HTechJ Health and Technology Journal (HTechJ)

Volume 03 Number 04
August 2025
p-ISSN: 2986-5662
e-ISSN: 2985-959X

Health Policy Strategy for Controlling Pneumonia Disease

Dina Rawan G. Rana[1]

[1] *Universitas Eka Harap, Palangkaraya, Indonesia*

Correspondence should be addressed to:
Dina Rawan G. Rana
dinavinovano1990@gmail.com

Abstract:
The increase in pneumonia cases directly impacts the burden of health services, marked by a surge in the number of visits to service facilities, an increase in hospitalization rates, and high pressure on medical personnel in health centers and hospitals. This study analyzes the policy strategy for controlling pneumonia in Central Kalimantan. This study uses qualitative research with a descriptive phenomenological approach that emphasizes the health policy strategy for controlling pneumonia in Central Kalimantan to gain a deep understanding of the stakeholders' implementation. Based on the study's results, although the National Action Plan for controlling pneumonia focuses on toddlers, in Central Kalimantan, most cases of pneumonia are found in the pre-elderly age group (45-59 years), indicating a mismatch between national policies and local conditions. Environmental factors, air pollution, and comorbid conditions, such as chronic obstructive pulmonary disease (COPD) and diabetes, may not have been sufficiently considered in the policy. In Central Kalimantan, poor air quality due to forest fires and extreme climate change worsens health, especially in the pre-elderly age group. Therefore, the pneumonia control strategy in this area needs to be adjusted to local epidemiological conditions, environmental and social risk factors, socio-economic conditions, adjustments to prevention and treatment strategies, and collaboration between sectors, including focusing on adult, pre-elderly, and elderly age groups, not just toddlers.

Article info:
Submitted:
27-06-2025
Revised:
11-07-2025
Accepted:
14-07-2025

Keywords:
pneumonia, strategy, health policy

DOI: https://doi.org/10.53713/htechj.v3i4.394

INTRODUCTION

Health policy strategies represent integrated, systematic plans designed to achieve long-term objectives by optimizing resource allocation and adapting to dynamic environmental challenges (Al-Worafi, 2024). In regional health sectors, these strategies involve setting priorities, developing targeted programs, and implementing continuous evaluation mechanisms to ensure equitable and efficient improvements in community health outcomes. Effective policy formulation requires alignment between governmental decisions, healthcare delivery systems, and socio-environmental contexts to address disease burdens comprehensively (Sally et al., 2024).

Pneumonia, an acute infection of pulmonary alveoli caused by bacteria, viruses, or fungi, remains a leading cause of morbidity and mortality worldwide, particularly in low- and middle-income countries (Perret et al., 2021; Fiatun et al., 2024). Despite being preventable and treatable, it contributes significantly to healthcare burdens in Indonesia, where disparities in access to services and low community awareness exacerbate its impact. The disease's environmental sensitivity, linked to factors like air pollution and climate variability, further complicates control efforts, necessitating context-specific interventions (Kapwata et al., 2021).

Volume 03 Number 04
August 2025
p-ISSN: 2986-5662
e-ISSN: 2985-959X

Central Kalimantan, a province in Indonesia, faces unique challenges in pneumonia management due to fluctuating case trends correlated with seasonal changes and environmental stressors. Data from 2015 to 2024 reveal West Kotawaringin Regency as the most affected area (2,844 cases), followed by Murung Raya (1,306 cases) and Sukamara (973 cases). These patterns are strongly associated with forest fire-induced haze, humidity shifts, and temperature variations, which degrade respiratory health and disproportionately affect vulnerable populations (Chang et al., 2023).

The pneumonia burden in Central Kalimantan manifests across three domains: (1) public health, with rising mortality and complications among productive-age groups and comorbid patients; (2) economic and healthcare systems, marked by strained facilities, increased hospitalizations, and reduced productivity; and (3) environmental and policy challenges, necessitating adaptive strategies to address climate-driven outbreaks. Rural communities exposed to chronic air pollution face heightened risks, underscoring the urgency of integrated interventions (Boutros et al., 2024).

Current national pneumonia policies prioritize childhood immunization (PCV vaccine) and primary healthcare monitoring yet overlook adult and elderly populations disproportionately affected in regions like Central Kalimantan. Climate data integration into health planning remains underutilized, despite its potential to predict outbreaks during extreme weather events. This siloed approach limits the responsiveness of interventions to environmentally driven disease dynamics (Haque et al., 2024).

A paradigm shift is needed to incorporate climate and environmental data—via institutions like Indonesia's BMKG—into pneumonia surveillance and early-warning systems. Collaborative frameworks between health departments, meteorological agencies, and local stakeholders could enhance preparedness for seasonal spikes. Such strategies should prioritize geographically tailored interventions, leveraging local data and community participation to align with regional risk profiles (Patel et al., 2024).

This research aims to formulate a context-specific health policy strategy for pneumonia control in Central Kalimantan, emphasizing data-driven decision-making, climate adaptation, and multisectoral coordination. By addressing gaps in national policies and integrating environmental determinants, the proposed framework seeks to reduce pneumonia-related mortality, improve healthcare efficiency, and support Sustainable Development Goals (SDGs) targets for infectious disease reduction across all age groups. The findings advocate for localized, participatory approaches to strengthen regional and national health resilience (Alif et al., 2025).

METHOD

This study uses qualitative research with a descriptive phenomenological approach that emphasizes the health policy strategy for controlling pneumonia in Central Kalimantan to gain a deep understanding of what is being implemented by stakeholders. By exploring a phenomenon in the form of a health policy strategy for controlling pneumonia in Central Kalimantan. This research design makes it easier to open phenomena that have been closed so far. This exploration can vary and be unique according to stakeholders' characteristics, so this theme is studied using qualitative research methods. Qualitative research is research that generally explains and provides understanding and interpretation of various individual behaviors in various forms. One way to understand this behavior and experience is to provide the essence of the phenomenon experienced by individuals or groups of individuals by emphasizing the causal relationship in explaining the behavior of these individuals.

Volume 03 Number 04
August 2025
p-ISSN: 2986-5662
e-ISSN: 2985-959X

Stakeholders in this study include: Central Kalimantan Provincial Health Office (Head of Central Kalimantan Provincial Health Office and Acting Director of dr. Doris Sylvanus Palangka Raya Hospital, Head of Disease Prevention and Control (P2P) Division, Infectious Disease Prevention and Control Section (P2PM) of Central Kalimantan Provincial Health Office, Junior Health Administrator/Data Section, Palangka Raya City Health Office (Secretary of Palangka Raya City Health Office, Infectious Disease Analysis Division of Palangka Raya City Health Office), dr. Doris Sylvanus Palangka Raya Regional General Hospital (Head of Data Processing/Medical Records Unit of dr. Doris Sylvanus Palangka Raya Hospital), Palangka Raya City Hospital (Director of Palangka Raya City Hospital, Coordinator of Medical Services of Palangka Raya City Hospital), BMKG Central Kalimantan (Coordinator of BMKG Data and Information Division).

This study received ethical approval from the Institutional Review Board (IRB) of STIKES Eka Harap, Palangka Raya, Indonesia. The research adhered to ethical principles outlined in the Declaration of Helsinki and national guidelines for health-related studies involving human participants. Informed consent was obtained from all respondents, ensuring voluntary participation, confidentiality, and the right to withdraw at any stage. Data collection procedures prioritized anonymity and secure handling of sensitive health information. The approval underscores the study's compliance with institutional and national standards for research ethics, safeguarding participant rights while addressing public health challenges in pneumonia management within Central Kalimantan.

RESULT

Strategy 1 on Behavioral Changes in Prevention and Control in the Community concluded that the Central Kalimantan Provincial Health Office is trying to encourage families to be more sensitive to signs of pneumonia, such as prolonged coughing, shortness of breath, and high fever, so that parents immediately take their children to health facilities. Actively disseminate information on pneumonia prevention through community activities, such as integrated health posts and PKK mothers' social gatherings. To that end, we develop communication, information, and education (KIE) materials that are easily understood in local languages and utilize social media such as WhatsApp groups. In rural areas that have not been exposed to technology, we conduct educational campaigns in schools and health centers, including free check-ups, although our reach is limited. In addition, we collaborate with community organizations and government agencies to disseminate accurate information and fight hoaxes, such as fake news about pneumonia vaccines that can cause more severe illnesses. However, we have not disseminated any specific information regarding pneumonia.

Strategy 2 on Strategy to Strengthen Acceleration of Implementation of Protection, Prevention and Management (3P) Interventions obtained results Efforts to prevent and control child health are carried out by increasing the coverage of exclusive breastfeeding for the first 6 months of life, as well as providing adequate additional food for infants and children which is now supplemented by the provision of nutritious food by the government in schools. In addition, there is a program to provide vitamin A supplements in February and August, nutritional counseling, and complete vaccination coverage. The Mandatory Handwashing with Soap (CTPS) campaign is also being intensively carried out, along with increasing access to clean drinking water and sanitation. However, there are still difficulties in areas near rivers. Other efforts include reducing household pollution levels, especially in homes where family members smoke. Integrated management of sick toddlers is a guide for comprehensive management of infants and toddlers with symptoms of pneumonia, such as coughing, rapid breathing, and chest wall retraction, and it encourages the practice of appropriate

Volume 03 Number 04
August 2025
p-ISSN: 2986-5662
e-ISSN: 2985-959X

antibiotic administration. Intensive care rooms for children are also available in hospitals, although these facilities are still limited in urban areas. On the other hand, strengthening the role of health workers, nurses, and village midwives in hard-to-reach areas is an important step, even though the referral hospital center in Central Kalimantan is only at the dr. Doris Sylvanus Palangka Raya Regional Hospital.

Strategy 3 on Integration Strategy and Multi-Party Collaboration. The programs we run in the regions follow the focus of the Central Government, such as handling stunting, but we also continue to pay attention to other diseases. However, if it is by the National Action Plan for Handling Pneumonia and Diarrhea 2023-2030, this program should have been running, but it is still focused on toddlers and children. Collaborating with various parties such as BPJS Kesehatan, IDAI, TNI/POLRI, and others, although there is no cooperation with BMKG. We also identify programs with the same target for children aged 0-9 years, such as stunting, immunization, UKS, and other related programs. Strategy 4 on Governance Strategy, Leadership, Program Management, and Quality Improvement. We are currently preparing a regional action plan that refers to the national action plan to strengthen commitment, policies, and the implementation of appropriate norms, standards, procedures, and criteria, such as Governor Regulations, Provincial Health Office Decrees, and Regent Decrees, so that they can be monitored at the Central and Regional levels. In addition, we focus on improving the quality of surveillance and information systems, the availability and management of vaccines, drugs, and medical device logistics, and improving the estimation and planning of drug needs. We also strive to minimize delays in receiving drugs and logistics, especially in areas with geographical constraints, accelerate the delivery of information on drug shortages, and develop mechanisms to overcome this by optimizing existing networks. Implementing a standardized and periodic training system is also our focus, along with health promotion on pneumonia, monitoring child growth and development, and developing integrated policies and regulations across stakeholders, including BPJS Kesehatan, related to financing of the pneumonia program, and consolidating financing support from development partners and other external sources. Quality data and integrating information systems in the pneumonia control program are essential for strategic and operational decision-making.

DISCUSSION

Based on the research results, although the National Action Plan for pneumonia control focuses on toddlers, in Central Kalimantan, most cases of pneumonia were found in the pre-elderly age group (45-59 years), indicating a mismatch between national policies and local conditions. Environmental factors, air pollution, and comorbid conditions, such as chronic obstructive pulmonary disease (COPD) and diabetes, may not have been sufficiently considered in the policy (Stolz et al., 2022). In Central Kalimantan, poor air quality due to forest fires and extreme climate change worsens health, especially in the pre-elderly age group. Therefore, pneumonia control strategies in this area need to be adjusted to local epidemiological conditions, environmental and social risk factors, socio-economic conditions, adjustments to prevention and treatment strategies, and collaboration between sectors, including focusing on adult, pre-elderly, and elderly age groups, not just toddlers.

The Central Kalimantan Provincial Health Office is trying to increase public awareness of pneumonia by educating families about symptoms such as prolonged coughing and high fever through counseling at integrated health posts and PKK mothers' social gatherings, as well as using easy-to-understand communication materials in local languages and social media. Educational campaigns are also carried out in rural areas with limited reach. The Health Office also works with various organizations to combat hoaxes about pneumonia, although no specific information has

Volume 03 Number 04
August 2025
p-ISSN: 2986-5662
e-ISSN: 2985-959X

been disseminated. Prevention programs include increasing coverage of exclusive breastfeeding, providing nutritious food in schools, providing vitamin A supplements, and complete vaccinations focusing on children's health (Sidabutar et al., 2024; Musviro et al., 2025). The Health Office also prepares regional action plans based on national policies. It seeks to improve the quality of surveillance and management of vaccine and drug logistics, especially in hard-to-reach areas. Implementing standardized training and using quality data are also important parts of decision-making for more effective pneumonia control (Carr et al., 2021).

Climate change, including extreme temperatures and high humidity, can worsen health conditions, especially in adults and the elderly with comorbidities (Brenner et al., 2024). Extreme temperatures and weather changes can reduce the body's immunity, increasing its susceptibility to respiratory infections such as pneumonia (Makrufardi et al., 2024). In addition, air pollution resulting from industrial activities and forest fires, especially in areas such as Kalimantan, increases the risk of decreased lung function and airway inflammation. This worsens pneumonia in adults (Krismanuel & Hairunisa, 2024).

Exposure to air pollution can worsen chronic lung disease, a significant risk factor for pneumonia in adults and the elderly. Therefore, health policies need to consider environmental factors as the leading cause of the increasing incidence of pneumonia, especially in areas exposed to air pollution and extreme climate change. Social, economic, and environmental factors play a significant role in influencing an individual's health status. Environmental factors, such as air pollution and socio-economic conditions that limit access to health facilities, can worsen the condition of the disease, especially for individuals with comorbidities. Therefore, pneumonia control must involve a comprehensive approach that not only focuses on specific age groups, such as toddlers, but also on adult and elderly age groups who are vulnerable to environmental impacts and comorbidities. Effective control strategies must be tailored to local epidemiological conditions, focusing on environmental and social risk factors. In addition, implementing local data-based policies, standardized training for medical personnel, and sound information systems will help manage this disease more effectively, especially in areas with limited infrastructure (Liu et al., 2022).

Based on the facts found in this study and existing theories, it is clear that there is a difference between the focus of national policies in handling pneumonia, which prioritizes toddlers, and the epidemiological reality in Central Kalimantan, where the incidence of pneumonia is higher in the pre-elderly age group (45-59 years). This shows the importance of adjusting pneumonia handling strategies that are more relevant to local conditions, especially considering environmental and social factors that influence disease prevalence. Air pollution and comorbidities such as COPD and diabetes that this age group often experiences must be given more attention in health policies. In addition, extreme climate change and poor air quality due to forest fires are worsening the situation, thus requiring a more comprehensive approach, including increasing public awareness through educational campaigns and improving the quality of health facilities (Joshi, 2024).

Pneumonia control should not only focus on prevention in toddlers. However, it should also involve the adult and elderly, who are more vulnerable to air pollution and extreme weather impacts. Local data-based policies, standardized training for medical personnel, and utilization of sound information systems are essential to manage this disease more effectively, especially in areas with limited infrastructure and health access. With a more comprehensive approach that includes environmental and social risk factors, the incidence and mortality rates from pneumonia, both in toddlers and adult and elderly age groups, can be further suppressed and by adding involvement from BMKG (Meteorology, Climatology and Geophysics Agency) in providing data related to climate parameters in Central Kalimantan so that all factors that can influence the increase in the incidence of pneumonia can be handled immediately (Grigorieva & Lukyanets, 2021).

CONCLUSION

Differences in the epidemiological pattern of pneumonia between national data and conditions in Central Kalimantan. Nationally, pneumonia is reported to attack more toddlers, as reflected in the priority of the national pneumonia control program stated in the "National Action Plan for Pneumonia and Diarrhea Control 2023-2030" by the Indonesian Ministry of Health in 2023. However, based on the results of this study, pneumonia cases in Central Kalimantan occur more in the pre-elderly group. This finding is closely related to the influence of fluctuations in climate parameters, such as air temperature, humidity, rainfall, and extreme wind speeds in the Central Kalimantan region. A national pneumonia control strategy gap has not involved the Meteorology, Climatology and Geophysics Agency (BMKG). Climate data and information from BMKG support efforts to prevent and control pneumonia, especially for developing early warning systems and risk analysis based on climate parameters. This is in line with the mandate of the Regulation of the Minister of Health of the Republic of Indonesia Number 42 of 2023 concerning the Control of Infectious Diseases, which emphasizes the importance of cross-sector collaboration in efforts to control infectious diseases. This study obtained a Clinical Pathway for Pneumonia based on climate parameters that directly consider the relationship between environmental factors and increased risk of pneumonia. This Clinical Pathway is designed to be integrated into the regional health service system, by the minimum service standards (SPM) in the health sector regulated in the Regulation of the Minister of Health of the Republic of Indonesia Number 4 of 2023. This pathway aims to improve the quality of health services that are more adaptive to climate change, especially in early detection, management, and referral of pneumonia cases.

ACKNOWLEDGEMENT

The author would like to thank the parties who have supported the implementation of this research and the participants and stakeholders who have contributed to the collection of data and information. Support from various parties is critical in completing this research.

CONFLICT OF INTEREST

The author declares no conflict of interest in writing this manuscript. If there is a potential conflict of interest, either financial or non-financial, the author declares it openly in order to maintain transparency and scientific integrity.

REFERENCES

Al-Worafi, Y. M. (2024). Nosocomial Pneumonia Management in Developing Countries. In *Handbook of Medical and Health Sciences in Developing Countries: Education, Practice, and Research* (pp. 1-23). Cham: Springer International Publishing. https://doi.org/10.1007/978-3-030-74786-2_51-1

Alif, A. R., Rumi, H. M., Emon, E. K. H., Tuba, A. I., & Haque, M. A. (2025). A Literature Review on Childhood Pneumonia in Bangladesh: Reducing Mortality and Advancing SDG Goals. *East West Medical College Journal*, *13*(1), 54–64. https://doi.org/10.3329/ewmcj.v13i1.77327

Boutros, P., Kassem, N., Boudo, V., Sié, A., Munga, S., Maggioni, M. A., ... & Barteit, S. (2024). Understanding the risk factors, burden, and interventions for chronic respiratory diseases in low-and middle-income countries: a scoping review. *Public Health Reviews*, *45*, 1607339.

https://doi.org/10.3389/phrs.2024.1607339

Brenner, T., Link, A., Khan, S. A., Reudenbach, C., Bendix, J., Kutzinski, M., Weckler, B. C., Pott, H., Rupp, J., Witzenrath, M., Rohde, G., Pletz, M. W., Bertrams, W., & Schmeck, B. (2024). Impact of comorbidities and personal characteristics on weather-related risk for community-acquired pneumonia. *Frontiers in Climate*, *6*, 1475075. https://doi.org/10.3389/fclim.2024.1475075

Carr, J. R., Jones, B. E., Collingridge, D. S., Webb, B. J., Vines, C., Zobell, B., Allen, T. L., Srivastava, R., Rubin, J., & Dean, N. C. (2021). Deploying an Electronic Clinical Decision Support Tool for Diagnosis and Treatment of Pneumonia Into Rural and Critical Access Hospitals: Utilization, Effect on Processes of Care, and Clinician Satisfaction. *The Journal of Rural Health*, *38*(1), 262-269. https://doi.org/10.1111/jrh.12543

Chang, J. H., Lee, Y. L., Chang, L. T., Chang, T. Y., Hsiao, T. C., Chung, K. F., … Chuang, H. C. (2023). Climate change, air quality, and respiratory health: a focus on particle deposition in the lungs. *Annals of Medicine*, *55*(2). https://doi.org/10.1080/07853890.2023.2264881

Fiatun, Fransisca Danik, I Komang Widarma Atmaja, and Ni Luh Kompiang Ariani. (2024). Implementation of The Ventilator Associated Pneumonia Bundle in the Intensive Care Unit. *Nursing and Health Sciences Journal (NHSJ)* 4 (3):269-73. https://doi.org/10.53713/nhsj.v4i3.379

Grigorieva, E., & Lukyanets, A. (2021). Combined Effect of Hot Weather and Outdoor Air Pollution on Respiratory Health: Literature Review. *Atmosphere*, *12*(6), 790. https://doi.org/10.3390/atmos12060790

Haque, S., Mengersen, K., Barr, I., Wang, L., Yang, W., Vardoulakis, S., Bambrick, H., & Hu, W. (2024). Towards development of functional climate-driven early warning systems for climate-sensitive infectious diseases: Statistical models and recommendations. *Environmental Research*, *249*, 118568. https://doi.org/10.1016/j.envres.2024.118568

Joshi, P. R. (2024). Pulmonary Diseases in Older Patients: Understanding and Addressing the Challenges. *Geriatrics*, *9*(2), 34. https://doi.org/10.3390/geriatrics9020034

Kapwata, T., Wright, C. Y., Du Preez, D. J., Kunene, Z., Mathee, A., Ikeda, T., Landman, W., Maharaj, R., Sweijd, N., Minakawa, N., & Blesic, S. (2021). Exploring rural hospital admissions for diarrhoeal disease, malaria, pneumonia, and asthma about temperature, rainfall and air pollution using wavelet transform analysis. *Science of The Total Environment*, *791*, 148307. https://doi.org/10.1016/j.scitotenv.2021.148307

Krismanuel, H., & Hairunisa, N. (2024). The Effects of Air Pollution on Respiratory Problems: A Literature Review. *Poltekita: Jurnal Ilmu Kesehatan*, *18*(1), 1–15. https://doi.org/10.33860/jik.v18i1.3151

Liu, S., Lim, Y. H., Chen, J., Strak, M., Wolf, K., Weinmayr, G., ... & Andersen, Z. J. (2022). Long-term air pollution exposure and pneumonia-related mortality in a large pooled European cohort. *American journal of respiratory and critical care medicine*, *205*(12), 1429-1439. https://doi.org/10.1164/rccm.202106-1484OC

Makrufardi, F., Triasih, R., Nurnaningsih, N., Chung, K. F., Lin, S., & Chuang, H. (2024). Extreme temperatures increase the risk of pediatric pneumonia: A systematic review and meta-analysis. *Frontiers in Pediatrics*, *12*, 1329918. https://doi.org/10.3389/fped.2024.1329918

Musviro, Arini Fitria, Nurul Hayati, Laili Nur Azizah, & Anggia Astuti. (2025). Pursed Lips Breathing with Balloon Enhancing Airway Clearance in Children with Pneumonia. *Health and Technology Journal (HTechJ)*, *3*(3), 342–350. https://doi.org/10.53713/htechj.v3i3.357

Patel, A., Maruthananth, K., Matharu, N., Pinto, A. D., & Hosseini, B. (2024). Early Warning Systems for Acute Respiratory Infections: Scoping Review of Global Evidence. *JMIR Public Health and Surveillance*, *10*, e62641. https://doi.org/10.2196/62641

Volume 03 Number 04
August 2025
p-ISSN: 2986-5662
e-ISSN: 2985-959X

Perret, C., Le Corre, N., & A., J. (2021). Emergent Pneumonia in Children. *Frontiers in Pediatrics*, *9*, 676296. https://doi.org/10.3389/fped.2021.676296

Sally, C., Gabrielle, C., Sidony, M. W., Christopher, S., Justin, T., & Avent, M. L. (2024). Implementation of a quality improvement strategy to optimise the management of community acquired pneumonia in a rural health setting. *Australian Journal of Rural Health*, *32*(3), 560-568. https://doi.org/10.1111/ajr.13116

Sidabutar, E., Ansariadi, Wahiduddin, Bustan, N., Stang, & Birawida, A. B. (2024). Analysis of risk factor for pneumonia in children less than five years in Makassar. *Journal of education and health promotion*, *13*, 16. https://doi.org/10.4103/jehp.jehp_727_23

Stolz, D., Mkorombindo, T., Schumann, D. M., Agusti, A., Ash, S. Y., Bafadhel, M., Bai, C., Chalmers, J. D., Criner, G. J., Dharmage, S. C., Franssen, F. M. E., Frey, U., Han, M., Hansel, N. N., Hawkins, N. M., Kalhan, R., Konigshoff, M., Ko, F. W., Parekh, T. M., . . . Dransfield, M. T. (2022). Towards the elimination of chronic obstructive pulmonary disease: A Lancet Commission. *The Lancet*, *400*(10356), 921-972. https://doi.org/10.1016/S0140-6736(22)01273-9