Administrative Factors and Key Success Factors Affecting the Surveillance, Prevention and Control of Coronavirus Disease 2019 (COVID-19) among the Health Personnel at Sub-District Health Promoting Hospital

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Abstract

This is a cross-sectional study aimed to identifyadministrative factors and key success factors affecting the surveillance, prevention, and control of COVID-9 among the health personnel at sub-district health promoting hospitals in KhonKaenProvince. The sample size was 138 health workers working in Sub-district health promoting hospital KhonKaenProvince, Thailand. Respondents were selected by applying systematic sampling method. A total of 905 people were selected from the study population for the quantitative study and 12 key informants were selected for the qualitative study. The qualitative study was carried out by using in-depth interview guidelines. The questionnaire was evaluated by 3 experts yielding an IOC value of more than 0.50 in all questions. The Cronbach's alpha coefficient of the questionnaire was 0.92. Data was collected between 21st December 2020 to 9th January 2021. Data analysis was performed by descriptive statistics and inferential statistics as a significant level at 0.05.

The results of the study showed that key success in all levels of agencies involved were with a work plan to support the performance, the performance link between the hospital and link to a major hospital, and the administrative factors of time, money, and management affecting and could jointly predict the surveillance, prevention and control of COVID-19(72.7%e ($R^2 = 0.727$, p-value < 0.001).In conclusion, five factors are identified to affect surveillance, control and prevention of COVID-19 amongthe public health officials. Therefore, there should be a plan to support the performance in assigning responsibilities, promoting participation in policy making, planning of time, budgetmanagement and regular and proper co-ordination for internal and external organizations.

Keywords: *administrative factors, key success factors, control coronavirus disease 2019 (covid-19)*

Introduction

The outbreak of Coronavirus Disease 2019 (COVID-19) since December 2019, and consequent worldwide spread, on March 11, 2020, the World Health Organization (WHO) declared the novel coronavirus outbreak as a pandemic after the virus spread to 213 countries and territories. The report of COVID-19 as of June 30, 2020, it is found more than 10,629,405 were confirmed cases, more than 514,901 deaths, 5,833,268 were cured, 4,821,236 were undergoing treatment, it was spread in Thailand since the beginning of January 2020[1].

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In Health District 7, on September 17, 2020, 13 confirmed cases of COVID-19 were detected, 13 cumulative cases of infectious disease, one death and treatment, and 12 cases were missing[2].

As per the report of 1 May 2020, 6 confirmed cases of coronavirus 2019(COVID-19) and 613 surveillance physicians (PUI) were eligible for investigation in KhonKaenProvince[3]. The implementation of surveillance, control, and prevention of infectious diseases among public health workers in sub-district health promoting hospitalsto achieve this objective requires several factors. For the smooth work plan and its proper execution in terms of applying knowledge to control the disease in effective way,the administrative factors should play very immense role[4]. Ability to supervise and monitor the project are additional factors of health workers in the operational management[5].

From the problems, the researcher gets interested in studying administrative and key success factors that effect on surveillance and prevention of COVID-19 of public health officers in sub-district health promoting hospitals KhonKaenProvince. for the reliability of the study results we had applied a guideline about planning, developing and supporting, along with promoting surveillance, control, and prevention of COVID-19 infectious disease among public health workers in sub-district health promoting hospitals to be more effective sustainably.

Research Objectives

Objective of this study was to identify the administrative and key success factors that affect surveillance and prevention of COVID-19 of public health officers in sub-district health promoting hospital,KhonKaenProvince, Thailand.

Research Methodology

This is a cross-sectional descriptive study to collect quantitative and qualitative data. **Population and sample size**

Sample group of this study is public health professionals, who are working in sub-district health promoting hospital KhonKaenProvince, Thailand. There is a procedure for calculating the sample size. When the population is known and for the multiple regression analysis, sample size is calculated by using the formula for calculating the sample size of Cohen (1988)[6].

Formula $N = \frac{\lambda(1-R^2_{Y.AB})}{R^2_{Y.AB}-R^2_{Y.A}} + w$ ……(1)

When $\lambda = \lambda_L - \frac{1/v_L - 1/v}{1/v_L - 1/v_U}(\lambda_L - \lambda_U)$ ……(2)

According to the sample size calculation, it is found that "n" is equal to 138 respondents, who will be responding the questionnaire.

In-depth interview random sampling

A group of people who provided information on in-depth interview to verify quantitative data that obtained from public health workers who can provide information on the fast-moving surveillance practice of the sub-district health promoting hospital, KhonKaen Province (Key Informants 12 persons).

The research tools

Tools used for the data collection in this study is a questionnaire to confirm the quantitative data. It consists of two types of tools:

Set one is a questionnaire that consists of five parts: **Part one** is a question of personal characteristics which consists of gender, age, marital status, education level, position, income, length of time in disease control work including trainingon disease control. **Part two** is of 30 administrative factors which consist of budgets, personnel,materials, equipment, time management, and technology. **Part three** is 30 key success factors that consist of executives at all levels who support and follow up,support agencies at all levels have a support program, taking action in an area where ready and voluntary participation, making understanding and encouraging cooperation, developing the image of the service facility and connect with *sub-district health*

promotion hospital and community hospitals. **Part four** is 30 questions about prevention, control, along with prevention of COVID-19 which consists of screening and monitoring for patients at checkpoints, nursing homes, and communities, infection prevention, contact tracing and containment, and risk communication. Implementing social and legal measures. Coordination and management of information. Use rating scale five levels in part two, three and four[7].

The scoring criteria for comments are as follows: The highest level is five points. The high level is four points. The intermediate level is three points. Low level is two points. The lowest level is one point. **Part 5** is three open-ended questions about problems, obstacles and suggestions about surveillance and prevention of COVID-19 of public health officers in sub-district health promoting hospital, KhonKaen Province.

Set two is an In-Depth Interview guideline that the information was found from the quantitative research data. The least average questions are used for in-depth interviews to confirm the data, support and explain the quantitative data. The researcher defined the issue in three parts: **Part one** is an in-depth interview guide about administrative factors. **Part two** is an in-depth interview guide about key success factors. **Part three** is an in-depth interview guide about surveillance, control and prevention of COVID-19.

Quality testing of the tools

Quality testing of the tools about content validity. The researcher led questionnaires and in-depth interviews offered three experts to check the correctness and validity. Then, questions were processed to find the Item Objective Congruence(IOC)[8].It was found that all items had IOC greater than 0.50.Checking the reliability of the tools [9] after improving them, try out was done with public health officials in sub-district health promoting hospital, Roi Et Province, Thailand that has similar area in operational service, and management characteristics. In this study, 30 people were given the reliabilityfrom Cronbach's alpha coefficient of the whole questionnaire equal to 0.92, Administrative factors are 0.76, key success factors are 0.92, and surveillance, control, and prevention of COVID-19 infectious disease (COVID-19) are 0.94.

Data Analysis

Descriptive statistics used to analyze the data are percentage, mean, median, standard deviation. Inferential statistics used to analyze the data are Correlation Coefficient of Pearson, regression analysis and stepwise multiple regression analysis. In-depth interviews to verify quantitative data by Content analysis.

Research results

1. Personal characteristics

Personal characteristics of public health workers performing the work of surveillance, control and prevention of COVID-19 in the sub-district health promotion hospital, KhonKaen Province found that the majority of the sample was female, totaling 86(62.3%), most of them aged between 31-40 years, totaling 51(37.0%), average age is 39.72 years (S.D.=10.08 years, Min = 23 years old, Max = 59 years old). Mostly, the marital status amounted to 90 people (65.2%). Most of them are graduated with a bachelor's degree or equivalent, 106 people (76.8%). There are 51 public health technical officer (37.0%) with an average income of 29,154.31 Baht (S.D.= 12,972.48 Baht). They have a duration of working about the surveillance and preventive work was 10 years or more, 62 people (44.9 %) with a median of 10 years (Min = 1 year, Max = 39 years). Most of them have received training in an epidemiological course, a total of 111 respondents (80.4%).

2. Administrative andkey success factors affecting to surveillance and control and prevention of COVID-19

The analysis results showed that independent variable that affects the surveillance, control and prevention of COVID-19 among public health professionals working in sub-district health promoting hospital, KhonKaen Province as follow: Key success Factors: supporting organizations at all levels have a support plan (p-value = 0.013), and connecting between

sub-district health promoting hospital and community hospitals(p-value < 0.001),Management factors: Time (p-value = 0.003), Budget (p-value <0.001),and Management(p-value = 0.043). Therefore, five independent variables can forecast about surveillance, control and prevention of COVID-19of Public Health Workers in sub-district health promoting hospital as 72.7 percentage (Table1). Multiple Linear Regression equation which is a prediction equation is as follow:

Y = 1.230 + (0.223)(Key success factors: Supporting organizations at all levels have a support plan)

+ (0.250)(Key success factors: Connecting between sub-district health promoting hospital and with Community Hospitals)

+ (0.242)(Management factors: Time)

- (0.139)(Management factors: Budget)

+ (0.160)(Management factors: Management)

Conclusion and Discussion

The results of the study showed that key success factors about supporting organizations at all levels have a support plan, connecting working between sub-district health promoting hospital and community hospitals, Management factors in Time, Budget, and Management can forecast about surveillance, control and prevention of COVID-19 of Public Health Workers working in sub-district health promoting hospitals, KhonKaenProvince as 72.7 percentage.

Key success factors about supporting organizations at all levels have a support plan, connecting working between sub-district health promoting hospital and community hospitals. They are an essential part of the overall service coverage and efficiency. Supporting organizations at all levels have a support plan and make a surveillance action plan about control and prevent disease both short-term, medium-term, and long-term. This study's results are consistent with the results of the study found that supporting organizations at all levels have a support plan effect on surveillance, control and prevention of infectious diseases of public health officials[10-11]. In addition, key success factors about connecting working between sub-district health promoting hospital and community hospitals affect on surveillance, control and prevention of public health officials [12-13]. However, the situation in COVID-19 working is different from other infectious disease therefore, the result of this study inconsistent with the results of the study found that supporting organizations at all levels have a support plan no effect on surveillance, control and prevention of infectious diseases of public health officials [14-15].

Management factors: Time, budget and management will be accomplished must take the time appropriately, organize work planning each day, each week, order of work by importance. As well as support the creation of a more efficient management process. Management is an essential process for resource management. Management to achieve the organization's objectives goals base on effectively: planning, budgeting and organizing. This study's results are consistent with the results of the study found that management factors; time, budget, and management affect on surveillance, control and prevention of infectious diseases of public health officials[11,16].It also found that time management factors, budget management factors, and management factors affect the working of public health officials[17-20]. The management factors were applied by different directors and area problem thus the result of this study is inconsistent with the results of the study found that management factors; time, and budget no affect on surveillance, control and prevention of infectious diseases of public health officials[21-22].

Results of in-depth interviews represent the surveillance, control and prevention of COVID-19 of public health workers in sub-district health promoting hospital is interviewee about suggestions founded that the lowest mean is entry and exit to follow about the risk groups in areas where some people don't have smartphones to report working data. Equipment isn't enough, such as protective clothing. Therefore, the

management organization should provide sufficient supplies to support the work. In case of necessity, a raincoat can be used instead of protective clothing to prevent direct contact with secretions.

In conclusion, key success factors about supporting organizations at all levels have a support plan, connecting working between sub-district health promoting hospital and community hospitals, Management factors in Time, Budget, and Management affect on surveillance, control and prevention of COVID-19 of public health officials. Therefore, there should be a plan to support the performance in assigning responsibilities, promoting participation in policy making, planning time, budget, management and connecting working for internal and external organizations.

Table 1. Statistics about stepwise multiple regression analysis of surveillance, control and prevention ofinfectious diseases COVID-19

Variable	B	Beta	T	P -value	R	R2	R2adj	R2 change
1. Key success factors: Supporting organizations at all levels have a support plan	0.223	0.244	2.508	0.013	0.769	0.592	0.589	0.592
2. Key success factors: Connecting between sub-district health promoting hospital and with Community Hospitals	0.250	0.359	5.113	< 0.001	0.815	0.664	0.659	0.072
3.Management factors: Time	0.242	0.270	3.054	0.003	0.831	0.690	0.683	0.026
4.Management factors: Budget	-0.139	-0.207	-3.752	< 0.001	0.847	0.718	0.710	0.028
5.Management factors: Management	0.160	0.182	2.040	0.043	0.852	0.727	0.716	0.009
Constant 1.230, F = 70.195, P– value < 0.001, R = 0.852, R2 = 0.727, R2adj = 0.716								

Suggestions for next research

There should be a study of factors affecting the participation in the surveillance and control of the COVID-19 of public health workers in the district health promotion hospital.

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Ethical Clearance: The researcher collected research data after being certified by the Human Research Ethics Committee of KhonKaen University on December 14, 2020 number HE 632257. Data collection was done between December 21, 2020 to January 9, 2020.

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