Understanding the Health Landscape of Coastal Communities: A Review on Non-Communicable Diseases

Nur Maziyya, Donny Nurhamsyah
Faculty of Nursing, Universitas Padjadjaran
Email: nur.maziyya@unpad.ac.id

Abstract

Non-communicable diseases (NCDs), particularly hypertension and type 2 diabetes mellitus, pose serious health challenges in coastal communities, which are often socioeconomically and geographically vulnerable. Limited access to healthcare and inadequate preventive health information further worsen these issues. This literature review aims to describe the health profile and associated risk factors of NCDs in coastal populations. A structured search was conducted through PubMed, Google Scholar, and ScienceDirect using keywords including non-communicable diseases, hypertension, diabetes, coastal community, and risk factors. Inclusion criteria comprised peer-reviewed primary research (quantitative or qualitative), published in English or Indonesian between 2020 and 2025. Of 67 articles identified, 17 met the criteria and were analyzed descriptively. Hypertension emerged as the most frequently studied NCD, followed by diabetes and metabolic syndrome. Commonly reported risk factors included obesity, low physical activity, high sodium intake, smoking, stress, aging, and low socioeconomic status. Some studies also noted the influence of seafood consumption, sleep quality, and comorbid conditions. Among elderly populations, factors such as health insurance and access to health counseling influenced health-seeking behaviors. These findings highlight the urgent need for tailored, community-based strategies to prevent and control NCDs in coastal regions.

Keywords: coastal community, diabetes, hypertension, non-communicable diseases, risk factors.

Introduction

Non-communicable diseases (NCDs), such as hypertension, diabetes mellitus, cardiovascular diseases, and chronic respiratory illnesses, have become the leading cause of death globally, responsible for approximately 74% of all deaths each year (World Health Organization [WHO], 2022). These chronic conditions not only reduce quality of life but also impose significant economic burdens on individuals, families, and health systems particularly in low- and middle-income countries where over three-quarters of NCD-related deaths occur. Although urban populations have been the primary focus of many public health interventions, recent evidence suggests that coastal communities are increasingly vulnerable to the growing burden of NCDs (Menon et al., 2014).

Coastal communities refer to populations residing in areas adjacent to coastlines, whose livelihoods and daily lives are closely connected to the marine environment, while facing distinct challenges and opportunities. They are commonly found in villages or small towns with livelihoods strongly dependent on coastal resources and marine-related services (Ramos, 2022). Coastal communities commonly experience geographic isolation, economic hardship, and occupational health risks, as many residents rely on physically demanding livelihoods such as fishing or informal labor that often lack adequate healthcare access and social protection. Their dietary patterns often include high consumption of salted or preserved seafood and low intake of fresh produce, contributing to excessive sodium intake and poor glycemic control (Susilawati & Solin, 2023). Furthermore, access to health education and preventive services is limited due to infrastructural challenges and a shortage of healthcare providers in remote coastal areas (Rahman & Isnaeni, 2025).

Non-communicable diseases (NCDs) in coastal communities emerge from the complex interaction of social, environmental, and behavioral risk factors rather than isolated determinants. Empirical studies in fishing and coastal populations have shown that sociodemographic vulnerabilities (e.g., low education, limited healthcare access) and lifestyle behaviors such as tobacco use, poor diet, inadequate sleep, and physical inactivity significantly contribute to the high prevalence of NCDs including hypertension, obesity, and metabolic disorders in these settings (K R et al., 2025). For example, research among fishing communities in Kerala, India, found that behavioral risk factors such as tobacco and alcohol use, inadequate fruit and vegetable intake, and lifestyle patterns were strongly associated with hypertension and obesity (Webster, 2023; K R et al., 2025). Similarly, a study in Southeast Sulawesi reported that behavioral and metabolic risk factors significantly affected cardiovascular disease risk, highlighting the role of lifestyle and metabolic profiles in shaping NCD outcomes within coastal populations(Syahrianti et al., 2025). These findings underscore how social and environmental influences shape health behaviors and interact to increase NCD risk among coastal communities, distinguishing their health profiles from those of inland or urban populations.

Despite the growing body of research on non-communicable diseases (NCDs), existing literature largely addresses NCDs in the general population or urban settings, with limited focus on coastal communities as distinct socio-environmental contexts. Available studies on coastal populations tend to be fragmented, often examining single diseases or isolated risk factors without integrating social, environmental, and occupational dimensions that characterize coastal livelihoods. Moreover, comprehensive reviews synthesizing evidence on NCD patterns, determinants, and health system challenges specific to coastal communities remain scarce, particularly in low- and middle-income countries. This gap highlights the need for a focused literature review to consolidate existing evidence and identify contextual vulnerabilities contributing to the NCD burden in coastal communities.

Given these concerns, this literature review aims to synthesize current evidence on the prevalence, patterns, and associated risk factors of non-communicable diseases in coastal settings. The findings are expected to inform targeted public health interventions and support policy development addressing

the specific health challenges faced by coastal populations.

Research Method

The literature study was conducted by reviewing published research articles related to non-communicable diseases (NCDs) in coastal communities. The article search was carried out systematically using three online databases: PubMed, Google Scholar, EbscoHost and ScienceDirect. The keywords used in the search included: non-communicable diseases, hypertension, diabetes, coastal community, and risk factors. The literature search covered publications from 2020 to 2025. A total of 76.865 papers were obtained. Articles included in this review had to meet the following inclusion criteria: they had to be primary research articles (quantitative or qualitative), peer-reviewed, written in English or Indonesian, and specifically address the topic of non-communicable diseases in coastal communities.

The exclusion criteria included review articles, articles that did not present primary data, articles available only in abstract form, non-research papers, and articles that lacked proper scientific structure (including abstract, introduction, methods, results, discussion, implications, and references).

The initial search across selected electronic databases yielded a total of 67 articles relevant to non-communicable diseases in coastal communities. Following the removal of duplicates, titles and abstracts were screened to assess relevance, and full texts were subsequently reviewed based on predefined inclusion and exclusion criteria. After this screening and eligibility assessment, 17 articles met the criteria and were included for further analysis. These selected studies were analyzed using a narrative descriptive synthesis to identify key themes, including types of NCDs. examined, population characteristics, variables assessed, and reported risk factors, enabling the construction of an overall picture of NCD-related health conditions in coastal communities.

As this study was a literature review utilizing secondary data from published sources, ethical approval was not required. Nevertheless, ethical principles of academic integrity were upheld throughout the review process by ensuring transparent reporting, accurate citation of original studies, and avoidance of data fabrication, falsification, or plagiarism.

Research Results

To ensure transparency and reproducibility of the literature selection process, this review followed a structured identification, screening, and inclusion procedure based on the PRISMA framework. Figure 1 illustrates the flow of article selection, detailing the number of records identified, screened, excluded, and ultimately included in the review. This process demonstrates how the initial pool of records was systematically refined to obtain studies that met the predefined inclusion and exclusion criteria.

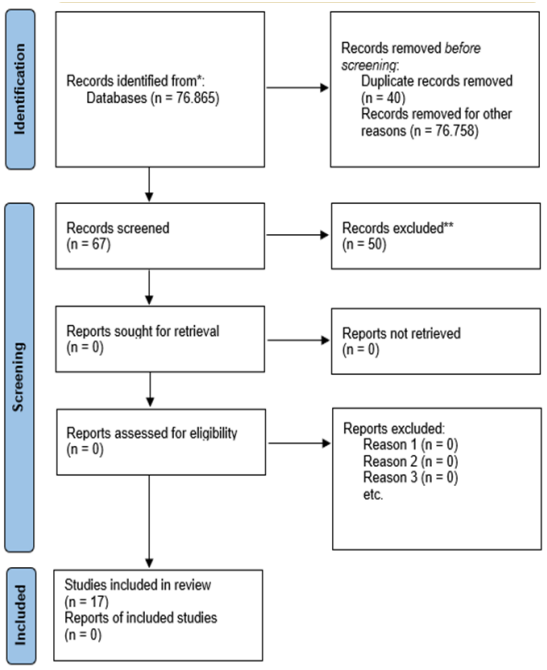

Figure 1. PRISMA Flow diagram of Searching Literature for review

Table 1. Result of Literature Search

Database	Number of articles according to keywords	Number of articles obtained	Number of articles match the inclusion criteria
PubMed	27	7	5
Google Scholar	6780	30	9
EbscoHost	69.943	20	1
ScienceDirect	115	10	2
Total	76.865	67	17

Table 2. Distribution of Research Sites

Place of Study	Number of articles
Ekuador	1
Indonesia	11
India	1
Vietnam	1
China	1
Bangladesh	2
Total	17

Table 3. Article Summary

Author & year	Place of Study	Study design	Sample	Variable	Findings
Gualan et al., (2024)	Ecuador	A Cross-sectional study	931 Montubio Adult age 18-94	Dependent: - Hypertension - Diabetes - Metabolic syndrome Independent: - Demographic data - Adiposity indicators	Results Out of 1,010 adults recruited, 931 were included in the analysis. Weighted prevalences were estimated for diabetes (20.4%, 95% CI 18.3–22.5%), hypertension (35.6%, 95% CI 29.0–42.1%), and metabolic syndrome (54.2%. 95% CI 47.0–61.5%) with higher prevalence observed in women. Hypertension prevalence increased with age while diabetes and metabolic syndrome peaked in the 6th and 7th decades of life, declining thereafter. Adiposity indicators were associated with diabetes, hypertension, and metabolic syndrome.
Putri et al., (2020)	Indonesia	A Cross-sectional study	170 respondents	Dependent: Hypertension Independent: - BMI -Physical Activity - Dietary	The results of bivariate analysis are known risk factors associated with the incidence of hypertension are: Body Mass Index ie obesity (OR = 3.6; 95% CI: 1.07-12.0). Moderate physical activity (OR = 0.30; 95% CI: 0.14-0.61) and adequate diet (OR = 0.1; 95% CI: 0.07-0.32). From the multivariate analysis the most dominant physical activity was OR = 0.7 95% CI = 0.4-1.1, Pvalue = 0.001 and dietary OR = 0.2 95% CI = 0.1-0.5, Pvalue = 0.000.

Najihah et al., (2024)	Indonesia	A Cross-sectional study	120 respondents	Dependent: Hypertension Independent: - Obesity - Family History - Sport Activity - Smoking habits	The results showed that there was a significant relationship between obesity (p-value 0.001), family history (p-value 0.013), and sports activity (p-value 0.009) with the incidence of hypertension. Smoking habits did not show a significant relationship (p-value 0.230) with the incidence of hypertension
Duy et al., (2023)	Vietnam	A Cross-sectional study	370 elderly people aged over 60 years	Dependent: Health-Seeking Behavior Independent: -Demographic factors -Presence of NCDs	The participants' average age was 69.70 (SD), and 18% of them reported having ≥ two non-communicable diseases (NCDs). The results of the study showed that 69.8% of the total participants exhibited health-seeking behaviors. The findings also revealed that elderly people living alone, and those with an average or above-average income, had higher utilization of health care services. Participants with multiple NCDs exhibited more health-seeking behaviors than those with only one (OR: 9.24, 95% CI: 2.66–32.15, p = <0.001). The presence of health insurance and the need for health care counseling were also relevant ([OR: 4.16, 95% CI: 1.30–13.31, p = 0.016], [OR: 3.91, 95% CI: 2.04–7.49, p < 0.001], respectively).
Susilawati & Solin, (2023)	Indonesia	A Cross-sectional study	90 respondents	Dependent: Hypertension Independent: - Socio demographic - Food consumption	The results showed a significant relationship between food consumption patterns (p = 0.009; POR = 3.780), educational status (p = 0.001; POR = 5.350), age (p = 0,000; POR = 9,000).
Linggar et al., (2023)	Indonesia	A Cross-Sectional Study	757 respondents	Dependent: Hypertension Independent: -Concomitant diseases - Lifestyle -Demographic status	We discovered that 6.4% of the residents of Laha Village's coastline community had hypertension. Demographic variables were significantly associated with hypertension, especially in the age ranges of over 60 (aOR=28.18; 95% CI:3.27-242.97; p=0.002) and 41–60 years (aOR=10.09; 95% CI:1.20-84.47; p=0.033). The results showed an interesting correlation between non-smoking (aOR=12.50; 95%CI: 1.54-101.13; p=0.018) and occasional smoking (aOR=13.95; 95%CI: 1.42-136.35; p=0.023) and hypertension. Additionally, a strong correlation was discovered between hypertension and concomitant joint illnesses (aOR=3.03; 95% CI: 1.60-5.70; p <0.001).

Rahmawati et al., (2023)	Indonesia	A Cross-Sectional Study	62 respondents	Dependent: Diabetes type II Independent: - Obesity - Physical activity - Demographic status	There were 3 risk factors that had a relationship with the incidence of DM, including obesity, physical activity, family history of DM
Astutik et al., (2020)	Indonesia	A Cross-Sectional Study	123 respondents between the age of 18-59	Dependent: Hypertension Independent: - Demographic status	The prevalence of systolic and diastolic hypertension among residents of coastal communities were as high as 33.33% and 31.71%, respectively. Increasing age was associated with systolic and diastolic hypertension (ORsystolic=1.11; 95% CI=1.03-1.19, p=0.01 and ORdiastolic=1.07; 95% CI=1.01-1.15, p=0.03) after controlling other variables. Respondents with the poorest and richer socio-economic status had higher odds of having systolic and diastolic hypertension compared to respondents with the richest socio-economic status (ORsystolic-poorest =12.78; 95% CI=1.61-101.54, p=0.02; ORsystolic- richer=10.74; 95% CI =1.55-74.37, p=0.02 and ORdiastolic- poorest=10.36; 95% CI= 1.40-76.74, p=0.02; ORdiastolic-richer=6.45; 95% CI=1.01-41.43, p=0.05) after controlling other variables.
Lesmana et al., (2022)	Indonesia	A Cross-Sectional Study	150 respondents	Dependent: Hypertension Independent: - Sports activities - Smoking habits - Salty eating habits	There were 61respondents (40.7%) of hypertension patients, the highest in the 36 - 70year age group. There is correlation between sports activities and blood pressure in coastal communities with a p value of 0.0001. There is correlation between smoking habits and blood pressure in the coastal community of Tarakan City where the p value is 0.001. There is a correlation between salty eating habits and blood pressure in the coastal community of Tarakan City, where the p value is 0.0001.
Rumaolat & Soamole, (2023)	Indonesia	A Cross-Sectional Study	58 respondents	Dependent: Hypertension Independent: - Sodium consumption - Smoking habits - Caffeine consumption - Stress	The research results showed that there was a relationship between sodium consumption and the incidence of hypertension with ρ value = 0.000, a relationship between smoking habits and the incidence of hypertension with ρ value = 0.002, a relationship between caffeine consumption and the incidence of hypertension with ρ value = 0.004, a relationship between stress and the incidence of hypertension with ρ value = 0.012.

Nafi & Putriningtyas, (2023)	Indonesia	A Cross-Sectional Study	100 respondents with hypertension aged 45–59	Dependent: Hypertension Independent: - Gender, - Obesity, - Coffee consumption, - Smoking habits, - Physical activity - Seafood consumption, - Sleep quality	The results showed there are 97.6% of respondents who are obese, and 98.7% of respondents who consume excess seafood experience hypertension. There is a relationship between sex (p =0.046), obesity (p<0.001), coffee consumption (p=0.037), physical activity (p<0.001), seafood consumption (p<0.001), and sleep quality (p<0.001) with the incidence of hypertension in coastal communities. There was no relationship between smoking status (p = 0.072) with the incidence of hypertension in coastal communities.
Albah et al., (2023)	Indonesia	A Cross-Sectional Study	114 respondents age 30-50 years	Dependent: Hypertension Independent: - Gender, - Physical activity - Stress	Gender obtained a p-value = 0.030 with an OR value = 2.667 (CI: 1.084-6.559), physical activity obtained a p-value = 0.802 with an OR value = 0.881 (CI: 0.329-2.363) and stress obtained a p-value = 1.000 with an OR value = 1.000 (CI: 0.426-2.346).
Susanti et al., (2020)	Indonesia	A Cross-Sectional Study	90 respondents	Dependent: Hypertension Independent: - Sosio demographic - Food consumption	The results showed a significant relationship between food consumption patterns (p = 0.009; POR = 3.780), educational status (p = 0.001; POR = 5.350), age (p = 0,000; POR = 9,000)
Doddamani et al., (2021)	India	A cross-sectional study	681 fishermen aged 18 years and above	Dependent: Hypertension Independent: - Sosio demogaprhic and Lifestyle -Physical activity -Stress -BMI and waist circumference -Lipid profile	The mean (SD) age of the population was 42.5 (SD 12.5) years. The mean years involved in fishing was 19.8 years (SD 10.9). More than half (59.5%) of the study participants had severe stress and most (80.3%) were ever substance users. Advancing age, not being able to contact family while at sea, poor dietary practice, ever substance use, increasing waist circumference were significant correlates of NCDs.
Lin et al., (2022)	China	A cross-sectional study	60 – 98 years old residents Quanzhou	Dependent: Hypertension Independent: - Age - Salt awareness, - Physical activity	The overall prevalence of hypertension, prehypertension, and normotension among older adults in Quanzhou was 29.0%, 18.7%, and 52.3%, respectively. The percentage of participants with low, moderate, and high 10-year CVD risk was 49.7%, 36.8%, and 13.5%, respectively. Older age, low salt awareness, and low levels of physical activity were significantly correlated with hypertension. The 10-year CVD risk was higher for men than women and increased with age. Higher blood pressure was associated with a greater 10-year CVD risk.

Shuvo et al., (2020)	Bangladesh	A cross-sectional study	240 respondents	Dependent: Hypertension Independent: - Socio demogaprhic - Life style of consuming soil and water salinity on dietary	Males and those aged 36–50 years (RRR:1.89, SE:0.58) and 51–65 years (RRR:4.51, SE:1.81) were associated with hypertension compared with the females (RRR:0.57, SE:0.18) and age group 20–35 years. Consumption of shallow tube-well water (RRR:3.12, SE:1.46), salt content rice (RRR:1.36, SE:0.50), salt content vegetables (RRR:1.09, SE:0.09), salt content fish (RRR:2.77, SE:0.47), and intake of table salt (RRR:1.05, SE:0.03) were significantly associated with risk factors of hypertension ($p< 0.01$).
Khan et al., (2020)	Bangladesh	A cross-sectional study	6,296 respondents	Dependent: Hypertension Independent: - Socio demogaprhic -water source -geographical location	Mixed-effects logistic regression analysis shows a significant association of medium or higher-level salinity with hypertension (adjusted odds ratio 1.650, 95% confidence interval: 1.101 –2.473). Other variables significantly associated with hypertension are age, sex, education status, water source, and geographical location. A sizable proportion of the total individual-level variance in the probability of being hypertensive was at household level (20%) and cluster-level (8%).

Study Characteristics

Seventeen studies were included in this review, all of which employed a cross-sectional design. The studies were conducted across various coastal regions in Southeast Asia and Latin America, including Indonesia, Bangladesh, Vietnam, India, China, and Ecuador (Table 2). Most studies were published between 2020 and 2024, reflecting a growing research interest in non-communicable diseases (NCDs) within coastal populations.

Sample sizes varied substantially, ranging from as few as 58 participants to as many as 6,296. The target populations were predominantly adults, with some studies specifically focusing on elderly individuals (aged 60 and above) or adults aged 30–70 years. The majority of studies were community-based and used structured questionnaires and physiological measurements to assess variables.

Data collection instruments typically included standardized tools for measuring blood pressure, body mass index (BMI), waist circumference, and blood glucose levels. In several cases, dietary patterns, physical activity, stress, and health-seeking behavior were assessed using validated or locally adapted questionnaires.

Population Characteristics

The studies collectively captured data from diverse coastal populations, including fishing communities, residents of shoreline villages, and ethnic coastal minorities. A significant portion of the population samples came from low- to middle-income households with limited educational attainment.

Gender distribution was generally balanced, though some studies reported higher prevalence rates of NCDs among women. Age-wise, the populations studied covered a wide range—from young adults (18 years) to older adults (over 70 years). Several studies highlighted age as a significant demographic determinant, with increasing age consistently associated with higher prevalence of hypertension and diabetes. Most participants had limited access to healthcare services, and in many cases, health-seeking behavior was influenced by socioeconomic factors such as income, health insurance coverage, and family support.

Types of Non-Communicable Diseases

The two most frequently examined NCDs across the studies were hypertension and type 2 diabetes mellitus. All 17 studies reported on hypertension either as a primary or secondary outcome. Diabetes mellitus was directly assessed in four studies, while metabolic syndrome was included in one large-scale study in Ecuador. Hypertension prevalence ranged from 6.4% to over 40% depending on the age range, gender distribution, and geographical location. Diabetes mellitus was reported with a prevalence of 20.4% in one South American study and was frequently co-occurring with hypertension in older adults. Some studies also reported on associated cardiovascular risk factors such as elevated cholesterol levels and abdominal obesity.

Risk Factors for Non-Communicable Diseases

A wide range of behavioral, environmental, and sociodemographic risk factors were identified across the studies. The most commonly reported and statistically significant risk factors include:

1. Obesity and Overweight: Several studies found strong associations between elevated BMI and both hypertension and diabetes.
2. Dietary Habits: High sodium intake, frequent consumption of salty foods, preserved seafood, and salt-laden rice and vegetables were significantly associated with hypertension.
3. Physical Inactivity: Low or moderate levels of physical activity were linked to increased NCD risk.
4. Smoking and Substance Use: Cigarette smoking was frequently reported as a risk factor, although the strength of association varied.
5. Psychosocial Stress: Stress levels, particularly among those with poor social support or high occupational strain, were positively correlated with hypertension.
6. Environmental Exposures: Water salinity and dietary salt contamination were significant in Bangladeshi coastal studies.
7. Demographic Factors: Advancing age, low education, low income, and family history of NCDs were consistently associated with higher prevalence.
8. Sleep Quality: Poor sleep quality was also identified as a contributor to hypertension in at least one study.

Notably, multiple studies emphasized that the clustering of risk factors such as obesity combined with poor diet or aging combined with sedentary lifestyle intensified NCD prevalence. These findings highlight the multifactorial nature of chronic disease development in coastal contexts and underscore the importance of integrated community-based prevention strategies.

Discussion

This review highlights the growing burden of non-communicable diseases (NCDs) in coastal communities, revealing not only the high prevalence of hypertension and diabetes but also the complexity of their associated risk factors. While these conditions are often framed as urban health issues, the evidence presented demonstrates that coastal populations, many of whom live in rural, low-resource settings are equally, if not more, vulnerable to NCDs due to a confluence of environmental, behavioral, and socioeconomic determinants.

The dominance of cross-sectional studies in the reviewed literature provides a broad epidemiological snapshot, showing that hypertension was the most commonly reported NCD, with prevalence rates ranging from moderate to high across diverse coastal settings. Diabetes mellitus, although less frequently studied, also demonstrated a considerable presence. These findings are consistent with global data that suggest the epidemiological transition toward chronic diseases is not confined to urban centers but increasingly affects peripheral and underserved populations (WHO, 2022).

One of the most prominent patterns emerging from the review is the multifactorial nature of NCD risk in coastal areas where environmental, social, and health system factors interact rather than operate independently. Environmental exposures, such as climate variability, coastal pollution, and occupational hazards associated with fishing and marine-based livelihoods, create chronic physical stressors that heighten long-term disease risk. These environmental pressures are closely intertwined with social

vulnerabilities, including unstable income, low educational attainment, and informal employment, which shape health behaviors and limit engagement in preventive care (Marmot, 2005; Stringhini et al., 2017).

Modifiable lifestyle factors, such as high-sodium diets, physical inactivity, and smoking were recurrently identified as significant contributors. In many coastal communities, dietary practices are strongly influenced by traditional food preservation methods and limited access to fresh produce, resulting in excessive salt intake. This pattern has been shown to increase the risk of hypertension and other cardiometabolic conditions (Susilawati & Solin, 2023). When combined with a shift toward sedentary lifestyles and heightened psychosocial stress, these behaviors further compound the risk of developing NCDs.

Environmental exposures further complicate the NCD risk profile in coastal areas. Several studies conducted in Bangladesh and India reported associations between elevated salinity in drinking water and increased blood pressure, suggesting that environmental degradation may act as a silent driver of chronic disease in coastal populations (Rahman & Isnaeni, 2025). These findings highlight the importance of interdisciplinary public health approaches that integrate environmental health, water security, and chronic disease prevention.

Sociodemographic vulnerabilities, including older age, low education attainment, low income, and lack of health insurance were consistently associated with poorer health outcomes. These findings align with social determinants of health frameworks, which emphasize how structural inequities shape health behaviors, access to healthcare services, and health literacy (National Academies of Sciences; Engineering and Medicine, 2016). In coastal settings, where healthcare infrastructure is often limited, these disadvantages are further compounded by barriers within the health system, such as geographic inaccessibility and fragmented continuity of care (Peters et al., 2008).

Interestingly, some studies reported paradoxical findings, such as an association between occasional smoking and hypertension. These inconsistencies may reflect contextual differences, cultural patterns of tobacco use, or methodological limitations inherent in cross-sectional study designs (Linggar et al., 2023). Such findings underscore the need for more nuanced and longitudinal research approaches to clarify causal pathways and temporal dynamics in coastal populations.

Despite the growing body of literature on NCDs, this review identifies persistent research gaps in the coastal context. Most existing studies remain descriptive and cross-sectional, offering limited insight into how environmental change, social vulnerability, and health system performance interact over time to influence NCD trajectories. In addition, evidence on the effectiveness of integrated, community-based interventions tailored to coastal livelihoods remains scarce, particularly in low- and middle-income countries (Allotey et al., 2014). Future research should prioritize longitudinal designs, mixed-methods approaches, and intervention studies to better capture the complexity of NCD risk and management in coastal communities.

The implications of these findings are substantial for public health practice and nursing. From a nursing perspective, the results of this literature review highlight the critical role of community and public health nurses in coastal settings. Nurses are uniquely positioned to conduct early risk screening, deliver culturally sensitive health education, and promote behavior change interventions that account for environmental exposures and occupational realities. Nursing-led outreach programs can also strengthen continuity of care, improve self-management of chronic conditions, and bridge gaps between communities and primary healthcare services. Integrating nursing perspectives into coastal NCD prevention and management strategies is essential to reducing health inequities and improving long-term outcomes.

Moreover, the intersection of environmental stressors, such as climate change and sea-level rise, and coastal ecosystem degradation with chronic disease risk demands integrated policy approaches that consider both ecological and epidemiological dimensions. Without targeted action, context-specific interventions, coastal communities may face a dual burden: environmental instability and

escalating NCD morbidity, reinforcing the urgency of coordinated action across health, environmental, and social sectors.

Conclusion

This review highlights a significant burden of non-communicable disease such as hypertension and diabetes among coastal communities, driven by lifestyle factors, environmental exposures, and socioeconomic vulnerabilities. To address this, targeted interventions such as health education, routine screening, and improved access to primary care are essential. Policies should also consider environmental and structural determinants to ensure sustainable, context-specific public health strategies for coastal populations.

References

Albah, D. N. D., Sety, L. O. M., & Harleli. (2023). Faktor Risiko Kejadian Hipertensi pada Masyarakat Pesisir Kecamatan Siompu Kabupaten Buton Selatan Tahun 2023. *Endemis Journal*, 4(3), 1–9.

Allotey, P., Davey, T., & Reidpath, D. D. (2014). NCDs in low and middle-income countries - Assessing the capacity of health systems to respond to population needs. *BMC Public Health*, 14(SUPPL. 2). https://doi.org/10.1186/1471-2458-14-S2-S1

Astutik, E., Puspikawati, S. I., Dewi, D. M. S. K., Mandagi, A. M., & Sebayang, S. K. (2020). Prevalence and Risk Factors of High Blood Pressure among Adults in Banyuwangi Coastal Communities, Indonesia. *Ethiopian Journal of Health Sciences*, 30(6), 941–950. https://doi.org/10.4314/ejhs.v30i6.12

Doddamani, A., Ballala, A. B. K., Madhyastha, S. P., Kamath, A., & Kulkarni, M. M. (2021). A cross-sectional study to identify the determinants of non-communicable diseases among fishermen in Southern India. *BMC Public Health*, 21(1). https://doi.org/10.1186/s12889-021-10376-w

Duy, H. M., Lee, J., Han, W., Rajaguru, V., & Jang, S. Y. (2023). The Health-Seeking Behavior of the Elderly with Non-Communicable Diseases in Coastal Areas of Vietnam. *Healthcare (Switzerland)*, 11(4). https://doi.org/10.3390/healthcare11040465

Gualan, M., Ster, I. C., Veloz, T., Granadillo, E., Llangari-Arizo, L. M., Rodriguez, A., Critchley, J. A., Whincup, P., Martin, M., Romero-Sandoval, N., & Cooper, P. J. (2024). Cardiometabolic diseases and associated risk factors in transitional rural communities in tropical coastal Ecuador. *PLoS ONE*, 19(7 July). https://doi.org/10.1371/journal.pone.0307403

K R, K., Menon, J. C., Kartha, N., & Rose, B. M. (2025). Non-communicable Disease Risk Factor Profile Among the Fishing Community in Ernakulam District of Kerala: A Community-Based Cross-Sectional Study. *Cureus*. https://doi.org/10.7759/cureus.80644

Khan, J. R., Awan, N., Archie, R. J., Sultana, N., & Muurlink, O. (2020). The association between drinking water salinity and hypertension in coastal Bangladesh. *Global Health Journal*, 4(4), 153–158. https://doi.org/10.1016/j.glohj.2020.11.001

Lesmana, H., Tukan, R. A., Darni, Pujianto, A., Handayani, F., Hasriana, H., & Paridah, P. (2022). Hypertension and Risk Factors in Coastal Societies. *International Journal of Health Sciences*, 6(S3), 3347–3354. https://doi.org/10.53730/ijhs.v6ns3.6451

Lin, H., Wu, Y., Wu, J., Chen, Q., Yu, J., & Lin, Y. (2022). Prevalence of Hypertension and 10-Year Cardiovascular Disease Risk Among Older Adults Living in Quanzhou, A Coastal Region of Southeast China. *Risk Management and Healthcare Policy*, 15, 1045–1053. https://doi.org/10.2147/RMHP.S341148

Linggar, E. Z. E. S., Irwan, Yunita, M., Ruspanah, I., Kadun, A. D. K., Starlia, F. T., Malakauseya, M. L. V., & Siahaya, N. (2023). Prevalence and Factors Associated with Hypertension in the Coastal Community of Laha Village: A Cross-Sectional Study. *1st International Conference on Health and Medicine*, 73–79. https://doi.org/10.11594/

nstp.2023.3510

Marmot, M. (2005). Social determinants of health inequalities. *The Lancet*, 365(9464), 1099–1104. https://doi.org/10.1016/S0140-6736(05)71146-6

Menon, J., Joseph, J., Thachil, A., Attacheril, T. V., & Banerjee, A. (2014). Surveillance of noncommunicable diseases by community health workers in Kerala: The Epidemiology of Noncommunicable Diseases in Rural Areas (ENDIRA) study. *Global Heart,* 9(4), 409–417. https://doi.org/10.1016/j.gheart.2014.07.003

Nafi, S. U., & Putriningtyas, N. D. (2023). Faktor yang Memengaruhi Kejadian Hipertensi Masyarakat Pesisir (Studi pada Masyarakat Wilayah Kerja Puskesmas Kedung II Jepara). *Journal Pf Nutrition College*, 12(1), 53–60. http://ejournal3.undip.ac.id/index.php/jnc/

Najihah, C., Wijayanti, D., Akbar Tukan, R., Arifin, H., & Selatan, S. (2024). Risk Factors for Hypertension in the Coastal Area of Tarakan City. *Jurnal Kesehatan*, 7(3).

National Academies of Sciences; Engineering and Medicine. (2016). A Framework for Educating Health Professionals to Address the Social Determinants of Health. *National Academies Press*. https://doi.org/10.17226/21923

Peters, D. H., Garg, A., Bloom, G., Walker, D. G., Brieger, W. R., & Hafizur Rahman, M. (2008). Poverty and Access to Health Care in Developing Countries. *Annals of the New York Academy of Sciences*, 1136, 161–171. https://doi.org/10.1196/annals.1425.011

Putri, R. M., Abdullah, A., & Hermansyah. (2020). Faktor Risiko Hipertensi pada Masyarakat Pesisir Di Kota Banda Aceh. *Jurnal Aceh Medika*, 5(2), 12–24.

Rahman, A., & Isnaeni, A. (2025). Environmental Sanitation Challenges and Opportunities in Indonesia Coastal Regions: A Review. *Journal of Epidemiology and Health Science*, 121(1), 121–126.

Rahmawati, D., The, F., & Imbar, A. W. J. (2023). RISK FACTORS ASSOCIATED WITH TYPE II DIABETES MELLITUS INCIDENCE IN COASTAL COMMUNITIES ON HIRI ISLAND, TERNATE. *Jurnal Kesehatan Tambusai,* 4(4), 5667–5680.

Rumaolat, W., & Soamole, I. (2023). Faktor-Faktor Berhubungan Dengan Kejadian Hipertensi Pada Nelayan Desa Titawaai Kabupaten Maluku Tengah. *Vitamin : Jurnal Ilmu Kesehatan Umum*, 1(4), 85–93. https://doi.org/10.61132/vitamin.v1i4.162

Shuvo, S. Das, Zahid, M. A., Rahman, M. M., & Parvin, R. (2020). Exploring the impact of soil and water salinity on dietary behavior and health risk of coastal communities in Bangladesh. *Journal of Water and Health,* 18(6), 1110–1123. https://doi.org/10.2166/wh.2020.145

Stringhini, S., Carmeli, C., Jokela, M., Avendaño, M., Muennig, P., Guida, F., Ricceri, F., d'Errico, A., Barros, H., Bochud, M., Chadeau-Hyam, M., Clavel-Chapelon, F., Costa, G., Delpierre, C., Fraga, S., Goldberg, M., Giles, G. G., Krogh, V., Kelly-Irving, M., … Zins, M. (2017). Socioeconomic status and the 25 × 25 risk factors as determinants of premature mortality: a multicohort study and meta-analysis of 1·7 million men and women. *The Lancet*, 389(10075), 1229–1237. https://doi.org/10.1016/S0140-6736(16)32380-7

Susanti, N., Siregar, P. A., & Falefi, R. (2020). Hypertension's Determinant in Coastal Communities Based on Socio Demographic and Food Consumption. *Jurnal Ilmiah Kesehatan (JIKA)*, 2(1), 43–52. https://doi.org/10.36590/jika.v2i1.52

Susilawati, & Solin, A. P. (2023). Determinan Kejadian Hipertensi Masyarakat Pesisir Berdasarkan Kondisi Sosio Geografi dan Konsumsi Makanan. *ZAHRA: JOURNAL OF HEALTH AND MEDICAL RESEARCH*, 3(4), 298–305.

Syahrianti, Rosyanti, L., Usman, R. R., Ismail, Birawida, A. B., Sumarheni, & Aziz, M. F. (2025). Understanding Cardiovascular

Risk: Insights From Coastal Communities in Southeast Sulawesi. *Media Kesehatan Masyarakat Indonesia*, 21(3), 274–285. https://doi.org/10.30597/mkmi.v21i3.45151

Webster, J. (2023). Preventing non-communicable diseases, protecting the planet and promoting equity in the Pacific.

World Health Organization. (2022). *Noncommunicable diseases*. https://www.who.int/news-room/fact-sheets/detail/noncommunicable-diseases