

Developing Indonesia's National Health Resilience: Strategic Responses to Covid-19 and Other Biological Threats

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Abstract: - The COVID-19 pandemic has highlighted the urgency of national health in confronting biological threats. This article attempts to design a model for Indonesia's national health resilience by considering the challenges faced during the pandemic. A comprehensive approach to the health system, including medical infrastructure, crisis management, and community support, is a critical focus in building resilience. By analyzing government policies, risk mitigation measures, and institutional frameworks, this article seeks to construct a model that can guide similar countries in strengthening their national health preparedness. According to the national resilience model, aspects of national life are divided into two: natural and social. The Indonesian Government's efforts to realize Indonesia's national health resilience in facing the COVID-19 pandemic as a biological threat are as follows. First, the President of the Republic of Indonesia and related ministries and institutions have successfully balanced the COVID-19 pandemic in Indonesia. Second, we need to be aware of the domino effect of the Covid 19 pandemic in Indonesia, considering that all community activities, from the economy, society, culture, and religion, are limited. Third, transparency in the use of the budget that has been allocated for handling Covid-19. Fourth, the government's policy simulation proposal scheme for handling Covid 19 shows promising results.

Key-Words: - National Health Resilience Development, Environmental Considerations in Health Resilience, Crisis Management Strategies, Community Engagement in Health Development, Government Policy Transparency in Pandemic Response, Developmental Prospects in Pandemic Management.

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1 Introduction

When a country can face disasters with solid resilience, this becomes crucial in determining the level of progress and welfare of its society, [1]. Resilience reflects the ability to develop strength to overcome various challenges, threats, and obstacles, both directly and indirectly, to maintain survival. Public awareness of environmental changes due to disasters is critical to reducing disaster risks and strengthening community resilience in various crises, [2].

National Resilience describes the dynamics of a nation, which includes sovereignty and resilience, containing the ability to develop national strength to face various challenges and threats, both from within and outside, which can endanger the integrity, identity, and survival of the nation and state, as well as the achievement of national goals.

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National Resilience describes the dynamics of a nation, which includes sovereignty and resilience, containing the ability to develop national strength to face various challenges and threats, both from within and outside, which can endanger the integrity, identity, and survival of the nation and state, as well as the achievement of national goals. The implementation of national resilience in Indonesia includes ideological, political, economic, and socio-cultural aspects and a national resilience index carried out over the last five years. Unfortunately, the COVID-19 pandemic in six months has erased the results of developing the national resilience index. Demographic, economic,

political, and ideological resilience experienced significant declines. Economic resilience experienced a drastic decline from the beginning of the year to June 2020. Therefore, this research will discuss further the Indonesian National Health Resilience Model in facing the COVID-19 pandemic as a biological threat.

According to Law Number 24 of 2007 concerning Disaster Management, disasters can be caused by natural and non-natural factors, including non-natural disasters such as the Covid-19 pandemic. The SARS-CoV-2 virus that causes Covid-19 is a global biological threat that cannot yet be minimized. Indonesia's national resilience must strengthen its health system to overcome this pandemic's health and economic impacts. The government has taken various steps to deal with this biological threat, including social distancing. Therefore, the focus of this research will discuss the impact of the COVID-19 pandemic as a biological threat to Indonesia's national health security. The aim is to present a model that can guide efforts to strengthen preparedness and response to similar situations in the future.

In a theoretical context, the main contribution of this research is developing an Indonesian national health resilience model that integrates key aspects in dealing with pandemics, especially as biological threats. Theoretically, this research contributes to understanding the concept of national resilience in the health context, which has focused more on political, economic, and socio-cultural aspects.

This research enriches the literature by expanding the understanding of national resilience, bringing new dimensions regarding responses to biological threats. By combining aspects such as health system preparedness, crisis management, community support, and government policy, the proposed model can serve as a theoretical basis for understanding and designing holistic national health resilience strategies. In addition, this research provides a theoretical contribution to understanding the impact of the COVID-19 pandemic on national resilience indices, illustrating how the pandemic can substantially change national resilience indicators in various sectors. Thus, this research enriches the literature related to the concept of national resilience and its application in facing biological threats, especially in the context of a global pandemic.

2 Problem Formulation

1. How can Indonesia's national health resilience model be conceptualized to overcome and

respond to the COVID-19 pandemic as a biological threat?

2. What key factors influence Indonesia's national health resilience in facing the COVID-19 pandemic, especially in medical infrastructure, crisis management, and community support?
3. What is the impact of the COVID-19 pandemic on Indonesia's national resilience index, especially in the demographic, economic, political, and ideological sectors, and how will this affect the country's ability to face biological threats in the future?

Based on the problem formulation above, the research objectives in writing this journal are:

1. Developing a National Health Resilience Model: Assessing, designing, and developing a holistic and practical national health resilience model to deal with the COVID-19 pandemic as a biological threat in Indonesia.
2. Analyzing Key Factors Influencing National Health Security: Identifying key factors influencing Indonesia's national health resilience, particularly in medical infrastructure, crisis management, and community support, to provide in-depth insight into strengthening health resilience.
3. Evaluating the Impact of the COVID-19 Pandemic on the National Resilience Index: Assessing the impact of the COVID-19 pandemic on Indonesia's national resilience index, focusing on the demographic, economic, political, and ideological sectors, as well as analyzing the consequences for the country's ability to face biological threats in the future.

3 Literature Review

3.1 National Defence

National resilience is the condition of the totality of aspects of a nation's life based on its national insight in order to create invulnerability, deterrence, and combat power to be able to interact with the environment at any given time in such a way to guarantee the survival and development of the nation's life by the stated objectives, [3]. National resilience is also a dynamic condition of a nation that contains tenacity and toughness, which contains the ability to develop national strength in facing and overcoming all threats, disturbances, and obstacles. It challenges both outside and within, directly and indirectly, endangers the integrity, identity, and survival of the nation and state and the struggle to pursue national goals, [4].

3.2 National Defense

The study of national defense theory is a scientific analysis that focuses on national defense concepts, doctrine, and strategy. The aim is to provide a comprehensive understanding of national defense so that it can become the basis for implementing national defense, [5]. National defense theory is a scientific study that studies national defense concepts, doctrines, and strategies, which are dynamic, adaptive, and responsive to changes in the strategic environment, [6], [7].

3.3 Biological Weapons Threat

Biological Weapons: From the Invention of State-Sponsored Programs to Contemporary Bioterrorism" [8] or "The Handbook of Bioterrorism and Disaster Medicine" [9]. WHO has announced several diseases that still threaten human life, namely Dengue Hemorrhagic Fever, Tuberculosis (TBC), Human Immunodeficiency Virus/ Acquired Immune Deficiency Syndrome (HIV/AIDS), foot and mouth disease in cattle, mad cow disease (Mad Cow) or Variant Creutzfeldt-Jakob Disease (VCJD), Avian Influenza (H5N1) or bird flu (Bird Flu), Severe Acute Respiratory Syndrome (SARS), swine flu (Swine Flu/H1N1 flu virus), Middle East Respiratory Syndrome (MERS), Ebola, and Avian Influenza (H7N9) or a new variant of bird flu (Bird Flu).

4 Research Methods

This research is normative juridical by applying statutory and conceptual approaches. In this context, normative juridical research takes insights from literature, such as journals, books, legislation, and other related documents. The normative legal science approach is closely related to legal practice, covering two main aspects: law formation and application. This research uses three types of legal materials: primary, secondary, and tertiary. Primary legal materials refer to provisions relating to Indonesia's national health resilience model in facing the COVID-19 pandemic as a biological threat. Meanwhile, secondary legal materials involve all non-official legal publications such as books, journals, articles, and other scientific works, and tertiary legal materials involve sources such as the Internet and encyclopedias.

4.1 Approaches in Normative Juridical Research

There are two approaches that can be used in normative juridical research, namely:

1) Legislative approach

The statutory approach is carried out by examining statutory regulations related to the problem being studied. This research uses a legislative approach to examine laws and regulations related to Indonesia's national health resilience model in facing the COVID-19 pandemic as a biological threat, [10].

2) Conceptual approach

The conceptual approach is an approach taken by examining legal concepts related to the problem being studied. This research uses a conceptual approach to examine legal concepts related to national health security, the COVID-19 pandemic, and biological threats.

4.2 Legal Materials in Normative Juridical Research

The legal materials used in normative juridical research consist of three types, namely:

1) Primary legal materials

Primary legal materials are statutory regulations that form the basis for the problems studied. In this research, the primary legal materials used are Law Number 36 of 2009 concerning Health, Law Number 6 of 2018 concerning National Resilience, and Government Regulation Number 82 of 2012 concerning the Implementation of Immunization. Law Number 6 of 2018 concerning National Resilience.

2) Secondary legal materials

Secondary legal materials are all publications about law that are not official documents. The secondary legal materials used in this research are books, journals, articles, and other scientific works related to national health security models, the COVID-19 pandemic, and biological threats.

3) Tertiary legal materials

Tertiary legal materials are legal materials that provide explanations or interpretations of primary legal materials and secondary legal materials. The tertiary legal materials used in this research are the internet, encyclopedias, and others.

4.3 Legal Material Collection Techniques

The technique for collecting legal materials used in normative juridical research is a literature study. A literature study collects legal materials by reading and studying legal materials related to the studied problem.

4.4 Legal Material Analysis Techniques

The legal material analysis technique used in normative juridical research is content analysis. Content analysis is an analysis technique carried out

by examining the contents of the collected legal materials. This research uses content analysis techniques to examine the content of laws and regulations, books, journals, articles, and other scientific works related to national health security models, the COVID-19 pandemic, and biological threats.

4.5 Data Analysis

After the data is collected, it is analyzed logically, systematically, and juridically. Logical analysis is carried out by analyzing data according to the principles of deductive logic. Systematic analysis is carried out by analyzing data by linking data to each other, which are interconnected and dependent. The juridical analysis starts from existing regulations and links them to the current positive law force. Based on the explanation above, normative juridical research examines normative legal materials, namely statutory regulations, legal doctrine, and legal principles. This research aims to analyze and understand the applicable law, as well as to provide an interpretation of this law.

5 Result and Discussion

5.1 Strategies for Facing Biological Threats

Several strategies for dealing with biological threats can be grouped into two, as follows:

1) Preventive strategy

Preventive strategies aim to prevent biological threats from occurring. This strategy can be done by:

- a) Increase national preparedness against biological threats
- b) Improve intelligence capabilities to detect and prevent biological threats
- c) Improve laboratory capabilities to detect and analyze biological agents
- d) Improving emergency response capabilities against biological threats

2) Curative strategy

Curative strategies aim to overcome the impact of biological threats. This strategy can be done by:

- a) Improving the ability to treat and treat diseases caused by biological agents
- b) Increase rehabilitation capabilities for victims of biological threats
- c) Increasing the capacity for economic and social recovery after a biological threat occurs

In facing biological threats, Indonesia needs to implement integrated preventive and curative

strategies. Preventive strategies aim to prevent biological threats from occurring, while curative strategies aim to overcome the impact of biological threats.

The following are several recommendations that can be considered in implementing strategies to deal with biological threats:

- 1) The government needs to increase the budget for national health security, including to deal with biological threats.
- 2) The government needs to increase international cooperation in dealing with biological threats.
- 3) The government needs to increase public awareness about biological threats.

It is hoped that these recommendations will help Indonesia face biological threats, including facing the Covid-19 pandemic.

5.2 Indonesian National Health Resilience Model

1) Government Role:

a) Coordination Between Central and Regional Governments:

- It is essential to integrate and coordinate policies between central and regional governments to ensure that the response to the pandemic is implemented uniformly and efficiently throughout the region.
- Strengthening coordination and communication mechanisms to optimize the role of regional government in accordance with local dynamics.
- Normative Juridical Analysis: Coordination between central and regional governments can be analyzed from a statutory perspective, such as Law No. 23 of 2014 concerning Regional Government. In this framework, the policy implementation evaluation must follow the principles of decentralization and regional autonomy.
- Recommendation: Improved coordination can be carried out by revising regulations governing regional government governance to ensure the implementation of national policies to local needs.

b) Evaluation and Improvement of Budget Mechanisms:

- Expanding the national health budget allocation to strengthen the health system, including financing for handling the pandemic and repairing vulnerable health infrastructure.

- Periodic evaluation of the effectiveness of budget use and financial readiness to face future health threats.
- Normative Juridical Analysis: Health budget mechanisms can be evaluated based on Law No. 36 of 2009 concerning Health, which determines budget allocations for the health sector. This evaluation needs to include a firm allocation of funds for handling the pandemic.
- Recommendation: Improving the budget mechanism could involve revising laws and regulations related to the allocation of the national health budget, as well as adding aspects of flexibility for handling crisis situations such as pandemics.

2) Community Role:

a) Intensive Educational Approach:

- Design and implement more intensive and targeted education programs to increase public understanding of the importance of health protocols and compliance with vaccinations.
- Take advantage of mass media and online platforms to convey information in a way that is easy to understand and relevant.
- Normative Juridical Analysis: Aspects of the educational approach can be analyzed from the perspective of Law No. 36 of 2009 concerning Health and Law no. 8 of 2016 concerning Population and Family Planning. Within this framework, the government has an obligation to provide health information and education to the public.
- Recommendation: Intensification of education can be strengthened through regulations that encourage active participation by the government and the private sector in health education to the community.

5.3 Strategies for Facing Biological Threats

1) Preventive Strategy:

a) Increased International Collaboration:

- Support and actively participate in international cooperation for the exchange of information, technology, and resources to improve the capacity for early detection and global response to biological threats.
- Strengthen international agreements and partnerships that encourage joint research and development of vaccine technologies.

- Normative Juridical Analysis: International cooperation in dealing with biological threats can be analyzed from the perspective of bilateral and multilateral agreements that have been ratified by Indonesia.

- Recommendation: Increased collaboration can be supported through improving regulations that provide a strong legal basis for international cooperation in the health sector.

b) Increased Laboratory Capacity and Medical Facilities:

- Prioritize investment in increasing laboratory capacity and medical infrastructure to ensure readiness to rapidly detect, analyze, and respond to biological threats.
- Build collaboration between the public and private sectors to optimize the use of the latest technology in the health sector.
- Normative Juridical Analysis: Increasing the capacity of laboratories and medical facilities can be analyzed from the perspective of regulations regarding health service standards and laboratory technical requirements.
- Recommendation: Capacity expansion can be strengthened by regulatory changes that require compliance with certain standards in establishing and operating health facilities.

2) Curative Strategy:

a) Health System Strengthening:

- Improve and update national health infrastructure, including medical facilities and equipment, as well as develop and train human resources.
- Design policies that ensure fair and rapid access to medical care, especially in remote areas.
- Normative Juridical Analysis: Improvement of the health system can be based on Law Number 36 of 2009 concerning Health, with an emphasis on establishing and maintaining a strong health system.
- Recommendation: Strengthening the health system can be supported through the revision of regulations that place additional obligations on the government and private sector to improve infrastructure and human resources in the health sector.

b) Economic Recovery Policy:

- Provide financial support to the most affected sectors, with a focus on sustainable

economic recovery and adaptation to the post-pandemic situation.

- Integrate health components in economic recovery policies to ensure holistic recovery efforts.
- Normative Juridical Analysis: Economic recovery policies can be integrated with the provisions in Law Number 11 of 2020 concerning Job Creation, with a focus on incentives for affected economic sectors.
- Recommendation: The government needs to develop policies that provide direct financial support to the sectors most affected by the Covid-19 pandemic. This may include financial aid, tax incentives, or low-interest loans. The main focus must be given to sectors that have a major impact on employment and national economic growth.

6 Recommendation

6.1 Improvements to the Health Resilience Model

1) Consolidation of cooperation between central and regional governments:

- Normative Juridical Analysis: Improvements can be realized through revision of regulations governing the duties, responsibilities, and authority of central and regional governments, perhaps through revision of Law Number 23 of 2014 concerning Regional Government.

2) Increase in national health budget:

- Normative Juridical Analysis: Budget increases can be discussed through an evaluation of Law Number 36 of 2009 concerning Health, with an emphasis on larger budget allocations to support national health resilience.

6.2 Strengthening International Response

1) Encourage international cooperation:

- Normative Juridical Analysis: Initiatives to encourage international cooperation could consider revising Law Number 39 of 2007 concerning Amendments to Law Number 6 of 2011 concerning Immigration, to include provisions that support cooperation between countries in facing global health threats.

2) Strengthening Indonesia's capacity and involvement in international research:

- Normative Juridical Analysis: Strengthening can be supported by

provisions in Law Number 11 of 2020 concerning Job Creation, with an emphasis on incentives and regulations that support research and innovation at the international level.

6.3 Community Empowerment

1) Implementation of inclusive education programs:

- Normative Juridical Analysis: Educational programs can be designed in accordance with the provisions in Law Number 44 of 2009 concerning Hospitals and Law Number 36 of 2009 concerning Health, with an emphasis on providing information that is easily accessible and understood by the general public.

These recommendations are directed at a legal basis that can support the implementation and development of Indonesia's national health resilience model in the context of the COVID-19 pandemic.

Declaration of Generative AI and AI-assisted technologies in the writing process

During the preparation of this work, the authors used Grammarly and ChatGPT to help improve sentence coherence and comprehensiveness, as well as to check grammar to ensure proper language use and readability. After using these tools/services, the authors reviewed and edited the content as needed and take full responsibility for the content of the publication.

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Contribution of Individual Authors to the Creation of a Scientific Article (Ghostwriting Policy)

Conceptualization and project supervision were primarily conducted by E.W. and M., with M.I. contributing to the methodology. S. was responsible for software development, while M.I. and E.W. jointly managed validation and data curation. E.W. led formal analysis and investigation, securing necessary project resources. The initial manuscript draft was prepared by E.W., with valuable input from M. during the review and editing phases. E.W. also handled data visualization, while S. oversaw project administration and funding acquisition. It is essential to acknowledge that all authors thoroughly reviewed and approved the final manuscript for publication.

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Conflict of Interest

The authors have no conflicts of interest to declare.

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