DETERMINANTS OF MYOCARDIAL INFARCTION OUTCOMES IN A NON-PERCUTANEOUS CORONARY INTERVENTION HOSPITAL IN JAKARTA

By Laili Talitha

WORD COUNT 3680
TIME SUBMITTED 28-NOV-2023 03:14PM
PAPER ID 104627696

Laili, T. S., & Winarti, W. (2023). *Nurse and Health: Jurnal Keperawatan. 12 (2): 131-139*
http://ejournal-kertacendekia.id/index.php/nhjk/index

Original Research Article

DETERMINANTS OF MYOCARDIAL INFARCTION OUTCOMES IN A NON-PERCUTANEOUS CORONARY INTERVENTION HOSPITAL IN JAKARTA

Talitha Syifa Laili[1], Wiwin Winarti[1*]

[1]Universitas Pembangunan Nasional Veteran Jakarta

***Correspondence:**
Wiwin Winarti
Department of Nursing, Faculty of Health Science, Universitas Pembangunan Nasional Veteran Jakarta Limo Raya Road, Limo District, Depok City, West Java 12450.
Email: wiwin.winarti@upnvj.ac.id

Article Info:
Received: September, 5th, 2023
Revised: -
Accepted: November, 26th, 2023

DOI:
https://doi.org/10.36720/nhjk.v12i2.579

Abstract

Background: Global cardiovascular challenges persist, notably in myocardial infarction (MI). Despite studying factors such as age, sex, MI type, and comorbidities impacting survival, knowledge gaps exist, particularly in Indonesia without recent MI data, especially in non-PCI settings.
Objectives: This study seeks to bridge the knowledge gap concerning determinants of post-MI survival in hospitals without PCI facilities in Jakarta, Indonesia.
Methods: Adopting a retrospective cross-sectional design, 112 medical record patients from an Emergency Department of non-PCI hospital in Jakarta were selected via purposive sampling. A structured checklist was utilized to assess 16 variables and the primary endpoint was post-treatment status. The study employed Chi-square, Fisher's exact, and Likelihood ratio tests to analyze the relationship between demographics, risk Factors, and MI treatment access and the post-treatment status.
Results: Results highlighted that of 112 myocardial infarction (MI) patients, males constituted 70.5%, with Non-ST Elevation Myocardial Infarction as the predominant subtype (57.1%). Most participants (86.6%) were ≥45 years old. Prevalence rates included hypertension (56.3%), Diabetes Mellitus (40.2%), Congestive Heart Failure (42.0%), and prior MI (27.7%). Post-MI survival stood at 92.9%, with 7.1% mortality. The results revealed a significant correlation between cardiogenic shock and MI outcomes (p=0.000), indicating a protective advantage (OR: 0.018) for those without cardiogenic shock against MI-related mortality.
Conclusion: While cardiogenic shock has been reaffirmed as the sole predictor of post-myocardial infarction mortality in our study, it's crucial to heighten awareness of other MI determinants, including age, gender disparities, smoking status, and the dynamics of therapeutic measures. This underlines the pressing need for early identification and evidence-based management strategies.
Keywords: *Myocardial infarction, Non-PCI, Survival, Cardiogenic shock*

E-ISSN
2623-2448
P-ISSN
2088-9909

INTRODUCTION

Cardiovascular diseases remain a prominent global health challenge, with myocardial infarction (MIs) being one of the most severe manifestations. Global statistics underscore the severity of this crisis: in America, an individual succumbs to heart disease every 40 seconds, and in the UK, this interval extends to every eight minutes (British Heart Foundation, 2022; Tsao et al., 2022). Beyond these numbers, a profound impact on patients, families, and communities was evident. Projections have estimated that heart disease-related deaths will reach 23.6 million by the end of the decade (Mozaffarian et al., 2021). This emphasizes the importance of understanding its implications, especially for regions facing diverse healthcare challenges.

Efforts to understand and mitigate MIs have led to extensive research on the determinants of MI mortality. Several key factors such as age, sex, MI type, pre-existing comorbidities, and timing of medical intervention have been identified as crucial for survival outcomes (Dharmarajan et al., 2017; Pramudyo et al., 2022; Rafi, Sayeed, Sultana, Aik, & Hossain, 2020; Subahi et al., 2018). An emerging area of focus is the relationship between degenerative diseases, such as diabetes, and their potential influence on MI outcomes, highlighting the complex interplay of physiological factors (Chen et al., 2021).

Nevertheless, there are gaps in our global understanding of MI, particularly in regions such as Indonesia, which lacks current MI survival data. This shortfall is evident in historical data from Jakarta (2014-2015) which provides insights into MI patient demographics, but has no recent research follow-up (Dharma et al., 2016). There is particular concern in areas without advanced medical infrastructure such as Primary Coronary Intervention (PCI) facilities. The absence of such facilities in certain general hospitals in Jakarta exemplifies this research and the healthcare challenges.

This situation raises several important questions. In the absence of PCI, which factors predominantly determine survival outcomes? How might specific regional elements, whether cultural, socioeconomic, or genetic, influence mortality risk? Preliminary studies have shown significant variations in mortality rates between different Indonesian provinces and certain Middle Eastern countries (Alhabib et al., 2019; Pramudyo et al., 2022; Wasyanto & Tridamayanti, 2019). Understanding these disparities in non-PCI contexts is essential to developing targeted medical interventions.

We addressed these gaps by examining the determinants of post-MI survival in a general hospital in Jakarta, Indonesia. Through an analysis of secondary patient medical records, our study offers two main contributions: enhancing academic discourse and providing actionable practical recommendations. Within the broader scope of global healthcare, deepening our understanding of MI survival transcends academic pursuits and becomes a crucial step towards refining patient care and elevating survival outcomes.

Objective(s): to bridge the knowledge gap concerning determinants of post-MI survival in hospitals without PCI facilities in Jakarta.

METHODS

Study Design

We employed a retrospective cross-sectional design to identify the determinants of post-MI survival in a non-PCI hospital in Jakarta, Indonesia. This design was apt for assessing historical myocardial infarction patient outcomes, especially to discern patterns specific to non-PCI contexts.

Setting

The study was conducted in the Emergency Department (ED) of a general hospital in Jakarta Province, chosen because of the absence of Primary Coronary Intervention (PCI) facilities. This absence represents specific healthcare scenarios in the region that may distinctly affect patient outcomes.

Research Subject

From an initial set of 150 medical records of patients in the ED with myocardial infarction between January and July 2023, we applied a purposive sampling technique. This resulted in a final sample size of 112 patients. This sampling approach ensured a diverse range of patient profiles for holistic understanding. The inclusion criteria consisted of patients aged 45-65+ years, those presenting with chest pain, those diagnosed with either STEMI or NSTEMI, and those showing elevated cardiac biomarkers. Individuals with incomplete data on the critical variables were excluded.

Instruments

Data were collected using a structured checklist validated by two Emergency Department specialists. The primary endpoint was post-treatment status, defined as either 'survived' or eased. We analyzed the relationships between 16 clinical variables, including Hypertension, Diabetes Mellitus, Chronic Kidney Disease, Cardiogenic Shock, CHF, and Stroke. Each variable had a defined set of clinical criteria. We also analyzed variables, such as Revascularization, Recurrent Myocardial Infarction, ER Arrival Time, and specific medications. Although Marital Status and BMI were initially considered, we excluded them because of concerns about their relevance and data inconsistencies.

Data Analysis

SPSS (version 26.0) was used for data processing. The analysis included the calculation of both absolute (f) and relative frequencies (%). To identify significant associations, we used the chi-square test, Fisher's exact test, and likelihood ratio test. We presented the results from bivariate analyses as odds ratios (ORs) with 95% CIs and P-values, considering a p-value of < 0.05, as statistically significant.

Ethical Consideration

The Health Research Ethics Committee (HREC) of the hospital granted ethical approval, as documented by approval letter No. 25, dated May 5, 2023. Given our focus on secondary data extraction, this study presents a minimal risk to the patients. While patient consent was not necessary owing to the nature of the data, we strictly adhered to the ethical guidelines outlined in the Declaration of Helsinki. We remained committed to ensuring confidentiality, maintaining anonymity, and safeguarding data throughout the study.

RESULTS

Demographics, Risk Factors, and MI Treatment Access

In this study, we observed specific patterns related to the prevalence and treatment of MI in a cohort of 112 patients. Males constituted the majority, representing 70.5% of the total, while females made up the remaining 29.5%. Age-wise, 86.6% of the participants were 45 years or older. When classifying the type of myocardial infarction, NSTEMI was the most frequent subtype, accounting for 57.1% of cases (Table 1).

Data concerning the smoking habits of the participants were somewhat incomplete, with an unclear status in 81.3% of the cohort, suggesting potential challenges in data collection. Among those whose smoking status was confirmed, active smokers (15.2%) significantly outnumbered nonsmokers (3.6%). Further assessment of the risk factors highlighted the prevalence of hypertension in 56.3% of the patients with myocardial infarction, Diabetes Mellitus in 40.2%, Chronic Kidney Disease in 21.4%, Congestive Heart Failure in 42.0%, and prior instances of Myocardial Infarction in 27.7% (Table 1).

Regarding healthcare accessibility, 66.1% of the participants accessed emergency care within the first 12 hours after symptom onset. Nonetheless, 33.9% of the patients accessed care after this period. Nitroglycerin

was conspicuously absent in 80.4% of the patients in the treatment regimen. However, aspirin and clopidogrel were commonly administered to 67.[illegible] and 69.6% of the cohort, respectively (Table 1).

Table 1. Distribution of Post-Myocardial Infarction Management Based on Patient Characteristics

Characteristics of Sample	Outcome Post-MI Management			P Value
	Survived f (%)	Deceased f (%)	Totals	
Age				
≤45 years	14 (93.3%)	1 (6,7%)	15 (13,4%)	1,000
>45 years	90 (92,8%)	7 (7,2%)	97 (86,6%)	
Gender				
Male	72 (91.1%)	7 (8.9%)	79 (70,5%)	0,433
Female	32 (97.0%)	1 (3.0%)	33 (29,5%)	
Type of Infark				
STEMI	44 (91.7%)	4 (8.3%)	48 (42,9%)	0,723
NSTEMI	60 (93.8%)	4 (6.3%)	64 (57,1%)	
Smoking Status				
Non-Smoker	3 (75.0%)	1 (25.0%)	4 (3,6%)	
Unidentified	85 (93.4%)	6 (6.6%)	91 (81,3%)	0,411
Smoker	16 (94.1%)	1 (5.9%)	17 (15,2%)	
Hypertension				
Yes	59 (93.7%)	4 (6.3%)	63 (56,3%)	0,728
No	45 (91.8%)	4 (8.2%)	49 (43,8%)	
Diabetes Mellitus				
Yes	42 (93.3%)	3 (6.7%)	45 (40,2%)	1,000
No	62 (92.8%)	5 (7.5%)	67 (59,8%)	
CKD				
Yes	22 (91.7%)	2 (8.3%)	24 (21,4%)	0,680
No	82 (93.2%)	6 (6.8%)	88 (78,6%)	
Cardiogenic Shock				
Yes	3 (37.5%)	5 (62.5%)	8 (7,1%)	**0,000***
No	101 (92.9%)	3 (7.1%)	104 (92,9%)	
CHF				
Yes	45 (95.7%)	2 (4.3%)	47 (42,0%)	0,464
No	59 (90.8%)	6 (9.2%)	65 (58,0%)	
Stroke				
Yes	2 (100.0%)	0 (0.0%)	2 (1,8%)	1,000
No	102 (92.7%)	8 (7.3%)	110 (98,2%)	
Reperfusion				
Yes	1 (100.0%)	0 (0.0%)	1 (0,9%)	1,000
No	103 (92.8%)	8 (7.2%)	111 (99,1%)	
Recurrent MI				
Yes	31 (100.0%)	0 (0.0%)	31 (27,7%)	0,104
No	73 (90.1%)	8 (9.9%)	81 (72,3%)	
Time Arrival to ED				
≤12 hours	70 (94.6%)	4 (5.4%)	74 (66,1%)	0,440
>12 hours	34 (89.5%)	4 (10.5%)	38 (33,9%)	
Nitroglycerin				
Yes	19 (86.4%)	3 (13.6%)	22 (19,6%)	0,189
No	85 (94.4%)	5 (5.6%)	90 (80,4%)	

Aspirin				
Yes	71 (93.4%)	5 (6.6%)	76 (67,9%)	0,710
No	33 (91.7%)	3 (8.3%)	36 (32,1%)	
Clopidogrel				
Yes	73 (93.6%)	5 (6.4%)	78 (69,6%)	0,697
No	31 (91.2%)	3 (8.8%)	34 (30,4%)	

Outcome Analysis: Impact of Cardiogenic Shock

Our outcome data, which are elaborated in Table 2, painted an optimistic picture, with a post-MI survival rate of 92.9%. However, a mortality rate of 7.1% was observed. Delving deeper into the data with a combination of Fisher's exact test and logistic regression, we identified cardiogenic shock as the only determinant with a strong correlation to myocardial infarction outcomes, with a p-value of 0.000 (when compared to a significance threshold of $p<0.01$). An odds ratio of 0.018 underscores that individuals presenting with cardiogenic shock demonstrate a markedly diminished survival probability relative to their counterparts without the condition, emphasizing the protective role of the absence of cardiogenic shock against mortality from myocardial infarction (Table 2).

Table 2. Relationship Between Cardiogenic Shock and Survival in Myocardial Infarction Patients

Variable	Odds Ratio (OR)	95% CI	P Value
Cardiogenic shock	0,018	0,003-0,112	0,000
Yes			
No			

DISCUSSION

Discerning subtle factors is vital for clinicians and researchers in the complex realm of MI determinants. Our investigation yields several insights, corroborating known theories and introducing new perspectives.

Our analysis highlighted cardiogenic shock as a crucial predictor of post-myocardial infarction mortality, consistent with prior studies like Medina et al. (2018) and Gawinski et al. (2023). The dire complications arising from diminished left ventricular contractility, as outlined by Shah et al. (2019), underscore the significance of this factor.

The role of age in our analysis prompted a reflection on healthcare accessibility and symptom recognition, particularly in older populations. This observation resonates with Gawinski et al. (2023) and mirrors the concerns articulated by Kochar et al. (2018), which highlight potential care delays for seniors owing to atypical symptoms or healthcare access constraints. Although sex was not identified as a direct determinant in our study, the data suggest that female patients might experience reduced post-event vulnerability. This observation is even more intriguing when juxtaposed with the findings of Takagi et al. (2021). The need to understand myocardial infarction symptoms in women, as highlighted by Aggarwal et al. (2018) and Rafi et al. (2020), further underscores the pressing need for gender-focused research and interventions.

Our study also touched upon intriguing phenomena such as the 'smoker's paradox' and 'hypertension paradox.' The complex interplay between active smoking and cardiovascular health, which seems to contradict the observations of Banks et al. (2019), warrants further investigation. Additionally, while our findings on revascularization align with Afana et al. (2020), they challenge a substantial body

of research emphasizing its prompt utility, such as studies by Degano et al. (2017) and Hashmi et al. (2018).

Therapeutically, interventions, such as NTG, ASA therapy, and clopidogrel, are vital for managing acute coronary syndromes, a sentiment echoed by Neto (2018) and Duckworth (2020). However, the evident gap between clinical practice and the established guidelines in our study underscores the imperative for enhanced guideline adherence.

Our exploration of myocardial infarction determinants offers a blend of affirmation and fresh insights into cardiovascular health. With cardiogenic shock as the predominant mortality predictor, understanding heart attack outcomes requires a continually adaptive and rigorous research approach, benefiting both academia and the medical field.

CONCLUSION

This study systematically explored the determinants of myocardial infarction in a non-PCI hospital environment in Jakarta, Indonesia, drawing attention to both well-established and novel factors that shape patient outcomes. The role of cardiogenic shock as a predictor of post-myocardial infarction mortality has been reaffirmed and is consistent with global research trends. Our findings highlight the complexity of MI determinants, emphasizing age, sex disparities, smoking status, and dynamics of various therapeutic measures. While the results hint at a unique vulnerability in women and the perplexities of the 'smoker's paradox,' they simultaneously emphasize the importance of stringent adherence to therapeutic guidelines. This research reiterates the persistent need for both healthcare professionals and researchers to jointly delve into, comprehend, and respond to the diverse factors influencing myocardial infarction outcomes, with the ultimate aim of optimizing patient care and survival prospects.

SUGGESTIONS

Our research showed that cardiogenic shock is a significant predictor of post-MI mortality. This emphasizes the urgent need for early identification and evidence-based management strategies. The age-specific delays observed suggest the need for targeted interventions, including digital health tools or awareness campaigns tailored to older populations. The intricate gender differences identified in our findings hint at the potential benefits of more gender-focused clinical trials, allowing for a deeper understanding and better management of myocardial infarctions in both men and women.

The fact that a notable proportion of patients accessed emergency care outside the recommended window points to a potential research area: understanding barriers to timely care, and developing strategies to overcome them. Furthermore, the disparities between our observations and existing clinical guidelines highlight the necessity for more longitudinal studies assessing the real-world effectiveness of these guidelines and how they translate into everyday clinical practice. This will help refine protocols and ensure that healthcare professionals receive continuous education based on recent high-quality evidence.

ACKNOWLEDGMENT

We extend our heartfelt gratitude to the hospital administrators for their unwavering support and facilitation of our research. Our deep appreciation also goes to the Faculty of Health Science at Universitas Pembangunan Nasional Veteran Jakarta for providing invaluable resources and encouragement throughout this study. Furthermore, we sincerely thank every individual who played a part in bringing this research to fruition.

DECLARATION OF CONFLICTING INTEREST

The authors declare no conflicts of interest regarding the publication of this paper.

FUNDING

The authors declare no funding sponsors of this study.

AUTHOR CONTRIBUTION

Talitha Syifa Laili: Conceptualization, methodology, investigation, data curation, formal analysis, software, and writing of the original draft of Bahasa Indonesia.

Wiwin Winarti: Conceptualization, methodology, data curation, formal analysis, software, writing of the original English draft, writing review, and editing.

ORCID

Talitha Syifa Laili:
0009-0005-1315-2868

Wiwin Winarti:
0000-0003-4135-2363

REFERENCES

Afana, M., Koenig, G. C., Seth, M., Sukul, D., Frazier, K. M., Fielding, S., … Gurm, H. S. (2020). Trends and outcomes of non-primary PCI at sites without cardiac surgery on-site: The Greater Michigan experience. *PLoS ONE*, *15*(8 August), 1–15. https://doi.org/10.1371/journal.pone.0238048

Aggarwal, N. R., Patel, H. N., Mehta, L. S., Sanghani, R. M., Lundberg, G. P., Lewis, S. J., … Mieres, J. H. (2018). Sex Differences in Ischemic Heart Disease: Advances, Obstacles, and Next Steps. *Circulation: Cardiovascular Quality and Outcomes*, *11*(2), 1–14. https://doi.org/10.1161/CIRCOUTCOMES.117.004437

Alencar Neto, J. N. de. (2018). Morphine, Oxygen, Nitrates, and Mortality Reducing Pharmacological Treatment for Acute Coronary Syndrome: An Evidence-based Review. *Cureus*, *10*(1), 1–13. https://doi.org/10.7759/cureus.2114

Alhabib, K. F., Kinsara, A. J., Alghamdi, S., Al-Murayeh, M., Hussein, G. A., AlSaif, S., … AlHarbi, I. A. (2019). The first survey of the Saudi Acute Myocardial Infarction Registry Program: Main results and long-term outcomes (STARS-1 Program). *PLoS ONE*, *14*(5), 1–20. https://doi.org/10.1371/journal.pone.0216551

Banks, E., Joshy, G., Korda, R. J., Stavreski, B., Soga, K., Egger, S., … Lopez, A. D. (2019). Tobacco smoking and risk of 36 cardiovascular disease subtypes: Fatal and non-fatal outcomes in a large prospective Australian study. *BMC Medicine*, *17*(1), 1–18. https://doi.org/10.1186/s12916-019-1351-4

British Heart Foundation. (2022). UK Factsheet. *British Heart Foundation*, (August), 1–21. Retrieved from https://www.bhf.org.uk/-/media/files/research/heart-statistics/bhf-cvd-statistics-uk-factsheet.pdf?rev=4b0be2cd03eb412f8f2703b63a3b4ebb&hash=E6965279D61DEA4CBD0C97E176CAA671

Chen, S., Huang, Z., Chen, L., Zhao, X., Ling, Y., Lai, W., … Chen, J. (2021). Does Diabetes Mellitus Increase the Short- and Long-Term Mortality in Patients With Critical Acute Myocardial Infarction? Results From American MIMIC-III and Chinese CIN Cohorts. *Frontiers in Endocrinology*, *12*(797049), 1–8. https://doi.org/10.3389/fendo.2021.797049

Degano, I. R., Subirana, I., Fusco, D., Tavazzi, L., Kirchberger, I., Farmakis, D., … Marrugat, J. (2017). Percutaneous coronary intervention reduces mortality in myocardial infarction patients with comorbidities: Implications for elderly patients with diabetes or kidney disease. *International Journal of Cardiology*, *249*, 83–89. https://doi.org/http://dx.doi.org/10.1016/j

.ijcard.2017.07.054

Dharma, S., Andriantoro, H., Purnawan, I., Dakota, I., Basalamah, F., Hartono, B., … Rao, S. V. (2016). Characteristics, treatment and in-hospital outcomes of patients with STEMI in a metropolitan area of a developing country: an initial report of the extended Jakarta Acute Coronary Syndrome registry. *BMJ Open*, *6*(8), 1–10. https://doi.org/10.1136/BMJOPEN-2016-012193

Dharmarajan, K., McNamara, R. L., Wang, Y., Masoudi, F. A., Ross, J. S., Spatz, E. E., … Curtis, J. P. (2017). Age differences in hospital mortality for acute myocardial infarction: Implications for hospital profiling. *Annals of Internal Medicine*, *167*(8), 555–564. https://doi.org/10.7326/M16-2871

Duckworth, R. (2020). Nitroglycerin: Major actions and misconceptions. Retrieved June 17, 2023, from https://www.ems1.com/ems-products/medical-monitoring/articles/nitroglycerin-major-actions-and-misconceptions-7j3y8hSw5MzSKU9S/#:~:text=Desired effects and indications of nitroglycerin&text=For EMS providers%2C typical nitroglycerin,as pulmonary edema with

Gawinski, L., Burzynska, M., Marczak, M., & Kozlowski, R. (2023). Assessment of In-Hospital Mortality and Its Risk Factors in Patients with Myocardial Infarction Considering the Logistical Aspects of the Treatment Process-A Single-Center, Retrospective, Observational Study. *International Journal of Environmental Research and Public Health*, *20*(4), 1–20. https://doi.org/10.3390/ijerph20043603

Hashmi, K. A., Abbas, K., Hashmi, A. A., Irfan, M., Edhi, M. M., Ali, N., & Khan, A. (2018). In-hospital mortality of patients with cardiogenic shock after acute myocardial infarction; Impact of early revascularization. *BMC Research Notes*, *11*(1), 1–5. https://doi.org/10.1186/s13104-018-3830-7

Kochar, A., Chen, A. Y., Sharma, P. P., Pagidipati, N. J., Fonarow, G. C., Newby, P. A., … Wang, T. Y. (2018). Long-term mortality of older patients with acute myocardial infarction treated in US clinical practice. *Journal of the American Heart Association*, *7*(13). https://doi.org/10.1161/JAHA.117.007230

Medina, M. S., Cortés, D. R. G., Siscar, J. L. P., & Fernández, A. R. R. (2018). Predictive Factors of Mortality in Acute Myocardial Infarction. *CorSalud*, *10*(3), 202–210.

Mozaffarian, S., Etemad, K., Aghaali, M., Khodakarim, S., Ghorbani, S. S., & Nazari, S. S. H. (2021). Short and long-term survival rates following myocardial infarction and its predictive factors: A study using national registry data. *Journal of Tehran University Heart Center*, *16*(2), 68–74. https://doi.org/10.18502/jthc.v16i2.7387

Pramudyo, M., Yahya, A. F., Martanto, E., Tiksnadi, B. B., Karwiky, G., Hafidhinar, R., & Putri, G. N. I. (2022). Predictors of In-Hospital Mortality in Patients with Acute Coronary Syndrome in Hasan Sadikin Hospital, Bandung, Indonesia: A Retrospective Cohort Study. *Acta Medica Indonesiana*, *54*(3), 379–388.

Rafi, A., Sayeed, Z., Sultana, P., Aik, S., & Hossain, G. (2020). Pre-hospital delay in patients with myocardial infarction: An observational study in a tertiary care hospital of northern Bangladesh. *BMC Health Services Research*, *20*(1), 1–12. https://doi.org/10.1186/s12913-020-05505-x

Shah, A. H., Puri, R., & Kalra, A. (2019). Management of cardiogenic shock complicating acute myocardial

infarction: A review. *Clinical Cardiology*, *42*(4), 484–493. https://doi.org/10.1002/clc.23168

Subahi, A., Abdullah, A., Yassin, A. S., Abubakar, H., Abugroun, A., Igbire, G., … Mohamad, T. (2018). Impact and Outcomes of Patients with Congestive Heart Failure Complicating Non-ST-Segment Elevation Myocardial Infarction,Results from a Nationally-Representative United States Cohort. *Cardiovascular Revascularization Medici* *20*(8), 659–662. https://doi.org/10.1016/j.carrev.2018.09.008

Takagi, K., Tanaka, A., Yoshioka, N., Morita, Y., Yoshida, R., Kanzaki Y., … Murohara, T. (2021). In-hospital mortality among consecutive patients with ST-Elevation myocardial infarction in modern primary percutaneous intervention era ~ Insights from 15-year data of single-center hospital-based registry ~. *PLoS ONE*, *16*(6), e0252503. https://doi.org/10.1371/journal.pone.0252503

Tsao, C. W., Aday, A. W., Almarzooq, Z. I., Alonso, A., Beaton, A. Z., Bittencourt, M. S., … Martin, S. S. (2022). Heart Disease and Stroke Statistics-2022 Update: A Report from the American Heart Association. *Circulation*, *145*(8), E153–E639. https://doi.org/10.1161/CIR.0000000000001052

Wasyanto, T., & Tridamayanti, A. (2019). Blood Urea Nitrogen as a Predictor of In-Hospital Mortality in Acute Coronary Syndrome Patients. *Indonesian Journal of Medicine*, *4*(3), 241–251. https://doi.org/10.26911/theijmed.2019.04.03.07

Cite this article as: Laili, T. S., & Winarti, W. (2023). Determinants of Myocardial Infarction Outcomes in a Non-Percutaneous Coronary Intervention Hospital in Jakarta. Nurse and Health: Jurnal Keperawatan, 12 (2), 131-139. https://doi.org/10.36720/nhjk.v12i2.579

DETERMINANTS OF MYOCARDIAL INFARCTION OUTCOMES IN A NON-PERCUTANEOUS CORONARY INTERVENTION HOSPITAL IN JAKARTA

ORIGINALITY REPORT

24%
SIMILARITY INDEX

PRIMARY SOURCES

1	sciforum.net Internet	43 words — 1%
2	utsouthwestern.influuent.utsystem.edu Internet	42 words — 1%
3	nhs-journal.com Internet	41 words — 1%
4	centaur.reading.ac.uk Internet	39 words — 1%
5	www.cienciavitae.pt Internet	35 words — 1%
6	repository.uki.ac.id Internet	33 words — 1%
7	tehj.springeropen.com Internet	33 words — 1%
8	pnrjournal.com Internet	32 words — 1%

9	Shamir R Mehta, John W Eikelboom, Catherine Demers, Aldo P Maggioni, Patrick J Commerford, Salim Yusuf. "Congestive heart failure complicating non-ST segment elevation acute coronary syndrome: incidence, predictors, and clinical outcomes", Canadian Journal of Physiology and Pharmacology, 2005 Crossref	31 words — 1%
10	campusvygon.com Internet	31 words — 1%
11	intjem.biomedcentral.com Internet	31 words — 1%
12	scholarlycommons.henryford.com Internet	31 words — 1%
13	ddescholar.acemap.info Internet	30 words — 1%
14	journal.ugm.ac.id Internet	26 words — 1%
15	www.aminer.cn Internet	26 words — 1%
16	elibrary.stipram.ac.id Internet	25 words — 1%
17	prod--journal.elifesciences.org Internet	25 words — 1%
18	www.sciencegate.app Internet	25 words — 1%
19	citeseerx.ist.psu.edu Internet	24 words — 1%

20	www.mendeley.com Internet	23 words — 1%
21	medworm.com Internet	21 words — < 1%
22	www.atenaeditora.com.br Internet	21 words — < 1%
23	Windi Nurdiana Utami, Chandrayani Simanjorang, Adzkia Avicena Maghfiroh, Bunga Andriana, Mugi Rahayu Lestari. "Risk factors of infection with SARS-CoV-2 Omicron BA.1 in Indonesia", International Journal of Public Health Science (IJPHS), 2023 Crossref	20 words — < 1%
24	pilotfeasibilitystudies.biomedcentral.com Internet	19 words — < 1%
25	www.journalofhumansexuality.com Internet	19 words — < 1%
26	eprints.qut.edu.au Internet	18 words — < 1%
27	harvest.usask.ca Internet	17 words — < 1%
28	quieora.ink Internet	16 words — < 1%
29	nigeriamedj.com Internet	14 words — < 1%
30	0-www-ncbi-nlm-nih-gov.brum.beds.ac.uk Internet	12 words — < 1%

31	clinics.elsevier.es Internet	12 words — < 1%
32	ejournal.poltekkes-smg.ac.id Internet	12 words — < 1%
33	ijconline.id Internet	12 words — < 1%
34	www.ajol.info Internet	12 words — < 1%
35	George W. Vetrovec. "NSTEMI: Not Just a 'Small Heart Attack'", Cardiovascular Revascularization Medicine, 2019 Crossref	11 words — < 1%
36	doc.rero.ch Internet	11 words — < 1%
37	fucape.br Internet	11 words — < 1%
38	era.ed.ac.uk Internet	10 words — < 1%
39	pbr.mazums.ac.ir Internet	10 words — < 1%
40	pure.sruc.ac.uk Internet	10 words — < 1%
41	András Wéber, Mathieu Laversanne, Péter Nagy, István Kenessey, Isabelle Soerjomataram, Freddie Bray. "Gains in life expectancy from decreasing cardiovascular disease and cancer mortality – an analysis of 28 European countries 1995–2019", European Journal of Epidemiology, 2023	9 words — < 1%

Crossref

42	Charles Knoery, Victoria McGilligan, Aleeha Iftikhar, Khaled Rjoob, Raymond Bond, Aaron Peace, Anne McShane, Stephen J Leslie. "Exploratory machine-learning based proteomic analysis to improve the diagnostic accuracy in patients with occlusion myocardial infarction", Research Square Platform LLC, 2023 Crossref Posted Content	9 words — < 1%
43	ds.inflibnet.ac.in Internet	9 words — < 1%
44	etda.libraries.psu.edu Internet	9 words — < 1%
45	ijphs.iaescore.com Internet	9 words — < 1%
46	ikee.lib.auth.gr Internet	9 words — < 1%
47	revistas.udes.edu.co Internet	9 words — < 1%
48	ykxb.scu.edu.cn Internet	9 words — < 1%
49	bmchealthservres.biomedcentral.com Internet	8 words — < 1%
50	journal.unhas.ac.id Internet	8 words — < 1%
51	mjz.co.zm Internet	8 words — < 1%

52	prosiding.umy.ac.id Internet	8 words — < 1%
53	Laura Chaffey, Annabell Roberti, David R. Greaves. "Drug repurposing in cardiovascular inflammation: Successes, failures, and future opportunities", Frontiers in Pharmacology, 2022 Crossref	7 words — < 1%
54	Robert T. Greenlee, Alan S. Go, Pamela N. Peterson, Andrea E. Cassidy-Bushrow et al. "Device Therapies Among Patients Receiving Primary Prevention Implantable Cardioverter-Defibrillators in the Cardiovascular Research Network", Journal of the American Heart Association, 2018 Crossref	7 words — < 1%

EXCLUDE QUOTES	OFF	EXCLUDE SOURCES	OFF
EXCLUDE BIBLIOGRAPHY	OFF	EXCLUDE MATCHES	OFF