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## Perception of and Preparedness for the COVID-19 Endemic in the Udon Thani Province

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**Abstract:** This study aimed to understand the perception toward endemic preparedness, adoption of the HBM seeks to improve the level of response of Udon Thani people toward governmental messages regarding transforming the Pandemic into an Endemic. To fulfill the study's aim, confidence toward various governmental activities and control measures. A cross-sectional survey was conducted among 120 participants across the Udon Thani Province using questionnaires implemented through Google Forms. The results were explained using descriptive and binary logistic regression analysis. Among the 120 participants, 97 (80.83%) were aware of COVID-19, and 88 (73.33%) had good knowledge. The behavioral change was observed in 97 (80.83%), and variables in the health belief model showed a significant association with the behavioral change. Most participants living across Udon Thani approached the COVID-19 endemic similarly, irrespective of age, education, or relation to the healthcare field. Perceptions of the community as explained by the health belief model were greatly influenced by the primary healthcare approach by the government and for the subsequent behavioral change.

**Keywords:** public perception, endemic, Udon Thani Province, health belief model.

## 乌隆他尼省对新冠肺炎流行病的认识和准备

**摘要：**这项研究旨在了解对流行病防范的看法，采用 HBM 旨在提高乌隆他尼人对有关将流行病转变为流行病的政府信息的反应水平。为了实现研究的目的，对各种政府活动和控制措施的信心。使用通过谷歌表单实施的问卷调查对乌隆他尼省的 120 名参与者进行了横断面调查。使用描述性和二元逻辑回归分析来解释结果。在 120 名参与者中，97 人 (80.83%) 了解新冠肺炎，88 人 (73.33%) 了解情况。97 人 (80.83%) 观察到行为改变，健康信念模型中的变量显示与行为改变显著相关。居住在乌隆他尼的大多数参与者都以类似的方式处理新冠肺炎流行病，无论年龄、教育程度或与医疗保健领域的关系如何。社区对健康信念模型的看法在很大程度上受到政府初级保健方法的影响以及随后的行为改变。

**关键词：**公众认知，地方病，乌隆他尼省，健康信念模型。

## 1. Introduction

On October 1, 2022, Thailand entered the Transition to Endemic Phase following the effectiveness of public health preventive and control measures, including those of the COVID-19 vaccination program in managing the transmission of the COVID-19 infection in the country. The health service system is now at a recovery stage where the rate of hospital admission of COVID-19 cases and the usage of intensive care wards are declining. This success is also contributed by the public's awareness of the importance of adopting the preventive measures recommended by the Government. Therefore, the Public Health Ministry (PHM) of Thailand thanks and congratulates all the Thais for their cooperation. Taking into account the current situation of COVID-19 in Thailand, PHM has examined and reviewed the control and preventive measures of COVID-19 that can be implemented during this Transition to Endemic Phase.

The term "endemic" refers to a disease that is circulating in a community at an expected or normal level, minus an occasional outbreak (for example, the flu). Udon Thani, along with other provinces of Thailand, has begun treating COVID-19 as an endemic virus due to declining case and hospitalization rates as well as the increased availability of vaccines, treatments, and rapid testing. Through these resources along with preventive strategies such as wearing masks when indicated, we can keep severe cases to a minimum and live our daily lives with an acceptable level of COVID-19 in the community.

It is not yet clear what the end state for COVID-19 will be, and so public policy, in confronting this wicked problem, must take a confidence-building stance amidst uncertainty. Even the scientists debate the trend in the evolution of COVID-19, with some concluding it will be difficult to model considering the world's uneven vaccination and health responses to the pandemic, and still, others expect risks of more virulent strains still possible [1]. While humankind cannot control nor predict how the virus will evolve, it can craft through policies a social and economic environment that brings the world closer to societies' preferences of the "new normal." Rather than painting this condition as an end-state, it may be more useful to illustrate it as a direction of social and economic conditions that could help bring about an acceptable degree of normalcy, as well as enhanced trust in government, public policy, and fellow citizens' commitment to the common good.

It is evidenced from previous pandemics that the lack of proper knowledge about the disease is associated with negative emotion among people, which can further complicate the attempts of preventing the spread of the disease [2], which has a high uncertainty regarding its potential severity and ability to take

control over the process by preventive measure. Furthermore, to understand the dynamics of risk perceptions toward the pandemic in a wider perspective, the health belief model (HBM) [3] was used as a conceptual framework, which has largely been tested empirically, explains, and predicts preventive health behavior in terms of belief patterns, focusing on the relationship between health behaviors and usage of health services. Therefore, the objective of this research was to describe the perceptions, behavioral changes of the community, and preparedness for the COVID-19 endemic in Udon Thani Province.

## 2. Materials and Methods

Purposive sampling and data collection from 120 participants were governors and officials involved in policy-making across the Udon Thani province of Thailand. The period of collection was from June to August 2022. A cross-sectional survey using modified WHO questionnaire 6 Scales for perception and behavioral change and affect had a 7-point ranking scale with the possible responses. Extreme values for Knowledge were No Knowledge-Excellent for COVID-19 and preventive measures, Unsusceptible-Highly Susceptible for perceived susceptibility, Not Severe-Very Severe for severity, Not at All-Very Much for self-efficacy, Extremely Difficult-Extremely Easy for barriers, and Not at All-Very Much for behavioral change. The answer "neutral" for opinions on governmental programs, "declined to answer" and "not sure" for COVID control activities for lockdown preparedness were excluded. To facilitate easier and more instructive interpretation, we transformed the initial 7-point Ranking scale of Perceptions of Knowledge, Susceptibility, Severity, Benefits, Self-Efficacy, Barriers and Practice Intentions into a binary scale. Freidman's test was used to identify the median ranks of each variable, and the variables were converted to dichotomous variables using median as cut-off. The results were explained using descriptive and Binary Logistic Regression analysis using SPSS, and Microsoft Excel was used to produce graphs and charts.

## 3. Results

COVID-19 Specific Behavioral Change: Most of the participants 97 (80.83%) followed the recommendations by the government to combat COVID-19, and 108 (90%) of them updated themselves about COVID-19 several times a day. 116 responded to the question regarding their willingness to vaccinate when it is available, and 112 (93.33%) agreed that they are more likely to get vaccinated and 4 (3.33%) were against it. There was a significant association between knowledge and behavioral change;

those who had good knowledge had 2.4 odds of good practice [2.4 95%CI 1.034–3.651] and 2.11 odds of intention to vaccinate 2.11 [95%CI 1.333–5.012] (Table 1). Majority of the participants were confident that by following hand washing and by practicing social distancing and lockdown would help them in the prevention of the disease. People's perceptions were collected and explained in the framework of the HBM model and detailed in Fig. 1 and Table 2.

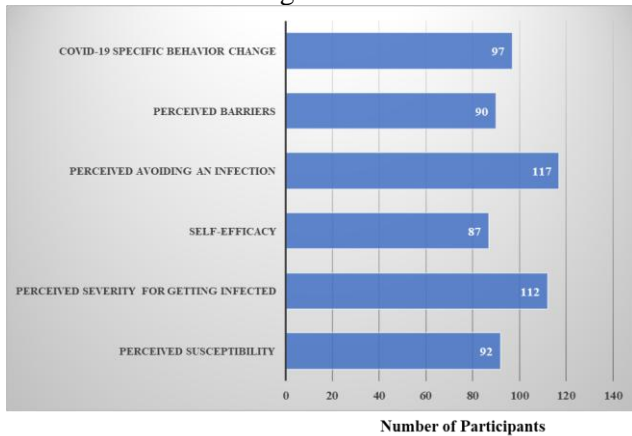


Fig. 1 Perceptions of susceptibility, severity, benefits, self-efficacy, barriers, cues for action, and COVID-19 behavioral change (Developed by the authors)

The data were collected based on the ranking from one to six, and median ranks obtained using Friedman's test were used to divide the responses into two for easy description. About 97 (80.83%) participants had an overall good perceived knowledge score, and 99 (82.5%) had good perceived knowledge regarding preventive measures. Perceived susceptibility was more among 101 (84.17%) and 19 (15.83%) felt that they were less susceptible to the disease. Perceived severity was less in 24 (20%) and 96 (80%) felt that if infected, it would be severe for them. A good proportion 99 (82.5%) felt that they are more likely to avoid infection if they followed the recommendations from the authorities and 21 (17.5%) felt that they are less likely to benefit from it because no one has a clear idea regarding the pathophysiology and epidemiology of COVID-19. Self-efficacy was less among 36 (30%)

and 84 (70%) perceived that they were confident in avoiding an infection. Perceived barriers were more among 87 (72.5%), as most of them updated regarding COVID-19 many times a day through different channels and conflicting information from the COVID info-demic were identified as barriers. More than half of the participants felt that many critical phenomena happen in the world, which the public is never informed about, 96 (80%) felt that politicians usually do not tell the true motives for their decisions, which increases the thought barrier for a behavior change. Opinions regarding various activities imposed by the government were listed. The respondents were asked whether they could be considered cues for action for behavioral change, and majority 107 (89.17%) felt that they had helped them for behavioral change. Binary logistic regression analysis considering the behavioral change as an outcome variable explains the role of HBM variables in terms of crude and adjusted Odds Ratios (OR<sub>adj</sub>) (Table 2).

More than 90% of the participants had appreciation for various programs such as Break the Chain Campaign, Complete Lockdown, Health Department Preparedness, Ration distribution, Community Kitchen, Airport Surveillance, and IEC activities. Law enforcement by the police and media was less appreciated (Fig. 2).

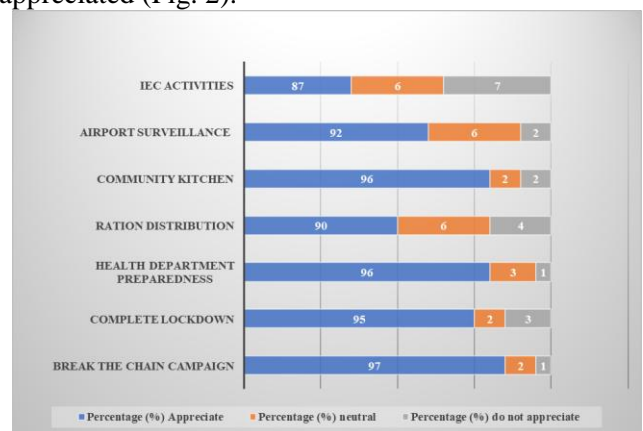


Fig. 2 Public opinion on various governmental programs against COVID-19 (Developed by the authors)

Table 1 Association of knowledge and behavior change (n = 120) (Developed by the authors)

Behavior Change Variables	Knowledge		$\chi^2$	OR	95%CI	p-value
	Poor	Good				
<i>I follow the recommendations</i>	23	97	6.012	2.40	1.034–3.651	0.021
Poor Practice (12, 10%)	3	9				
Good Practice (108, 90%)	20	88				
<i>If a vaccine is available, I'll take it</i>	5	115	8.766	2.11	1.333–5.012	0.001
Less likely (4, 3.33%)	1	3				
More likely (116, 96.67%)	4	112				

Table 2 Distribution of HBM variables in response to COVID-19 endemic and its relationship with the behavioral change (Developed by the authors)

HBM* Variables	BC**		$\chi^2$	ORadj	95%CI	p-value
	Poor 23, 19.17%	Good 97, 80.83%				
<b>Perceived susceptibility</b>						
Less susceptibility (19, 15.83%)	10	9	2.19	1.46	0.82–5.21	0.188
More susceptibility (101, 84.17%)	13	88				

Continuation of Table 2						
<b>Perceived severity</b>						
Less severity (24, 20%)	10	14	8.21	0.35	0.13–0.58	0.005
More severity (96, 80%)	13	83				
<b>Perceived benefits</b>						
Less likely (21, 17.5%)	4	17	8.55	0.72	0.55–1.32	0.001
More likely (99, 82.5%)	19	80				
<b>Self-efficacy</b>						
Less (36, 30%)	20	16	36.41	5.11	2.49–8.31	0.001
More (84, 70%)	3	81				
<b>Perceived barrier</b>						
Less (33, 27.5%)	21	12	38.62	5.98	1.99–9.08	0.002
More (87, 72.5%)	2	85				
<b>Cues for action</b>						
Less (13, 10.83%)	5	8	12.24	2.77	1.34–5.93	0.003
More (107, 89.17%)	18	89				

\* HBM - health belief model; \*\* BC - behavior change

## 4. Discussion

This study has had nearly equal representation of participants from the healthcare field and other professions. Although there was good perceived knowledge about the current situation of the COVID-19 pandemic, their perceived knowledge for preventive measures was poor, indicating the need for behavioral change communication. Poor knowledge can be considered to be a barrier for behavioral change. Risk perceptions influence individual protective behaviours, but paradoxically, how people perceive risk is not necessarily correlated with the actual risk. This was seen during the influenza pandemic in 2009 [4–5], where uncertainty and perceived exaggeration were also associated with a reduced likelihood to implement the recommended behaviors [5]. According to the HBM, an increase in perceived susceptibility to a particular health problem would engage in behaviors to reduce the risk of developing the health problem [6]. Individuals who believe they are at a low risk of developing an illness are more likely to engage in unhealthy or risky behaviors. The combination of perceived severity and perceived susceptibility is referred to as perceived threat [7], which depends on knowledge about the condition [6]. The HBM predicts that a higher perceived threat leads to a higher likelihood of engagement in health-promoting behaviors. In our study, those who practice hand washing and other measures that prevent the infection transmission perceive that contracting COVID-19 would be severe (51%) and susceptible (60%), and most of the elderly having comorbid conditions felt that contracting COVID-19 would be very severe. Therefore, these individuals perceive a given health problem as serious are more likely to engage in behaviors to prevent the health problem from occurring as they feel more susceptible to contract the disease. Perceived benefits in the HBM model refer to an individual's assessment of the value or efficacy of engaging in a health-promoting behavior to decrease the risk of disease [8]. If an individual believes that a particular action will reduce susceptibility to a health problem or decrease its seriousness, then he or she is

likely to engage in that behavior regardless of objective facts regarding the effectiveness of the action [6]. In this study, most of them felt it was extremely easy to avoid infection if they followed the recommendations set by the government (93.8%) and followed the same. Perceived barriers refer to an individual's assessment of the obstacles to behavior change [8]. The perceived benefits must outweigh the perceived barriers in order for behavior change to occur [7–8]. Perceived barriers to taking action include the perceived inconvenience, expense, danger (e.g., side effects of a medical procedure), and discomfort (e.g., pain, emotional upset) involved in engaging in the behavior [6]. In this study, perceived barriers were mainly the thought barriers about the current situation; people did not understand the importance of disease prevention, felt there was much media hype, and secret organizations influenced political decisions, which were the barriers in adopting preventive measures. Sudden influx of knowledge through different media (info-demic) made confusion among the public regarding behavioral changes. An overall good knowledge about the disease spread was very much needed to overcome these barriers. The cues of action included trusted programs by the authorities, events, or information from close others [8], the media [9], or healthcare providers [8] promoting engagement in health-related behaviors. In this study, more than half (53.7%) updated themselves about the current situation several times through media and information from close ones and healthcare providers, which would be necessary for promoting engagement in health-promoting behaviors. Self-efficacy referred to an individual's perception of his or her competence to successfully perform a behavior [7]. This recognized the confidence in one's ability to effect change in outcomes, which was a key component of health behavior change [7, 10]. This study adds to our understanding of awareness and promotional activities during pandemic events would impact the pandemic worry, knowledge, and behavior. Additionally, this study goes one step further to consider how the health belief model construct during a pandemic event helps identify and engage in health-promoting behavior in

the population.

## 5. Conclusion

The leader of Udon Thani province has acquired adequate knowledge of COVID-19, including the susceptibility to and severity of the outbreak. Even though a greater proportion had self-efficacy and identified barriers, the majority trusted and followed recommendations from the authorities. Most of them had good opinions about the different strategies adopted by the government. The Government could gain the confidence of the community and thus healthy behavior was preparedness for the COVID-19 endemic.

## 6. Limitations and Further Study

The urgency of the situation limits the study. Additionally, the population selected to study should also choose to interview the people in the province to analyze and comprehend the guidelines.

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