Evaluating healthcare response to COVID-19 across Southeast Asia: A post-Pandemic Reflection and Way Forward

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ABSTRACT

This paper provides a comprehensive analysis of Southeast Asian countries' responses to the COVID-19 pandemic, particularly focusing on Malaysia, Singapore, Thailand, the Philippines, Indonesia, and Myanmar. The primary objective is to explore how the pandemic has evolved in these nations, how the respective healthcare delivery systems responded, and the current COVID-19 status within each country. It presents epidemiological trends and governmental strategies adopted in combating the pandemic. The paper also outlines lessons learned and future challenges, highlighting key areas like global health diplomacy, the need for collaboration, clear government agency communication, and a stance against social discrimination. It culminates in an assessment of the post-pandemic landscape, discussing the transformation of public health policies and the socio-economic implications of pandemic management.

KEYWORDS:
COVID-19, Malaysia, Singapore, Thailand, Philippines, Indonesia, Myanmar, Southeast-Asian Nations, healthcare

INTRODUCTION

The COVID-19 pandemic, a global crisis of unprecedented scale, indelibly marked the early 21st century. Across Southeast Asia, countries with disparate economic, socio-cultural, and political systems navigated the turbulent waters of the pandemic, each charting its course. This paper provides a follow-up on a previous article reported by Rampal et al.,[1] which charted the epidemiological trends and government interventions in these nations during the early uncertainty of the pandemic in 2020. Their prior analysis illuminated each country's unique challenges, reflecting their distinctive socio-economic contexts and health infrastructures. Here, we turn our gaze to the post-pandemic landscape in the six Southeast Asian nations – Malaysia, Singapore, Thailand, Indonesia, the Philippines, and Myanmar.

Most of these countries have moved into an "endemic phase". This paper aims to explore how the pandemic has evolved in these nations, how the respective healthcare delivery systems responded, and the current COVID-19 status within each country.

In doing so, the analysis attempts to derive insights into the nuances of public health governance, the socio-economic implications of pandemic management, and lessons for future crises. By dissecting the successes and shortcomings of each country's response, the objective is to glean lessons that could fortify these nations – and indeed, the broader global community – against future health crises.

Epidemiological trends of the COVID-19 pandemic in the Association of Southeast Asian Nations (ASEAN) countries

The latest available epidemiological data of total COVID-19 cases, deaths, and mortality rates extracted from the World Health Organization's (WHO's) database from January 2020 to 2nd August 2023 for Malaysia, Singapore, Thailand, Philippines, Indonesia, and Myanmar are shown in Table I.[2]

The total number of COVID-19 cases in these six countries accounted for 23,998,461 cases, with a mortality rate of 1.339%. Although the region's mortality rate was slightly higher than that globally, there was considerable diversity in the epidemiological trends among Malaysia, Singapore, Thailand, the Philippines, Indonesia, and Myanmar. Indonesia has reported the highest number of confirmed COVID-19 cases among the six nations, with a total of 6,812,670 cases, followed by Malaysia with 5,081,682 cases. However, Myanmar reported a significantly lower number of cases at 641,074. Looking at the mortality rates, Myanmar stands out with the higher rate (3.04%)followed by Indonesia (2.37%), Philippines (1.59%), Malaysia (0.731%), Thailand (0.723%) and .Singapore which showed a remarkably lower mortality rate at 0.073%.

It is noted that vaccine procurement, distribution, and demand presented varying challenges across the region. The WHO's *Strategy to Achieve Global COVID-19 vaccination by Mid-2022* aimed to cover 70% of the total population by June 2022 and Southeast Asia has notably excelled in this respect.[3] To circumvent COVID-19 Vaccines Global Access (COVAX's) supply constraints, several Southeast Asian countries implemented a multiple-sourcing strategy and benefitted from the supply of vaccines facilitated through Covid-

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diplomacy. Table II summarizes the vaccines authorized by each respective government within the region.[4]

Singapore leads the vaccination trends across the region, with a robust 89.7% of its population having received a complete primary series of vaccinations. Malaysia follows closely with an impressive 85.11% of its population vaccinated. Thailand and the Philippines have also made considerable progress, with vaccination rates of 77.62% and 71.58% respectively, followed by Indonesia and Myanmar with 63.94% and 64.69% of their populations vaccinated. A notable achievement, given the challenges imposed upon health systems in less developed countries globally. Table III summarizes the total number of people and percentage of the population vaccinated with a complete primary series in each country, as well as the percentage of the population.[2]

However, these relatively lower percentages could be ascribed to a combination of an initial lack of vaccine supply and hesitant demand. Vaccine hesitancy was prevalent across Southeast Asia in the early stages of vaccine rollout. Notably, the Philippines, Thailand, and Indonesia reported lower-than-average willingness to get the vaccines, attributed largely to a lack of information about vaccines, misinformation, mistrust, and underestimation of their benefits.[5] In Myanmar, ongoing internal political challenges may have obstructed the country's vaccination rates. However, both the availability and uptake of vaccines have shown a progressive increase over time.

Country-specific situational analysis and trajectories

Malaysia

The COVID-19 pandemic in Malaysia, evolved through a series of waves, each leading to varying governmental responses from strict lockdowns to subsequent easing of restrictions.

Malaysia reported its first cases on 25th January 2020, involving three Chinese tourists.[5] On 17th March 2020, the government initiated a nation-wide Movement Control Order (MCO), lasting until early May. As the situation improved, the government transitioned to the "Conditional Movement Control Order" (CMCO) in May, followed by the "Recovery Movement Control Order" (RMCO) in June 2020.6 During this period, the Malaysian government also established a COVID-19 fund, set up a provisional hospital, and allocated additional funds of 1.6 billion ringgits to the Ministry of Health and 250 billion ringgits to small and medium enterprises.[7]

A state of emergency was declared in January 2021, suspending Parliament and State Legislative assemblies and providing the government with emergency powers to address the pandemic until 1st August 2021. The vaccination program in Malaysia began in February 2021, and was both free and phased.[8] Despite a high initial vaccination rate, hesitancy led to low booster uptake and waste of 8.5 million vaccine doses.[9]

On 1st April 2022, Malaysia transitioned into an endemic phase, relaxing many restrictions including international travel and outdoor mask mandates. In March 2023, the country reported an overall low fatality rate to the virus of 0.7%, and healthcare utilization rates of under 3%.[10] However, the status of Malaysia as an infected area under the Prevention of Infectious Diseases Act has been extended to 31st December 2023.[11]

Beyond healthcare, the pandemic had significant socio-economic impacts, prompting further government stimulus packages. At the first onset of the MCO in March 2020, the Work Bank reported that most Malaysians only had enough savings to live for 1-2 months.[12] There was an increase in the suicide rate reported even during the first year of the COVID-19 pandemic,[13] testament to the profound personal hardship experienced by the Malaysian people during this time.

Nonetheless, in the aftermath of the COVID-19 pandemic, Malaysia is beginning to see signs of regrowth. In the post-pandemic period of 2022, the country achieved an 8.7% GDP growth rate,[14] and has seen unemployment drop to 3.4% as of June 2023.[15] Political stability has also improved after the 15th general election in November 2022. In summary, Malaysia has navigated through the pandemic and into the endemic phase with resilience, despite facing unique challenges and economic hardship.

Singapore

Singapore's journey through the COVID-19 pandemic was marked by early detection, swift responses, and effective control measures. Singapore's prior experience with outbreaks like Severe Acute Respiratory Syndrome (SARS) and avian flu, combined with its relative affluence and significant investment in healthcare infrastructure, laid the groundwork for a robust pandemic response. After confirming its first COVID-19 case on 23rd January 2020, the Singaporean government swiftly escalated the nation's Disease Outbreak Response System Condition (DORSCON) to Orange and later implemented strict Circuit Breaker (CB) lockdown measures from 7th April to 1st June 2020, along with mandates for mask-wearing and social distancing. Parallel to this, the government conducted a robust public health and anti-disinformation campaign informing of up-to-date information surrounding the virus. This overall kept the spread amongst the general population low throughout the early phase of the virus.

However, by late March, COVID-19 clusters were detected at multiple migrant worker dormitories, contributing significantly to the country's total case count. It was estimated that by December 2020, about 47% of the migrant workers living in dormitories tested positive in Polymerase Chain Reaction (PCR) or serology tests for COVID-19. This then led to subsequent waves in which they attempted to isolate, treat, and test dormitory populations while simultaneously and gradually re-opening schools and businesses with safe distancing measures. However, the outbreak in the migrant worker dormitories highlighted a fault-line fault line in Singapore's otherwise pre-pandemic readiness and quick and effective responses.

Singapore was the first Asian country to receive the Pfizer-BioNTech vaccine in December 2020 and has one of the highest vaccination rates in the world. The vaccination

Table I: Latest number of COVID-19 cases, deaths, and mortality rates by countries, as of 2nd August 2023 [2]

Locations	Cases	Deaths	Mortality Rate
Malaysia	5,081,682	37,164	0.731%
Singapore	2,534,940	1,872	0.073%
Thailand	4,755,175	34,425	0.723%
The Philippines	4,172,920	66,592	1.596%
Indonesia	6,812,670	161,895	2.376%
Myanmar	641,074	19,494	3.040%
Worldwide	768,983,095	6,953,743	0.904%

Table II: Vaccinations available in each country in Southeast Asia

Vaccination	Malaysia	Singapore	Thailand	Indonesia	The Philippines	Myanmar
Moderna Spikevax	X	X	X	X	X	
Moderna Spikevax Bivalent Original/ Omicron BA.1		X				
Pfizer/BioNTech Comirnaty	X	X	X	X	X	
CanSino Convidecia	X					
Janssen Jcovden	X		X	X	X	
Oxford/AstraZeneca Vaxzevria	X		X	X	X	
Bharat Biotech Covaxin	X				X	
Sinopharm Covilo	X		X	X	X	X
Sinopharm Inactivated Vero Cells					X	
Sinovac Coronovac	X	X	X	X	X	
Novavax Nuvaxovid		X				
Serum Institute of India COVOVAX (Novavax formulation)			X	X	X	
Serum Institute of India (Covishield)						X
Anhui Zhifei Longcom Zifivax				X		
PT Bio Farma IndoVac				X		
WalvaxAWcorna				X		
CanSino Convidecia				X		
Gamaleya Sputnik V				X	X	X
Gameleya Sputnik Light					X	
Shenzhen Kangtai Biological Products Co KCONVAC				X		

Note: The symbol "X" represents a vaccination brand verified by the government.

Table III: Latest number of people vaccinated with a complete primary series, as of 2nd August 2023

Locations	Number	Percentage of population
Malaysia	27,547,903	85.11%
Singapore	5,248,048	89.7%
Thailand	54,181,443	77.62%
The Philippines	78,443,972	71.58%
Indonesia	174,893,201	63.94%
Myanmar	35,196,377	64.69%
Worldwide	5,148,821,611	65.27%

program was free, phased, and widely-adopted, beginning with vaccinations for healthcare workers and vulnerable populations.

As of 13th February 2023, Singapore transitioned into the "Endemic Phase," with the vast majority of COVID-19 restrictions lifted. The transition represents the culmination of extensive efforts by the government and the cooperation of the population in controlling and managing the spread of the virus. The government's multifaceted approach to pandemic management led Singapore to maintain one of the lowest case fatality rates globally. The experiences during the pandemic have fortified Singapore's healthcare system and the country's readiness to manage future public health crises.

Thailand

Thailand's experience with the COVID-19 pandemic was characterized by early surge, firm governmental interventions, and a relatively steady evolution towards endemicity. On the 1st March 2020, the country saw its first confirmed death followed by a surge of cases in the following weeks. To control the spread, the Thai government closed businesses and public venues in Bangkok and other provinces. However, given the centrality of Bangkok within

Table IV: Government Response across Southeast Asia

Locations	Government response	Gaps in response	Current status
Malaysia	1. Movement Control Order (MCO) 2. Economic Stimulus Packages 3. Immunization program 4. Testing and contact tracing via the MySejahtera application 5. Quarantine centres	1. Political crises that hampered early response 2. Inconsistent or confusing messaging from the government 3. Heavy dependence on lockdowns	Declared an "Infectious Endemic Area", as of 30th June 2023
Singapore	1. Early response 2. Lockdowns (Circuit Breaker, phased reopening) 3. Economic measures 4. Isolation and quarantine 5. Testing and contact tracing via the TraceTogether application 6. Vaccination 7. Immunization program 8. Addressing initial vaccine hesitancy	1. Management of the Migrant Worker dormitories	Endemic, as of 13th February 2023
Thailand	1. Lockdown measures 2. Contact tracing 3. Isolation and quarantine 4. Healthcare infrastructure expansion 5. Economic relief measures 6. Vaccination program	1. Vaccine procurement and distribution 2. Support for vulnerable populations 3. Management of outbreaks 4. Impact on tourism	Endemic, as of 1st October 2022
Indonesia	1. Large Scale Social Restrictions (PSBB) 2. Health infrastructure expansion 3. Economic stimulus package 4. (Internal) Travel restrictions 5. Vaccination program 6. Contact tracing and testing	1. Delayed testing and contact tracing 2. Vaccine procurement and distribution 3. Confusion and ineffectiveness of PSBB 4. Concerns about measures for vulnerable groups	Endemic, as of 21st June 2023
The Philippines	1. Community Quarantine Measures 2. Economic stimulus packages (Bayanihan 1 and 2) 3. Vaccination Program 4. Travel restrictions 5. Testing and contact tracing (but expensive and uncoordinated) 6. Healthcare infrastructure expansion	1. Initially delayed lockdown 2. Low healthcare capacity (PPE shortage and low testing) 3. Vaccine procurement and distribution 4. Varied public compliance 5. Data management issues 6. Concerns about measures for vulnerable groups	Endemic, as of 22nd July 2023
Myanmar	1. Travel restrictions 2. Lockdown measures 3. Healthcare infrastructure expansion 4. Economic support 5. Testing and contact tracing (but inefficient)	1. Political instability 2. Low healthcare capacity 3. Limited testing and vaccination 4. Concerns about humanitarian measures 5. Lack of public compliance	Unclear due to the current military coup d'état.

the Thai economy, the sudden closure of businesses within the country's capital led to a mass migration of workers back to their hometowns and the consequent spread of the virus across the country. The government then declared a state of emergency on the 26th March 2020, which was later extended to the 14th January 2021. While the Thai government maintained that this was necessary to prevent imported cases, international rights groups criticized this extended state of emergency as a means to suppress free speech.[16]

By 1st June 2022, the Ministry of Public Health (MOPH) shut down its COVID-19 location tracking application, MorChana, in anticipation of reclassifying the disease to an endemic status. This shift was officially announced on 8th August 2022, when the government declared that COVID-19 would be downgraded to a "communicable disease under surveillance".[17]

The Thai government's handling of the pandemic has seen a mix of strict measures and gradual loosening in line with disease prevalence trends. The government has pledged to boost its currently crippled yet formerly lucrative tourism industry in the face of an endemic recovery, in the form of a stimulus package.[18] The country's journey to managing COVID-19 as an endemic disease shows the importance of balancing public health priorities with social and economic needs.

Indonesia

The COVID-19 pandemic in Indonesia began on 2nd March 2020 and spread to all 34 provinces in the country by 9th April 2020. Indonesia has the second-highest cases in Southeast Asia and the second-highest deaths in Asia and ranks 9th in the world for COVID-19-related deaths.

Instead of a full lockdown, Indonesia implemented "Large Scale Social Restrictions" (PSBB) and later "Community Activities Restrictions Enforcement" (PPKM), which it would later impose and de-escalate depending on new variants and surges in cases.19 These were lifted in all regions by December 2022 as population immunity exceeded expectations, though the pandemic status remained in place.

Vaccinations started on 13th January 2021, with President Joko Widodo receiving the first dose. On 21st June 2023, President Widodo officially announced the revocation of the COVID-19 pandemic status in Indonesia, marking the start of an endemic period.

The Philippines

Once the Philippines reported its first imported case in January 2020, the country was quick to place restrictions on travelers from mainland China, Hong Kong, Macau, and Taiwan. However, the country was slow to impose full lockdowns and travel bans due to the high levels of urbanization in Metro Manila as well as heavy reliance on tourism and overseas foreign workers. Ultimately, this resulted in the virus' hasty spread to all of the country's 81 provinces. Only after the first COVID-19 death was the Philippines put under a state of public health emergency. President Duterte signed the Bayanihan to Heal as One Act, a law granting him additional powers to handle the pandemic, followed by the Bayanihan to Recover as One Act on 11th September 2020.

Due to issues with vaccine procurement, the Philippines only began its phased vaccination program with donated Sinovac vaccines in March 2021. Vaccines were also acquired through the COVAX facility and the Asian Development Bank (ADB) Asia Pacific Vaccine Access Facility (APVAX).

However, the outdoor mask mandate was lifted in September 2022, and the indoor mandate was lifted the following month, except for healthcare facilities, public transport, and medical transport. On 22nd July 2023, President Bongbong Marcos lifted the COVID-19 pandemic state of a public health emergency.

Myanmar

The COVID-19 pandemic situation in Myanmar has seen a dramatic and tumultuous evolution. Although the first case of COVID-19 was only confirmed in Myanmar on 23rd March 2020, the Myanmar President's Office announced the formation of a special committee to tackle COVID-19 on the 30th January 2020. As of February 2020, Myanmar suspended Chinese visas. Myanmar launched community lockdowns promptly as and when they were detected across the country but only culminated in a full lockdown in September 2020.

Despite these early containment measures and public health responses, Myanmar experienced one of the most severe COVID-19 outbreaks in Southeast Asia by late 2020. As a result of six decades of military rule and consistent political precarity, the country had insufficiently invested in healthcare. Myanmar was poorly equipped to handle the growing healthcare needs as well as the economic strain caused by the lockdown.

The situation came to a head when the country faced an unprecedented crisis with the coup d'état that unfolded in February 2021. The political turmoil, accompanied by widespread protests and a civil disobedience movement—some of which were led by healthcare workers—caused severe disruptions to the country's public health response and deepened the economic recession. In the wake of the coup, the testing system and vaccine deployment for COVID-19 reportedly collapsed, further impeding the nation's fight against the pandemic.

The true impact of the pandemic in Myanmar has been difficult to measure due to the lack of adequate testing and limited attention paid to the public health crisis happening alongside the long-drawn-out political unrest. As of now, the COVID-19 situation in Myanmar remains precarious due to political instability and infrastructural constraints, with little available information about the country's plan for endemicity. The country continues to grapple with the challenges of managing the pandemic amid ongoing civil unrest and a crippled healthcare system.

Lessons learned and challenges ahead

Successes

Each Southeast Asian country has distinctly responded to the COVID-19 pandemic, reflecting the specificities of their socio-political context, available resources, and healthcare infrastructure. Strategies have included: imposing lockdowns, activating contact tracing, enforcing social distancing measures, and implementing various forms of travel restrictions. Table IV summarizes the government response, as well as gaps in the response across Southeast Asia.

Southeast Asian countries have demonstrated impressive resilience and adaptability in the face of challenges, engaging in intra-regional healthcare diplomacy, and cooperating to share essential. Several Southeast Asian nations have been beneficiaries of global health diplomacy throughout the pandemic – China donated vaccinations to the Philippines, Malaysia received at least $US 19.93 million in loans and grants from the Asian Development Bank and United States Agency for International Development and the Philippines received $US4.9 billion in loans and grants from a myriad of sources.[20]

Singapore's robust preparedness for a global health crisis positioned it as a significant contributor to global health diplomacy during this period. Singapore was a member of the 'Friends of COVAX' group, a conglomerate of high-income nations committed to ensuring equitable access to COVID-19 vaccine access in low- and middle-income countries.[21] Furthermore, Singapore offered aid to China, Indonesia, and Myanmar, as well as supplying more than 35 countries globally with medical aids such as test kits and hand sanitizers – a diplomatic strategy referred to as "test kit diplomacy".[22] This commendable and effective multilateral altruism offers a template that one hopes will be followed in addressing future healthcare crises.

Lessons

The post-pandemic phase for countries globally has been characterized by intensified endeavors to equip themselves for similar future crises. To fully understand the scope of such

preparations, it is crucial to examine key aspects of the pandemic response that have either been neglected or not sufficiently addressed across Southeast Asia.

The pandemic has laid bare the existing inequalities as well as interdependencies between each country's health infrastructures, necessitating increased collaboration in the face of future pandemics. The high levels of intra-regional migration, both documented and undocumented, have presented significant challenges and underscored the need for collaboration across borders. As such, forging alliances between neighboring countries within Southeast Asia is an imperative public health strategy.

While political instability is someone anticipated within a country's response to a crisis, there is a pressing need for implementing comprehensive measures aimed at deliberate public communication and promotion of public health guidelines. The experiences of the countries considered in this article offer valuable lessons. A study conducted by Hartigan-Go et al.[23] spanning Southeast Asia found that the implementation of public health education programs significantly curtailed vaccine hesitancy.

Furthermore, it is imperative to bolster public communications to counteract misinformation and alleviate pandemic fatigue.[24] Strategies such as the use of official government-endorsed social media platforms in the Philippines, Singapore's Multi-Ministerial Taskforce,[25] and the deployment of apolitical figures like Malaysia's Health Director-General Noor Hisham Abdullah serve as excellent models of effective governmental communication.[26] These strategies sought to provide a trusted source of information and authority on the issue on platforms that would appeal to their target audience, therefore resulting in their success.

Finally, issues such as vaccine shortages and pervasive misinformation related to the virus and vaccinations hindered the fight against the pandemic and ignited social tension, particularly against already marginalized communities.[27] Xenophobia and racism have emerged as unfortunate corollaries of the discrimination and misinformation that circulated globally throughout the pandemic. It is incumbent upon future governments to ardently promote accurate information dissemination and maintain social harmony during already fractious times.

Challenges ahead - Looking forward

Southeast Asian nations face several key challenges. First, managing COVID-19 as an endemic disease will require a shift in strategy. Beyond, its devastating health impact, the virus has inflicted substantial economic, political, and societal damage although with considerable asymmetry across the region. The Asian Development Bank estimates that the pandemic pushed 4.7 million Southeast Asians into extreme poverty and eliminated 9.3 million jobs in the region in 2021 alone.[28] The severe loss in tourism over the past few years, restricted movement across borders, and supply chain disruptions will significantly challenge economic recovery, particularly for low-income countries. As Southeast Asia transitions into the endemic phase, there is an opportunity for ASEAN governments to collectively address their shared situation, prioritizing cooperation, and coordination. Finally, providing comprehensive mental healthcare to address the psychological impact of the pandemic will be crucial in the years ahead. The pandemic has brought about unprecedented stress and anxiety levels, and mental health services need to be strengthened and made widely accessible.

CONCLUSION

The COVID-19 pandemic has indelibly shaped the landscape of Southeast Asia, leaving in its wake a trail of economic, political, and societal disruptions. However, the collective resilience of Southeast Asian nations has also shone through, with each country navigating the crisis with varying strategies that reflect their unique socio-political contexts, resources, and healthcare infrastructures. There have been notable successes, such as efficient vaccine procurement and the initiation of intra-regional healthcare diplomacy. Nevertheless, several challenges remain, including managing endemic COVID-19, driving economic recovery, and enhancing public health infrastructures to ensure preparedness for future pandemics. It has also served as an important learning experience for Southeast Asia Nations. The lessons learned and challenges encountered hopefully guide the region as it embarks on its journey to recovery and resilience, shaping its collective approach to public health, healthcare, and pandemic response.

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