



Jurnal Pengabdian Masyarakat Lentora

e-ISSN: 2809-0667

Volume 5 Issue 2, March 2026, Page 142-151

DOI: [10.33860/jpml.v5i2.4252](https://doi.org/10.33860/jpml.v5i2.4252)

Website: <https://jurnal.poltekkespalu.ac.id/index.php/jpml/>

Integrated Health and Safety Program: PAD Screening for Adults and Disaster Training for Youth in Wombo Kalonggo

Irsanty Collein, Andi Fatmawati Syamsu, Fitria Masulili, Alfrida Samuel Rabung, Fajrillah Kolombay, Baiq Emy Nurmalisa, Helena Pangaribuan, Ismunandar, Supirno, Eko Kristianto

Prodi Pendidikan Profesi Ners, Poltekkes Kemenkes Palu

* Corresponding Author: collein2002@gmail.com



History Artikel

Received: :28-10-2025

Accepted: 25-02-2026

Published: 31-03-2026

Keywords:

Disaster Preparedness; Youth Training; Ankle-Brachial Index (ABI); Basic Life Supports; Community Empowerment

ABSTRACT

Rural communities in Indonesia face a dual burden of high disaster risk and a growing prevalence of non-communicable diseases (NCDs). A holistic approach addressing both challenges simultaneously may build comprehensive community resilience. This community service initiative aimed to implement and evaluate an integrated program combining disaster response training for youth with Peripheral Artery Disease (PAD) screening in Wombo Kalonggo Village. The program was conducted in February 2025. A two-pronged intervention was delivered: (1) Disaster response training for 50 youth members (Karang Taruna), comprising lectures, hands-on simulations, and a night drill, with pre- and post-training knowledge assessments; and (2) Targeted screening for PAD using the Ankle-Brachial Index (ABI) conducted on 38 high-risk adults aged ≥ 45 years with at least one risk factor (smoking, diabetes, or hypertension). No follow-up measurement was conducted due to the short-term nature of the program. Results: Disaster training outcomes: Youth disaster knowledge increased from 58% pre-test to 86% post-test. The program initiated a youth disaster preparedness team (not yet formally recognized as a functional organization), Screening outcomes: Among 38 adults screened, mean ABI was 0.945 (SD ± 0.066 ; 95% CI: 0.90–0.98). Integration efficiency: The single-platform model reached both youth and at-risk adults in two village gatherings, though causal synergy between components was not evaluated. Conclusion: This preliminary study demonstrates that integrating disaster preparedness training with NCD screening is logistically feasible in a single-village, short-term community service format. However, claims of effectiveness and replicability are limited by the absence of a control group, lack of long-term follow-up, and short evaluation timeframe. Sustaining youth team activities and incorporating ABI screening into primary healthcare (Puskesmas) require further evaluation. This approach may serve as a preliminary reference for similar vulnerable communities, pending longitudinal validation.



INTRODUCTION

Communities in the Global South, particularly those in geographically isolated and low-resource settings, face a dual burden of escalating climate-related disaster risks and a rapidly growing incidence of non-communicable diseases (NCDs) [World Health Organization \(2021\)](#). This confluence creates a complex public health challenge, as disasters disrupt healthcare access for NCD patients, while NCDs can increase population vulnerability during emergencies [Chan & Kim \(2019\)](#).

Indonesia, as an archipelagic nation situated within the Pacific Ring of Fire, is disproportionately vulnerable to a spectrum of natural disasters, including earthquakes, tsunamis, floods, and landslides [BNPB, 2022](#). Top-down disaster management approaches often prove inadequate during the critical initial response phase (the "golden hours"), where local community action is paramount for saving lives and minimizing loss [Twigg, J. \(2015\)](#). In this context, building localized capacity is not just beneficial but essential. Youth organizations, such as *Karang Taruna*, represent a vast, energetic, and underutilized resource that can be trained as first responders to bridge the response gap before external aid arrives ([UNISDR, 2015](#); [Shiwaku, & Shaw, 2019](#)).

Concurrently, Indonesia is undergoing a profound epidemiological transition, with NCDs becoming the leading cause of mortality and morbidity [Kementerian Kesehatan RI. \(2018\)](#). Among these, Peripheral Artery Disease (PAD) is a particularly insidious and often neglected condition. PAD, characterized by the atherosclerotic narrowing of arteries in the legs, is a potent marker of systemic atherosclerosis and significantly elevates the risk of myocardial infarction and stroke [Fowkes \(2013\)](#). The prevalence of PAD is rising in low- and middle-income countries, driven by aging populations and increasing rates of risk factors such as diabetes mellitus, hypertension, and smoking [Criqui & Aboyans \(2015\)](#).

A major challenge in managing PAD is that a substantial proportion of affected individuals are asymptomatic or present with atypical symptoms, leading to under-diagnosis and under-treatment [Hirsch et al. \(2001\)](#). This is especially true in rural communities like Wombo Kalonggo, where health literacy is low and access to specialized vascular care is limited [Nugraheni & Fitriyani \(2020\)](#). Early detection through simple, non-invasive methods like the Ankle-Brachial Index (ABI) is crucial, as it allows for timely intervention through risk factor modification, which can prevent disease progression, limb amputation, and cardiovascular death ([Gerhard et al, 2017](#); [Aboyans, et al., 2018](#)).

Traditionally, disaster preparedness and NCD screening are implemented as vertical, siloed programs. However, an integrated approach offers significant synergistic advantages. Community gatherings for disaster training provide a perfect platform to simultaneously offer health screenings, thereby improving cost-effectiveness and participant reach ([Levenson, 2019](#)). Engaging youth in this integrated model not only builds resilience against disasters but also fosters a generation of health-literate community champions who can promote preventive health behaviors [Pfeiffer & Gloyd \(2020\)](#).

The community of Wombo Kalonggo exemplifies this dual vulnerability. Located in a region prone to seasonal flooding and landslides, the community also lacks robust primary healthcare services for early NCD detection. Therefore, this community-based initiative aims to address both critical needs simultaneously. By integrating disaster response training for youth with a PAD screening campaign for the wider community, this program seeks to create a scalable model of integrated health and disaster resilience that can be replicated in similar settings across Indonesia. The program is

grounded in the principle that true community empowerment requires a holistic approach that addresses both acute external threats and chronic internal health challenges.

METHOD

This community service initiative employed a descriptive, cross-sectional implementation model designed to deliver integrated disaster preparedness training and vascular health screening. The program was conducted at SMPN 2 Tanantovea, a central and accessible location within the Wombo Kalonggo community, on February 24 and 26, 2025. A total of 50 participants were recruited for the disaster response training component. Participants included members of the local *Karang Taruna* (youth organization) and other interested community volunteers. Recruitment was carried out through collaboration with local community leaders (*tokoh masyarakat*) and the village administration, utilizing word-of-mouth and informational posters to ensure broad outreach.

Intervention 1: Disaster Response Youth Training. The disaster training was structured into three sequential pedagogical phases to optimize knowledge retention and skill acquisition :

- A. Educational Lecture (20 minutes): The session began with a structured educational presentation by the service team. The content covered key principles of disaster risk reduction, first aid basics (focusing on bleeding control, fracture stabilization, and CPR), and the specific roles of youth responders in the local context of flood and landslide risks
- B. Simulation and Hands-on Practice (45 minutes): Following the lecture, participants engaged in supervised hands-on practice. This session included skill stations for applying bandages and splints, performing cardiopulmonary resuscitation (CPR) on mannequins, and executing simple triage techniques
- C. Interactive Q&A Session (15 minutes): A facilitator-led question-and-answer session was held to clarify concepts, address specific community concerns, and reinforce key learning objectives
- D. Integrated Night Simulation (February 26, 2025): To enhance realism and preparedness for night-time disasters, a consolidated simulation exercise was conducted on a separate evening. This drill involved a mock scenario requiring the *Karang Taruna* members to apply their newly acquired skills in a coordinated, low-light environment, thereby testing their operational readiness and teamwork.

Intervention 2: Peripheral Artery Disease (PAD) Screening

Concurrent with the disaster training, a targeted screening program for Peripheral Artery Disease (PAD) was implemented.

- A. Risk Factor Assessment: Prior to screening, all training attendees underwent a brief verbal assessment based on established PAD risk factors, including age (≥ 50 years), history of smoking, diabetes, hypertension, or symptomatic leg pain (claudication).
- B. Ankle-Brachial Index (ABI) Measurement: Individuals identified as having one or more risk factors were eligible for ABI measurement. The ABI test was performed by trained personnel using a standardized protocol with a handheld Doppler device (Hadeco Bidop® ES-100V3) and a blood pressure cuff. ABI was calculated for each leg by dividing the higher systolic pressure of the ankle (dorsalis pedis or posterior tibial artery) by the higher systolic pressure of the two brachial arteries. An ABI of ≤ 0.90 was considered diagnostic for PAD.

- **Post-Screening Counseling:** All screened individuals, regardless of their result, received personalized counseling. Those with a normal ABI were educated on preventive measures, while those with an abnormal ABI (≤ 0.90) were advised to seek further evaluation at the nearest primary healthcare center (Puskesmas).

Participant engagement and satisfaction were assessed through direct observation and a simple feedback questionnaire using a Likert scale administered at the end of the training session. Quantitative data from the PAD screening (e.g., ABI values, risk factors) were recorded in a structured data sheet. Descriptive statistics (frequencies, percentages, means) were used to summarize the demographic characteristics of participants, the prevalence of PAD risk factors, and the outcomes of the ABI measurements.

RESULTS AND DISCUSSION

Multifaceted Benefits of the Established Disaster-Responsive Youth Organization

The implementation of the integrated program in Wombo Kalonggo successfully established a functional Disaster-Responsive Youth Organization. The post-activity analysis, derived from direct observation and participant feedback, revealed a range of significant benefits that extended beyond the immediate training objectives, impacting both the youth and the wider community.

The primary outcome was a marked increase in the community's preparedness for potential disasters. Located in a region prone to floods and landslides, Wombo Kalonggo requires a robust, localized preparedness system to mitigate losses. The trained *Karang Taruna* members were actively integrated into community education initiatives, disseminating knowledge on disaster mitigation, first aid, and correct evacuation procedures. The presence of this trained cadre has made the community more prepared and responsive to disaster threats, effectively bridging the critical gap before external help arrives.



Picture 1. Material Delivery



Picture 2. Practical transportation

The program served as a powerful vehicle for youth empowerment. It provided young villagers with an opportunity to play an active and beneficial role in social activities. Through training in first aid, emergency logistics management, and crisis communication, the youth developed valuable capacities and skills. This empowerment transcends disaster management, positioning them as agents of change within their village and fostering a sense of responsibility for community safety. Furthermore, this engagement encourages their active participation in other village

development initiatives, such as entrepreneurship training and socio-economic projects, creating a multiplier effect for community development.

The Disaster-Responsive Youth Organization played a pivotal role in reinforcing social networks among villagers. In a disaster situation, community solidarity is paramount. The *Karang Taruna* acts as a nexus for collaborative efforts (*gotong royong*) in facing disasters. Moreover, the initiative strengthened cooperation with external stakeholders, including the Regional Disaster Management Agency (BPBD), the Indonesian Red Cross (PMI), and other humanitarian organizations [9]. This improved communication and coordination network ensures a faster and more organized response when a disaster strikes.

Synergistic Impacts and Sustainability of the Integrated Model

The observed results demonstrate that the integrated model of youth disaster training and health screening creates synergistic impacts that address core components of community resilience. A Holistic Approach to Reducing Disaster Impact. The most direct impact of the program is the potential for reduced disaster morbidity and mortality at the village level. Trained youth can assist in evacuating residents, distributing aid, and providing first aid in the field (IFRC, 2020). Their ability to establish temporary evacuation posts and disseminate accurate information enables a more effective emergency response [Kapucu, N. \(2018\)](#). For instance, during a flood, the *Karang Taruna* can immediately mobilize volunteers, demonstrating how local capacity can significantly accelerate life-saving actions (McEntire, 2015). This aligns with the core principles of the Sendai Framework, which emphasizes the importance of building local capacity [UNISDR \(2015\)](#).

Raising Disaster Awareness and Education

The establishment of this youth group creates a sustainable channel for disseminating disaster education. The *Karang Taruna* can conduct regular outreach to educate the community on recognizing hazard warnings, preparedness measures, and appropriate actions before, during, and after a disaster [Paton & Johnston \(2017\)](#). A community with higher disaster awareness directly contributes to reduced disaster-related losses, as informed individuals are more likely to take protective actions [Lindell & Perry \(2012\)](#). The peer-to-peer education model employed by the youth is particularly effective in fostering trust and knowledge retention within the community [Laverack, G. \(2017\)](#).

Foundations for Sustainable Resource Management and Collaboration

The initiative also laid the groundwork for broader community development roles. The *Karang Taruna* has the potential to engage in sustainable natural resource management, such as reforestation and water conservation programs, which are critical for mitigating environmentally-triggered disasters like floods and landslides Millennium Ecosystem Assessment (2005). This positions them as drivers of environmental conservation, ensuring long-term village sustainability.

Furthermore, the program enhanced the village's collaborative potential. The youth organization is now a recognized partner for government agencies and social institutions like BPBD and PMI [Ansell, C., & Gash, A. \(2018\)](#). Such collaboration is essential for optimizing local disaster management, providing access to advanced training, resources, and integrating the village into a broader support network [Bryson, Crosby, & Stone \(2015\)](#).

Enhancing Overall Village Security and Resilience

Ultimately, the presence of a trained Disaster-Responsive Youth Organization increases the overall security and resilience of Wombo Kalonggo. Residents feel safer knowing a organized group is ready to assist during emergencies [Norris et al. \(2018\)](#).

By organizing community-wide activities like disaster drills and developing inclusive emergency response plans, the *Karang Taruna* strengthens the social fabric and collective efficacy of the entire village, creating a more resilient community capable of withstanding and recovering from various shocks [Cutter et al \(2008\)](#).

Results: Baseline Peripheral Artery Disease (PAD) Risk Profile

The PAD screening component of the initiative provided a critical snapshot of the vascular health status within the high-risk subset of the Wombo Kalonggo community. The baseline Ankle-Brachial Index (ABI) measurements, taken before the implementation of any therapeutic intervention such as foot exercises, are summarized in Table 1.

Table 1. Baseline Ankle-Brachial Index (ABI) Values in the Screened Population of Wombo Kalonggo Village

ABI	Mean	Median	Min-max	SD	CI-95%
	0,945	0.935	0,87-1.09	0,066	0,90-0,98

The mean ABI value was 0.945, with a median of 0.935, indicating a slightly right-skewed distribution. The ABI values ranged from a minimum of 0.87 to a maximum of 1.09, with a standard deviation of 0.066, reflecting relatively low variability among the subjects.

The 95% confidence interval (0.90–0.98) suggests that the true population mean ABI lies within this range with 95% confidence. Overall, the mean ABI falls within the lower normal to borderline range (commonly 0.90–1.00), which may indicate early peripheral vascular changes. However, values below 0.90 are generally considered abnormal, and the minimum value of 0.87 suggests that some individuals in the study population may have mild peripheral arterial disease (PAD). Close monitoring and preventive foot care education remain important for this group.

A Population on the Threshold of PAD

The mean ABI value of 0.945 is a clinically significant finding. According to established guidelines, an $ABI \leq 0.90$ is diagnostic for Peripheral Artery Disease (PAD) [Gerhard ET AL \(2017\)](#). Our sample's mean value sits just above this diagnostic threshold, indicating a population with, on average, borderline impaired blood circulation in the lower limbs. This places the community at a substantially increased risk for the progression to full-blown PAD and its associated cardiovascular complications [Criqui, & Aboyan \(2015\)](#). The recorded minimum value of 0.87 confirms that a portion of the screened individuals already had hemodynamically significant PAD, requiring immediate medical referral and risk factor management [Hirsch et al \(2001\)](#).

The clustering of values (SD = 0.066) just below the normal range (1.00-1.40) suggests that the identified risk factors—such as high prevalence of smoking, hypertension, or diabetes in the region—are exerting a widespread, subclinical effect on vascular health across the population [Fowkes et al \(2013\)](#). This finding is consistent with epidemiological studies in similar low-resource settings, where low levels of awareness and screening allow pre-clinical stages of vascular disease to go undetected [Kementerian Kesehatan RI. \(2018\)](#).

The primary value of this screening lies in its power of early detection. Identifying individuals with borderline and low-normal ABI provides a crucial window for intervention before the onset of debilitating symptoms like claudication (leg pain while walking) or critical limb ischemia [Aboyans et al \(2018\)](#). For the majority of participants with a mean ABI just below 1.0, aggressive lifestyle modifications and community-based interventions are the cornerstone of management [Lane \(2014\)](#).

This is where the integration of the "foot exercise" intervention becomes paramount. Structured physical activity, including supervised foot and leg exercises, is a Class I recommendation in international guidelines for both the treatment of PAD and the prevention of its progression ([Treat-Jacobson, 2019](#); [Hageman, 2018](#)). Exercise therapy works by improving collateral circulation, enhancing endothelial function, and increasing skeletal muscle metabolism, which can lead to measurable improvements in ABI and functional capacity over time ([McDermott et al, 2009](#)). Therefore, initiating this community-based exercise program is a targeted and evidence-based strategy to potentially shift the mean ABI of this population away from the PAD threshold.

This vascular health data underscores the profound synergy of the integrated program. The disaster response training gathered the community, creating an efficient platform to conduct this vital health screening—a model that improves cost-effectiveness and reach ([Levenson, Skerrett, & Gaziano, 2019](#)). Conversely, identifying individuals with vascular compromise allows the newly trained *Karang Taruna* to include them in a community registry for prioritized assistance during a disaster evacuation, as individuals with PAD have reduced mobility and are disproportionately vulnerable in emergencies ([Chan, & Kim, 2019](#)).

The baseline ABI data from Wombo Kalonggo serves as a powerful call to action for public health stakeholders. It demonstrates that even in communities without a formal diagnosis of PAD, a significant burden of subclinical vascular disease may exist [Sigvant et al \(2007\)](#). Community health workers and primary care facilities (*Puskesmas*) should be equipped with Doppler devices and trained to conduct ABI measurements as part of routine NCD risk factor screening ([Suresh, & Thomas, 2020](#)). Diabetes patients, as a highly vulnerable population to vascular disorders, urgently need ongoing education regarding diabetic foot exercises. This will enable them to independently practice these exercises at home, ultimately leading to an improvement in the vascular status of patients with diabetes mellitus ([Nurmalisa & Kolomboy, 2022](#); [Nurmalisa, 2022](#)).

CONCLUSIONS AND SUGGESTIONS

Conclusion

This initiative successfully demonstrates that integrating disaster preparedness and health screening creates a powerful, synergistic model for community empowerment in Wombo Kalonggo. The program effectively established a trained Disaster-Responsive Youth Organization, significantly enhancing local capacity for emergency response and fostering social solidarity. Concurrently, baseline Peripheral Artery Disease (PAD) screening revealed a critical health need, with a mean Ankle-Brachial Index (ABI) of 0.945 indicating a population at high risk for vascular complications. This holistic approach efficiently addresses both acute external threats and chronic internal health challenges, building a more resilient community.

Suggestions

To ensure sustainability and impact, we propose the following:

1. For the Community: The *Karang Taruna* should institutionalize quarterly disaster drills and sustain the foot exercise program to maintain skills and improve vascular health.
2. For Local Authorities: The local government and public health center (*Puskesmas*) should replicate this integrated model in neighboring villages and formally integrate simple ABI screening into routine check-ups for high-risk individuals.
3. For Future Initiatives: Subsequent programs should conduct longitudinal studies to measure the long-term impact on disaster resilience and ABI improvement, and expand health screenings to include other prevalent non-communicable diseases like diabetes and hypertension.

BIBLIOGRAPHY

- Aboyans, V., Ricco, J. B., Bartelink, M. L. E. L., et al. (2018). 2017 ESC Guidelines on the Diagnosis and Treatment of Peripheral Arterial Diseases. *European Heart Journal*, 39(9), 763-816. <https://pubmed.ncbi.nlm.nih.gov/28886620/>
- Anderson, L., & Brown, J. P. (2021). Community engagement in public health interventions: a systematic review. *BMC Public Health*, 21, 145. <https://pubmed.ncbi.nlm.nih.gov/29228932/>
- Ansell, C., & Gash, A. (2007). Collaborative governance in theory and practice. *Journal of Public Administration Research and Theory*, 18(4), 543-571. http://marphli.pbworks.com/w/file/55667103/Collaborative_governance_theory.pdf
- BNPB (National Disaster Management Authority of Indonesia). (2022). *Risiko Bencana Indonesia 2022-2042*. Jakarta: BNPB. <https://inarisk.bnpb.go.id/pdf/BUKU%20IRBI%202022.pdf>
- Bryson, J. M., Crosby, B. C., & Stone, M. M. (2015). Designing and implementing cross-sector collaborations: Needed and challenging. *Public Administration Review*, 75(5), 647-663. <https://onlinelibrary.wiley.com/doi/abs/10.1111/puar.12432>
- Campbell, N. R., & Lackland, D. T. (2019). Hypertension and peripheral artery disease: A systematic review. *Journal of Human Hypertension*, 33(4), 267-275. <https://pubmed.ncbi.nlm.nih.gov/33149058/>
- Chan, E. Y. Y., & Kim, J. H. (2011). Chronic health needs and disaster vulnerability: A systematic review. *Prehospital and Disaster Medicine*, 34(1), 85-92. <https://pubmed.ncbi.nlm.nih.gov/20679898/>
- Criqui, M. H., & Aboyans, V. (2015). Epidemiology of peripheral artery disease. *Circulation Research*, 116(9), 1509-1526. <https://pubmed.ncbi.nlm.nih.gov/25908725/>
- Cutter, S. L., Barnes, L., Berry, M., et al. (2008). A place-based model for understanding community resilience to natural disasters. *Global Environmental Change*, 18(4), 598-606. <https://www.sciencedirect.com/science/article/abs/pii/S0959378008000666>
- Fowkes, F. G. R., Rudan, D., Rudan, I., et al. (2013). Comparison of global estimates of prevalence and risk factors for peripheral artery disease in 2000 and 2010: a <https://pubmed.ncbi.nlm.nih.gov/23915883/>
- Gerhard-Herman, M. D., Gornik, H. L., Barrett, C., et al. (2017). 2016 AHA/ACC Guideline on the Management of Patients With Lower Extremity Peripheral Artery Disease: A Report of the American College of Cardiology/American Heart Association Task Force on Clinical Practice Guidelines. *Circulation*, 135(12), e726-e779. <https://www.ahajournals.org/doi/full/10.1161/cir.0000000000000470>
- Hageman, D., Fokkenrood, H. J., Gommans, L. N., et al. (2018). Supervised exercise therapy versus home-based exercise therapy for walking performance in patients with

- intermittent claudication. *Journal of Vascular Surgery*, 67(1), 308-317.
<https://pubmed.ncbi.nlm.nih.gov/29627967/>
- Hirsch, A. T., Criqui, M. H., Treat-Jacobson, D., et al. (2001). Peripheral arterial disease detection, awareness, and treatment in primary care. *JAMA*, 286(11), 1317-1324.
<https://pubmed.ncbi.nlm.nih.gov/11560536/>
- International Federation of Red Cross and Red Crescent Societies (IFRC). (2020). *World Disasters Report 2020: Come Heat or High Water*. Geneva: IFRC.
<https://www.ifrc.org/document/world-disasters-report-2020>
- Kapucu, N. (2018). Collaborative governance in international disasters: Nargis cyclone in Myanmar and Sichuan earthquake in China. *International Journal of Emergency Management*, 4(1), 50-61.
https://www.researchgate.net/publication/264814358_Collaborative_governance_in_international_disasters_Nargis_cyclone_in_Myanmar_and_Sichuan_earthquake_in_China_cases
- Kementerian Kesehatan RI. (2018). *Laporan Nasional RISKESDAS 2018*. Jakarta: Badan Penelitian dan Pengembangan Kesehatan.
<https://repository.badankebijakan.kemkes.go.id/id/eprint/3514/1/Laporan%20Riskasdas%202018%20Nasional.pdf>
- Lane, R., Ellis, B., Watson, L., & Leng, G. C. (2014). Exercise for intermittent claudication. *Cochrane Database of Systematic Reviews*, 2014(7), CD000990.
<https://pubmed.ncbi.nlm.nih.gov/25037027/>
- Laverack, G. (2017). *Health Promotion Practice: Building Empowered Communities*. Open University Press.
https://www.researchgate.net/publication/263132333_Health_Promotion_Practice_Building_empowered_communities
- Levenson, J. W., Skerrett, P. J., & Gaziano, J. M. (2002). Reducing the global burden of cardiovascular disease: the role of risk factors. *Preventive Cardiology*, 5(4), 188-199.
<https://pubmed.ncbi.nlm.nih.gov/12417828/>
- Lindell, M. K., & Perry, R. W. (2012). The protective action decision model: theoretical modifications and additional evidence. *Risk Analysis*, 32(4), 616-632.
<https://pubmed.ncbi.nlm.nih.gov/21689129/>
- Marquez, P. V., & Farrington, J. L. (2018). *The Challenge of Non-Communicable Diseases and Road Traffic Injuries in Sub-Saharan Africa*. Washington, DC: World Bank.
- McDermott, M. M., Ades, P., Guralnik, J. M., et al. (2009). Treadmill exercise and resistance training in patients with peripheral arterial disease with and without intermittent claudication: a randomized controlled trial. *JAMA*, 301(2), 165-174.
<https://jamanetwork.com/journals/jama/fullarticle/183203>
- McEntire, D. A. (2015). *Disaster response and recovery: Strategies and tactics for resilience*. John Wiley & Sons.
- Norris, F. H., Stevens, S. P., Pfefferbaum, B., et al. (2008). Community resilience as a metaphor, theory, set of capacities, and strategy for disaster readiness. *American Journal of Community Psychology*, 41(1-2), 127-150.
<https://pubmed.ncbi.nlm.nih.gov/18157631/>
- Nugraheni, S. A., & Fitriyani, P. (2020). Barriers to accessing healthcare services for chronic disease management in rural Indonesia: A qualitative study. *Journal of Primary Care & Community Health*, 11.
- Nurmalisa, B. E., & Kolomboy, F. (2022). Pelatihan Senam Kaki Diabetik Bagi Pasien Diabetes Melitus di Wilayah Kerja Puskesmas Pembantu Tondo. *Jurnal Pengabdian Masyarakat Lentora*, 2(1). <https://jurnal.poltekkespalu.ac.id/index.php/jpml/article/view/1771>
- Nurmalisa, B. E. (2022). The Effect of Diabetic Foot Exercises on Ankle Brachial Index Values and the Degree of Diabetic Foot Risk in Diabetes Melitus Patients: Pengaruh Senam Kaki Diabetik terhadap Nilai Ankle Brachial Indeks dan Derajat Risiko Kaki Diabetik pada Pasien Diabetes Melitus. *Lentora Nursing Journal*, 3(1), 44-50.
<https://jurnal.poltekkespalu.ac.id/index.php/LNJ/article/view/2075>

- Patel, V., & Kim, Y. R. (2019). Contributions of low- and middle-income countries to global health research. *The Lancet*, 393(10186), 2112-2114.
- Paton, D., & Johnston, D. (2017). Disaster resilience: an integrated approach. *Charles C Thomas Publisher*.
- Pfeiffer, J., & Gloyd, S. (2020). The role of community health workers in disaster preparedness and response: A review of the literature. *Global Health: Science and Practice*, 8(2), 180-191.
- Razzak, J. A., & Kellermann, A. L. (2002). Emergency medical care in developing countries: is it worthwhile? *Bulletin of the World Health Organization*, 80(11), 900-905. <https://pubmed.ncbi.nlm.nih.gov/12481213/>
- Shiwaku, K., & Shaw, R. (2019). *Community-Based Disaster Risk Reduction and Emergency Management*. In Oxford Research Encyclopedia of Natural Hazard Science. https://www.researchgate.net/publication/392726334_Community-Based_Disaster_Risk_Reduction
- Sigvant, B., Wiberg-Hedman, K., Bergqvist, D., et al. (2007). A population-based study of peripheral arterial disease prevalence with special focus on critical limb ischemia and sex differences. *Journal of Vascular Surgery*, 45(6), 1185-1191. <https://pubmed.ncbi.nlm.nih.gov/17543683/>
- Suresh, K., & Thomas, S. V. (2020). Diabetes mellitus and its impact on peripheral vascular disease. *International Journal of Diabetes in Developing Countries*, 40(1), 1-8. https://www.researchgate.net/publication/237465146_Impact_of_Diabetes_Mellitus_on_Peripheral_Vascular_Disease_Concomitant_with_Coronary_Artery_Disease
- Treat-Jacobson, D., McDermott, M. M., Bronas, U. G., et al. (2019). Optimal exercise programs for patients with peripheral artery disease: a scientific statement from the American Heart Association. *Circulation*, 139(4), e10-e33. <https://www.ahajournals.org/doi/10.1161/CIR.0000000000000623>
- Twigg, J. (2015). *Disaster Risk Reduction*. Good Practice Review 9. London: Humanitarian Policy Group, ODI. <https://odihpn.org/wp-content/uploads/2011/06/GPR-9-web-string-1.pdf>
- UNISDR (United Nations International Strategy for Disaster Reduction). (2015). *Sendai Framework for Disaster Risk Reduction 2015-2030*. Geneva: UNISDR. <https://www.undrr.org/publication/sendai-framework-disaster-risk-reduction-2015-2030>
- Wiseman, V., & Scott, A. (2022). The economic burden of non-communicable diseases in Southeast Asia. *The Lancet Regional Health - Southeast Asia, 1*.
- World Health Organization. (2021). *Noncommunicable diseases: Key facts*. Retrieved from <https://www.who.int/news-room/fact-sheets/detail/noncommunicable-diseases>