

## แจ้งการถอดถอนบทความ

ตามเกณฑ์มาตรฐานด้านจริยธรรมการวิจัยของ TCI และวารสารพยาบาลศาสตร์และสุขภาพ บทความต่อไปนี้ได้รับการพิจารณาให้ถอดถอน:

พัทธนันท์ คงทอง เกศินี สราญฤทธิชัย. ประสิทธิภาพของการพัฒนาศักยภาพในการเรียนรู้ของอาสาสมัครสาธารณสุขประจำหมู่บ้าน โดยใช้แอปพลิเคชัน อสม.ออนไลน์ในสมาร์ทโฟน ตำบลคอนช้าง อำเภอเมือง จังหวัดขอนแก่น. วารสารพยาบาลศาสตร์และสุขภาพ 2564;44(3):47-57. Available from: <https://he01.tci-thaijo.org/index.php/nah/article/view/247628>

## ปัญหาทางจริยธรรมและการตรวจสอบ

หัวหน้าโครงการซึ่งเป็นเจ้าของหมายเลขการตรวจสอบจริยธรรมการวิจัยที่อ้างถึงในบทความได้ติดต่อวารสารฯ มีข้อสงสัยเกี่ยวกับบทความปี พ.ศ. 2564 ถึงความถูกต้องของการนำเสนอหมายเลขการผ่านการรับรองด้านจริยธรรมการวิจัย ซึ่งหมายเลขที่บทความอ้างถึงนั้นเป็นของโครงการที่ตนรับผิดชอบและไม่ได้มีส่วนเกี่ยวข้องกับบทความดังกล่าว

เพื่อสนองตอบต่อข้อสงสัยนี้ กองบรรณาธิการจึงได้ตรวจสอบ และ พบว่าบทความวิจัยดำเนินการในพื้นที่เดียวกันกับโครงการที่อ้างอิงหมายเลขจริยธรรม แต่เป็นโครงการเพื่อพัฒนาศักยภาพของบุคลากรในพื้นที่ที่ผู้เขียนคนแรกทำงานเป็นประจำ และไม่ได้ร้องขอการตรวจสอบจากคณะกรรมการจริยธรรมการวิจัย

ดังนั้น ข้อเสนอการตัดสินใจของบรรณาธิการวารสารพยาบาลศาสตร์และสุขภาพ ที่ปฏิบัติตามเกณฑ์มาตรฐานจริยธรรมการวิจัยของ TCI และ วารสารพยาบาลศาสตร์และสุขภาพ จึงประกาศถอดถอนบทความดังกล่าว จากการเผยแพร่

## Retraction Notice

At the request of the TCI standard and the Journal of Nursing Science and Health, the following article has been retracted:

Pattanan Khongtong, Kesinee Saranritticha. The effectiveness of learning capacities development of village health volunteers by using a VHV online smartphone application program in Don Chang Sub district, Mueang Khon Kaen District, Khon Kaen Province, Thailand. Journal of Nursing Science and Health 2021;44(3):47-57. Available from: <https://he01.tci-thaijo.org/index.php/nah/article/view/247628>

## Ethical Concerns and Investigation

The project leader, who owns the research ethics clearance number referenced in the article, contacted the journal with concerns about the 2021 article. Specifically, they questioned whether the presentation of the IRB clearance number was accurate. The numbers cited belong to projects under their responsibility and are unrelated to the article.

In response to these concerns, an investigation was conducted. The investigation revealed that while the article was conducted in the same area as the project that cited the ethics number, it was part of a separate project aimed at developing the potential of personnel in the area where the first author worked regularly.

This project was not submitted for review by the ethics committee. Based on the results of the investigation, TCI research ethical standards, and the decision of the Journal Editor, this article has been retracted.

## ประสิทธิผลของการพัฒนาศักยภาพในการเรียนรู้ของอาสาสมัครสาธารณสุขประจำหมู่บ้าน โดยใช้แอปพลิเคชัน อสม.ออนไลน์ในสมาร์ทโฟน ตำบลคอนช้าง อำเภอมือง จังหวัดขอนแก่น\*

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### บทคัดย่อ

การวิจัยนี้เป็นการวิจัยกึ่งทดลอง โดยมีวัตถุประสงค์ เพื่อศึกษาประสิทธิผลการพัฒนาศักยภาพอาสาสมัครสาธารณสุขในการใช้แอปพลิเคชัน อสม.ออนไลน์บนโทรศัพท์มือถือ โดยเปรียบเทียบคะแนนความรู้ทัศนคติ และพฤติกรรมการใช้แอปพลิเคชัน อสม.ออนไลน์บนโทรศัพท์มือถือของ อสม. ระหว่างกลุ่มทดลอง และกลุ่มเปรียบเทียบ หลังประยุกต์โปรแกรมสุ่มตัวอย่างด้วยวิธี simple random sampling ได้ขนาดตัวอย่างกลุ่มละ 35 คน วิเคราะห์ข้อมูลโดยใช้สถิติเชิงพรรณนา การแจกแจงความถี่ ร้อยละ mean SD และสถิติเชิงอนุมาน ได้แก่ independent t-test ผลการศึกษาพบว่า ภายหลังการทดลองกลุ่มทดลองมีค่าเฉลี่ยคะแนนความรู้มากกว่ากลุ่มเปรียบเทียบ (mean difference = 5, 95%CI : 4.4 - 5.5, p-value <0.0001) ค่าเฉลี่ยคะแนนทัศนคติมากกว่ากลุ่มเปรียบเทียบ (mean difference = 9, 95%CI : 7.5 - 10.4, p-value <0.0001) และค่าเฉลี่ยคะแนนการใช้แอปพลิเคชันสูงกว่ากลุ่มเปรียบเทียบ (mean difference = 9.5, 95%CI : 8.5 - 10.4, p-value <0.0001) ผลการศึกษาสะท้อนให้เห็นว่า โปรแกรมการพัฒนาศักยภาพในการเรียนรู้ของอาสาสมัครสาธารณสุขประจำหมู่บ้านโดยใช้แอปพลิเคชัน อสม.ออนไลน์ในสมาร์ทโฟน เป็นเครื่องมือที่ใช้พัฒนาศักยภาพของ อสม. และสามารถนำไปใช้ได้ในการปฏิบัติงานของ อสม.ได้

คำสำคัญ : อาสาสมัครสาธารณสุข แอปพลิเคชัน อสม. ออนไลน์

วันที่รับบทความ 12 กุมภาพันธ์ 2564 วันที่แก้ไขบทความแล้วเสร็จ 30 มีนาคม 2564 วันที่ตอบรับบทความ 31 มีนาคม 2564

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## The effectiveness of learning capacities development of village health volunteers by using a VHV online smartphone application program in Don Chang Sub district, Mueang Khon Kaen District, Khon Kaen Province, Thailand\*

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### Abstract

This quasi-experimental research aimed to investigate the effectiveness of learning capability development of village health volunteers (VHVs) using an online VHV application by comparing knowledge, attitude, and VHV application using behavior between the experimental group and the control group after the implementation of the VHV online smart phone application program. Simple random sampling was used to obtain 35 VHVs for each control and experiment group. The data was analyzed by using descriptive statistics, including frequency distribution, percentage, mean, standard deviation; and inferential statistics, including independent t-test. Results revealed that after the implementation, the experimental group had higher knowledge score than the control group (mean difference = 5, 95%CI: 4.4 -5.5, p-value <0.0001), had higher attitude score than the control group (mean difference = 9, 95%CI: 7.5 -10.4, p-value <0.0001), and had higher VHV application using behavior score than the control group (mean difference = 9.5, 95% CI: 8.5 -10.4, p-value <0.0001). It is suggested that VHV online smartphone application program is practical and effective tool for capability development of VHVs.

**keywords:** village health volunteer; online smartphone application

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## 1. Introduction

The Thai government has launched a policy to move the nation of Thailand to be 4.0 and developed Village Health Volunteers to become VHV 4.0 the volunteers can be the backbone of the people sector by establishing health promotion and disease prevention policies according to the Prevention and Promotion Excellent Strategy (P&P Excellence) of Thailand a 20-year national strategy. Previous study showed VHV's had limited correct and effective knowledge to do community project<sup>1</sup>. Thus development of VHV's learning capability need to be focus on. As for a public health plan, village health volunteers are the health leaders of the community, playing an important role in improving health and hygiene of people in their villages. They live close to the villagers and there are a total of 1.04 million health volunteers<sup>2</sup>, representing every village. There are 105 health volunteers from all communities in Don Chang Sub district, Mueang Khon Kaen District, Khon Kaen province, Northeast of Thailand, and one volunteer is responsible for 10 households. The Ministry of Public Health, therefore, has an idea to develop VHV's to be VHV 4.0. This intent is to help health volunteers apply digital technology to caring for their own health and community members' health, and to become the leaders of a health revolution. In order to become health volunteer leaders, they need devices to record health information retrieved from their villages and with their responsible households. This information also helps to communicate with health care providers for planning and caring for villagers' health. As a result, Ministry of Public Health had supported the volunteers to use digital technology to know community health well, especially first aid, so they can support society in different fields.

Thailand Medical Hub, Ministry of Public Health, created and developed a Smart VHV application, version 1.0 in the fiscal year 2018 to inform the news from Ministry of Public Health directly to VHV's. Nevertheless, health volunteers and other service units performing under The Ministry of Public Health did not prefer to use this application. Later, a smartphone company developed a "VHV online application, the digital innovation for Thai society" to increase the efficiency of community health performance. It was an online application used as a communication tool for proactive community health performance of primary health service by VHV's.

The VHV online application could be used with any smartphone network. The healthcare staff of Don Chang Health-Promotion Hospital realized that the application could be very useful for healthcare performance in Don Chang Subdistrict<sup>3</sup>, so the village health volunteers were supported to use the application for their work. However, the survey conducted before applying the online application showed that only 32.2 percent of Don Chang village health volunteers used smart phones and 36.6 percent were over 60 years old. These resulted in the considerable problems and obstacles in the initial period of applying the application. Don Chang Health-Promotion Hospital encouraged the volunteers to use smartphones gradually, starting from the leaders of Village Health Volunteers of every village. Most village health volunteers realized the importance of smartphones, and they agreed that every volunteer of Don Chang Sub district needed to use smartphones. After all the volunteers had smartphones, the researchers started to study the capability development of the Village Health Volunteer networks using

a VHV online smartphone application for healthcare activities in Don Chang Sub district, Khon Kaen Province, Thailand.

## 2. Materials and Methods

This is a quasi-experimental research design. The research participants were divided into two groups which was an experiment group and a comparison group. Each group consisted of 35 village health volunteers.

### 2.1 Study population

The population of the study were VHVs of Dong Chang Sub district, Mueang District, Khon Kaen Province. Study population were selected with the following criteria:

**The study population was selected from the VHVs who:**

1. had been VHVs for Don Chang Sub district at least 1 year;
2. were able to read and write fluently; and
3. have and could use a smartphone with online VHV Online Smartphone Application.

**The study population was excluded from the study when:**

1. they resigned during the research study and data collection periods;
2. they were not in Don Chang Sub district area and could not complete all missions they needed in VHV online application; and
3. participant in experimental group who were not able to attend monthly meetings and did not consistently participate in this learning capacities development program.

### Sample size

The formula for sample size used to compare the differences of the average scores between two independent groups<sup>4</sup>.

$$n = \frac{2(Z_{\alpha/2} + Z_{\beta})^2 \sigma^2}{(\mu_1 - \mu_2)}$$

The sample size was calculated from the variables in the knowledge about using the online VHV application because it resulted in the biggest sample size.

$$\alpha = 0.05 \text{ so } Z_{\alpha/2} = 1.96 \quad \beta = 0.01 \text{ so } Z_{\beta} = 1.28$$

$\sigma^2$  = the variance of the scores in knowledge of using the online VHV application equaled 3.012 (The pilot study among village health volunteers)

$\mu_1$  = the control-group scores on knowledge of using the online VHV application after the experiment equaled 9.48 (The pilot study was among village health volunteers)

$\mu_2$  = the experimental-group scores on knowledge of using the online VHV application after the experiment equaled 13.09 (The pilot study was among village health volunteers)

As a result, there were at least 13 study samples in each group. However, for this study, there were 35 participants in each group due to dropout prevention and volunteer need.

### Sampling

Simple random sampling was used for random allocation into both control and experiment group. The population of the experimental group was selected from the village health volunteers of Village No. 2, 3 and 4 while that of the control group included

the village health volunteers from Village No. 5, 6, 7 and 8. Sampling without replacement was applied to both groups and resulted in 35 subjects in each group.

## 2.2 Instrument

Instruments used in this study were: 1) smart phone with the VHV online application program and 2) self-administered questionnaires. The questionnaire was composed of 4 parts: **Part 1** general information of VHVs, composing of 15 items such as age, duration of being a village health volunteer, the numbers of responsible households, income, and highest education level. **Part 2** knowledge regarding the online application program composing of 15 items. **Part 3** attitude, composing of 10 items which was rate into 4 level: the most = 3 points, high = 2 points, low = 1 point and least = 0 points. **Part 4** VHV online smartphone application using behavior, composing of 10 items which was rated into 4 levels: behave every time = 3 points, behave nearly every time = 2 points, behave sometimes = 1 point and never behave = 0 points.

The quality of questionnaires

The index of Item-Objective Congruence (IOC) was used to find the content validity from 3 experts: 1 expert is in area of research and 2 experts in area of practice. The Cronbach Alpha coefficient was used to verify the reliability of the questionnaire from 30 VHVs in other district. Part 2 knowledge, the IOC and Cronbach Alpha coefficient of this part were 0.89 and 0.84 respectively. Part 3 attitude, the IOC and Cronbach Alpha coefficient of this part were 0.86 and 0.86 respectively. For part 4 VHV online smartphone application using behavior, the IOC and Cronbach Alpha coefficient of this part were 0.80 and 0.83 respectively.

## 2.3 Data collection

### 2.3.1 For experimental group

Data were collected in Don Chang Village, Moo 2-4. Researcher implemented learning program regarding using VHV online application program by providing knowledge about the program, how to use, demonstrate and in turn VHVs return demonstration to researcher and team. Details of implementation in experimental group were shown below.

The implementation of VHV online smart phone application program

VHV online smart phone application program was a set of activities contributing to learning capability development of VHVs to use VHV online smart phone application targeting to record health information of villager and health related information of villages and submit the report with community health work (which will help for health care planning and implementation in the next step) through the online VHF application as follows:

1<sup>st</sup> week activities were getting to know each other and doing pre-test in both control and experimental group. Experimental group was given introduction of the online VHV application activity. Different menus and the advantages of the online VHV application were introduced to Don Chang village health volunteers. Then, the application was installed on the mobile phone of all study subjects.

2<sup>nd</sup> week activity dealt with monthly report menus. The subjects were trained to send reports through the application. The researcher and the subjects went on a trip to the field to investigate and sent the reports to Don Chang Health Promotion Hospital through the application. They needed to send the report once a month.

3<sup>rd</sup> week activity was to investigate mosquito larva. The subjects had to investigate the mosquito larva in the households that they were responsible for and send the locations and situations of mosquito larva of each household to Don Chang Health Promotion Hospital. They had to investigate once a month.

4<sup>th</sup> week activity was to learn about other menus. The subjects learned how to respond to the monthly meeting appointments, to report about the monthly compensation, to follow news and reply to the admins, to read the monthly meeting reports, to chat with other village health volunteers and staff at Don Chang Health Promotion Hospital.

5<sup>th</sup> week activity was for sending situation and activity reports. The subjects had to send a report together with the location of each activity through the application. In each report, they had to include the names of related people, details of work performance, the location and a few pictures related to the work.

For the situation report, the subjects needed to report 5 situations of their responsible households which were pregnant women, cigarette smokers, bed-ridden patients, elderly residents, and chronic disease patients to Don Chang Health Promotion Hospital. They had to submit 2 situations every month.

For the activity report, the subjects had to report any activities they did for common interests or other community health activities which were not the situations they needed to report every month.

10<sup>th</sup>, 11<sup>th</sup>, and 12<sup>th</sup> week activity was to follow up and assess the results of using the application during week 1 to 5. Additionally, the reports were checked for the correctness and completeness so that Dong Chang Health Promotion Hospital could use the data in the future.

20<sup>th</sup> week activities were to make a conclusion of capability development of the study subjects for further improvement. At the end, all VHVs had to do post-test in both control and experimental group.

### 2.3.2 For control group

Data were collected in Don Chang Village, Moo 5-7. Control group did not receive any program implementation regarding VHV online application program except other normal programs provided to all villages. VHVs used the VHV online application program by themselves. However, research provided intervention to this group after the research was finished.

## 2.4 Data analyses

The data was analyzed by using descriptive statistics including frequency distribution, percentage, mean, and standard deviation, and inferential statistics. The reason for collecting data from both an experimental group and a control group beforehand was to investigate if the subjects' knowledge, attitude and online VHV application use were different compared to before and after. According to the data, they were not different, so the scores before and after the experiment were presented with independent t-test and calculated for a 95% confidence interval for a mean between the two groups after the experiment.

## 2.5 Ethical issues

The data of this research was collected from May to September 2019 at Don Chang Village Health Volunteer, Khon Kaen Province and KKU human research ethics approval was obtained (HE601166).

### 3. Results

#### 3.1 General information

The average age of the experimental group was 55.8 years old and had been VHVs for 18 years in average. Each of them was responsible for 11 households in average and their average income was 9,522 baht. Most of them finished high school or vocational certificate as their highest education, 88.5 percent.

The average age of the control group was 57 years old and they had been VHVs for 19 years in average. Each of them was responsible for 10 households in average and their average income was 8,611 baht. Most of them finished high school or vocational certificate as their highest education, 80 percent.

**Table 1** General characteristics of VHVs

Characteristics	Experimental group (n=35)	Control group (n=35)
Age (years)		
Means (SD)	55.8 (9.19)	56.8 (8.7)
Duration of being a village health volunteer (years)		
Means (SD)	18.2 (8.9)	19.1 (9.6)
Numbers of responsible households		
Mean (SD)	10.6 (1.5)	10.1 (1.4)
Income (baht)		
Means (SD)	9,522 (2,377.2)	8,611 (2,276.1)
Highest education		
High school/vocational certificate	31 (88.5)	28 (80.0)
Higher than high school/vocational certificate	4 (11.5)	7 (20.0)

#### 3.2 The comparison of average scores of knowledge on using online VHV application between the experimental group and the control group

There was a statistically significant difference between the average scores of the

experimental group and the control group after the experiment ( $p\text{-value} = <0.0001$ ). The full score of this part was 15 points and the experimental group scored 5 points more than the control group (95%CI: 4.4–5.5).

**Table 2** The comparison of knowledge of online VHV application use between the groups after the experiment

Groups (n=35)	Pretest scores		Posttest scores		Mean difference	95 % CI	t-value	p-value
	Mean	SD	Mean	SD				
Experimental	5.8	0.8	12.6	1.1				
Control	5.9	0.9	7.6	1.2	5.0	4.4 – 5.5	-18.0	<0.0001

### 3.3 The comparison of average scores of attitudes towards the online VHV application use between the experimental group and the control group

The average scores between the experimental group and the control group showed statistically significant difference ( $p\text{-value} = <0.0001>$ ). The full score of this part was 40 points and the experimental group scored 9 points more than the control group (95%CI: 7.5–10.4).

**Table 3** The comparison of attitudes towards online VHV application between the groups after the experiment

Groups (n=35)	Pretest scores		Posttest scores		Mean difference	95 % CI	T-value	P-value
	Mean	SD	Mean	SD				
Experimental	20.9	0.2	29.4	0.6	9	7.5 – 10.4	-12.0	<0.0001
Control	21.4	0.3	20.4	0.4				

### 3.4 The comparison of the average scores of online VHV application using behavior between the experimental group and the control group

There was a statistically significant difference between the average scores between the experimental

group and the control group ( $p\text{-value} = 0.0001$ ). The full score of this part was 40 points and the experimental group scored 9.5 points more than the control group (95%CI: 8.5–10.4).

**Table 4** The comparison of online VHV application use between the groups after the experiment

Groups (n=35)	Pretest scores		Posttest scores		Mean difference	95 % CI	t-value	p-value
	Mean	SD	Mean	SD				
Experimental	28.2	3.1	39.1	2.0	9.5	8.5 – 10.4	20.3	<0.0001
Control	29.2	4.6	29.6	1.8				

#### 4. Discussion

The average scores of knowledge, attitude, and the use of online VHV application of village health volunteers before and after the experiment were clearly different. As a result, the village health volunteers from the experimental group could improve their knowledge and perform community health with confidence. This indicated that the increasing of cognitive ability towards accessing to knowledge via online VHV smart phone application contributing to increasing VHV's healthcare practices. It was congruence with study from Taiwan showing that general cognitive status of volunteer work was significantly associated with actively involved in volunteer work and social participation<sup>5</sup>. Moreover, study also showed the increasing of attitude toward using online VHV application which designated to increasing of motivation to use application to improve better health of community people. This pointed that accessing to health information and understanding contributing to using VHV smart phone application which was related with increasing acquisition and seeing health-related knowledge were important motivators to put into action<sup>6</sup>.

In addition, the research applied a teaching strategy that could analyze the capability of learners and changed teaching methods according to individual ability. The subjects who were good at using smartphones and understanding the community health work learned fast and received high scores in the knowledge and application use parts. They could submit the reports to Don Chang Health Promotion Hospital correctly and completely at the first time. Researchers asked the subjects who had high level of knowledge and skills in using the application to help teaching and sending the reports of the subjects

with an average level of skills in using smartphones<sup>7</sup>. For the subjects who had low level of using smartphones, the researcher taught them individually how to use the application in actual situations until they could submit the reports themselves. They were taught to use the application repeatedly and to check the report through the application by themselves every time until every subject could use the application quickly, precisely, and correctly. They needed to repeat these processes for 20 weeks and they could send the reports through the online VHV smartphone application correctly and completely according to the research specification.

To perform community health activities through an online VHV application and smartphones is to respond the Thailand 4.0 policy, which substantially encourages technology use in community health activities. This can help reduce problems related to information management, one of the important problems in community health performance. This is relevant to the study of Aekkaphong Ke-yong<sup>8</sup> which reveals that providing knowledge for many village health volunteers at the same time at different levels of knowledge and skills can cause them to perform community health activities correctly and by the same standard. That means the learning program of this research is successful and the same as the study of the efficiency in learning program arrangement by analyzing the male learners who were homosexual in wearing condoms every time they had sex<sup>9</sup>. The study was successful because the subjects realized the importance of this issue and could reduce sexually transmitted diseases effectively. Likely, when the village health volunteers used the online VHV smartphone application and encountered the problems and obstacles, they

could communicate with other volunteers to solve the problems conveniently and quickly. It was more convenient for them since they did not have to write their reports on the paper as was usual. When they submitted the reports to Don Chang Health Promotion Hospital and compared their reports with the control group and other volunteers, they became proud of themselves and more interested in using the application.

It is suggested that increasing accessing to knowledge and using VHV online smart phone application as the important media are crucial strategies for improving learning skill pointing to increasing health literacy, in particularly, media literacy. Increasing of health literacy contributes to increasing motivation and performing behavior of community people<sup>10</sup>. In addition, study showed VHV's attitude was increase after intervention, thus, increasing motivation to use technology of online VHV smartphone application need to be promote and apply to other group of VHV and other contexts.

Furthermore, previous study showed Thai native chicken (TNC) mobile app contributing to the improvement of rearing methods and productivity of Thai native chicken breeds<sup>11</sup>. Thus, next study need to explore the consequence of VHV online smart phone using behavior on villagers' health and community well-being.

## References

1. Phaipong S, Pinitsoontorn S Village health volunteers' knowledge and role in community health phanning in Phen district, Udon Thani province. Community health development quartery Khon Kaen University 2016;4(2): 291-305. (in Thai)
2. Department of Health Service Support, Ministry of Public Health. Guideline to develop the efficiency of village health volunteer 4.0 [Internet]. Songkhla: Department of Public Health and Environment; 2017 [cited 2019 Dec 2]. Available from [https://www.songkhla-city.go.th/2020/files/com\\_news\\_research/2019-11\\_60993e139dc0955.pdf](https://www.songkhla-city.go.th/2020/files/com_news_research/2019-11_60993e139dc0955.pdf)
3. Khongtong P, Chiangchai S, Polbarmung S, Duangkuna K, Chaiprain T, Wongklang V. Characteristics of village health volunteers residing in the southern health. KKU-JPHR 2012;5(1): 69-76. (in Thai)
4. Aroon J, Statistics for health care research. Khon Kaen: Klang Nana Wittaya; 2008.
5. Chiao C. Beyond health care: Volunteer work, social participation, and late-life general cognitive status in Taiwan. Soc Sci Med 2019; 229:154-60.
6. Singh D, Cumming R, Mohajer N, Negin J. Motivation of community health volunteers in rural Uganda: The interconnectedness of knowledge, relationship and action. Public Health 2016;136:166-71.
7. Wutthiphong K. Characteristics of homosexual guys who are the members of violet group in a southern province [dissertation]. Khon Kaen: Khon Kaen University; 2006.
8. Aekkaphong Ke-yong. Work performance of village health volunteers among changes. Journal of Health System Research 2017 Jan-Mar;11(1):118-26.
9. Pattanan K. The efficiency of applying self-regulation theory and social supporting theory for improving the behavior of homosexual guys who are the members of violet

- group, Khon Kaen Province. KRU Research Journal 2009 Oct;14(10):939-49.
10. Saranrittichai K, Ussavapark W, Thamrongwarangkoon A, Heangsorn T, Daoruang S, Teeranut A. Community based approach to cancer prevention in rural Thailand based on experiences of accredited health professional. Asian Pac J Cancer Prev 2020;21(1):7-12.
  11. Saengwong S, Koksantia C. Development of a mobile app for enhancing the performance of smallholder native chicken management and production. Asia Pacific Journal of Science and Technology 2020;25(1): Article ID:APST-25-01-10.

ถอดถอน  
Retraction