THE IMPACT OF COVID-19 ON THAILAND’S PUBLIC HEALTH EMERGENCY MANAGEMENT SYSTEM: A CASE STUDY

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ABSTRACT

Purpose: This phenomenological qualitative research investigates Public Health Emergency Management (PHEM) in response to COVID-19, with a specific focus on the case of Thailand’s Health Region 9 (Nakhon Ratchasima) and its program known as COVID-19 Back Home.

Method: The study gathers data through in-depth interviews with four groups comprising a total of 112 individuals from three Thai provinces. The collected data is subjected to content analysis, and the findings are analyzed using a framework based on system theory.

Results and conclusion: The successful management of subjects returning home is highlighted, resulting in saving numerous patients’ lives. The study identifies various suggestions and success factors for each phase of the management process. The research sheds light on PHEM situations in response to COVID-19, specifically examining Health Region 9’s COVID-19 Back Home program.

Implications of the research: The study provides valuable insights into the inputs, activities, and processes involved in managing such situations, showcasing successful strategies, collaborative efforts, and behavioral changes.

Originality/value: The identified suggestions and success factors can inform and improve future management approaches.

Keywords: COVID-19, Emergency Situation Management, Isan Society, System Theory, Thailand.

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O IMPACTO DA COVID-19 NO SISTEMA DE GERENCIAMENTO DE EMERGÊNCIAS DE SAÚDE PÚBLICA DA TAILÂNDIA: UM ESTUDO DE CASO

RESUMO


Método: O estudo coleta dados por meio de entrevistas em profundidade com quatro grupos, compreendendo um total de 112 indivíduos de três províncias tailandesas. Os dados coletados são submetidos à análise de conteúdo, e as descobertas são analisadas usando uma estrutura baseada na teoria do sistema.


Implicações da pesquisa: O estudo fornece percepções valiosas sobre os insumos, as atividades e os processos envolvidos no gerenciamento de tais situações, apresentando estratégias bem-sucedidas, esforços de colaboração e mudanças de comportamento.

Originalidade/valor: As sugestões e os fatores de sucesso identificados podem informar e aprimorar futuras abordagens de gerenciamento.


EL IMPACTO DE COVID-19 EN EL SISTEMA DE GESTIÓN DE EMERGENCIAS DE SALUD PÚBLICA DE TAILANDIA: UN ESTUDIO DE CASO

RESUMEN


Método: El estudio recopila datos mediante entrevistas en profundidad con cuatro grupos formados por un total de 112 personas de tres provincias tailandesas. Los datos recogidos se someten a un análisis de contenido y las conclusiones se analizan utilizando un marco basado en la teoría de sistemas.

Resultados y conclusión: Se destaca el éxito de la gestión de los sujetos que regresan a casa, lo que ha permitido salvar la vida de numerosos pacientes. El estudio identifica varias sugerencias y factores de éxito para cada fase del proceso de gestión. La investigación arroja luz sobre las situaciones de PHEM en respuesta a COVID-19, examinando específicamente el programa COVID-19 Back Home de la Región Sanitaria 9.

Implicaciones de la investigación: El estudio proporciona información valiosa sobre los insumos, las actividades y los procesos involucrados en la gestión de tales situaciones, mostrando estrategias exitosas, esfuerzos de colaboración y cambios de comportamiento.

Originalidad/valor: Las sugerencias y factores de éxito identificados pueden informar y mejorar futuros enfoques de gestión.

Palabras clave: COVID-19, Gestión de Situaciones de Emergencia, Sociedad Isan, Teoría Sistémica, Tailandia.

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1 INTRODUCTION

The emergence of the COVID-19 pandemic in late 2019 brought unprecedented challenges to countries worldwide, including Thailand. In Thailand, the Kingdom closed some of its borders on March 28, 2020, due to the ravages of the growing COVID-19 pandemic onslaught and saw its 40 million tourists a year tourism economy plummet to almost zero (Kaendera & Leigh, 2021; Yurayat & Tuklang, 2023). As the virus spread rapidly across borders, Thailand's public health management system (PHMS) faced significant disruptions (Marshall et al., 2021), forcing the country to adapt and implement measures to combat the virus's initial waves. The county responded quickly with strong public health and social measures and contact tracing being performed by over 1000 surveillance and rapid response teams with support from 1.1 million village health volunteers to identify, isolate, and quarantine cases (Kaweenuttayanon et al., 2021; Rajatanavin et al., 2021). Further social measures under a state of emergency were implemented by the newly created Centre for COVID-19 Situation Administration (CCSA) in April 2020, including a full-scale national lockdown, curfews, and 14-day mandatory quarantine for international travelers (World Health Organization, 2020a). Therefore, the following brief introduction aims to outline the critical impacts of COVID-19 on Thailand’s PHMS during the early stages of the pandemic.

Thailand's PHMS was initially put to the test in identifying and detecting COVID-19 cases, which unfortunately became the first country outside China to identify the first case of the virus (Ayudhaya & McFarlane, 2019; Okada et al., 2020; World Health Organization (WHO), 2020a). With limited knowledge about the virus and its transmission dynamics, Thailand's surveillance systems must adapt rapidly. Enhanced screening procedures were implemented at airports, quarantine measures were enforced for travelers, and contact tracing efforts were intensified to promptly identify and isolate potential cases (McLaughlin, 2020; World Health Organization, 2020a).

The sudden surge in COVID-19 cases strained Thailand's healthcare infrastructure (Figure 1) (Rajatanavin et al., 2021). Hospitals and healthcare facilities faced challenges in managing the increasing number of patients, leading to capacity and resource allocation concerns. Also, according to Marshall et al. (2021), at COVID-19’s peak in Thailand, critical care resources such as intensive care unit (ICU) beds and ventilators became depleted. Emergency field hospitals were set up to accommodate the growing influx of patients, ensuring sufficient bed capacity and medical personnel.
COVID-19 presented the Thai PHMS with the task of effectively disseminating accurate information and raising public awareness. The government and health authorities implemented public health campaigns to educate the population about preventive measures, such as mask usage, hand hygiene, and social distancing. Efforts were made to combat misinformation and encourage adherence to the Ministry of Public Health guidelines. Within some academic institutions, mental health counseling moved online, challenging the healthcare professional's ability to adopt and adapt (Yurayat & Tuklang, 2023). However, online interaction between teachers and students has been proven to be an effective option (Sukendro et al., 2023).

Thailand's PHMS swiftly implemented various policies and measures to contain the virus. This included declaring an emergency, travel restrictions, and closing non-essential businesses and entertainment venues (Ayudhaya & McFarlane, 2019; Rajatanavin et al., 2021). Quarantine and isolation protocols were enforced for both incoming travelers and confirmed cases. These policies aimed to mitigate the virus's spread and alleviate the healthcare system's burden.

Thailand's PHMS emphasized collaboration among multiple stakeholders. Government agencies, healthcare professionals, public health experts, and international organizations collaborated to share expertise, coordinate efforts, and ensure a unified response. This collaboration helped facilitate information sharing, resource allocation, and the implementation of effective strategies to manage the initial waves of COVID-19. As pointed out in by García
et al. (2023) in Mexico, health education programs are critical elements in saving the welfare of the population.

The initial waves of the COVID-19 pandemic posed significant challenges to Thailand's PHMS. However, the country navigated the early stages of the crisis through proactive measures, swift policy implementation, and effective collaboration. The experiences and lessons learned during this period strengthened Thailand's public health response and preparedness for subsequent pandemic waves.

2 THEORETICAL FRAMEWORK

This study examined the public health emergency management in response to COVID-19 in Thailand's Health Region 9, comprising three provinces. The investigation covered the period from January 31, 2020, to April 30, 2025, and analyzed the situation of patients testing positive during the first four waves (Table 1).

Table 1
Covid’s four waves

<table>
<thead>
<tr>
<th>Health Region 9</th>
<th>First wave cases</th>
<th>Second wave cases</th>
<th>Third wave cases</th>
<th>Fourth wave cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Province 1</td>
<td>19</td>
<td>32</td>
<td>29,634</td>
<td>79,621</td>
</tr>
<tr>
<td>Province 2</td>
<td>14</td>
<td>15</td>
<td>16,732</td>
<td>59,372</td>
</tr>
<tr>
<td>Province 3</td>
<td>9</td>
<td>14</td>
<td>17,042</td>
<td>45,922</td>
</tr>
<tr>
<td>Totals</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Department of Disease Control (2022)

These figures indicate the success of Thailand's COVID-19 control during the first and second waves. Thailand's Health Region 9 (Nakhon Ratchasima) demonstrated effective management mechanisms, with the provincial governor acting as the emergency commander, following operational guidelines from the government and the Ministry of Public Health.

Despite being a developing country with a Gross National Product (GDP) ranking 22nd globally in 2019, Thailand excelled in health security, ranking sixth among 195 countries and first in Asia (Office of the Permanent Secretary, Ministry of Public Health, 2020). This pre-existing strength in health security positioned Thailand well to tackle the outbreak.

However, during the third and fourth waves (March 2021 to April 30, 2022), the number of positive cases increased to a level where hospitals became overwhelmed, leading to challenges in patient accommodation and increased fatalities. Some provinces implemented a
policy of *taking the patients back home* ("Thai’s 'Covid-19 train'", 2021), necessitating preparation, crisis acceptance, and coordinated planning within local medical and public health systems. This required leveraging the social capital of the Isan region to manage the influx of patients effectively.

The study highlights the importance of learning from local experiences in preparation for future outbreaks and disasters (Bhaskara & Filimonau, 2021). The findings provide valuable insights for agencies to review their experiences, improve work systems, and adopt effective measures and policies to prevent and control diseases. Additionally, the study emphasizes the need for agencies and related associations to contextualize lessons learned and apply them to specific areas while promoting disease prevention and control measures and policies.

Overall, the study aimed to investigate public health emergency management in response to COVID-19, focusing on Health Region 9 and the process of returning COVID-19 patients to their respective hometowns.

### 3 METHODOLOGY

The study used a phenomenological qualitative research method from December 2021 to January 2022 in three northern Thai provinces.

#### 3.1 KEY INFORMANTS

This study chose a specific group of key informants using purposive sampling, consisting of people involved in public health emergency management in response to COVID-19, divided into four groups. These included 112 policy-level executives from three northern Thai provinces. They were disease prevention and control specialists, maintenance officers and public health volunteers, community leaders, or community representatives. Province 1 had 39 participants, Province 2 had 35 participants, and Province 3 had 38 participants, respectively.

#### 3.2 RESEARCH INSTRUMENT

The research instrument consisted of a semi-structured survey for in-depth interviews and focus group discussions with people involved in public health emergency management in response to COVID-19. According to Gill et al. (2008), the most frequently used methods for...
data collection in qualitative research are focus groups and interviews. The content validity of the interviews was checked by five experts (Yurayat & Tuklang, 2023).

3.3 DATA COLLECTION

The researchers-initiated contact with the disease control officer under the Provincial Public Health Office, who acted as the coordinator for the study. According to Kaewchandee et al. (2023), the district public health officers (DPHO) became the most critical link in providing essential resources to patients during the COVID-19 outbreak in Thailand.

An official letter was sent to the coordinator, requesting an interview with the target group and clarifying the study's importance, interview duration, and the specific issues to be investigated. Interview questions were included in the letter.

Regarding inviting respondents to participate in the research, the provincial coordinator assumed responsibility for planning the interviews. This involved specifying the interviews' date, time, and location and informing the respondents at least one to two weeks in advance.

During the interviews, the research team manually collected data at each stage. The process began with self-introduction, familiarization, and building trust with the target groups. The team then clarified the study's objectives, explained the research process steps, and determined the overall duration of the research and the length of each interview. The interviews lasted between 30 and 60 minutes, while the focus group discussions lasted 90 to 120 minutes.

3.4 DATA ANALYSIS

Qualitative data analysis was performed utilizing content analysis to derive conclusions. The data collected in the field were systematically categorized and analyzed to establish relationships, employing interpretation techniques to identify common characteristics and specify keywords. From the data, conceptual summaries were generated, serving as the theoretical foundation for the study.

3.5 ETHICS CLEARANCE

In this study, the researcher was certified in research ethics from the Human Research Ethics Committee, Institute for the Development of Human Research Protections (IHRP), IHRP 2021076. The
researchers complied with considerations and ethics guidelines for human research in all study phases (Pimdee, 2020).

4 RESULTS AND DISCUSSION

4.1 GENERAL SYSTEM THEORY (GST)

Ludwig Bertalanffy's General System Theory (GST) provided a holistic and interdisciplinary framework for understanding Thailand’s complex Public Health Emergency Management (PHEM) system, its structures, interactions, and behaviors (Guberman, 2004). When applied to COVID-19 and PHEM, GST offered valuable insights into the interconnectedness and interdependencies of various elements within the PHEM system (Katrankazas et al., 2020).

4.1.1 Systemic Perspective

GST emphasizes viewing COVID-19 and PHEM as dynamic systems rather than isolated events. GST highlights the interactions between different components, including the virus, individuals, healthcare systems, government policies, and societal factors. This perspective helps identify the interconnected nature of the system and the potential ripple effects caused by interventions or disruptions in any part of the system.

4.1.2 Emergent Properties

GST acknowledges that systems exhibit emergent properties that arise from the interactions of their components. In the context of COVID-19, emergent properties can include the spread patterns of the virus, the impact on healthcare infrastructure, and the socio-economic consequences. Understanding these emergent properties allows for a more comprehensive assessment of the system's behavior and the potential cascading effects of public health emergencies.
4.1.3 Feedback Loops

GST highlights the presence of feedback loops within systems, including positive and negative feedback mechanisms. In the case of COVID-19, feedback loops can manifest in various ways. For example, positive feedback can occur when a rise in cases leads to increased transmission rates, overwhelming healthcare systems. Negative feedback can be observed when preventive measures, such as lockdowns or vaccinations, help reduce transmission rates and alleviate the burden on healthcare facilities.

4.1.4 Open Systems

GST recognizes that systems, including public health emergencies, are open and interact with their environment. COVID-19 management involves interactions with the external environment, such as international travel restrictions, border control measures, and the influence of cultural, economic, and political factors. Understanding the system's openness helps comprehend the external factors that shape the dynamics of the pandemic and public health emergency responses.

4.1.5 Interdisciplinary Approach

GST promotes an interdisciplinary approach to problem-solving, recognizing that complex issues require insights from multiple disciplines. COVID-19 and PHEM involve various disciplines, including epidemiology, healthcare, economics, psychology, and sociology. Integrating knowledge from diverse fields can enhance understanding, decision-making, and the development of comprehensive strategies to mitigate the impacts of the pandemic.

4.1.6 Adaptability and Resilience

GST underscores the importance of adaptability and resilience within systems. In the context of COVID-19, public health emergency management must exhibit adaptability by continually updating strategies based on new scientific evidence, monitoring the effectiveness of interventions, and adjusting policies to address emerging challenges. Building resilience
involves preparing healthcare systems, infrastructure, and communities to respond effectively to future outbreaks or public health emergencies.

Applying Bertalanffy’s General System Theory to COVID-19 and PHEM enables a holistic understanding of the complexity and interconnectedness of the system. It emphasizes the need for integrated approaches, interdisciplinary collaboration, and adaptive strategies to address the challenges posed by the pandemic effectively.

4.2 INPUTS

Planning and support for Public Health Emergency Management (PHEM) in response to COVID-19 involved an administrative and command structure with a single commander. Resolutions and proposals from the Provincial Communicable Disease Control Committee were based on policy guidelines from the Center for COVID-19 Situation Administration, Ministry of the Interior, under the Prime Minister's leadership. Two critical operations were established: the Provincial Communicable Disease Committee (PCDC) and the Disaster Prevention and Mitigation Division, with the provincial governor serving as chair, following the guidelines of the World Health Organization (2020c).

The command system was well-structured, with the supreme commander making decisions and an integrated team responsible for driving the work, including the Provincial Management Center Committee. Meetings were held to implement PCDC. Measures were implemented in alignment with the management center's guidelines, adapted to suit the specific needs of each province. Collaboration between relevant agencies was crucial since the public health department may need more authority to cover all activities. Measures and activities were clarified and enforced under the Communicable Diseases Act B.E. 2558 (2015) and the Emergency Decree on Public Administration in Emergency Situations B.E. 2548 (2005), introducing a new dimension of disease control. Unlike previous epidemics where the public health sector primarily operated alone, the COVID-19 response required cooperation from multiple governments and public health sectors, reflecting a genuine social and national sacrifice.

The PCDC’s command system demonstrated agility and speed in response to situations. Technology was utilized to issue measures and announcements swiftly. Daily board meetings were held during the early stages, chaired mainly by the provincial governor, with committee members attending in person. To stay informed, district committees could participate via online technology, live broadcasts, or Facebook Live. As the situation improved, the frequency of
meetings gradually decreased, but urgent decisions could be coordinated directly with the governor using technology.

The management model in medicine and public health involves the Public Health Emergency Management Committee under the Public Health Emergency Operation Center (PHEOC) (World Health Organization, 2021), following national and provincial orders and transmitting them to the PHEOC at the district level. The Provincial Public Health Office established a clear PHEOC based on previous disaster management experience, making necessary improvements to ensure consistency. Well-defined mission groups with clear roles facilitated real-time teamwork, resulting in consistent and coordinated mechanisms. The COVID-19 outbreak led to the automatic improvement of medical and public health personnel through knowledge development and operational enhancements.

Budgets for implementation were obtained from various sources, including the public and private sectors and donations. TO SUPPORT SL, the PHEOC ensured stockpiling and logistics (SL) of medical supplies, equipment, ICT, communication systems, survival equipment, vehicles, operating centers, and facilities. In the initial phase of COVID-19, focus was placed on prevention, screening, stock observation, and equipment and vaccine management. The PHEOC's COVID-19 stock was not procured independently, but the ministry's logistics supported the area's management, including a ‘Cohort Ward’ (Naorungroj et al., 2023).

4.3 ACTIVITIES

Activities for PHEM at the provincial level included roles and mechanisms to drive operations from inputs, with integration from the public, communities, and individuals in the provinces. The lessons could be summarized according to implementing public health emergency management (PHEM) 2P2R (P1: Prevention and Mitigation, P2: Preparedness, R1: Response, R2: Recovery) as discussed below:

4.3.1 P1: Prevention and Mitigation and P2: Preparedness

The province's policy for dealing with COVID-19 involved conducting a situation analysis. The Provincial Public Health Emergency Operation Center (PHEOC) committee reviewed the COVID-19 epidemic situation at the provincial level, considering information from around the world, continents, countries, and provinces while aligning with policies set by
the national level Center for COVID-19 Situation Administration (CCSA). They analyzed and assessed health behaviors and public risks. A table plan was used to present information and work plans to the Provincial Communicable Disease Control Committee (PCDC), with the provincial governor as the commander, to determine resolutions and issue announcements.

The PCDC implemented preventive measures to mitigate the epidemic's impact. These included surveillance and prevention measures for individuals coming from risky countries or areas, screening potentially infected individuals (PUI) by Village Health Volunteers (VHVs) and Subdistrict Health Promoting Hospitals (SHPH) in line with previous studies (Kaweenuttayanon et al., 2021; World Health Organization, 2020a). They also supported at-risk groups and developed guidelines for various emergency agencies. At the district and subdistrict levels, the district chief served as the chairman of the PHEOC and received assistance from various departments, including the district health office, SHPH, community leaders, VHVs, and other sectors (Tejativaddhana et al., 2020). This integration of sectors created a new approach to disease control, involving collaboration from all sectors.

During the third wave, when the number of patients increased so Bangkok could no longer accommodate them, the province had to repatriate patients to their hometowns. This was done by preparing Community Isolation (CI) facilities and field hospitals to provide appropriate care and support.

4.3.2 R1: Response

The Provincial Communicable Disease Control Committee (PCDC) issued resolutions and orders to address prevention and control, treatment, and social measures during the first and second waves of the disease outbreak. They relied on guidelines from previous outbreaks to inform their efforts. However, both healthcare practitioners and the public initially lacked knowledge about the emerging disease, leading to panic and anxiety. As the number of patients increased during the third wave, the COVID-19 Back Home initiative was introduced. This initiative involved the establishment of a call center to coordinate with relevant agencies at the provincial, district, and community levels.

During Thailand's 2021 Songkran water festival, many people, including those in Bangkok and other provinces, began returning to their hometowns in rural areas like Thailand's Northeast (Isan). In July 2021, an order was issued to close worker camps in Bangkok, resulting in a situation where people had to wait for examinations, beds, and death. Region 9 took the initiative to bring patients back home, but it was challenging because only patients with PCR
results were allowed to return. This caused confusion and difficulty in contacting people to return home as Bangkok did not provide testing facilities, hospitals were at total capacity, and there were numerous deaths.

Region 9 had to prepare dedicated areas for patients without PCR results to address the situation, including establishing quarantine (LQ) and waiting centers. The advantage of rural areas was that people had siblings and relatives whose houses could be used as quarantine facilities. Proper management of infectious waste was necessary during community quarantine. High-risk groups were instructed to burn their waste daily. Officers collected waste from patients, sent it to hospitals, disposed of it at waste facilities, and used appropriate casings. Initially, this method was not widely accepted, but the Department of Health recommended its use.

Consequently, the Community Isolation (CI) approach allowed patients to handle infectious waste themselves. Temples and communities collaborated in using crematoriums to dispose of infectious waste. Proper management of bodies according to guidelines was crucial when deaths occurred. Cremation required a standard incinerator, so a provincial hospital developed a guideline for coordinating corpse management.

### 4.3.3 Community Engagement

In Region 9, community engagement played a significant role in the COVID-19 response. The advantage of rural areas was that people had strong social networks, with siblings and relatives offering their homes as quarantine facilities. This sense of community and kinship support facilitated the implementation of quarantine measures and helped control the spread of the virus.

### 4.3.4 Innovative Waste Management Solutions

Managing infectious waste was a crucial aspect of the response. In addition to high-risk groups burning waste daily, the Community Isolation (CI) approach allowed patients to dispose of infectious waste themselves (Chartier, 2014). This innovative solution reduced the burden on healthcare facilities and ensured proper waste management in the community. Temples and communities also collaborated in utilizing crematoriums to dispose of infectious waste safely.
4.3.5 Challenging Situations

With the vast increase in patients during the third wave, resources became limited. The orders to close worker camps in Bangkok led to a complex situation where people were left waiting for testing, beds, and sadly, even deaths occurred. This highlights the challenges and strains experienced by the healthcare system and the need for effective coordination and resource allocation.

4.3.6 Guideline for Coordinating Corpse Management

Proper management of deceased individuals was a critical aspect of the response. Cremation required a standard incinerator, and a provincial hospital developed a guideline to ensure the appropriate handling and coordination of corpse management. This emphasized the importance of maintaining respectful and proper procedures even during challenging times.

4.3.7 Treatment

During the first and second waves, healthcare practitioners experienced panic due to the lack of knowledge and equipment. A provincial hospital initially managed identified cases until the patients could go home. In the meantime, a community hospital provided training on infection control (IC) and personal protective equipment (PPE) to patients under investigation (PUI). They established a collaboration with a provincial hospital, which acted as a mentor, to develop guidelines and offer advice to the community hospital through the Line application. To handle the increasing number of cases, leading government hospitals and field hospitals provided an acute respiratory infection (ARI) clinic, an emergency room (ER), a cohort ward/intensive care unit (ICU), treatment equipment, and a care service system. The care for patients in home isolation (HI), community isolation (CI), and field alternative isolation (FAI) utilized a case monitor that employed innovation and technology, along with a network of personnel from the public and private sectors and volunteers. During the third wave, there was an influx of patients returning home from Bangkok due to the Songkran Festival and the closure of worker camps. However, during a crisis in Bangkok, patients were only admitted for treatment if they had PCR test results, posing a challenge.

The ARI clinic was established by converting a tuberculosis room into a cohort ward for COVID-19 patients. They used the "inflated" or "Bullfrog Model" to increase the number...
of beds. The CI and field hospitals were added when the room capacity proved insufficient. The proactive preparation of these facilities yielded positive results during the COVID-19 situation. Services needed modifications, such as extending the operating hours of the ARI clinic to a full day. Contact tracing work was suspended during COVID-19 to allocate resources for swab testing. Medicines were delivered to the homes of patients with non-communicable and general diseases, appointments were postponed, and proactive case admission was implemented using Google Forms, allowing doctors to screen for symptoms and patient history.

Effective teamwork was crucial for direct patient contact, especially in modifying risky tasks. This required a well-managed team to ensure that patients who had not completed their 14-day treatment were discharged to make space for new patients. Rehabilitation centers, or CI, were utilized for patients who had not completed treatment. Some communities used the HI with the assistance of the Line application to monitor patients' symptoms. Thus, community care requires staff from the District Public Health, Subdistrict Health Promoting Hospital (SHPH), Village Health Volunteers (VHVs), and community leaders to play significant roles. The Isan social capital in a large province facilitated the establishment of quarantine areas such as the LQ, CI, or expansion to field hospitals (Figure 2). Patients were cared for by hospital staff, VHVs, and community members who delivered food to both relatives and non-relatives.

**Figure 2**
*Operation of COVID-19 Back Home*

Source: Authors

**4.3.8 Social Measures**

The province communicated social measures to the public to create health awareness and encourage participation from various sectors and areas. These measures included social...
distancing, guidelines for factories, schools, and practices to prevent infection and the spread of the disease, formulated within the province based on resolutions from the Provincial Communicable Disease Control Committee (PCDC). Effective communication channels were necessary for the public to understand and receive accurate information. The call center was a central hub to provide information, advice, and assistance, handle complaints, and receive reports. Any issues that arose were distributed to relevant organizations for prompt resolution. Dissatisfied individuals who called in to complain or discuss concerns were listened to, and doctors also used Facebook Live to answer questions and explain various measures. Community leaders played a role in disseminating information.

4.3.9 R2: Recovery

As the third and fourth waves subsided, provinces began reopening, allowing people to resume normal activities. However, businesses had been closed for an extended period, impacting income and livelihoods. COVID-free settings were implemented to assess the safety of the environment, service providers, and recipients. Signs indicating safety standards were categorized as green, yellow, and red. Vaccination coverage was prioritized, and vaccination measures were considered for event permissions, with vaccination coverage as a determining factor for approval.

4.4 OUTPUT

Performance and COVID-19 Back Home management in Health Region 9 saved many patient lives. Another achievement was that turning crisis into opportunity was achieved through the cooperation of all sectors to cope with COVID-19 as well as the changing behaviors of people.

Regarding success factors and obstacles, success factors in the initial phase included laws, structures, and mechanisms based on the ‘triangle that moves the mountain’ strategy, including academic affairs, society, and state power, referring to strong leaders who excel in contexts and situations to manage disaster situations with a quick response. The middle phase included personnel who sacrificed a sufficient number, communicated honestly, understood community members, and responded quickly. The problem in disease prevention and control management was hiding the truth due to uneducated and fearful community members. With understanding, people in the community were willing to help each other as Isan social capital.
in terms of intimacy. The final phase included policies/measures for post-disaster recuperation management without waiting for the disease to lessen.

4.5 OUTCOMES

The study highlighted several findings regarding PHEM responses to COVID-19, mainly focusing on the COVID-19 Back Home program in Health Region 9. The inputs for effective management included an administrative and command structure with a single commander, specifically the provincial governor acting as chairman. This structure facilitated coordination and collaboration among different sectors. The study emphasized the importance of relevant laws, such as the Communicable Diseases Act and the Public Administration in Emergency Situations Act, which provided a legal framework for managing the crisis.

The study also emphasized the significance of the Thai Health Promotion Foundation (THPF) tri-power strategy model, the ‘triangle that moves the mountain,’ involving collaboration between academics, society, and state power (Figure 3) (Ungsuchaval, 2016; Wasi, 2000). THPF's plans are developed based on the model’s concepts for knowledge creation, research evidence, policy advocacy, and social mobilization. THPF's strategy emphasizes technical capacity and knowledge management to advance professional healthcare worker capabilities (Buasai et al., 2007).

This strategy enabled comprehensive management and control of the epidemic, leveraging the collective efforts of various sectors. The Local Administrative Organization (LAO) also played a vital role in supporting the community health system (Van Nguyen et al., 2021; Wasi, 2011). This is supported by research from Yodsuban et al. (2023), which confirmed the critical importance of community health nurse roles in primary health care service during the COVID-19 pandemic. This and other studies highlight the importance of integrated work and cooperation from all sectors to effectively address the complex and chaotic nature of the COVID-19 crisis.
The flexibility and speed of the command system, mainly through the Provincial Communicable Disease Committee (PCDC) and the Emergency Operations Center (EOC), facilitated the issuance of quick measures, announcements, and orders to handle the public health emergency on time. The study identified the incident command system of the Department of Disease Control, consisting of mission groups, as an effective structure for managing the crisis.

Regarding the activities and processes for public health emergency management, the study summarized lessons based on prevention and mitigation (P1) and preparedness for situation analysis and policy preparedness (P2). The EOC committee was crucial in reviewing the epidemic situation, presenting data and work plans to the PCDC, and determining resolutions and orders. The study highlighted the unique challenge of returning patients home during the third wave when hospitals in Bangkok reached capacity. The COVID-19 Back Home program was implemented, and coordination among relevant agencies at the provincial, district, and community levels was established.

The study discussed various measures for treatment, social communication, and post-disaster recovery. These measures included creating understanding and participation through communication channels, establishing temporary treatment facilities, providing medical supplies and equipment, managing infectious waste, and coordinating corpse management. The study emphasized the importance of community engagement, utilizing the Isan region's solid social capital and kinship networks to support quarantine, patient care, and resource distribution.

In the recovery phase, the study emphasized reopening provinces and allowing people to resume normal activities. Vaccination coverage was a priority, and efforts were made to assess the environment and address the economic and livelihood impacts. The study highlighted...
the successful performance of COVID-19 Back Home management in Health Region 9, which saved numerous lives. Collaboration among sectors and changes in people's behaviors were identified as crucial factors contributing to the achievements.

The study also discussed the influence of the environment, terrain, climate, and indigenous culture on COVID-19 control and prevention efforts. It emphasized the role of environment management and the impact of cultural factors on individual and family disease control practices. It also confirmed COVID-19 research from Northern Thailand. Srichan et al. (2020) reported that the crucial nature of accurate and up-to-date information regarding COVID-19 prevention and control is essential, particularly for men, older age groups, and those lacking formal education.

Overall, the study gave valuable insights into the effective management of public health emergencies, specifically COVID-19, highlighting the importance of coordination, collaboration, legal frameworks, community engagement, and adaptability to changing circumstances.

5 CONCLUSION

The authors undertook a phenomenological qualitative research study to investigate how Thailand’s Public Health Emergency Management (PHEM) system responded to COVID-19, specifically as undertaken by Health Region 9 (Nakhon Ratchasima) and its program known as COVID-19 Back Home. As such, the study examined the inputs required for managing public health emergencies in response to COVID-19, including planning and support. The activities and processes related to PHEM were evaluated. Defined as 2P2R, P1 was Prevention and Mitigation, and P2 was Preparedness for situation analysis and policy preparedness. The R1 response phase entailed policy implementation, while the R2 recovery phase occurred between the third and fourth COVID-19 pandemic waves. In-depth interviews from four groups of 112 individuals from three Thai provinces were analyzed, with the findings analyzed using a framework based on system theory.

The successful management of subjects returning home was highlighted, saving numerous patients' lives. The study provides valuable insights into the inputs, activities, and processes involved in managing such situations, showcasing successful strategies, collaborative efforts, and behavioral changes. The identified suggestions and success factors can inform and improve future management approaches.
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The Impact of COVID-19 on Thailand’s Public Health Emergency Management System: A Case Study


