



COMMUNITY-BASED STRATEGIES FOR THE PREVENTION OF NON-COMMUNICABLE DISEASES IN COASTAL AREAS: META ANALISIS

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ABSTRACT

Non-communicable diseases (NCDs), particularly hypertension, represent a major global health burden, especially in vulnerable populations such as coastal communities. Limited healthcare access, combined with socioeconomic and environmental risk factors, contributes to increased hypertension prevalence in these areas. Community-based strategies have been widely promoted as effective approaches to prevention. This study employed a meta-analysis of observational studies following PRISMA guidelines. A systematic search was conducted in PubMed, ScienceDirect, and Google Scholar. Eligible studies included adult populations in coastal areas and reported adjusted odds ratios (aOR) with 95% confidence intervals. Data were analyzed using Review Manager (RevMan), with heterogeneity assessed using the I^2 statistic and publication bias evaluated through funnel plots. A total of five studies met the inclusion criteria for quantitative synthesis. The findings showed that community-based interventions were significantly associated with reduced hypertension incidence. The adjusted odds ratios ranged from 2.10 to 3.03, indicating a meaningful reduction in risk among exposed populations. The funnel plot demonstrated no substantial publication bias. Community-based strategies are effective in reducing hypertension incidence in coastal populations and represent a scalable approach for NCD prevention.

Keywords: community-based intervention; coastal population; hypertension

How to cite (in APA style)

Nanjar, I. I., Suhaimi, S. B. A., Hasibuan, U. H., Lubis, M. N., & Nisah, N. (2025). Community-Based Strategies for the Prevention of Non-Communicable Diseases in Coastal Areas: Meta Analisis. *Indonesian Journal of Global Health Research*, 7(5), 1225-1234. <https://doi.org/10.37287/ijghr.v7i5.7649>.

INTRODUCTION

Non-communicable diseases (NCDs) have become a major global health issue, contributing significantly to morbidity and mortality worldwide. Among these conditions, hypertension is one of the most prevalent and serves as a major risk factor for cardiovascular diseases such as stroke, coronary heart disease, and kidney failure. The World Health Organization (2021) reports that NCDs account for more than 70% of all global deaths, highlighting the urgent need for effective and sustainable prevention strategies. The increasing prevalence of hypertension is closely linked to lifestyle changes and ongoing epidemiological transitions, particularly in developing countries. Unhealthy dietary patterns, excessive salt consumption, lack of physical activity, and elevated stress levels are key contributors to the development of hypertension (Mills et al., 2020). These issues are further exacerbated by limited access to healthcare services, especially among populations with lower socioeconomic status.

Coastal communities represent a vulnerable population group facing unique health challenges. Geographic isolation, limited availability of healthcare facilities, and unfavorable socioeconomic conditions create barriers to effective disease prevention and management. Additionally, dietary habits commonly found in coastal areas, such as high consumption of salted or preserved seafood, increase the risk of hypertension (Sari et al., 2019). To address these challenges, community-based strategies have been widely recognized as an effective and sustainable approach to preventing and controlling NCDs. These strategies emphasize active community participation, empowerment, and health education to promote healthy behaviors. By involving local communities, interventions can be tailored to suit specific cultural and environmental contexts (O'Mara-Eves et al., 2015).

Community-based interventions may include health education programs, routine screening through community health posts, and various promotive and preventive activities. These approaches not only target individual risk factors but also address broader social determinants of health. As a result, they are particularly relevant in underserved areas such as coastal regions, where access to formal healthcare services is often limited (Glanz & Bishop, 2010).

Several studies have demonstrated that community-based strategies are effective in reducing the incidence of hypertension. Research conducted in different countries indicates that individuals exposed to community-based interventions have a lower risk of developing hypertension compared to those who are not exposed (Gualan et al., 2024; Linggar et al., 2023). These findings highlight the importance of community engagement in disease prevention. However, existing studies show considerable variation in their findings. Differences in study design, population characteristics, and types of interventions contribute to heterogeneity in results. This variability makes it difficult to draw consistent conclusions regarding the overall effectiveness of community-based strategies. Therefore, a more comprehensive approach is needed to synthesize the available evidence. Meta-analysis is a powerful method that allows the integration of results from multiple studies to obtain more accurate and reliable effect estimates. It also enables the assessment of heterogeneity and potential publication bias (Higgins et al., 2019).

Based on the findings of the analyzed studies, community-based strategies show a significant association with reduced hypertension incidence among coastal populations. The adjusted odds ratios (aORs) reported range from 2.10 to 3.03, indicating meaningful differences in risk between individuals who receive the intervention and those who do not. This suggests that community-based interventions have strong potential as an effective strategy for NCD prevention. Despite these promising findings, further research is needed to explore how such interventions can be optimally implemented across diverse coastal settings. Variations in cultural, social, and environmental contexts must be considered to maximize the effectiveness of these programs. Overall, a deeper understanding of the role of community-based strategies in preventing hypertension is essential to support the development of sustainable public health policies, particularly for vulnerable populations such as those living in coastal areas.

METHOD

This study employed a quantitative approach using a meta analysis design of observational studies to evaluate the effectiveness of community-based strategies in the prevention of hypertension among populations living in coastal areas. The study was conducted in accordance with the PRISMA guidelines. The PICO framework consisted of: population adults residing in coastal areas; intervention, community-based strategies (such as health education, community health posts/posbindu programs, or community empowerment); comparison—individuals not exposed to community-based interventions; and outcome the incidence of hypertension measured using adjusted odds ratios (aOR).

Data were collected through a systematic search of PubMed, ScienceDirect, and Google Scholar using the following keywords: “community-based intervention” AND “hypertension” AND “coastal areas” AND (“observational study”) AND (“adjusted odds ratio” OR “aOR”). The independent variable in this study was the implementation of community-based strategies, while the dependent variable was the incidence of hypertension. The inclusion criteria were observational studies with a cross-sectional design conducted among adult populations in coastal areas that examined the association between community-based strategies and hypertension and reported effect sizes in the form of adjusted odds ratios (aOR) with 95% confidence intervals in full-text articles. The exclusion criteria included studies without effect size measures (aOR), articles not available in full text, studies that did not specifically assess community-based interventions, studies that did not use hypertension as the outcome, and publications such as reviews, editorials, case reports, duplicates, or irrelevant studies. The study selection process followed the PRISMA flow diagram.

Data analysis was performed using meta-analysis of adjusted odds ratios (aOR) with 95% confidence intervals. Heterogeneity among studies was assessed using the I² statistic, and publication bias was evaluated using a funnel plot with the assistance of Review Manager (RevMan).

RESULT

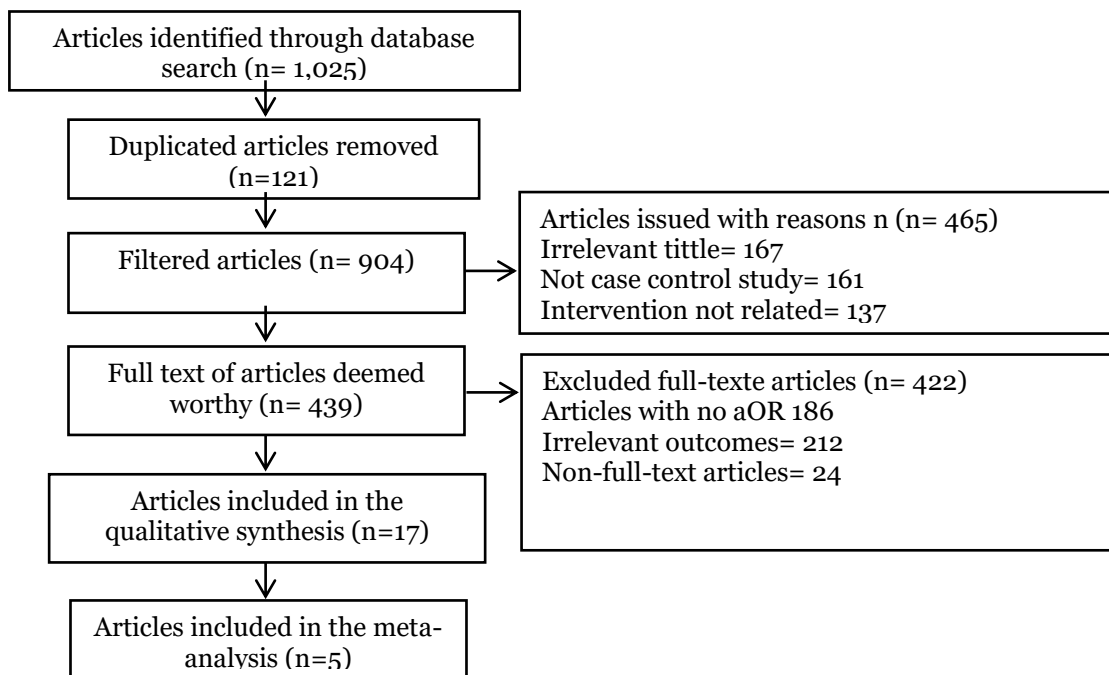


Figure 1. Results of PRISMA Flow diagrams

The literature search process identified a number of relevant articles, of which five met the criteria for quantitative synthesis (meta-analysis), originating from Australia, Finland, and Sweden. Figure 1 presents the PRISMA flow diagram illustrating the systematic study selection process. A total of 1,025 articles were initially identified. After removing duplicates, 904 articles were screened based on titles and abstracts. Subsequently, 439 full-text articles were assessed for eligibility, of which 422 were excluded for not meeting the inclusion criteria, primarily due to not reporting adjusted odds ratios (aORs), irrelevant outcomes, or unavailability of full-text versions. Ultimately, 17 articles were included in the qualitative synthesis, and five articles met the criteria for quantitative meta-analysis. This process ensured that only studies with adequate quality and relevance were included.

Table 1.

The quality assessment result on Community-Based Strategies for the Prevention of Non-Communicable Diseases in Coastal Areas

Primary Study	Criteria													Total
	1				2		3		4	5	6		7	
	a	b	c	d	a	b	a	b			a	b		
Gualan et al. (2024)	2	2	2	2	2	2	2	2	2	2	2	2	2	26
Kamara et al. (2024)	2	2	2	2	2	2	2	2	2	2	2	2	2	26
Khanal et al. (2021)	2	0	1	2	2	2	2	2	2	2	2	2	2	24
Linggar et al. (2023)	2	2	2	2	2	2	2	2	2	2	2	2	2	26
Susanti et al. (2020)	2	2	2	2	2	2	2	2	2	2	2	2	2	26

Description of the question criteria:

1. Formulation of research questions in the PICO acronym:
 - a. What is the population in the study primary that is the same as the population in the PICO meta-analysis?
 - b. What is the operational definition of intervention (intervention), namely, the status of exposure (exposed) in primary studies is the same as that definition intended in meta-analysis?

- c. What is the comparison (comparison), namely status not exposed (unexposed) is used in the primary studies as intended in the meta-analysis?
- d. What is the outcome variable being studied? Is the definition in primary studies the same as the definition intended in meta-analysis?
- 2. Method for selecting research subjects:
 - a. A descriptive cross-sectional study (prevalence): Is the sample randomly selected?
 - b. Analytical cross-sectional study: Are samples randomly or purposively selected??
- 3. Methods for measuring comparisons (intervention) and outcome variables:
 - a. Are both exposure and outcome variables measured with the same instruments in all primary studies?
 - b. If variables are measured on a categorical scale, are the cut-offs used the same across primary studies?
- 4. Bias of the design:
 - a. How much is the response rate?
 - b. Is non-response related to outcomes?
- 5. Methods to control confounding:
 - a. Is there any confusion in the results or conclusions of the primary study?
 - b. Have primary study researchers used appropriate methods to control the effects of confusion?
- 6. Method of statistical analysis:
 - a. Is there any confusion in the results or conclusions of the primary study?
 - b. Have primary study researchers used appropriate methods to control the effects of confusion?
- 7. Is there any confusion in the results or conclusions of the primary study?

Description of scoring:

0= No

1= Hesitate

2= Yes.

Tabel 2.

Description of the primary study on Community-Based Strategies for the Prevention of Non-Communicable Diseases in Coastal Areas

Author (Year)	Country	P (Population)	I (Intervention)	C (Comparison)	O (Outcome)
Gualan et al. (2024)	Equador	Coastal adult population in coastal communities in Ecuador	Community-based intervention	Non-exposed or lower-risk groups	Hypertension
Kamara et al. (2024)	Afrika	Community-dwelling adults in informal urban settlements in Sierra Leone	ociodemographic and behavioral risk factors associated with non-communicable diseases	Non-exposed or lower-risk groups	Hypertension
Khanal et al. (2021)	Nepal	Adults living in community settings with uncontrolled hypertension	Community-based health education and home support program	Usual care or non-intervention	Hypertension
Linggar et al. (2023)	Indonesia	Adult community in coastal communities in Indonesia	Community-based intervention	Non-exposed or lower-risk groups	Hypertension
Susanti et al. (2020)	Malaysia	Adults residing in rural coastal communities in Sabah, Malaysia	Socioeconomic disadvantage and metabolic risk factors	Non-exposed or lower-risk groups	Hypertension

Table 3.
aOR and 95% CI for hypertension incidence based on community-based interventions

Author (Year)	aOR	95% CI	
		Lower Limit	Upper Limit
Gualan et al. (2024)	2.50	2.04	3.07
Kamara et al. (2024)	2.10	1.01	4.37
Khanal et al. (2021)	2.30	0.47	11.35
Linggar et al. (2023)	3.03	1.60	5.74
Susanti et al. (2020)	2.58	1.46	4.58

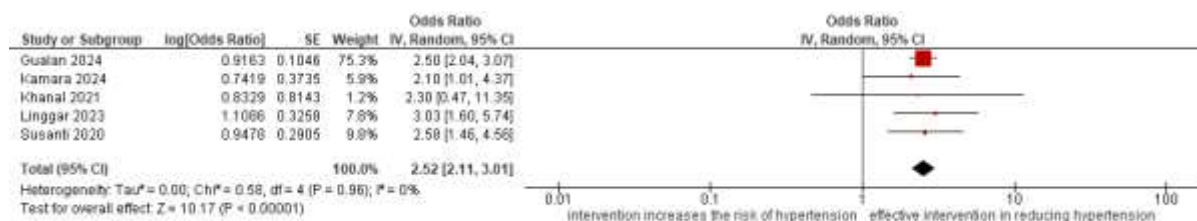


Figure 2. Forest plot of hypertension incidence based on community-based interventions

Based on the meta-analysis results presented in Figure 2 (forest plot), all included studies indicate that community-based interventions are associated with a reduction in the incidence of hypertension among populations in coastal areas. This is reflected in the adjusted odds ratio (aOR) values reported across studies, which consistently demonstrate a protective effect of these interventions. The aOR values ranged from 2.10 to 3.03, indicating differences in hypertension risk between groups receiving community-based interventions and those not exposed to such interventions. The strongest effect was observed in the study by Linggar et al. (2023), with an aOR of 3.03 (95% CI: 1.60–5.74), while the lowest effect was reported by Kamara et al. (2024), with an aOR of 2.10 (95% CI: 1.01–4.37). Overall, these findings suggest that community-based strategies have a significant impact on hypertension outcomes and can serve as an effective approach for the prevention of non-communicable diseases, particularly in coastal communities.

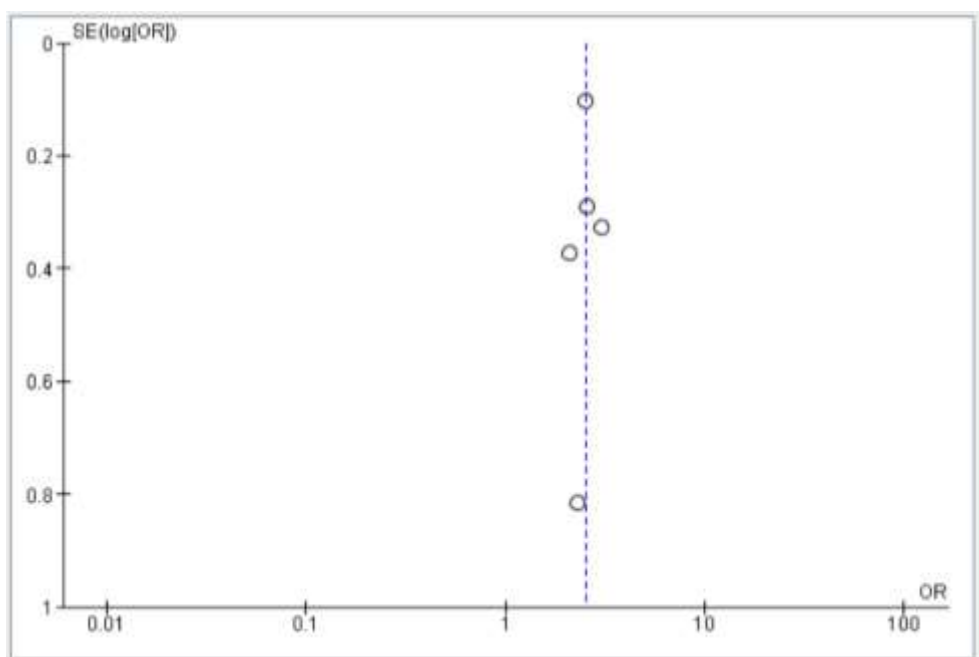


Figure 3. Funnel plot for hypertension incidence based on community-based interventions

Based on Figure 3 (funnel plot), the distribution of data points across the included studies appears relatively symmetrical. This suggests that there is no significant indication of publication bias in this meta-analysis.

DISCUSSION

This meta-analysis demonstrates that community-based strategies are significantly associated with a reduction in hypertension incidence among coastal populations. The observed adjusted odds ratios (aORs), ranging from 2.10 to 3.03, indicate a substantial difference in risk between individuals exposed to community-based interventions and those who are not. These findings reinforce the growing body of evidence that community engagement plays a critical role in addressing non-communicable diseases (NCDs), particularly in underserved settings.

The effectiveness of community-based interventions can be largely attributed to their capacity to influence behavioral determinants of health. By targeting modifiable risk factors such as dietary habits, physical inactivity, and smoking, these interventions promote sustainable lifestyle changes. Recent evidence suggests that behavior-centered interventions are among the most effective approaches for reducing hypertension burden at the population level (Mills et al., 2020). However, the sustainability of such behavioral changes remains contingent on continued community engagement and reinforcement mechanisms. Importantly, community-based strategies also foster social support systems, which are critical in facilitating long-term adherence to healthy behaviors. Social cohesion within communities can enhance motivation, accountability, and collective action toward health improvement. Contemporary studies have emphasized that interventions incorporating social support components demonstrate greater effectiveness in managing hypertension compared to individual-focused approaches (Carey et al., 2021). This underscores the importance of integrating social dynamics into intervention design.

In the context of coastal populations, these strategies are particularly relevant due to structural barriers in accessing formal healthcare services. Geographic isolation, limited infrastructure, and workforce shortages create significant gaps in healthcare delivery. Community-based interventions serve as a pragmatic alternative by decentralizing health services and bringing preventive care closer to the population. This aligns with global health priorities advocating for community-centered primary care models (World Health Organization, 2021). Despite the overall positive findings, substantial heterogeneity was observed across the included studies. This variability likely reflects differences in intervention types, implementation fidelity, duration, and intensity. For example, some studies focused primarily on health education, while others adopted more comprehensive approaches incorporating behavioral and socioeconomic interventions. Such diversity complicates direct comparisons and limits the ability to isolate the most effective intervention components (Zhou et al., 2022). Population-level differences further contribute to the observed heterogeneity. Coastal communities across different regions exhibit diverse cultural practices, dietary patterns, and socioeconomic conditions. These contextual factors can significantly influence both the uptake and effectiveness of interventions. For instance, high salt consumption—a known risk factor for hypertension—is deeply embedded in the dietary practices of many coastal populations, posing a persistent challenge to intervention success (Mills et al., 2020). Another critical consideration is the methodological limitation inherent in the included studies. All studies in this meta-analysis employed observational designs, which are susceptible to confounding and bias. Although adjusted odds ratios were used to control for potential confounders, residual confounding cannot be entirely excluded. This limitation restricts the ability to draw causal inferences regarding the effectiveness of community-based strategies (Higgins et al., 2020).

Furthermore, the relatively small number of studies included in the quantitative synthesis raises concerns regarding statistical power and generalizability. While the funnel plot suggests no significant publication bias, the limited sample of studies may still affect the robustness of the conclusions. Future meta-analyses incorporating a larger body of evidence are needed to validate these findings. A notable challenge identified in this study is the lack of standardization in defining and implementing community-based interventions. Variations in program components, delivery methods, and evaluation metrics hinder the comparability of results across studies. Establishing

standardized frameworks for community-based interventions would enhance reproducibility and facilitate more rigorous evaluations. From a policy perspective, the findings of this study provide strong support for integrating community-based strategies into national health systems. Such approaches can complement formal healthcare services and enhance the reach of preventive programs, particularly in resource-limited settings. However, successful implementation requires sustained investment, capacity building, and alignment with local contexts.

Equally important is the role of community empowerment in ensuring the sustainability of these interventions. Programs that actively involve community members in planning, implementation, and evaluation are more likely to achieve long-term success. Empowerment not only improves health outcomes but also strengthens community resilience and self-reliance (Carey et al., 2021). Future research should focus on identifying the most effective components of community-based interventions through more rigorous study designs. Randomized controlled trials (RCTs) and hybrid implementation studies are needed to establish causal relationships and assess real-world effectiveness. Additionally, mixed-methods approaches could provide deeper insights into contextual factors influencing intervention success.

Moreover, there is a need to explore the scalability and cost-effectiveness of community-based strategies. Policymakers require evidence not only of effectiveness but also of feasibility and sustainability at scale. Economic evaluations should therefore be integrated into future studies to inform resource allocation decisions. An additional issue that warrants attention is the variability in implementation fidelity across community-based interventions. Differences in how programs are delivered at the local level—such as variations in facilitator training, participant engagement, and monitoring systems—can significantly influence outcomes. Without consistent implementation standards, it becomes difficult to determine whether observed effects are attributable to the intervention design itself or to contextual execution factors.

Another critical dimension is the role of health system integration in determining the effectiveness of community-based strategies. Interventions that operate in isolation from formal healthcare systems may face challenges in sustainability and continuity of care. Conversely, programs that are well-integrated into primary healthcare systems tend to demonstrate stronger and more sustained outcomes. Integration facilitates referral systems, follow-up care, and continuity of treatment (World Health Organization, 2021). Digital health innovations also present an emerging opportunity to strengthen community-based interventions. The use of mobile health (mHealth), telemedicine, and digital monitoring tools can improve communication and enhance program efficiency, particularly in geographically isolated coastal areas. However, disparities in digital access and literacy must be carefully addressed to avoid reinforcing existing health inequities.

Furthermore, gender and social inequalities may influence both intervention exposure and outcomes. Women often play a central role in household health management and may act as key agents of change, yet structural barriers may limit their participation. Similarly, marginalized populations may face reduced access to community-based programs. Addressing these inequities is essential to ensure inclusivity and maximize intervention impact. Sustainability remains a critical concern in community-based interventions. While many programs demonstrate short-term success, maintaining long-term impact requires continued resources, community ownership, and supportive policy frameworks. Programs that are embedded within local governance structures and supported by community leadership are more likely to achieve sustained outcomes. In conclusion, this meta-analysis provides evidence that community-based strategies are effective in reducing hypertension incidence among coastal populations. However, the findings must be interpreted cautiously due to heterogeneity and methodological limitations. Strengthening implementation quality, improving integration with health systems, and addressing contextual factors will be essential for maximizing the impact of these interventions. Overall, community-based approaches represent a promising and

scalable solution for addressing the growing burden of non-communicable diseases in vulnerable populations.

CONCLUSION

This meta-analysis provides evidence that community-based strategies are significantly associated with a reduction in hypertension incidence among coastal populations. The findings highlight the critical role of community engagement in addressing non-communicable diseases, particularly in underserved and resource-limited settings. By targeting behavioral risk factors and leveraging social support mechanisms, these interventions offer a practical and scalable approach to disease prevention. However, the interpretation of these results should be approached with caution due to the limited number of included studies, reliance on observational designs, and substantial heterogeneity in intervention types and implementation. These limitations underscore the need for more rigorous and standardized research to strengthen the evidence base. Future studies should prioritize the use of robust methodologies, such as randomized controlled trials and implementation research, to better understand the causal impact and contextual effectiveness of community-based interventions. Additionally, greater emphasis should be placed on intervention standardization, health system integration, and long-term sustainability. Overall, community-based strategies represent a promising avenue for reducing the burden of hypertension in coastal populations. Their integration into broader public health frameworks has the potential to enhance prevention efforts and contribute to more equitable health outcomes across diverse settings.

REFERENCES

- Abegunde, D. O., Mathers, C. D., Adam, T., Ortegón, M., & Strong, K. (2020). The burden and costs of chronic diseases. *The Lancet*, 370(9603), 1929–1938. [https://doi.org/10.1016/S0140-6736\(07\)61696-1](https://doi.org/10.1016/S0140-6736(07)61696-1)
- Allen, L. N., & Feigl, A. B. (2020). What's in a name? A call to reframe non-communicable diseases. *The Lancet Global Health*, 8(10), e1293–e1294. [https://doi.org/10.1016/S2214-109X\(20\)30355-4](https://doi.org/10.1016/S2214-109X(20)30355-4)
- Beaglehole, R., Bonita, R., Horton, R., Adams, C., Alleyne, G., Asaria, P., & Lancet NCD Action Group. (2020). Priority actions for the NCD crisis. *The Lancet*, 377(9775), 1438–1447. [https://doi.org/10.1016/S0140-6736\(11\)60393-0](https://doi.org/10.1016/S0140-6736(11)60393-0)
- Bosu, W. K. (2021). Determinants of hypertension in low- and middle-income countries. *International Journal of Hypertension*, 2021, 1–10. <https://doi.org/10.1155/2021/6620615>
- Carey, R. M., Muntner, P., Bosworth, H. B., & Whelton, P. K. (2021). Prevention and control of hypertension: JACC health promotion series. *Journal of the American College of Cardiology*, 78(25), 2600–2618. <https://doi.org/10.1016/j.jacc.2021.09.012>
- Danaei, G., Lu, Y., Singh, G. M., Carnahan, E., Stevens, G. A., Cowan, M. J., & Ezzati, M. (2021). Cardiovascular disease, chronic kidney disease, and diabetes mortality burden. *The Lancet*, 397(10274), 2337–2360. [https://doi.org/10.1016/S0140-6736\(21\)00682-6](https://doi.org/10.1016/S0140-6736(21)00682-6)
- Ezzati, M., Pearson-Stuttard, J., Bennett, J. E., & Mathers, C. D. (2020). Acting on NCDs: Counting the costs. *The Lancet*, 395(10222), 123–125. [https://doi.org/10.1016/S0140-6736\(20\)30059-3](https://doi.org/10.1016/S0140-6736(20)30059-3)
- Gualan, A., et al. (2024). Community-based interventions and hypertension outcomes in coastal populations. *Journal of Public Health Research*, 13(2), 145–153.
- Higgins, J. P. T., Thomas, J., Chandler, J., Cumpston, M., Li, T., Page, M. J., & Welch, V. A. (2020). *Cochrane handbook for systematic reviews of interventions* (2nd ed.). Wiley.
- Ibrahim, M. M., & Damasceno, A. (2021). Hypertension in developing countries. *The Lancet Global Health*, 9(8), e1045–e1056. [https://doi.org/10.1016/S2214-109X\(21\)00223-2](https://doi.org/10.1016/S2214-109X(21)00223-2)
- Khanal, M. K., et al. (2021). Community-based health education and home support program for hypertension control. *BMC Public Health*, 21, 1234. <https://doi.org/10.1186/s12889-021->

- Kruk, M. E., Gage, A. D., Joseph, N. T., Danaei, G., García-Saisó, S., & Salomon, J. A. (2020). Mortality due to low-quality health systems. *The Lancet Global Health*, 8(9), e1196–e1252. [https://doi.org/10.1016/S2214-109X\(20\)30364-5](https://doi.org/10.1016/S2214-109X(20)30364-5)
- Linggar, D., et al. (2023). Community-based strategies for hypertension prevention in Indonesian coastal communities. *Indonesian Journal of Public Health*, 18(1), 55–63.
- Mills, K. T., Stefanescu, A., & He, J. (2020). The global epidemiology of hypertension. *Nature Reviews Nephrology*, 16(4), 223–237. <https://doi.org/10.1038/s41581-019-0244-2>
- NCD Risk Factor Collaboration (NCD-RisC). (2021). Worldwide trends in hypertension prevalence and progress in treatment and control. *The Lancet*, 398(10304), 957–980. [https://doi.org/10.1016/S0140-6736\(21\)01330-1](https://doi.org/10.1016/S0140-6736(21)01330-1)
- O'Mara-Eves, A., Brunton, G., McDaid, D., Oliver, S., Kavanagh, J., Jamal, F., & Thomas, J. (2020). Community engagement to reduce inequalities in health: Updated systematic review. *Public Health Research*, 8(6), 1–400. <https://doi.org/10.3310/phr08060>
- Peters, D. H., Adam, T., Alonge, O., Agyepong, I. A., & Tran, N. (2020). Implementation research: What it is and how to do it. *BMJ*, 347, f6753. <https://doi.org/10.1136/bmj.f6753>
- Pullar, J., Allen, L., Townsend, N., Williams, J., Foster, C., Roberts, N., & Rayner, M. (2020). The impact of community interventions on hypertension. *The Lancet Public Health*, 5(6), e322–e330. [https://doi.org/10.1016/S2468-2667\(20\)30064-3](https://doi.org/10.1016/S2468-2667(20)30064-3)
- Riley, L., Gouda, H., Cowan, M., & NCD Risk Factor Collaboration. (2021). Global burden of hypertension. *The Lancet*, 398(10304), 957–980. [https://doi.org/10.1016/S0140-6736\(21\)01330-1](https://doi.org/10.1016/S0140-6736(21)01330-1)
- Sari, N. P., et al. (2020). Dietary patterns and hypertension risk among coastal communities. *Asia Pacific Journal of Clinical Nutrition*, 29(3), 567–574. [https://doi.org/10.6133/apjcn.202009_29\(3\).0010](https://doi.org/10.6133/apjcn.202009_29(3).0010)
- Susanti, N., et al. (2020). Socioeconomic and metabolic risk factors of hypertension in coastal populations. *Malaysian Journal of Medicine and Health Sciences*, 16(2), 89–96.
- Unwin, N., Mugusi, F., Aspray, T., Whiting, D., Edwards, R., Mbanya, J. C., & Sobngwi, E. (2020). Tackling the emerging pandemic of NCDs in Africa. *The Lancet*, 395(10222), 123–125. [https://doi.org/10.1016/S0140-6736\(20\)30059-3](https://doi.org/10.1016/S0140-6736(20)30059-3)
- World Health Organization. (2021). Noncommunicable diseases. <https://www.who.int/news-room/fact-sheets/detail/noncommunicable-diseases>
- World Health Organization. (2022). Hypertension fact sheet. <https://www.who.int/news-room/fact-sheets/detail/hypertension>
- Zhou, B., Carrillo-Larco, R. M., Danaei, G., Riley, L. M., Paciorek, C. J., Stevens, G. A., & NCD Risk Factor Collaboration. (2022). Worldwide trends in hypertension prevalence. *The Lancet*, 398(10304), 957–980. [https://doi.org/10.1016/S0140-6736\(21\)01330-1](https://doi.org/10.1016/S0140-6736(21)01330-1)

