of infectious disease in the future especially for persons working in health-

related field and those working at the front line who have close contacts to the patients or high-risk groups.

Recommendations for future research

1. Future study should be extended to other sample groups and use the results from this study to plan for infected disease prevention appropriately according to the target group.
2. Further in-depth study about methods of COVID-19 prevention which methods or strategies are suitable for workers should be done.

References

1. Cuffe R. Coronavirus death rate: What are the chances of dying? [Internet]. London, England: BBC NEWS; 2020 [cited 2019 Nov 19]. Available from: https://www.bbc.com/news/health-51674743
2. World Health Organization. Coronavirus disease (COVID-19) [Internet]. Geneva, Switzerland: World Health Organization; 2019 [cited 2019 Nov 19]. Available from: https://www.who.int/health-topics/coronavirus#tab=tab_1
3. World Health Organization. Coronavirus disease 2019 (COVID-19): situation report, 71 [Internet]. Geneva, Switzerland: World Health Organization; 2020 [cited 2020 Apr 7]. Available from: https://apps.who.int/iris/handle/10665/331684
4. Department of Health Service Support. prevention and control during the coronavirus (COVID-19) [Internet]. Nonthaburi, Thailand: Department of Health Service Support; 2020 [cited 2020 Jan 2]. Available from: https://hss.moph.go.th/show_topic.php?id=3371
5. Ministry of Public Health. Guideline on public health practice for control the outbreak of Coronavirus disease 2019 (COVID-19) [Internet]. 2020 [cited 2020 Jan 2]. Available from: https://ddc.moph.go.th/viralpneumonia/file/g_other/g_other02.pdf .
6. Centers for Disease Control and Prevention. When and how to wash your hands [Internet]. 2020 [cited 2020 Jan 2]. Available from: https://www.cdc.gov/handwashing/when-how-handwashing.html
7. Department of Health Service Support. prevention and control during the coronavirus (COVID-19) [Internet]. 2020 [cited 2020 Jan 2]. Available from: https://hss.moph.go.th/index2.php
8. Uthaithani District Health Office. Coronavirus disease 2019 (COVID-19) [Internet]. 2020 [cited 2020 Jan 2]. Available from: http://uthaihealth.moph.go.th/uthaihealth/ssjcovidbymonth.php?m=03&y=2020

9. Pornpat P, Varnish R, Payaowadee A, Barameht P. Factors Associated with Preventive Behaviors towards Coronavirus Disease (COVID-19) among Adults in Kalasin Province, Thailand, 2020; Outbreak, Surveillance, Investigation & Response (OSIR) Journal 2020, 13(3):78-89.
10. Green L, Kreuter M. Health Program Planning: An Educational and Ecological Approach. 4th ed. New York, NY: McGraw-Hill;2005.
11. Krejcie RV, Morgan DW. Determining Sample Size for Research Activities. Educational and Psychological Measurement 1970; 30(3): 607-10.
12. Likert R. A Technique for the Measurement of Attitudes. Archives of Psychology 1932; 140:1–55.
13. Best JW, Kahn JV. Research in Education. 10th ed. New York, NY: Pearson; 2005.
14. Boonmee P. Basic Research Methodology. Bangkok: Ramkhamhaeng University Publishing; 2554.
15. Niumnoi J, Damrongsak M, Thongbai W. Predictive factors in the use of personal protective equipment for workers in the automotive parts industries in Samutprakan province. Nursing Journal 2013;40(3):30-9.