

Factors Effecting to Policy Implementation to Accessibility COVID-19 Vaccine in Phetchabun Province, Thailand

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ABSTRACT

Introduction: Coronavirus disease 2019 (COVID-019) emerged in late 2019 and became the pandemic with a number of infections and deaths worldwide. The study aimed to determine factors associated with the policy implementation to accessibility of COVID-19 vaccine.

Methods: A cross-sectional was used to gather data from participants who were health workers who worked at health promoting hospitals in Phetchabun Province, in fiscal year 2022. A systematic random sampling was used. Data collected by validated questionnaires consisted of personal characteristics, health service system according to six building blocks, participation, and policy implementation to improve accessibility COVID-19 vaccine. Questions were validated by three experts in the field and piloted. Cronbach's coefficient alpha was found at 0.94. Data analyzed using correlation and regression analyses.

Results: Majority of participants were female (70.25%), 30-49 years (59.09%) and Buddhist (61.9%). A half of participants (54.96%) were married or ever married, 85.54% hold a bachelor degree, 57.85% had family monthly income between 10,000-30,000 baht, 35.12% were public health professionals, and 23.97% were registered nurses. A large proportion (47.52%) had their working experience less than 10 years, and 52.89% received COVID-19 information twice per year. In the health service system, it was found that health service, medical materials, and health information and good government were highly correlated with the COVID-19 vaccine implementation. While dimension of the participating process, action was found to have the highest correlation with the COVID-19 vaccine implementation. Five variables were found to be good predictors to the policy implementation to accessibility of COVID-19 vaccine; health workforce, action, doing activities, health information system and planning.

Conclusion: To ensure the policy implementation of COVID-19 vaccine, policy makers should focus on the elements of health workforce, action, doing activities, health information system and planning.

Keywords: Coronavirus disease 2019, COVID-19, Vaccine, Policy implementation

Introduction

Coronavirus disease 2019 (COVID-19) was recognized and identified as one of major human health threats globally [1]. A large number of infected person and deaths from the COVID-19 have been reported. A few weeks after the first case reported, the World Health Organization (WHO) announced that it was one of the new severe threats of the human in the 21st century and requests all people, countries including all sectors of health professionals to eliminate the disease [1]. In Thailand, the central government had set the national committee to address this particular problem. At the late pandemic of the disease, about 4,577,593 cases and 31,189 deaths were reported through the health system of the Ministry

of Public Health (MOPH), Thailand. In late 2022 to 2023, many kinds of COVID-19 vaccines are available for all people in Thailand which is the key essential measure to prevent and control the disease. One of the significant lessons learned during the pandemic was how much and frequency to receive the accurate information of the disease including effective prevention and control measures. Monitoring was found as the important part of the completeness of the elimination of the disease and also to be used as the important functions to detect the new emerging waves [2]. In some stages of the prevention and control of the disease, all people living in Thailand have been

encouraged to receive the COVID-19 vaccine voluntarily. The goal was set at 70% by 2021 [1].

In February 2022, the MOPH reported that 82.1% of Thais received the 1stdose of a COVID-19 vaccine, 76.8% received the 2nd dose, and 44.1% received the 3rddose [2]. Similarly, the Phetchabun Provincial Public Health Office reported the coverage of COVID-19 vaccine that 75.39% received the 1stdose, 71.5% received the 2nddose, and 32.91% received the 3rddose, respectively [3]. The WHO recommended the use of the six building blocks as the principles of health care service management in an organization to meet the most effectiveness [4].

To ensure the implementation of the policy to improve the rate of receiving COVID-19 among the target population, the system of health services should focus on the very critical elements which might different institute-by-institute or setting-by-setting. Then, this study aimed to determine factors associated with the policy implementation to accessibility of COVID-19 vaccine.

Methods

Study design, and study setting

A cross-sectional study was applied. The study was conducted among healthcare workers who were working at a health promoting hospital in Phetchabun Province, in fiscal year 2022.

Study population and study sample

Those healthcare workers who were working in the study areas were considered to be invited into the study. Only those healthcare workers who were involved in COVID-19 vaccine implementation and had worked at a health promoting hospital for at least one year met the inclusion criteria. The sample size was calculated according to the standard formula of a cross-sectional study, Daniel formula [5], at least 242 samples were required for the analysis.

Research instruments

A validated question was used to collect information from the participants. It was divided into four parts. Part-I, seven (6) questions were used to collect personal characteristics of participants including sex, age, marital status, education, average monthly income, length of working, frequency of receiving COVID-19 information. Part-II, five items on the health service system were used to collect the information including good governance, health workforce, medical material, health information system, financial, health service. Health service systems were measured on five-point scales: strongly disagree, disagree, uncertain, agree, and strongly agree. Items were composed of both positive and negative statements. Part-III, four aspects of the process of public health implementation: planning, doing activities, checking, and action. These

variables were measured on five-point Likert scales: mostly, most, moderate, low, and lowest. Items were composed of both positive and negative statements. For the interpretations the mean score of part-II and III were followed the Best John W theory [6] which were classified into three level in the final: high level(scored3.67–5.00), moderate level (scored2.34–3.66), and low level (scored1.00–2.33). The last part (part-IV), three aspects of questions were used to collect data on policy implementation to accessibility COVID-19 vaccine including: policy clarifying, administration resources, and accessibility. These variables were measured on five-point Likert scales: strongly disagree, disagree, uncertain, agree, and strongly agree. Scale items were composed of both positive and negative statements.

Questions used in the study were validated by three experts in the field. Pilot was operated among 30 health workers, and the Cronbach alpha [7] was detected at 0.94.

Statistical analyses

SPSS version 23 was used to analyze the data after cleaning. Continuous data was described in means and standard deviation, while categorical data were reported on the frequency and percentage. The Kolmogorov Smirnov test was used to test normal distribution. Pearson product moment correlation coefficient and stepwise multiple regression analysis were used to detect the correlations and associations at the significant at alpha 0.05.

Results

Majority of participants were female (70.25%), 30-49 years (59.09%) ($\bar{x}$ =37.73, SD =9.9) and Buddhist (61.9%). A half of participants (54.96%) were married or ever married, 85.54% hold a bachelor degree, 57.85% had family monthly income between 10,000-30,000 baht, 35.12% were public health professionals, and 23.97% were registered nurses. A large proportion (47.52%) had their working experience less than 10 years, and 52.89% received COVID-19 information twice per year (Table 1).

Table 1 Characteristics of participants (n=242)

Characteristics	n	%
Sex		
Male	72	29.75
Female	170	70.25
Age (years)		
< 30	66	27.27
30 – 49	143	59.09
≥ 50	33	13.64
<i>Mean=37.73, SD=9.96, Min =22, Max =59</i>		
Marital status		
Single	88	36.36
Married	133	54.96
Widowed/Divorced	21	8.68

Characteristics	n	%
Education		
Diploma	7	2.89
Bachelor degree	207	85.54
Master degree	28	11.57
Average family income (baht/month)		
< 10,000	3	1.24
10,000 – 30,000	140	57.85
> 30,000	99	40.91
<i>Mean=28,736.77, SD=13,456.01</i>		
Position		
Director	43	17.77
Professional public health	85	35.12
Professional nurse	58	23.97
Health practitioner	36	14.88
Thai traditional medicine	20	8.26
Length of working (years)		
< 10	115	47.52
10 – 19	79	32.64
≥ 20	48	19.83
<i>Mean=13.33, SD=11.03</i>		
Frequency of receiving the COVID-19 information		
< 2	128	52.89
2 – 5	70	28.93
≥ 6	44	18.18

Regarding the health service system related to COVID-19 vaccine implementation, the participants reported on the most stratifications on the dimension of health service (4.72), medical materials (4.68), and health information (4.62) and good government (4.62). While the financial dimension was reported in the lowest satisfaction (Table 2).

According to participants' process dimension, it was found that action was reported in the highest score (4.67), and checking was reported in the lowest score (4.61) (Table 2).

Factors	Levels (%)			Mean	SD
	High	Moderate	Low		
Health service system					
Good governance	97.52	2.48	-	4.62	0.426
Health workforce	94.21	5.37	0.41	4.56	0.489
Medical material	97.93	2.07	-	4.68	0.412
Health information system	95.45	4.55	-	4.62	0.454
Financial service	78.51	21.07	0.41	4.30	0.726
Health service	98.35	1.65	-	4.72	0.367
Overall	97.52	2.48	-	4.58	0.327

Factors	Levels (%)			Mean	SD
	High	Moderate	Low		
Participating in the process					
Planning	96.69	3.31	-	4.63	0.415
Doing activities	97.11	2.89	-	4.62	0.411
Checking	95.87	4.13	-	4.61	0.485
Action	96.69	3.31	-	4.67	0.416
Overall	97.93	2.07	-	4.63	0.322

According to the correlations of health service system and the policy implementation according to improvement on receiving the COVID-19 vaccine, it was found that health workforce ($r=0.28$, $p\text{-value}<0.001$) and financial ($r=0.24$, $p\text{-value}=0.001$) were observed in the strongest correlated with the policy implementation to accessibility COVID-19 vaccine. In the aspect of participating process and the policy implementation according to improvement on receiving the COVID-19 vaccine, it was found that the checking process ($r=0.26$, $p\text{-value}=0.032$) was the strongest correlated with the policy implementation to accessibility COVID-19 vaccine (Table 3).

Table 3 Association between health service system, participating process and policy implementation to accessibility COVID-19 vaccine

Factors	Policy implementation to accessibility COVID-19 vaccine	
	Correlation (r)	p-value
Health service system		
Good governance	0.12	0.048*
Health workforce	0.28	<0.001*
Medical material	0.13	0.035*
Health information system	0.18	0.005*
Financial	0.24	0.001*
Health service	0.22	0.011*
Participating process		
Planning	0.22	<0.001*
Doing activities	0.19	0.002*
Checking	0.26	0.032*
Action	0.22	<0.001*

*Significant level at $\alpha=0.05$

In the multiple regression model, there were five (5) variables that were found to be good predictors to the policy implementation to accessibility of COVID-19 vaccine; health workforce, action, doing activities, health information system and planning (Table 4).

Table 4 Predicted factors of policy implementation to accessibility of COVID-19 vaccine

Predicted factors	B	S.E.	Beta	t	p-value
Health workforce	0.125	0.025	0.295	4.963	<0.001*
Action	0.209	0.063	0.208	3.306	0.001*
Doing activities	0.457	0.082	0.429	5.587	<0.001*
Health information system	0.204	0.060	0.238	3.421	0.001*
Planning	0.209	0.069	0.209	3.021	0.003*

*Significant level at $\alpha=0.05$

Discussion

Five factors were detected as good predictor to effective of policy implantation to increase the accessibility COVID-19 vaccine among the people live in Phetchabun Province, Thailand according to the perception of healthcare workers who were working in health promoting hospitals in the province including health workforce, action, doing activities, health information system and planning. The coverage of the vaccine in Phetchabun Province was recognized as one of the very successful settings in Thailand.

Health workforce was found to be associated with the policy implementation to encourage an accessibility COVID-19 (p-value<0.001). This might be because health workforce was a critical element of the six building blocks of the strong health service systems. This was supported by the Global Health Alliance and the World Health Organization said that 'no health without a workforce'. It is clearly known that health workforce is the main element to operate the system of healthcare services, and it's recognized as the main element to have the successful function of a healthcare service [8]. The findings in this study indicated that health workers had a high perception of implementing the COVID-19 vaccine in their setting. However, the factors of the health workforce, and their skill and knowledge are also very important especially in working in the very serious and difficult situation as the pandemic of COVID-19. This was supported by a study conducted previously which clearly reported that the number and skill of health care staff were very important to accomplish the job [9].

The element of action for participation was found to be associated with the policy implementation to encourage people to access COVID-19 vaccine Phetchabun Province, Basically, all activities should be clearly clarified at the beginning of the process, if the

mission does not meet the goal, it might be important to closely look at the actions whether acting as the plan or not. A study reported that regularly detected the effectiveness of the activities could improve the successful rate of a project [10].

In this study, the element of doing activities was found to be associated with the policy implementation to encourage people to access COVID-19 vaccine in Phetchabun Province. One of the supporting factors on this issue was teamwork of the health workers which introduced the success of the project. A study showed that teamwork and effective communication were significant factors to achieve the goals of the project [10].

In our study, the element of the health information system was found to be associated with the policy implementation to encourage people to access COVID-19 vaccine in Phetchabun Province. In real life, the health information system is one most important for public health implementation. People need accurate and real time information for making a decision and adjusting plans implemented to make sure that the goals will be successful achievements. Moreover, a study reported that understanding on the data management and interpretation of healthcare workers were also extremely important, particularly in ability to interpret the information and use in their work plan [9]. Finally, we found that the element of planning was found to be associated with the policy implementation to encourage people to access COVID-19 vaccine. Planning was recognized as the most important step of effective management because the excellent planning could lead to high efficiency and benefit outcome [11].

Conclusion

There are many factors (elements) are involving and contributing to the success of the policy implementation on accessibility COVID-19 Vaccine in Phetchabun Province, Thailand. The policy makers should be concerned with the issues of health workforce, action, doing activities, health information system and planning to ensure that the implementations will accomplish their final goals.

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