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Indonesia's COVID-19 Trend After the End of a Public Health Emergency of International Concern: Preparation for an Endemic

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Abstract

Three years into the pandemic, the World Health Organization revoked the COVID-19 public health emergency of international concern on 5 May 2023. This decision sparked debate, notably around the possibility of a surge in cases due to the SARS-CoV-2 mutations. To manage this transition, the Indonesian government enacted stringent controls on case numbers. This case series study provided an overview of COVID-19 case trends in Indonesia following the revocation of public health emergency of international concern status by the World Health Organization. Data were collected for 5 weeks after the statement (6 May-10 June 2023) from the COVID-19 Task Force's official online platform of the Indonesian Ministry of Health. The trends were monitored in daily confirmed, active, recovered, and death cases, and analyzed the data using Microsoft Excel and Stata 16. The findings indicated a positive trend for Indonesia, with decreased daily confirmed cases (89.42%) and active cases (44.16%). Recovered cases accounted for 97.47%, higher than the global average (96%). Unfortunately, the death rate (2.38%) exceeded the global statistic (1%). These results highlighted the need for sustained vigilance, enhancement of the 3T strategy (testing, tracing, and treatment), and wider vaccination coverage. It remains critical to uphold the 3M protocols—mask-wearing, physical distancing, and hand hygiene—to prevent a potential rebound in cases, even without the public health emergency of international concern status, as the situation transitions toward endemic COVID-19.

Keywords: COVID-19, endemic, Indonesia, pandemic, public health emergency of international concern

Introduction

Since early 2020, the coronavirus disease 2019 (COVID-19) pandemic has led to various global changes. Within the first two weeks of onset, cases increased 13-fold in the disease's origin country, China, and later spread to 114 countries.¹ This prompted the World Health Organization (WHO) to declare a Public Health Emergency of International Concern (PHEIC) on 30 January, 2020,² and to subsequently establish a pandemic status on 11 March 2020.³

The PHEIC status is the highest alert issued by the International Health Regulations (IHR),⁴ a cooperative network of 196 countries that significantly detect and report potential global public health emergencies.⁵ It represents an extraordinary event, whether unusual or unexpected, that poses a public health risk to other nations due to the international spread of disease, necessitating a coordinated international response.⁶ This status also empowers the WHO Director-General to declare a "temporary recommendation," which requires both affected and unaffected countries to be actively involved in preventing

and reducing the spread of disease through restrictions on international travel and trade.⁶

In contrast to PHEIC, pandemic status only denotes the geographic extent of a new disease and does not entail the international legal consequences associated with a "temporary recommendation."⁷ The Centers for Disease Control and Prevention (CDC) defines a pandemic as an epidemic that spreads across several countries or continents, causing widespread infection.⁸ An epidemic, conversely, is a sudden surge in disease incidence above the normal level within a specific population or area.⁸

Three years into the pandemic, the WHO Director-General officially revoked the COVID-19 PHEIC status during the 15th IHR (2005) Emergency Committee meeting on 4 May 2023, based on the global decreasing trend in COVID-19 cases.⁹ Moreover, due to scientific advancements in disease diagnosis and management, COVID-19 is no longer considered to meet extraordinary or unexpected criteria.⁹

In Indonesia, the term "pandemic" is more commonly used to describe the COVID-19 outbreak than "PHEIC."

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As of 29 April 2023, based on data from the Indonesian Ministry of Health, there were 6,773,146 confirmed cases and 161,272 deaths (2.38%) due to COVID-19.¹⁰ Compared to global statistics, Indonesia's COVID-19 mortality rate was relatively high. Globally, out of the recorded 764,474,387 COVID-19 cases, there were 6,915,286 deaths, representing about 0.90% of total cases.¹⁰

In response to the pandemic, the Indonesian government established a special task force for managing COVID-19, introduced various programs to limit social interaction, and initiated a COVID-19 vaccination campaign.⁸ These initiatives aim to prevent the transmission of the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) through droplets and promote herd immunity through humoral immune responses.¹¹ Despite these efforts, Indonesia has faced numerous challenges in combating the COVID-19 infection.

The unpreparedness of facilities and infrastructure for handling cases, coupled with inadequate public awareness about preventing transmission, has resulted in a high number of confirmed cases and a significant mortality rate. Steps to improve health services, hospitals, laboratories, and related infrastructure are necessary, along with educating the public through various media and ensuring cross-sector coordination. These actions are expected to control the outbreak without exacerbating economic losses.⁸

The COVID-19 cases in Indonesia experienced two sharp increases: one from June to September 2021 due to the Delta variant (the second wave) and another in February 2022 due to the Omicron variant (the third wave).⁸ The highest death toll occurred in December 2020 (the first wave) and June–July 2021 (the second wave).¹¹ The potential for virus mutations leading to new variants presents a risk for future waves. Each variant's distinct characteristics, clinical manifestations, and severity must be considered to understand the epidemiology of COVID-19.

At the beginning of 2023, COVID-19 cases in Indonesia began to show a positive trend. The percentage of active cases was lower than global figures (0.27% compared to 3.01%).¹² The recovery rate reached 97.35%, 1.35% higher than the global recovery rate (96%).¹² Unfortunately, confirmed cases in Indonesia on 7 May 2023 were double the number of cases reported on 7 April 2023, and the mortality rate exceeded the global rate.¹²

Recently, governments worldwide have begun preparing for a transitional phase toward long-term COVID-19 management.⁹ The hope is that there will be no rebound in cases or the emergence of new variants that could reverse the positive trend observed since the beginning of 2023. Consequently, it is imperative to review the trend

of COVID-19 cases in Indonesia following the revocation of PHEIC status by the WHO. Thus, this case series study aimed to provide an overview of the trends in COVID-19 cases in Indonesia after this significant status change.

Method

This case series study employed a quantitative descriptive method. Data were obtained from the Indonesian COVID-19 Task Force's online platform (covid19.go.id) of the Indonesian Ministry of Health; this platform, updated daily, offers open access to its data.¹³ The data collection period spanned five weeks following the revocation of PHEIC by the WHO, specifically from 6 May to 10 June 2023. The data were then processed using Microsoft Excel Version 2208 and Stata 16. The results were presented descriptively, highlighting the number of active, confirmed, recovered, and death cases. Graphs have been employed to illustrate the trend of COVID-19 in Indonesia from 5 May (when the WHO ended the PHEIC status) until 10 June 2023.

Results

Table 1 indicates that the number of confirmed cases before the observation period (5 May 2023) was 6,784,170. After the observation period (10 June 2023), this had risen to 6,810,008 cases, an increase of 25,838 cases (0.38% of the total confirmed cases in Indonesia). By utilizing pandemic indicators to compare the increase in confirmed cases over the past month, the data reveals a decrease of 89.42% from 10 May to 10 June 2023.

The number of active cases also decreased before and after the observation period. The decrease was 41.14%, from 17,909 active cases at the start of the observation period to 10,541 at the end. This data closely align with the pandemic indicators. Comparing the increase in active cases over the last month, from 10 May to 10 June 2023, there was a decrease of 44.16% in active cases.

At the beginning of the observation period, the number of recovered cases was 6,604,857, which rose by 32,790 cases during the observation period (an increase of 0.50%). At the end of the observation period, the percentage of recovered cases stood at 97.47% of the total confirmed cases in Indonesia. As for death cases, there was an increase of 0.26% during the observation period. The increase was by 416 cases, while 161,404 deaths had been recorded since the beginning of the pandemic. Compared to the number of confirmed cases, deaths related to COVID-19 in Indonesia reached 2.38% at the end of the observation period.

The average number of daily active cases was 14,664, with a standard deviation of 2847.925 (Table 2). The peak in total active cases occurred on 11 May 2023, reaching 19,067 cases, while the lowest was recorded on the last day of the observation period, 10 June 2023, with

10,541 cases. Daily confirmed cases varied from 178 (9 May 2023) to 1,902 (2 June 2023). The average number of daily confirmed cases was 717.72, with a standard deviation of 512.55. At the end of the observation period, there were additional 187 confirmed cases. Recovered cases documented during the observation period ranged from 243 to 2,242 cases, with an average of 910.83 and

a standard deviation of 490.08. The lowest number of recovered cases was reported on the last day of observation, while the highest number was noted on 15 May 2023.

The lowest number of daily death cases also occurred on the last day of the observation period, with no death cases reported on 10 June 2023. The highest number of

Table 1. Overview of the COVID-19 Trend in Indonesia

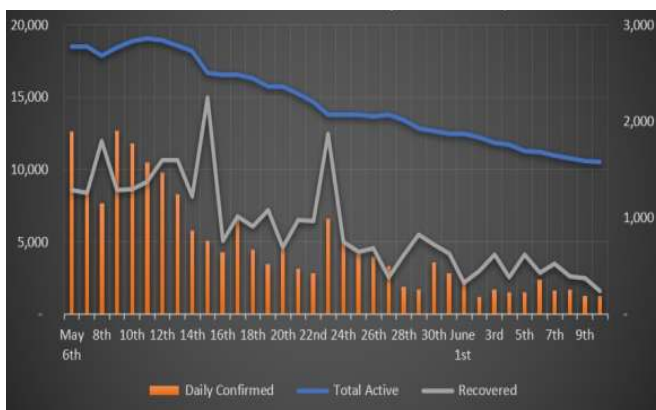
Variable	Category	Amount (Cases)	Fluctuation (%)
Confirmed cases	10 May 2023	1,768	
	10 June 2023	187	-89.42
	Before the observation period ¹⁴	6,784,170	
	End of the observation period	6,810,008	
Active cases	During the observation period	25,838	0.38
	10 May 2023	18,877	
	10 June 2023	10,541	-44.16
	Before the observation period ¹⁴	17,909	
Recovered cases	End of the observation period	10,541	-41.14
	Before the observation period ¹⁴	6,604,857	
	During the observation period	32,790	0.50
	End of the observation period	6,637,647	97.47
Death cases	Before the observation period ¹⁴	161,404	
	During the observation period	416	0.26
	End of the observation period	161,820	2.38

Notes: The observation period was from 6 May to 10 June 2023; A negative sign indicates a decrease in cases and vice versa.

Table 2. Descriptive Analysis of COVID-19 Trends in Indonesia After PHEIC Status Revocation (6 May–10 June 2023)

Variable (n = 36)	Mean	Minimum	Maximum	Range	SD
Total active cases	14,664.14	10,541	19,067	8,526	2,847.925
Confirmed cases per day	717.72	178	1,902	1,724	512.55
Recovered cases per day	910.83	243	2,242	1,999	490.08
Death cases per day	11.55	0	35	35	8.41

Notes: SD = Standard Deviation; The data are presented as the number of cases.



Note: Daily Confirmed and Recovered Cases in secondary axis

Figure 1. COVID-19 Cases in Indonesia from 6 May to 10 June 2023

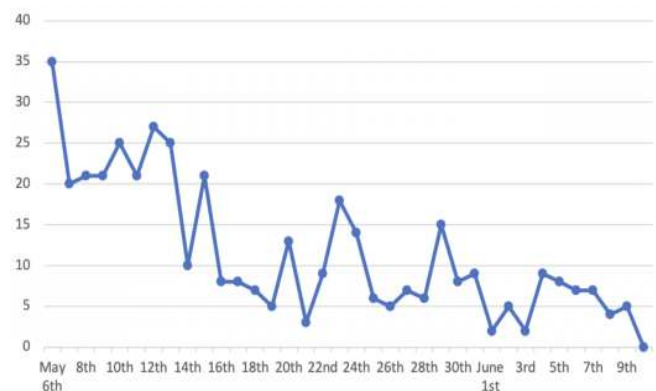


Figure 2. Number of Daily COVID-19 Death Cases in Indonesia from 6 May to 10 June 2023

deaths occurred on 6 May 2023, the first day of observation, with 35 deaths recorded in a single day. In the interim, the number fluctuated, with an average of 11.55 cases and a standard deviation of 8.41. The data obtained during the observation period are presented using bar and line charts in Figures 1 and 2. These illustrate decreased active cases, total confirmed, recovered and death cases. However, there were fluctuations indicated by several spikes, with decreasing trends documented as the graphics flattened over time.

Discussion

The WHO's decision to revoke COVID-19 PHEIC status has elicited a variety of responses, both in favor and against.¹⁵ The IHR noted a downward trend in COVID-19 deaths, a decrease in intensive care unit admissions, and high levels of population immunity to SARS-CoV-2, suggesting that it is time to transition to long-term management of the COVID-19 pandemic while acknowledging the possibility of viral evolution.^{15,16} The press conference in Geneva emphasized that this does not mean that COVID-19 is no longer a global threat.¹⁶ All countries must not interpret this as a reason to lower their guard, neglect the health regulation system built over three years, or convey the wrong message to the population that COVID-19 is no longer a cause for concern.¹⁵

The emergence of new variants and decreasing vigilance could potentially lead to a new pandemic. The WHO's decision might result in difficulties accessing vaccines, laboratory kits, and health statistics data related to COVID-19. A week after the declaration, the US public health emergency ended, and the CDC officially announced the termination of the free rapid test policy.¹⁵ The policy mandating data collection has been withdrawn, implying that health laboratories are no longer required to report testing results, nor is each state required to share real-time COVID-19 statistics. On the other hand, maintaining PHEIC status for an extended period could undermine community trust in the WHO and public health agencies. In the future, when a public health emergency declaration is needed, gaining public support and attention could prove challenging.¹⁵

The Indonesian government has begun to formulate a transition from the COVID-19 pandemic to an endemic state, which was announced at the end of June 2023. In this endemic state, COVID-19 is expected to follow a pattern similar to influenza and other viral acute respiratory infections (ARIs), with mild or asymptomatic symptoms. This state could be achieved if herd immunity is established through vaccination or infection recovery. Hanifah and Siregar predicted that during the transition period, COVID-19 would begin to be treated as endemic, with persistently low numbers of cases in areas with high

vaccination coverage.⁸ While, the vaccination target should be met in areas with low vaccination coverage before transitioning.⁸

The Indonesian Minister of Health has emphasized four considerations during this transition period: understanding COVID-19 and how to avoid it, surveillance and detection, antiviral drugs, and the COVID-19 vaccine.¹⁷ The government also continues monitoring daily case data, including the number of recovered and confirmed cases, deaths, active cases, vaccination rates, and other data related to the pandemic transition.¹⁷ Figure 1 shows that the additional daily confirmed cases in Indonesia have decreased. Table 1 shows an approximately 89.42% decrease in cases from 10 May to 10 June 2023. The decrease reached 93% on 11 June 2023, with 111 cases compared to the 1,577 cases recorded on 11 May 2023.¹⁴

According to the 2022 COVID-19 Management Guidelines, 4th Edition, a "confirmed case" is defined as a person who meets one of the following criteria: (a) a person with positive Nucleic Acid Amplification Test (NAAT) results; (b) a person who meets the criteria for suspected or close contact cases and has positive Antigen Rapid Diagnostic Test (Ag-RDT) results in regions B and C as per the Ag-RDT usage criteria; (c) a person with a positive Ag-RDT test result in line with the usage guidelines for Ag-RDT in region C.¹⁸ NAAT is a nucleic acid amplification examination method for detecting and identifying the genetic material of pathogenic organisms, one variant of which is known as Polymerase Chain Reaction (PCR).¹⁹ Regional criteria for testing are determined based on the availability and accessibility of diagnostic tools as well as the length of the waiting time for test results.¹⁹ Region A areas have the closest access and shortest waiting time for COVID-19 diagnostic tools.^{18,19}

The number of documented confirmed cases correlates with the number of specimens taken and the public's awareness of getting tested when exhibiting symptoms suggestive of COVID-19. Over time, it is undeniable that public awareness of disease detection and protection measures has begun to decline. One of the contributing factors to this is a decrease in disease severity along with the mutation of the SARS-CoV-2 variant. An *in vitro* study by the University of Hong Kong stated that the Omicron variant can replicate 70-fold faster in airway cells than the Delta variant.¹⁸ However, the Omicron variant replicates 10 times slower in lung parenchyma cells, suggesting that while Omicron is more transmissible and mutable, its severity is lower than its predecessor.¹⁸

According to the COVID-19 Task Force Weekly Report dated 11 June 2023, the number of individuals tested in the second week of June 2023 was approximate-

ly 27.99%, including 12,791 individuals tested with PCR (16.93%) and 62,769 with antigen tests (83.07%). This weekly testing rate was below the WHO target of 100%. There is a need to enhance testing as the primary standard for COVID-19 diagnosis. Especially in conditions of low case numbers, it is crucial to maintain a high number of tests to detect any escalation in transmission, thereby enabling early intervention before a significant spike occurs.¹⁹

Active cases refer to patients still undergoing treatment, whether in health facilities or self-isolation.¹⁸ This condition can conclude in two ways: recovery, denoted by the number of recovered cases, or death, indicated by the number of death cases.¹⁸ As illustrated in Figure 2, the number of active cases in Indonesia seems to have plateaued. Data comparison between 11 May 2023 and 11 June 2023 reveals a decrease in cases by 45%, from 19,067 to 10,483. The number of active cases in Indonesia is also below the global average of active cases (3%), with a difference of -2.85% equating to 0.15%.¹³ Control of active cases has been achieved by implementing 3M health protocols (*menggunakan masker*/mask-wearing, *menjaga jarak*/physical distancing, and *mencuci tangan dengan sabun*/washing hands with soap), accelerating vaccination efforts, and strengthening 3T (testing, tracing, and treatment) strategies.¹³

The criteria for COVID-19 recovery are determined based on disease severity. Patients without symptoms are considered to have recovered after ten days of isolation. For those with mild or moderate symptoms, recovery is defined as completing isolation (10 days from the confirmation date plus at least three additional days free of fever symptoms and respiratory problems).¹⁸ No follow-up Reverse Transcription Polymerase Chain Reaction (RT-PCR) examination is needed unless comorbidities or potentially worsening conditions are present. Patients with severe or critical symptoms require one RT-PCR-negative examination after a minimum of 3 days without symptoms.¹⁸ In cases where RT-PCR is difficult to access, the criteria for recovery include complete isolation for ten days from symptom onset plus at least three additional days without symptoms of fever or respiratory problems.¹⁸

The recovery trend in Indonesia is promising. The number of recovered cases reached 97.47% of the total cases, surpassing the global recovery rate by 1.47%, with the world's recovery rate at approximately 96%.¹³ The five provinces with the highest recovery rates are the Special Capital Region of Jakarta, West Java, Central Java, East Java, and Banten, collectively contributing to 66.17% of the national recovery rate.¹³

Conversely, the mortality rate related to COVID-19 in Indonesia is higher by 1.38% (2.38%) compared to the global statistics (1%). Central Java, East Java, West

Java, the Special Capital Region of Jakarta, and the Special Region of Yogyakarta are the five provinces with the highest mortality rates, contributing to 65.01% of the national mortality rate.¹³ During the pandemic, the WHO recorded nearly 7 million deaths due to COVID-19. A previous study suggested that the actual mortality rate could be about three times higher than that.¹⁵ Additionally, many COVID-19 patients still require intensive care, and survivors often experience post-infection effects.¹⁸ This situation presents further challenges for the Indonesian government as it prepares for the transition to COVID-19 becoming endemic after the WHO revoked PHEIC status in early May 2023.

Conclusion

From observing the 5 weeks following the WHO's revocation of PHEIC status (6 May–10 June 2023), it can be concluded that COVID-19 cases in Indonesia have shown a positive trend. The last day of observation data reveals a decrease in daily confirmed cases of 89.42% compared to a month earlier. Active cases decreased by 44.16% compared to a month earlier and are 2.85% below global statistics (0.15% versus 3%). While the recovery rate in Indonesia is 1.47% higher than the world's recovery rate (97.47% versus 96%), COVID-19-related deaths are still 1.38% higher than global deaths (2.38% versus 1.00%). Although the statistical graph appears to have plateaued, the strengthening of 3T, increasing vaccination coverage, and implementing 3M are still required for Indonesia to successfully navigate the pandemic transition period toward long-term disease handling in COVID-19's endemic conditions.

Abbreviations

COVID-19: coronavirus disease 2019; WHO: World Health Organization; PHEIC: Public Health Emergency of International Concern; IHR: International Health Regulator; CDC: Centers for Disease Control and Prevention; SARS-CoV-2: Severe Acute Respiratory Syndrome Coronavirus 2; ARI: Acute Respiratory Infection; NAAT: Nucleic Acid Amplification Test; RDT-Ag: Rapid Diagnostic Test Antigen; PCR: Polymerase Chain Reaction.

Ethics Approval and Consent to Participate

Not applicable.

Competing Interest

The authors declare that there are no significant competing financial, professional, or personal interests that might have affected the performance or presentation of the work described in this manuscript.

Availability of Data and Materials

Data and materials are available publicly in the mass media quoted in this study.

Authors' Contribution

NN conceptualized, drafted, and provided data for this article. RM provided valuable input and insight in writing the article. H revised the manuscript and provided final approval of the version to be published.

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