

**IMPLEMENTATION OF THE INTEGRATED EMERGENCY RESPONSE SYSTEM:  
SYSTEMATIC REVIEW****Ayu Fina Lestari<sup>1\*</sup>, Septo Pawelas Arso<sup>2</sup>, Sutopo Patria Jati<sup>3</sup>**<sup>1-3</sup>Faculty of Public Health, Universitas Diponegoro

Email Korespondensi: ayufinalestari07@gmail.com

Disubmit: 16 Februari 2024

Diterima: 13 Maret 2024

Diterbitkan: 01 April 2024

Doi: <https://doi.org/10.33024/mahesa.v4i4.14303>**ABSTRACT**

The aim of this research is to highlight the urgency of the need for an Integrated Emergency Response System in overcoming the complexity of current global disasters and emergencies. With the need for rapid and coordinated responses, this research explores the global implementation of these systems. The focus includes integration of resources from various agencies and community participation while addressing challenges such as climate change. Given the need for a rapid and coordinated response, this research explores the application of this system globally. The focus includes integration of resources from various institutions and community participation while addressing challenges such as climate change. This research method is a systematic research that adopts the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-analyses) method. Research stages include: formulating background, objectives and research questions, as well as literature searches using related keywords in databases such as Google Scholar, PubMed, and ResearchGate. The sample consists of articles in accredited academic journals published between 2020-2023, with a focus on the Implementation of an Integrated Emergency Response System. The results of the analysis show the importance of preparation before a disaster occurs. Preparedness through health education, emergency planning, and community participation increases knowledge about emergency response. Active community involvement plays an important role in the success of an emergency management system. Factors such as resources, policies, technology, and interagency cooperation influence system implementation and response to disasters. Health system evaluation and education is an integrated strategy to improve disaster response and mitigation.

**Keywords:** Integrated Emergency Response System, Emergency Response System and Implementation

## INTRODUCTION

Current global conditions show that natural disasters, security incidents, and other emergencies are increasingly complex and difficult to anticipate. In the face of these challenges, the need for integrated and efficient emergency response systems has become increasingly urgent throughout the world. Therefore, this research aims to investigate and implement an Integrated Emergency Response System at a global level. The importance of time and fast coordination in dealing with emergencies gives rise to the need for the implementation of an Integrated Emergency Response System. The system is designed to integrate resources and responses from multiple agencies, including government agencies, fire services, medical services, police, and relevant private sectors (Yan & Zhongyu, 2023)

Most countries in the world have emergency response systems that may not be fully coordinated or have adequate infrastructure. At the same time, some countries may have sufficient resources, but struggle to integrate and manage them effectively. This research will investigate this imbalance and seek solutions to integrate resources more efficiently at a global level (Una et al., 2020)

Climate change has increased the frequency and severity of natural disasters. Thus, a fast and coordinated response is needed. This research will examine how the Integrated Emergency Response System can prepare for and respond to more frequent and complex disasters while considering the impacts of climate change (Song et al., 2020). Responding to disasters is not only the government's responsibility but also involves active community participation. This

research will explore ways to increase global community involvement in reporting and responding to emergencies and how this system can utilize positive contributions from communities in disaster management. After a disaster, sustainability and recovery are crucial stages. This research will examine how the Integrated Emergency Response System can assist in the long-term recovery process and build sustainability at the global level (Rustamov et al., 2020)

By involving the latest technology and geographic information systems (GIS), the Integrated Emergency Response System will not only enable rapid identification and analysis of emergencies but also facilitate effective communication and coordination between the parties involved. The use of smart sensors, real-time data, and predictive analytics will provide better visibility into the dynamics of emergency events, enabling more accurate and faster decision-making. Apart from that, the implementation of the Integrated Emergency Response System will also increase community participation in emergency response. Mobile applications, online platforms, and other communication channels will be used to provide clear and up-to-date information to the public, as well as provide a means to report emergency incidents and request assistance quickly. (Mar'atun Ulaa & Khusnul Tisa Azmi, 2023)

Steps toward implementing this system will involve collaboration between the government, disaster management agencies, the private sector, and the general public. Policy design, personnel training, technology development, and

regular simulations will be an integral part of this effort to ensure system reliability and effectiveness in dealing with various emergency scenarios.

This research is urgently carried out considering the rapid escalation of natural disasters, security incidents, and global emergencies. The urgency lies in the urgent need to devise and implement an Integrated Emergency Response System that can respond quickly and efficiently to these increasingly complex challenges. In emergencies, a timely response can reduce human and property losses, therefore, there is a need for a deeper understanding of the integration of the latest technologies, including smart sensors, big data analysis, and artificial intelligence. This research also has urgency in overcoming complex global challenges, such as climate change, which require international-level coordination and a holistic approach. In addition, this research will underscore the importance of community involvement in the emergency response process, which can speed up post-disaster recovery. Thus, this research not only contributes to the development of a more effective Integrated Emergency Response System but also responds to the global urgency in facing the increasing threat of disasters and emergencies.

#### LITERATURE REVIEW

The importance of implementing an efficient and globally integrated Integrated Emergency Response System (IERS) is increasingly visible in current global conditions. Natural disasters, security incidents, and other emergencies are increasingly complex and difficult to predict,

driving the need for emergency response systems that can operate in a coordinated manner across the globe. Although many countries have emergency response systems, often coordination between various relevant institutions and organizations is not optimal, or the infrastructure is inadequate. Conversely, some countries may have adequate resources but have difficulty integrating them and managing them effectively.

Additionally, climate change has increased the frequency and severity of natural disasters, strengthening the argument for rapid and coordinated responses. Disaster response is no longer solely the responsibility of the government; Active community participation is also crucial in speeding up reporting and response to emergencies. The use of the latest technology, such as smart sensors, real-time data analysis, and predictive analytics, is an important aspect of the development of IERS.

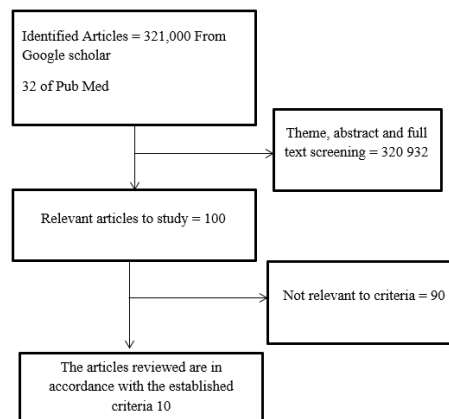
This technology provides better visibility into the dynamics of emergency events, enabling more accurate and faster decision-making. Implementation of this system requires collaboration between the government, disaster management institutions, the private sector, and the general public. The urgency to address the growing threat of disasters and emergencies highlights the importance of long-term recovery and building global resilience. Thus, this research not only aims to develop a more effective IERS but also to respond to urgent needs at the global level in facing increasingly complex challenges.

## METODOLOGI PENELITIAN

This research is a systematic review using the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-analyses) method, which was carried out in a structured manner by following established research stages and protocols. This Systematic Review procedure includes several stages, namely compiling the research background and objectives, formulating research questions, conducting a literature search, establishing selection criteria, carrying out practical screening, using a quality checklist, data extraction strategy, and data synthesis strategy.

A search for research articles relevant to the topic was carried out

using related keywords such as implementation of the Integrated Emergency Response System, traffic accident management system, and integrated emergency department. Data sources were obtained from Google Scholar, PubMed, and ResearchGate. The population in this study includes all articles published in accredited national and international journals, full text, relevant to the topic, namely Implementation of the Integrated Emergency Response System. This research sample consists of articles that meet the inclusion criteria covering the publication period between 2020-2023, discussing the Integrated Emergency Response System.



Gambar 1. Article Selection Results Scheme

## RESULT

A systematic review was conducted to investigate the implementation of the Integrated Emergency Response System. The article selection process began with a search on Google Scholar, identifying an initial 321,000 articles and 32 from Pub Med. From these results, 320,932 articles were retrieved and involved a filtering process based on themes, abstracts, and full text. After screening, 100 articles were considered relevant

and according to the established research criteria. However, as many as 90 articles were later eliminated because they were deemed not by the research objectives. Finally, 10 articles deemed to meet the study criteria underwent a more in-depth systematic review.

Interpretation of the findings from this systematic review can provide a comprehensive understanding of the implementation of the Integrated

Emergency Response System. This includes identifying general patterns, trends, and key findings that can provide in-depth insight into the factors influencing the implementation of these systems. A more detailed analysis can also be carried out to see the specific

contribution of each article to our understanding of the implementation of the Integrated Emergency Response System, taking into account the context, research methods, and main results of each article.

**Table 1. of Article Review Results**

Name/ Year	Title	Method	Results
(Panjaitan, 2022)	Resources and Cooperation in Integrated Emergency Management Systems Disaster Management	Researchers conducted literature searches through databases such as Pubmed, Science Direct, and Google Scholar, and reviewed relevant previous articles. They used descriptive methods to collect data on factors influencing the implementation of the Integrated Emergency Management System (SPGDT) in Indonesia, including resources, response time, and innovation. Inclusion criteria include research articles in the last 10 years, published in Indonesian or English, with accessible full text.	Disaster management is very important to reduce casualties. The involvement of various parties in providing post-disaster assistance and services is important. Pre-disaster preparedness helps in effective response. Preparedness should be focused on high-risk areas. Building preparedness is the key to community resilience in disasters.
(Khairilmizal et al., 2020)	Expert System Development Process of Integrated Disaster Management System for Lead Responding Agency in Malaysia During	This research aims to describe the process of developing the IDMS (Integrated Disaster Management System) expert system. Through document review and analysis	This research concludes that IDMS can assist officers in managing emergencies, especially during the initial response and recovery phase. To ensure the capacity and

Name/ Year	Title	Method	Results
	Response and Early Recovery Phases	methods, four previous expert system development models were examined. From the comparison and understanding of the four models, the IDMS expert system development process was integrated in the form of seven steps which also meet the criteria for a computerized system for the main response agency in Malaysia	capability of the IDMS, the system needs to be developed based on a concrete expert system development process. The seven steps in the expert system development process that have been presented show that the design and development of an IDMS must be able to meet the needs of end users while meeting the disaster management system criteria for the main disaster management agency in Malaysia. With the expert system development process outlined, IDMS design and development can become more systematic and primarily meet end-user requirements. Researchers hope that this expert system development process can be used for the design and development of other expert systems in the future.
(Mar'atun Ulaa & Khusnul Tisa Azmi, 2023)	The Influence of Integrated Emergency Response System (SPGDT) Health	This research is a Quasi Experiment with a pretest-posttest nonequivalent non-	Health education regarding prevention of pregnancy emergencies;

Name/ Year	Title	Method	Results
	Education on Pre-Health Services on Residents' Knowledge of Maternal Emergencies in the Work Area of the Plaju Health Center	control experimental group design which was carried out in July 2023 in the work area of the Plaju Palembang Community Health Center. The research sample consisted of 28 people who were given health education about SPGDT (Pre-Pregnancy Health Services) related to maternal emergency knowledge. The media used was a booklet compiled by the researcher himself. Data analysis used the Wilcoxon test	Unsafe Abortion in Adolescents is effective in increasing respondents' knowledge with a value of 0.000. Conclusion: statistically, health education is effective in increasing respondents' knowledge about SPGDT in Pre-Pregnancy Health Services towards Maternal Emergency Knowledge in the Plaju Palembang Health Center Working Area with a P value of 0.000.
(Al Kurdi, 2021)	A critical comparative review of emergency and disaster management in the Arab world	The author selected Qatar, and Oman to represent the Arab oil-rich countries, while Jordan, Egypt, and Morocco to represent non-oil-rich countries. The research was conducted in a qualitative, inductive systematic literature review based on a well-established systematic literature review methodology. Selected literature was based on its recency and the country in question.	The findings of this review reveal population disparities that could threaten social systems in the event of disasters in countries such as Qatar and Oman. Most countries lack community engagement and planning for emergency preparedness due to social and cultural barriers. Other countries such as Jordan, Egypt, and Morocco are vulnerable to long-term economic challenges due to a lack of resources,

Name/ Year	Title	Method	Results
			poor management, or corruption. This paper also highlights the need to increase educational attainment among citizens to understand disaster risk reduction.
(Cahyono et al., 2022)	Emergency Management System Indonesia: Evaluation Emergency Patient Management 2020	In An Of In	Of the 88 respondents from 21 provinces in Indonesia, the validity test results showed that the correlation coefficient for all indicators was above the r table value (0.2096) and the Cronbach's Alpha value for all indicators was above 0.80. From the assessment results, twelve indicators show values below the average (66). The data obtained from this research can be an initial reference for continuous improvement in the Indonesian emergency management system operated by the PSC.
(Yudhanto et al., 2021)	Analysis of the Implementation of the SPGDT Program in Indonesia		This research is a simple literature review that involves searching literature in several databases such as ScienceDirect, Scopus, PubMed, Garuda Portal, and Google Scholar. The search was carried out. Factors that influence the Integrated Emergency Management System (SPGDT) program, such as standard operating procedures (SOP) and resource availability, are



Name/ Year	Title	Method	Results
		out using keywords and following previously established inclusion and exclusion criteria. The aim is to gather relevant information and understanding of the research topic from existing literature.	closely related to traffic accidents.
(Rosady et al., 2023)	Strategy Model for the Development of Integrated Emergency Management System Policy Implementation	The research used a qualitative case study approach by observing the implementation of the emergency system, conducting interviews, and examining related policy documents	The results show that aspects of institutional characteristics, socio-economic and political conditions, and the disposition of implementers are in good condition. Based on the IFAS value of 0.55 and EFAS 0.23, Cibabat Regional Hospital is in quadrant I, suggesting the implementation of a fast growth strategy. The development strategy model using SWOT analysis produces 12 alternative strategies.
(Murod & Andriansyah, 2021)	Call Center 119 DKI Jakarta, Breakthrough Emergency Health Services	This research adopts a qualitative-descriptive approach with an interactive model.	The results of this research show that the SPGDT 119 Call Center represents innovation in the process of providing emergency services to the community by providing a new approach to these services. Furthermore, the research identified three diseases that

Name/ Year	Title	Method	Results
			are commonly experienced by Indonesian people, namely cerebrovascular disease, traffic accidents, and ischemic heart disease.
(Song et al., 2020)	Improvement measure of integrated disaster management system considering disaster damage characteristics: Focusing on the Republic of Korea	This study analyzes the disaster management system in foreign countries and the damage that occurred in the last 10 years in South Korea, facing natural and social disasters.	Findings show problems such as inefficient initial response and overlap in command systems persist. The proposed solutions include merging all types of disasters, restructuring administrative organizations, revising disaster-related laws, and addressing connectivity issues between ministries and overlapping regulations. The goal is to improve South Korea's integrated disaster management system. Currently, the Si/Gun/Gu Disaster Safety Agency, under the local government, is the agency responsible for disaster response, while the central government supervises and controls overall disaster support and management.
(Wiratma, 2018)	Implementation of an Integrated Emergency Management	This research uses qualitative research methods with descriptive research	The results of this research indicate that the PSC (Public Safety Center)

Name/ Year	Title	Method	Results
	System (Analysis of the Responsiveness of the Public Safety Center Program in Tulungagung Regency)	type. Data collection techniques were carried out through document study, observation, and in-depth interviews with informants. The determination of informants was carried out purposively by selecting parties who were deemed to have a deeper understanding of the implementation of integrated emergency management, especially the Public Safety Center program in Tulungagung Regency which involves related sectors in emergency services.	program in the context of integrated emergency management in Tulungagung Regency has been running well. This has important relevance in traffic accident management, where optimal responsiveness in the emergency system can play a key role in providing rapid and effective assistance to accident victims. With good implementation of the PSC program, traffic accident management in the area can be improved, helping to reduce the impact of injuries and deaths due to road accidents.

Various studies emphasize the urgency of preparation before a disaster occurs. This preparedness includes health education efforts, emergency planning, and active community involvement in reducing the impact of disasters. Research findings show that community participation has a central role in the success of the emergency management system. Regions or countries where people are actively involved tend to respond more effectively to disasters. Research also identifies factors that influence the implementation of emergency systems, such as the availability of

resources, appropriate policies, adequate technology, and inter-agency collaboration. Continuous system evaluation is an important step in developing better systems, with several studies offering development strategies based on SWOT analysis to increase system effectiveness and responsiveness. In addition, the focus on increasing knowledge through health education regarding emergency systems shows a significant increase in public understanding of certain emergency responses, such as in the case of knowledge about maternal emergencies.

## DISCUSSION

### Pre-Disaster Preparedness

Various studies emphasize the importance of preparation before a disaster occurs. This preparedness includes health education, emergency planning, and community participation in efforts to reduce the impact of disasters. Pre-disaster preparedness is the main focus of many studies related to emergency management. Research by Panjaitan (2022) highlights that pre-disaster preparation through health education, emergency planning, and community participation are crucial factors in reducing the impacts caused by disasters. This is reinforced by the results of other research, such as research by Mar'atun Ulaa and Khusnul Tisa Azmi (2023) which shows that health education related to emergency systems, such as Pre-Pregnancy Health Services, can significantly increase public knowledge of maternal emergency responses. Likewise, research by Cahyono et al. (2022) and Yudhanto, Suryoputro, and Budiyanti (2021) emphasize the importance of preparedness through evaluation of emergency management systems involving policy indicators, planning, program implementation, and community participation as initial efforts to ensure a more effective emergency response system. In this context, health education and community engagement play a key role in preparing communities and institutions to face disasters. The Integrated Emergency Management System (SPGDT) combines emergency management from the pre-hospital level to the hospital level and referrals between hospitals with a cross-program and multi-sectoral approach. Public Safety Care (PSC) as the spearhead of a safe community is a public/community facility which is a combination of

emergency ambulance service elements, security (police) elements and rescue elements. PSC is the first emergency treatment that helps improve pre-hospital services to ensure a fast and appropriate response to save lives and prevent disability, before being referred to the target hospital.

### The Role of Community Engagement

The research findings highlight that community involvement is critical to the success of an emergency management system. Countries or regions with active public participation tend to have more effective responses to disasters. Research from Khairilmizal et al. (2020) emphasized that active community involvement plays a central role in the success of emergency management systems. This is reflected in more effective responses to disasters faced by countries or regions with high levels of community participation. This finding is in line with research by Cahyono et al. (2022) which shows that community participation is a key factor in evaluating emergency management systems, influencing aspects of policy, planning, program implementation, and the effectiveness of responses to disasters. Apart from that, research by Murod and Andriansyah (2021) also emphasizes that optimal responsiveness in the emergency system can provide faster and more effective assistance to disaster victims when there is strong involvement from the community in implementing an integrated emergency management program. In conclusion, community involvement has a crucial role in ensuring the success of emergency response and mitigating the impact of disasters.

Community empowerment is carried out through education and training regarding emergencies and first aid.

### **Influence Factors on System Implementation**

These studies identify several factors that influence the implementation of emergency management systems, such as the availability of resources, appropriate policies, adequate technology, and inter-agency preparedness and cooperation. Research conducted by several researchers such as Panjaitan (2022), Cahyono et al. (2022), and Yudhanto, Suryoputro, and Budiyantri (2021) highlights crucial factors that influence the implementation of emergency management systems. One of them is the availability of resources which includes sufficient equipment, personnel, and infrastructure needed for emergency response. Apart from that, the right policy is an important point, as shown in research by Cahyono et al. (2022), that well-structured and implemented policies influence the effectiveness of the emergency system as a whole.

Example in Indonesia, the use of technology and communication, as explained in research by Wiratma (2018), is a crucial element in efforts to handle traffic accidents. In particular, the existence of the SPGDT 119 Call Center reflects innovation in providing emergency services to the community. Through this Call Center, the public can quickly contact SPGDT when a traffic accident occurs. Quick response is a critical factor in emergency situations like this, where every second counts and can make the difference between safety and greater risk for accident victims. The use of technology and communications allows authorities to respond to emergency calls more

efficiently, leading to faster transportation and more appropriate medical services for victims. Therefore, this kind of innovation is an important aspect in handling traffic accidents, enabling better prevention efforts and providing a key role in saving lives and reducing the impact of injuries (Irvan et al, 2022).

The importance of adequate technology was also revealed in this research, as explained by Panjaitan (2022), that advances in technology and information infrastructure are very supportive of emergency management. In addition, inter-agency preparedness and cooperation are also important factors identified by several studies, indicating that good coordination between relevant agencies has a significant impact on the response and effectiveness of emergency management systems.

All of these factors are important, interrelated components in implementing an effective emergency management system, ensuring that adequate resources are supported by structured policies, appropriate technology, and good coordination between agencies to provide an efficient response to disasters.

### **Evaluation and Continuous Development**

Evaluation of existing systems is an important step in developing a better system. These studies offer development strategies based on SWOT analysis to increase system effectiveness and responsiveness.

Research related to emergency management emphasizes the importance of evaluating existing systems as a crucial step in developing better systems. The results of this evaluation become the basis for improving and improving the system's response to disasters.

Several studies, such as those conducted by Yudhanto, Suryoputro, and Budiyantri (2021), highlight the use of SWOT analysis as a method for evaluating strengths, weaknesses, opportunities, and threats in emergency management systems.

In this context, the evaluation results become the basis for identifying areas that need to be repaired or improved, as well as utilizing existing potential to optimize system responses in dealing with disasters. With continuous evaluation and continuous development based on SWOT analysis, it is hoped that the emergency management system can continue to develop, becoming more responsive, effective, and adaptive in facing various disaster challenges that may occur.

### **Focus on Increasing Knowledge and Emergency Response**

Integrated Emergency Services (SPGDT) includes PSC (Public Safety Center) evaluation and SISRU (Integrated Referral System) application. In Indonesia SPGDT or in other countries called EMS (Emergency Medical Services) there are still complaints from the public because it has not shown maximum results. Even though there are many emergency installations, the facilities are inadequate, integration in serving emergency sufferers is not yet systematic, there is a lack of communication between health facilities and between the health workers themselves, let alone the user community, so it seems like they are running separately.

### **CONCLUSION**

Several studies related to emergency management emphasize several crucial aspects in preparing for disasters. A focus on pre-disaster preparedness, such as through

health education, emergency planning, and community participation, is a major concern. In this context, this preparation helps increase public knowledge of specific emergency responses, such as maternal emergencies. In addition, active community involvement was also found to have an important role in the success of the emergency management system. Countries or regions with high community participation tend to respond more effectively to disasters. Factors influencing system implementation, including availability of resources, appropriate policies, adequate technology, and interagency cooperation, were also identified as critical components in strengthening disaster response. Continuous system evaluation and focus on increasing knowledge through health education are integrated strategies to improve response and mitigation of the overall impact of disasters.

In Indonesia SPGDT or in other countries called EMS (Emergency Medical Services), starting with the activation of the Integrated Emergency Management System (SPGDT), this has become one of the programs of the Ministry of Health in order to improve health services, especially in emergency services, which can be done through efforts to increase the community's capacity as first responders. Training to help emergency patients will be provided to the community to increase the community's ability to provide quality first aid so that it is hoped that it can reduce the risk of disability and death in emergency patients.

### **REFERENCES**

Al Kurdi, O. F. (2021). A critical comparative review of

- emergency and disaster management in the Arab world. *Journal of Business and Socio-Economic Development*, 1(1), 2446. <https://doi.org/10.1108/jbsed-02-2021-0021>
- Ariyani, H., & Rosidawati, I. (2023, October). Designing application community based emergency management. In *AIP Conference Proceedings* (Vol. 2510, No. 1). AIP Publishing.
- Astuti Ramadhana, R. T., Winarni, I., & Windarwati, H. D. (2019). The Principle of Lived Body Experience of Public Safety Center (PSC) 119 Officer in Conducting Integrated Emergency Response Systems in Malang, East Java, Indonesia. *Indian Journal of Public Health Research & Development*, 10(8).
- Cahyono, A., Lestari, F., Prasetyo, S., & Tejamaya, M. (2022). Emergency Management System in Indonesia: an Evaluation of Emergency Patient Management in 2020. *Asia Pacific Journal of Health Management*, 17(2), 1-7. <https://doi.org/10.24083/apjhm.v17i3.1655>.
- Fikriana, R., & Al-Afik. (2018). The Effect of Public Safety Center Simulation on Increasing Self-Efficacy of Integrated Emergency Management System Coordination. *Jurnal Keperawatan Universitas Muhammadiyah Malang*, 9(1), 35-42. <http://repository-stikep.ddns.net:8080/xmlui/handle/123456789/229>.
- Habibullah, A., Mutiarin, D., & Sarofah, R. (2019). The Challenges of Smart City Implementation in Indonesia: Case Study of Sleman Regency, Special Region of Yogyakarta, Indonesia. *Journal of Governance and Development (JGD)*, 15(1), 1-18.
- Irwan, V. F., Tamtomo, D. G., & Murti, B. (2022). Policy Implementation of Mayor Regulation Number 21 of 2020 concerning the Implementation of an Integrated Public Safety Service Center in Padang, West Sumatera, Indonesia. *Journal of Health Policy and Management*, 7(02), 139-148.
- Khairilmizal, Hussin, M. F., Husna, A., Yassin, M., Ihsan, A., Kasri, M. H., & Hussain, A. R. (2020). Expert System Development Process of Integrated Disaster Management System for Lead Responding Agency in Malaysia During Response and Early Recovery Phases. *Journal of Electrical & Electronic Systems Research*, 16(JUNE 2020), 47-53. <https://doi.org/10.24191/jeesr.v16i1.007>
- Mar'atun Ulaa, & Khusnul Tisa Azmi. (2023). The Influence of Integrated Emergency Response System (SPGDT) Health Education on Pre-Health Services on Residents' Knowledge of Maternal Emergencies in the Work Area of the Plaju Health Center. *Jurnal Inspirasi Kesehatan*, 1(2), 209-219. <https://doi.org/10.52523/jika.v1i2.55>
- Murod, M., & Andriansyah, E. S. (2021). Call Center 119 DKI Jakarta, Terobosan Pelayanan Kesehatan Kegawatdaruratan. *Petanda: Jurnal Ilmu Komunikasi Dan Humaniora*, 03(02), 125-137.
- Muskananfola, I. L., & Ahsan, T. H. N. (2019). Analyzes of nurse work load and teamwork with the service quality of pre-hospital emergency in Kupang, East Nusa Tenggara, Indonesia. *International Journal of*

- Nursing Education*, 11(3), 80-85.
- Nurmalia, P., & Budiono, I. (2020). Program Public Safety center (PSC) 119 Mataram Emergency Medical Servis (MEMS). *Higeia Journal of Public Health Research and Development*, 4(2), 301-311.
- Panjaitan, B. S. P. (2022). Resources and Cooperation in Integrated Emergency Management Systems in Disaster Management. *Science Midwifery*, 10(2), 2721-9453.
- Rosady, Septriana, D., Trilestari, Wirjatmi, E., Listiani, & Teni. (2023). Model Strategi Pengembangan Implementasi Kebijakan Sistem Penanggulangan Gawat Darurat Terpadu. *Jurnal Integrasi Kesehatan Dan Sains (JKS)*, 5(2), 124-130.
- Rustamov, Sharipov, & Pulatov, T. (2020). Vulnerability Analysis of Emergency Response System Based on Navigational Units in Case of Vehicle Accidents. *Technical Science and Innovation*, 2020(2), 14-18. <https://doi.org/10.51346/tstu-01.20.2-77-0058>.
- Sulistiadi, W., Nurhidayah, S., & Asyary, A. (2020). Evaluating the management information system of integrated medical emergency care in batang regency, Indonesia.
- Song, Y. S., Park, M. J., Lee, J. H., Kim, B. S., & Song, Y. H. (2020). Improvement measure of integrated disaster management system considering disaster damage characteristics: Focusing on the republic of Korea. *Sustainability (Switzerland)*, 12(1). <https://doi.org/10.3390/SU12010340>
- Una, G., Van Eden, H., Singh, A., Bardella, F., & Verma, A. (2020). Enhancing Digital Solutions to Implement Emergency Responses. *International Monetary Fund*, June 8, 1-8.
- Wiratma, B. (2018). Implementasi Penanganan Kegawatdaruratan Terpadu ( Studi Tentang Responsivitas Program Public Safety Center di Kabupaten Tulungagung ). *Kebijakan Dan Manajemen Publik*, 6(2), 1-7.
- Yan, & Zhongyu. (2023). Retracted: Optimization of Remote Public Medical Emergency Management System with Low Delay Based on Internet of Things. *Journal of Healthcare Engineering*, 2023, 9891760. <https://doi.org/10.1155/2023/9891760>
- Yudhanto, Y., Suryoputro, A., & Budiyantri, R. T. (2021). Analisis Pelaksanaan Program SPGDT Di Indonesia. *Media Kesehatan Masyarakat Indonesia*, 20(1), 3140. <https://doi.org/10.14710/mkmi.20.1.31-40>