



Efforts To Improve Access To Primary Healthcare Services In Archipelagic Regions : A Literature Review

Ruth Christy Setyaningtyas*, Dumilah Ayuningtyas

Faculty of Public Health, Universitas Indonesia Jl. Lingkar, Pondok Cina, Beji, Depok, Jawa Barat 16424, Indonesia

*christyruth0@gmail.com

ABSTRACT

Healthcare delivery in archipelagic regions faces significant challenges, including limited access, inadequate infrastructure, and a shortage of healthcare professionals. Achieving universal health coverage in these regions requires innovative strategies and approaches. This study aims to identify regulations, challenges, and provide recommendations to improve access to healthcare services in archipelagic regions. A literature review method was employed, utilizing two databases, Google Scholar and ScienceDirect. Keywords used include “Pelayanan Kesehatan di Kepulauan” OR “archipelago healthcare” OR “health services in islands”. From 515 articles with publications from 2019 – 2024 initially retrieved, only seven were analyzed after screening using the PRISMA diagram based on predetermined criteria. The findings reveal that common challenges across archipelagic regions include geographical conditions, infrastructure limitations, and shortages in healthcare workforce quantity. Innovative efforts, such as telemedicine, hospital ships, health boats, and village health posts, have been implemented in several countries with similar geographical characteristics and proven effective in overcoming these access barriers. In conclusion, despite the complex challenges in archipelagic regions, existing regulations and various implemented efforts have improved healthcare access, fulfilling community health needs. These initiatives contribute to accelerating the equitable delivery of sustainable and high-quality healthcare services.

Keywords: access; archipelagic regions; healthcare services

How to cite (in APA style)

Setyaningtyas, R. C., & Ayuningtyas, D. (2025). Efforts to Improve Access to Primary Healthcare Services in Archipelagic Regions : A Literature Review. *Indonesian Journal of Global Health Research*, 7(1), 885-894. <https://doi.org/10.37287/ijghr.v7i1.5307>.

INTRODUCTION

Health services are efforts to prevent, cure diseases, and improve public health maintenance (Sudjadi et al., 2018). The country’s basic regulations allow everyone to obtain safe, quality, and affordable health services equally. Since 2005, the World Health Organization (WHO) has issued a resolution encouraging countries worldwide to achieve universal health coverage, aiming that all levels of society can access quality health services without financial hardship (WHO, 2022). However, challenges in providing effective and quality health services remain a frequent problem in many countries, especially in remote island regions. These challenges include a lack of physical access, competence of health workers, and adequate infrastructure to reach healthcare facilities, which makes health services in these areas critical (Ras et al., 2024). Long distances from major healthcare centres are one of the most significant barriers island residents face in accessing promotive, preventive, curative, and rehabilitative services in a timely and affordable manner. This limited access not only slows down the government’s efforts to improve public health but also reduces the willingness of local people to seek medical care when needed. As a result, their health conditions may worsen before they receive good treatment (World Bank, 2022); (UNICEF, 2023). Previous studies have shown that access to health facilities is not only influenced by the availability of services but also by demographic characteristics, health insurance ownership, and physical access such as insurance ownership, and physical access such as transportation costs and travel time, which are often the focus of health service access research (Suparmi et al., 2019).

In developing countries with large geographical areas, low and middle incomes, and an archipelago, such as Indonesia and the island nations of the Pacific Ocean, the challenges of access to health services are even more complex. Widely dispersed populations with limited numbers of health workers mean that health facilities are often far beyond the reach of most communities. Furthermore, poor road and transportation infrastructure is an obstacle to providing fast and quality health services (WHO, 2022);(World Bank, 2022). In addition to distance, the need for more trained health workers is also a significant constraint in determining the quality of care. However, health facilities are available, and more than adequately trained health workers can limit the effectiveness of the care provided. This suggests that the quality of health services in the islands is also affected by the competence of health workers, which is a critical factor in ensuring optimal care for the community (UNICEF, 2023).

Health services that are based on individual and community needs are not only implemented in Indonesia but are also recognized throughout the world. When viewed from other archipelagic areas outside Indonesia, it is noted that Sweden is the country with the most significant number of islands at 267,570 islands. Then followed by several countries, namely Norway (239,057 islands), Finland (178,947 islands with only 780 inhabited islands among them), Canada (52,455 islands including the inhabited Victoria Island), the United States (18,617 islands, one of which is the Hawaiian Islands), Indonesia (17,504 islands), Japan, and Australia (World Bank, 2022). In addition, the Philippines and Malaysia are also among the countries with the most islands in Southeast Asia after Indonesia. This demonstrates the importance of the spread of health services to reduce the impact of the spread of disease and high mortality rates (Inayati & Nuraini, 2021).

Equality related to health services in Indonesia can be considered uneven. Some remote villages do receive different health services from big cities. With community health posts in these remote villages, trained personnel can provide health services to the community according to their needs. The Posyandu program in Indonesia has been a shining example of adequate health service delivery in the archipelago (Hafifah & Abidin, 2020). Posyandu service activities include maternal and child health checks, vaccinations, and health education and interventions for the entire life cycle. This is expected to contribute to improved health outcomes for the surrounding population. In addition, in implementing health services, it is necessary to develop communication skills to increase health maintenance awareness between the community and health workers (Guevarra et al., 2022).

Thus, achieving universal health goals in island regions requires various innovations and strategic approaches. The collaboration of international organizations between countries is one of the solutions to address challenges in the health sector, such as infectious diseases, climate change, and pandemics. Several initiatives, such as telemedicine, drones for drug delivery, and improved health supply chain systems, have been developed in various countries as solutions to overcome these geographical barriers and strengthen healthcare systems, especially in island regions. Therefore, this literature review study aims to explore supporting regulations, analyze the main challenges encountered, and formulate innovative strategic recommendations to enhance access to and quality of primary healthcare services in archipelagic regions sustainably.

METHOD

The research method used is a literature review focusing on island health services. This research literature search was conducted through 2 (two) databases, namely Google Scholar and ScienceDirect. The search process was based on the keywords “health services in islands”

OR “archipelago healthcare” OR “health services in island”. The literature criteria used were journal articles with publications from 2019 – 2024 and free full-text access. The results of the search using these two databases, from 515 articles, were then filtered and analyzed in depth, and 7 (seven) articles were obtained as the basis for analysis in this paper. This literature search is limited to journal articles published in Indonesia and English language. This study used the literature review method to examine the health service model in the islands, concerning the PRISMA guidelines. There is software based on website that can help to make PRISMA flow diagram, available at https://estech.shinyapps.io/prisma_flowdiagram/, and Microsoft Excel software was utilized by the author to record and filter the retrieved articles. At the identification stage that searching based on the keywords, 515 articles were obtained from Google Scholar (433) and ScienceDirect (82). Of these, 54 articles were excluded before the screening process because they were detected as duplicates, so were 461 articles were found to be irrelevant and were excluded. It is because some of these articles discuss health services in general and do not explain concrete examples of the health services provided. Furthermore, the remaining 184 articles were submitted for the retrieval process, but 115 could not be retrieved, so there were only 69 articles to be evaluated for eligibility. Then, after filtering by looking at the availability of full-text free access and assessing the year of publication, 62 articles that do not meet the criteria will be exclude, because some books are not available to fully open. The final result was 7 (seven) articles that will be included in this research review.

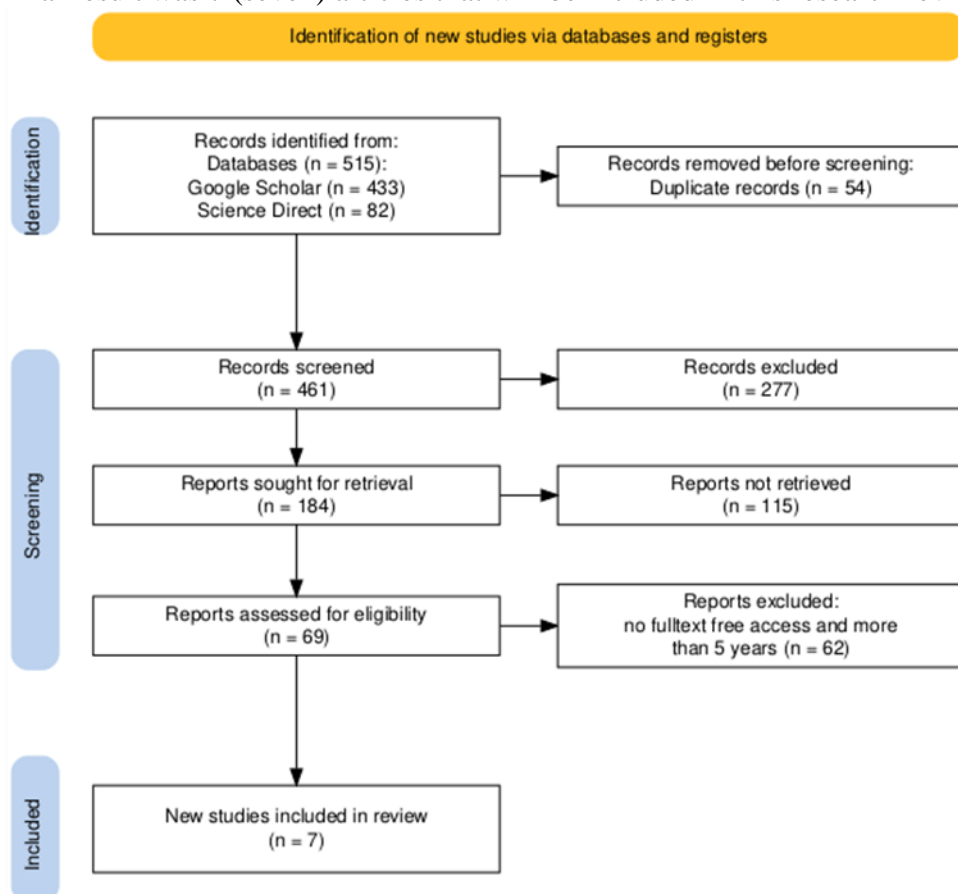


Figure 1. PRISMA Flowchart

RESULT

The result of the literature review found in relation to health services provided in several island countries are shown in the table below, as follows.

Table 1.
Literature Review Results

No.	Title	Author	Year	Result
1	Economic Evaluation of Mobile Mental Health Units in Greece: The Case of Cyclades Islands (Lykomitrou et al., 2020)	Aikaterini Lykomitrou, et.al.	2020	Of the 724 individuals included in the study, 604 received regular and continuous mental health care through the Mobile Mental Health Unit (MMHU). The findings highlight the significant impact of MMHU in reducing the burden of mental health disorders while demonstrating its cost-effectiveness in improving mental health services in the Cyclades region.
2	Hospital Ship: Health Services in the Tambelan Islands (Soeselo et al., 2023)	Daniel Ardian S., et.al.	2023	The hospital ship dr. Lie Dharmawan was established to improve access to healthcare for the surrounding community, offering surgical services despite not meeting the minimum standard for healthcare personnel availability. Patient referrals to the West Kalimantan Regional Hospital require approximately 15 hours of travel.
3	Telemedicine Implementation Challenges in Underserved Area of the Philippines (Dela Cruz & Tolentino, 2021)	Luna A. Dela Cruz, Lean Karlo, S.T.	2023	3 out of 5 respondents found telemedicine affordable and comparable to in-person consultations, particularly during the COVID-19 pandemic. However, its evaluation revealed limitations in diagnostic accuracy, poor network connectivity, and relatively high costs, especially for mental health services.
4	Progress of Island Health in the Maldives (Eya et al., 2023)	Lawson Ifeanyi Eya, et.al.	2023	Each inhabited island is equipped with a health center providing primary care, while the Indira Gandhi Memorial Hospital serves as the main tertiary care facility. Healthcare financing is supported by a universal health insurance system called "Aasandha". Telemedicine and sea ambulances have been implemented as solutions to improve access, though challenges remain, particularly related to weather conditions and network connectivity.
5	Geographic Barriers to Care Persist at the Community Healthcare Level: Evidence from Rural Madagascar (Evans et al., 2022)	Michelle V. Evans, et.al.	2022	Transportation infrastructure in the region is very limited. As a result, residents often walk, cycle to gain access to health services including for referrals.
6	An Overview of the Benefit of Basic Health Services Reaching Communities in the Islands with the Perahu Sehat Pulau Bahagia Program (PSPB): Case Study of Sabutung Health Care, Liukang Tupabiring Utara	Iman Idrus	2021	80% of the respondents utilized this PSPB-based service with a proportion of 33,3% aged 56-78 years (20 people). Overall, this facility is well received by the community but the distribution of facilities and the addition of the PSPB fleet must be improved.

7	Sub-district (Idrus, 2021) The Palace of Rural Hospital in New Zealand's Health System: An Explanatory Qualitative Study (Blattner et al., 2023)	Katharina Blattner, et.al.	2023	About 15% of New Zealand's peoples rely on rural hospital for healthcare. Rural hospitals are well positioned to provide an integrative role in local service provision.
---	-----------------------------------------------------------------------------------------------------------------------------------------------------	----------------------------	------	--------------------------------------------------------------------------------------------------------------------------------------------------------------------------

DISCUSSION

Access to health services is a critical element in improving public health, reflecting the quality of life and overall well-being. In this context, every individual, without exception, has the same right to obtain adequate health services according to their needs, as regulated in various regulations and principles of social justice. However, the reality is that there are often disparities in access and quality of health services in multiple regions, especially in remote, underdeveloped, and island areas. Therefore, equitable distribution of health services is a strategic step that needs to be continuously pursued through appropriate policies, increasing infrastructure capacity, and optimizing the use of human resources in the health sector. This approach is critical to reduce inequality in services and ensure that every individual can enjoy the right to health equally, without being hindered by geographical, economic, or social factors. This study will discuss the regulations government's efforts to improve access to health services, the challenges faced in the islands, and recommendations that can be applied.

Efforts to Improve Access to Health Services in the Islands Region Regulation Regulation

To support improved access to health services in the Indonesian archipelago, the Indonesian government has implemented several policy strategies through programs focusing on improving health services in remote, border, and island areas. The following are some of the regulations that supporting health services in the islands.

Law No. 17/2023 about Health

This law contains the main policy government of the implementation of health services in the islands. The 29th section mandates the government to take responsibility for delivering health services in remote, underdeveloped and border areas, such as the islands, to ensure that every Indonesia citizen has the right to adequate health services. In addition, various district head regulations also reflect that local governor are paying special attention to this issue and are working to address the challenges at the local level.

Minister of Health Regulation No. 90/2015 about the Implementation of Health Services in Health Care Facilities in Remote and Very Remote Areas

The regulation underlines the importance of innovations such as telemedicine, mobile clinics, and special health transportation support (health boats). And also encourages the empowerment of health workers with special program-based assignment patterns, such as Nusantara Sehat, to answer the needs of health human resources in these areas. The village health post (Poskesdes), a community-sourced health effort (UKBM), plays a strategic role in improving access to basic health services for rural and remote island communities, addressing geographical and transportation challenges. It enhances the affordability and sustainability of healthcare while empowering communities to manage their health independently, making it a vital pillar in strengthening health systems in remote areas.

Aru Islands Regent Regulation No. 35/2018 about the Island Cluster-Based Health Service System

This regulation states that the implementation of an effective referral system is achieved through increased coordination between health service facilities in the island cluster,

especially in point 9. It means including through pre-referral communication, reverse referral mechanisms, management of referral system such as telemedicine, and scheduling of mobile health facilities. This is realized by providing sea ambulances for patients who require referral to advanced levels.

Maluku Governor Regulation No. 32/2022 about the Implementation of Telemedicine Services between Health Service Facilities

This regulation explains how to implement telemedicine applications so that people, especially in the islands, can still get access to health services. The amount of this service fee is determined by the Governor, but sometimes then be charged to patients who conduct teleconsultations or there are agreements between health facilities and third-party payers. By utilizing remote communication technology, telemedicine allows people living on islands to consult with medical personnel without the need to travel long distances to health facilities on the mainland. Health workers in the central region can also monitor the condition of their patients.

Ministry of Health RI Ambulance Technical Guidelines 2019

Sea, water, and air ambulances play an important role in emergency transportation for patients in areas without direct access to advanced health facilities. The differences between water and sea ambulances are in the detailed technical specifications of the frame of the ambulances. Air ambulances can be either helicopter or aeroplane. This medical services in remote areas or those with long distances should use aircraft with a larger fuel capacity so that they can reach their destination safely and efficiently. Usually, the referral destination is a hospital, so hospitals that serve air ambulances should have helipad access. Air ambulances provide a quick solution for patients from remote islands who need immediate care, such as Aceh's Simuelue Islands and the Isles of Scilly. This service has proven to be very effective in reducing travel time in emergency situations, like heart attacks, severe trauma or labour complications (Silvalila, 2019).

Challenges

Health services in island regions face unique challenges related to limited access, infrastructure, and human health resources. This study revealed that geographical challenges, such as the distance between islands and the often unfavourable weather, are the main obstacles to providing adequate health services to the communities in these areas. The results also showed that limited access to health facilities led to low community visits to health posts, especially for preventive and promotive health services (Fauziyyah et al., 2024). This limitation is a factor that affects the quality of life of island communities and increases the risk of disease incidence that could be prevented with better access. Based on the results of the literature review, some of the challenges often experienced by island regions, in particular, are as follows:

Geographical and Weather Conditions

Archipelagic regions have unique accessibility challenges, as long distances between islands often limit the mobility of communities and health workers in providing health services. This is exacerbated by extreme weather conditions, such as storms and high waves. This makes transportation between islands impossible in a safe and timely manner, resulting in longer travel times, higher costs, and having to wait until the weather to be good so we can order to use sea ambulances for healthcare needs. In Indonesia, for example, in the Thousand Islands, boats or sea ambulances to advanced health facilities in mainland Jakarta are forced to stop when extreme weather occurs. As a result, community accessibility to health services is

limited. However, medical health services will continue to be provided while waiting for the weather to improve.

Limited Infrastructure and Health Facilities

Many health centres operating on islands still have minimal facilities, such as a lack of standard medical equipment. Even usually, as in Thousands Islands, each island has only one health centre that must operate 24 hours due to the absence of other health clinics. RSUDs located in the Pramuka Island are also currently still not equipped with facilities; for example, Thousand Islands RSUD only has an ultrasound service that is often operated, so sometimes referrals from other islands are directed to hospitals on the mainland of Jakarta. This condition results in low public visits to health facilities. This can have a direct impact on the high rate diseases that could have been prevented or controlled through early intervention.

Availability of Health Human Resources

The lack of health workers with certain specialities adds to the barriers of limited access, as people on the island often have to be referred to health facilities outside the island for further treatment. This results in high transportation costs for patients include families, make an increased risk of delayed treatment.

Operational Costs

Another obstacle arises in some developing countries, namely limited operational financing. With limited availability of ambulances, high one-way operational costs, procurement costs, and maintenance costs, it is a challenges that cannot be separated from the assistance of local governments (Toledano et al., 2023). As a solution, cost constraint, several approaches can be implemented. First, adopt a financing model based on collaboration between the government, private sector and non-government organizations to cover part of the operational cost. As in the Philippines, this model has been successful in easing the burden on the government in providing health services in remote island areas (Isolana, 2023). Second, a policy of optimizing the use of special (regional) health funds that are encouraged to be allocated to support the operation and maintenance of health services so as to enable the implementation of ambulances, as implemented in Indonesia with decentralization.

Relevance and Impact for Indonesia

The relevance of efforts to improve access to health services in the archipelago is significant for Indonesia, given that it is the largest archipelago in the world with 17,508 scattered and inhabited islands. The impact of these efforts is not only seen in improving the quality of public health, but also in strengthening the health system as a whole. Collaboration between the central and local governments realized through integrated policy planning, can create a more inclusive and efficient health service model. The involvement of local communities through training and health education programs can also contribute greatly to creating mode independent communities to manage their health. Thus, the relevance of improving health access in the archipelago reflects Indonesia's strategic need to address geographical challenges while supporting the achievement of sustainable health development goals.

CONCLUSION

Health services in the islands face similar challenges, such as difficult geographical conditions, limited infrastructure, and shortage of human resources, resulting in low community access to quality health services, especially preventive and promotive services. To overcome this, improvement in both quantity and quality of health facilities are needed. Innovations such as telemedicine, sea and air ambulances, then village health posts have proven effective in some island countries. Technology integration, infrastructure

improvements and sustainable financing, such as community-based insurance schemes, can improve access to equitable and quality health services. Recommendations such as the development of health jetties and international cooperation can also support the improvement of inter-island health services and reduce disparities.

REFERENCES

- Blattner, K., Clay, L., Nixon, G., Richard, L., Miller, R., Crengle, S., Anton, R., & Stokes, T. (2023). The Place of Rural Hospital in New Zealand's Health System: An Exploratory Qualitative Study. *Rural and Remote Health*, April 2022. <https://doi.org/https://doi.org/10.22605/RRH7583>
- Dela Cruz, L. A., & Tolentino, L. K. S. (2021). Telemedicine Implementation Challenges in Underserved Areas of the Philippines. *International Journal of Emerging Technology and Advanced Engineering*, 11(07). https://doi.org/http://dx.doi.org/10.46338/ijetae0721_08
- Evans, M. V., Andréambelosen, T., Randriamihaja, M., Ihantamalala, F., Cordier, L., Cowley, G., Finnegan, K., Hanitriniaina, F., Miller, A. C., Ralantomalala, L. M., Randriamahaso, A., Razafinjato, B., Razanahanitriniaina, E., Rakotonanahary, R. J. L., Andriamiandra, I. J., Bonds, M. H., & Garchitorena, A. (2022). Geographic barriers to care persist at the community healthcare level: Evidence from rural Madagascar. *PLOS Global Public Health*, 2(12), 1–21. <https://doi.org/10.1371/journal.pgph.0001028>
- Eya, L. I., Adam, I. M., Ibrahim, M., Miranda, A. V., Kannan, S., & Lucero-Prisno, D. E. (2023). Progress of Island Health in the Maldives. *Public Health Challenges*, 2(3), 2–5. <https://doi.org/10.1002/puh2.114>
- Fauziyyah, A. N., Shibanuma, A., Ong, K. I. C., & Jimba, M. (2024). What are the factors affecting primary care choice when the access under health insurance scheme is limited?: a cross-sectional study in Bandung, Indonesia. *BMC Primary Care*, 25(1), 1–13. <https://doi.org/10.1186/s12875-024-02296-6>
- Guevarra, J. P., Zuñiga, Y. M. H., Uezono, D. R., Go, J. J. L., Granada, C. N., & Manese, D. T. (2022). Developing an interpersonal communication material for primary health-care workers for the prevention and control of noncommunicable diseases: experience from a case in Manila, Philippines. *Journal of Health Research*, 36(4), 685–695. <https://doi.org/10.1108/JHR-07-2020-0283>
- Hafifah, N., & Abidin, Z. (2020). Peran Posyandu dalam Meningkatkan Kualitas Kesehatan Ibu dan Anak di Desa Sukawening, Kabupaten Bogor. *Jurnal Pusat Inovasi Masyarakat*, 2(5), 893–900. <https://journal.ipb.ac.id/index.php/pim/article/view/31742>
- Idrus, I. (2021). Gambaran Kemanfaatan Layanan Kesehatan Dasar Menjangkau Masyarakat Di Kepulauan Dengan Program Perahu Sehat Pulau Bahagia (Pspb) (Studi Kasus Puskesmas Sabutung Kecamatan Liukang Tuppabiring Utara) Description Of Benefits Of Basic Health Services Reaching. *Journal of Social Science, Humanities and Humaniora*, 1(1), 61–73.
- Inayati, I., & Nuraini, S. (2021). Peran Pemerintah Desa Dalam Pelayanan Kesehatan Masyarakat Di Desa Sukajaya Kecamatan Cibitung Kabupaten Bekasi. *Governance Jurnal Ilmu Pemerintahan*, 9(2), 44–73. <https://doi.org/10.33558/governance.v9i2.3164>
- Isolana, J. B. (2023). Public-Private Partnerships (PPP) in the Philippines: Issues and

- Prospects. *Recent Trends in Arts and Social Studies* Vol. 9, October, 68–85. <https://doi.org/10.9734/bpi/rtass/v9/19515d>
- Lykomitrou, A., Geitona, M., Stylianidis, S., Pantelidou, S., & Souliotis, K. (2020). Economic Evaluation of Mobile Mental Health Units in Greece: The Case of Cyclades Islands. *Scientific Research Publishing*, 12(07), 891–903. <https://doi.org/10.4236/health.2020.127066>
- Ras, A., Genda, A., Sumilih, D. A., Rahim, H., Ramadhan, S., Hasanuddin, U., & Makassar, U. N. (2024). Tantangan dan Peran Pemerintah dalam Meningkatkan Pelayanan Kesehatan di Kabupaten Takalar. 7(3), 1574–1585. <https://doi.org/https://doi.org/10.35817/publicuho.v7i3.518>
- Silvalila, M. (2019). Pelayanan Ambulan Udara di Provinsi Aceh. *Jurnal Kedokteran Nanggroe Medika*, 2(1), 35–40. <http://jknamed.com/jknamed/article/view/61>
- Soeselo, D. A., Yolanda, R., & Tampubolon, D. P. (2023). Hospital Ship: Pelayanan Kesehatan Di Kepulauan Tambelan. *Mitra Mas: Jurnal Pengabdian Dan Pemberdayaan Masyarakat*, 1(2), 90–100. <https://doi.org/https://doi.org/10.25170/mitramas.v1i2.3974>
- Sudjadi, A., Widanti, A., Sarwo, Y. B., & Sobandi, H. (2018). Penerapan Pelayanan Kesehatan Masyarakat Miskin Yang Ideal Dalam Pelayanan Kesehatan Masyarakat Miskin Melalui Program Jamkesmas. *Soepra Jurnal Hukum Kesehatan*, 3(1), 14–24. <https://doi.org/10.24167/shk.v3i1.694>
- Suparmi, Maisya, I. B., & Lestari, H. (2019). Health Insurance as a Solution for Barriers to Maternal Healthcare Access in Indonesia. *Health Policy Plus*, November, 1–6. http://www.healthpolicyplus.com/ns/pubs/17359-17647_PBHealthInsurance.pdf
- Toledano, B. R. F., Garganera, K. B., Prado, J. P. A., Sabas, M. L., & Martinez, G. S. (2023). Geographic Areas of Responsibility Among Percutaneous Coronary Intervention-capable Hospitals in the Philippines. *Journal of Asian Pacific Society of Cardiology*, 2. <https://doi.org/10.15420/japsc.2022.49>
- UNICEF. (2023). *Strengthening Health Systems to Reach Remote Communities*. www.unicef.org
- World Bank. (2022). *Delivering Medical Supplies to Remote Islands in Kiribati*. www.worldbank.org
- WHO. (2022, November). WHO issues consolidated guide to running effective telemedicine services. *WHO News*. <https://www.who.int/news/item/10-11-2022-who-issues-new-guide-to-running-effective-telemedicine-services>

