



## Epidemiology of Non-Communicable Diseases and Predictive Factors in the Elderly in Southeast Asia

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### Abstract

The elderly are defined as individuals aged 60 and above, often associated with physical decline and helplessness. The increasing number of elderly people in the Southeast Asian region is followed by a high prevalence of Non-communicable Diseases (NCDs) and overall, the leading cause of death in 2021 was non-communicable diseases (NCDs), which contributed more than 74% of total deaths, with about 18 million of them being premature deaths before reaching the age of 70. This study aims to analyze the epidemiology of non-communicable diseases and to identify predictive factors affecting the incidence of non-communicable diseases in the elderly population in the Southeast Asian region. This research uses a qualitative method with a literature review approach. Diseases such as hypertension, diabetes mellitus, heart disease, and obesity are increasingly prevalent among the elderly population. Risk factors include unhealthy eating patterns, lack of physical activity, smoking, obesity, socio-economic limitations, poor living environments, and uneven access to healthcare services. In conclusion, managing Non-Communicable Diseases (NCDs) in the elderly population in Southeast Asia requires an approach that involves multiple sectors. This approach must include attitude changes, health system improvements, preventive policies, and efforts to reduce socio-economic disparities.

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### Introduction

The elderly, defined as individuals aged 60 years and over, are often associated with physical decline and helplessness. As they age, the bodily functions of the elderly tend to deteriorate due to aging, making them more vulnerable to Non-Communicable Diseases (NCDs). The level of morbidity among the elderly reflects the proportion of older adults facing health problems that affect their daily activities (Alifariki et al., 2021). Service providers for the elderly are those close to the elderly and understand matters related to them, including physical, psychological, and social changes. These individuals include staff at care homes, social workers, and especially health professionals (nurses and doctors). The support in meeting the Activities of Daily Living (ADL) for the elderly does not mean that once someone enters old age, they just sit, remain silent, stay calm, and do nothing. To help the elderly remain active, support from caregivers is needed (Muhtar & Aniharyati, 2019).

The process of aging in the population of Southeast Asia occurs alongside changes in disease patterns, characterized by the increasing dominance of Non-Communicable Diseases (NCDs) as the main cause of health problems and deaths among the elderly. Overall, the leading cause of death in 2021 was non-communicable diseases (NCDs), accounting for over 74% of total deaths, with around 18 million of these being premature deaths before reaching the age of 70. Most, namely 82%, of these premature deaths occurred in low- and middle-income countries, including in the Southeast Asia region (WHO, 2024). This situation indicates that the burden of non-communicable diseases among the elderly is a public health issue that urgently needs to be addressed in this region (WHO Regional Office for South-East Asia, 2023).

Non-communicable diseases generally develop slowly and are chronic in nature. Some examples of non-communicable diseases include heart disease, diabetes, chronic respiratory diseases, and cancer. The

main risk factors for non-communicable diseases involve lifestyle, such as unhealthy eating patterns, lack of physical activity, smoking habits, and alcohol consumption (Istyanto et al., 2024). Non-communicable diseases (NCDs) play a central role in the current global disease burden, including in Indonesia, with profound impacts on individual and community health as a whole. Diseases such as heart disease, diabetes, chronic respiratory diseases, and cancer are increasingly dominating global health statistics (Wahidin et al., 2022). Prevention and control of Non-Communicable Diseases (NCD) are also included in the minimum service standards in the health sector, specifically regarding screening for NCD risk factors. Additionally, the Non-Communicable Disease (NCD) program is also part of the indicators of the Healthy Indonesia Program with a family approach, particularly related to the control of hypertension and smoking. (Wahidin et al., 2022).

Although information regarding the prevalence of diseases such as hypertension, diabetes, ischemic heart disease, and cancer can be found through national surveys in various Southeast Asian countries, there is still a clear deficiency in the integration of evidence regarding the predictors of Non-Communicable Diseases (NCDs), particularly in the elderly population (de Silva et al., 2023). Many studies only emphasize lifestyle factors such as smoking, high salt intake, obesity, and lack of physical activity, without considering aspects of social determinants and regional inequalities (Rahman et al., 2022). This hampers a comprehensive understanding of the interaction between biological, social, and environmental factors that contribute to the high prevalence of NCDs among the elderly in Southeast Asia (Bhuiyan et al., 2024).

International studies show significant differences in the burden of Non-Communicable Diseases (NCDs), where some high-income countries have experienced a decrease in prevalence thanks to successful prevention initiatives, while developing countries, including much of Southeast Asia, are facing increasing trends (Peng et al., 2024). Factors such as urbanization, changes in consumption patterns, and increased exposure to air pollution further elevate the risk of Non-Communicable Diseases (NCDs) among the elderly population (WHO, 2024). Therefore, deeper research into regional synthesis is needed to identify specific predictor factors as well as socio-economic gaps that affect the epidemiology of Non-Communicable Diseases (NCDs) in the elderly population in Southeast Asia (WHO Regional Office for South-East Asia, 2023).

Indonesia is currently facing a dual burden of disease, namely infectious diseases and non-communicable diseases. The change in disease patterns is significantly influenced by environmental changes, societal behavior, demographic transitions, technology, economy, and socio-culture. The increase in the burden due to non-communicable diseases (NCDs) is in line with the rising risk factors which include increased blood pressure, blood sugar, body mass index or obesity, unhealthy eating patterns, lack of physical activity, and smoking and alcohol consumption (Hi Yahya Kunoli et al., 2024). Given the complexity of the challenges faced, particularly in vulnerable elderly groups, a more in-depth study on the patterns of dissemination and the factors influencing the occurrence of Non-Communicable Diseases (NCDs) is necessary. This understanding is important to support more targeted promotional and preventive efforts, especially in Southeast Asia, which has diverse demographic and socio-cultural characteristics.

## Methods

This research uses a qualitative method with a literature review approach using PRISMA (Preferred Reporting Items for Systematic Review and Meta-Analysis). The analysis focuses on the presence and identification of microplastics in salt consumed in Indonesia by identifying relevant articles on the epidemiology of Non-Communicable Diseases (NCDs) and their predictor factors among the elderly in the Southeast Asian region. Data sources were obtained from national and international scientific articles published between 2018 and 2024 through search platforms such as Google Scholar and ResearchGate with relevant keywords amounting to 13 journal references.

## Results

**Table 1.** Literature Review Results

No.	Autor / Year	Title	Methods	Results
1	(Hi Yahya Kunoli et al., 2024)	Early Detection of Risk Factors for Non-Communicable Diseases at the Lagarutu CPI 5 Elderly Posyandu Talise Valangguni Palu	Descriptive observational method	This activity is running well and community participation is quite high. However, there are still elderly individuals who have complaints of non-communicable diseases, particularly hypertension and metabolic disorders.
2	(Yanti et al., 2024)	Screening Non-Communicable Diseases and Health Education for the Elderly in Padang Mutung Village, Kampar Regency	Descriptive method with a screening approach	As many as 65.4% have an abnormal waist circumference, and 46.2% are detected with hypertension. A small portion of others have high blood sugar and cholesterol levels.
3	(Istyanto et al., 2024)	Non-communicable Disease Counseling (NCD) in Adainasnosen Village, Biak Numfor Regency	Extension and field screening methods	Out of 78 respondents, 56.4% have high blood pressure, 41% have high uric acid levels, 59% have high blood sugar levels, 53.8% have high cholesterol, and 21.8% are experiencing anemia (abnormal Hb).
4	(Agustini et al., 2025)	Screening and Early Detection Program of Non-Communicable Diseases in the Elderly in Kedisan Village, the Work Area of Kintamani IV Health Center	Quantitative descriptive methods through surveys and direct inspections.	Out of 96 respondents, 31% were detected to have grade 1 hypertension. The majority (80%) did not have a history of chronic diseases, however, about 7% were aware of having hypertension and 20% had high cholesterol.
5	(Yuyun Rahayu Fitri et al., 2025)	Health Education on the Prevention of Non-Communicable Diseases in the Elderly	Educational approach methods through interactive lectures, situational analysis, and pre-test evaluations.	Before education, the average knowledge score of the elderly was 7.34. After education, the score increased to 8.32. The increase of 0.98 indicates that the understanding of the elderly significantly improved after receiving health education.
6	(Nurfalah et al., 2024)	Early Detection and Prevention of Non-Communicable Diseases in the Community	Home visit approach method (door to door)	The results show that 31.6% of the population experiences stage I hypertension, 86.7% have a normal body temperature (36–37.5°C), and 98.3% have a normal respiratory rate.
7	(Wahidin et al., 2022)	Burden of Disease and Programs for the Prevention and Control of Non-communicable Diseases in Indonesia	Mixed-methods approach (quantitative and qualitative)	NCDs contribute 70% of the total disease burden. Major risk factors include high blood pressure, poor diet, high blood sugar levels, obesity, and smoking habits. Existing NCD programs are not optimal, with a gap between policy and implementation on the ground.
8	(Center for Data	Empowered Elderly,	The method of	The prevalence of hypertension

No.	Autor / Year	Title	Methods	Results
	and Information Technology of the Ministry of Health of the Republic of Indonesia, n.d.)	Prosperous Nation (Infodatin 2023)	studying secondary data based on Riskesdas, WHO reports, and BPS.	reaches 69.5% in the age group ≥75 years. Diabetes, stroke, and heart disease increase after the age of 55.
9	(Alifariki et al., 2021)	Differences in Sodium Consumption Patterns Among Hypertension Sufferers in Coastal and Highland Communities of the Wakatobi Islands	Analytical observational method, cross-sectional	Sodium consumption patterns in coastal communities (Mola Samaturu) are higher (≥2000 mg/day) compared to those in the highland communities (Waginopo) where most are <2000 mg/day. The p-value = 0.000 indicates a significant difference between the two.
10	(AM. Al Fath Sabiliy Haq et al., 2024)	Maintain the health of the elderly with early detection of non-communicable diseases as a first step.	Participatory Action Research approach method	More than 60% of elderly people with risky conditions are referred for further evaluation. There has been an increase in awareness and behavioral changes, such as exercising regularly and improving dietary patterns.
11	(Novita Eka Rini, 2018)	Analysis of Lifestyle on the Health Status of the Elderly at the Simpang IV Sipin Health Center	Analytical observational method with a cross-sectional design	There is a significant relationship between lifestyle (diet, physical activity, rest, and smoking habits) and the health status of the elderly with a p-value < 0.05 for all variables.
12	(Latifah et al., 2024)	The Relationship Between Physical Activity and the Incidence of Non-communicable Diseases in the Elderly in Tegal City	Analytical observational methods with a quantitative approach and cross-sectional design.	There is a significant relationship between the level of physical activity and the incidence of non-communicable diseases (hypertension, diabetes, heart disease, etc.). The elderly with low physical activity are at greater risk of non-communicable diseases.

**Table 1**, based on a literature review of nine journals and other supporting literature, it can be concluded that the prevalence of Non-Communicable Diseases (NCD) among the elderly is a complex issue influenced by various aspects. These factors include demographic conditions, environment, lifestyle, social support, geographical factors, and the effectiveness of health policies and programs. The following discussion describes the relationship of each factor to the occurrence of Non-Communicable Diseases (NCD) among the elderly.

## Discussion

The increase in the elderly population in Indonesia is part of the global phenomenon of aging population. Data from Infodatin (2023) shows that the elderly in Indonesia have exceeded 11.75% of the total population, with a dependency ratio of 17.08. This increase correlates with the rise in morbidity due to Non-Communicable Diseases (NCDs) such as hypertension, diabetes mellitus, and heart disease, as reflected in several studies (Yanti et al., 2024; Wahidin et al., 2022). This demographic transition demands adjustments in the healthcare system to be more adaptive to the needs of the elderly group. The role of caregivers becomes an important component in supporting the fulfillment of the basic needs of the elderly, especially in daily activities (Activities of Daily Living/ADL). Research by Muhtar & Aniharyati (2019) shows that the elderly who receive optimal support from caregivers tend to have a higher level of independence. This support is not only physical but also encompasses emotional, spiritual, and social

aspects that can enhance the quality of life for the elderly, especially those living in social care facilities or living alone.

Geographical and environmental conditions of the living area also play an important role in consumption patterns and disease risks. La Ode Alifariki et al. (2021) showed that communities in coastal areas tend to have higher sodium intake, due to the consumption habits of salted fish and processed seafood. This has an impact on the high rates of hypertension in those areas compared to highlands. Furthermore, other journals note that poor ventilation, low lighting, and high housing density further worsen the health conditions of the elderly. A healthy lifestyle is an important determinant in preventing Non-Communicable Diseases (NCDs). Willia Novita Eka Rini (2018) notes that a balanced diet, adequate physical activity, regular sleep patterns, and not smoking play a role in maintaining the health of the elderly. On the contrary, unhealthy behaviors such as smoking and consuming high-fat foods contribute to high rates of obesity and metabolic diseases. Studies by Yanti et al. (2024) and Istyanto et al. (2024) also show that the majority of respondents have a body mass index above normal and unhealthy waist circumference.

Non-communicable Diseases (NCDs) are often found in the elderly in urban areas, where the rates of hypertension and lack of physical activity are very high—about 33% of the elderly have low levels of physical activity and around 91% suffer from hypertension in moderate to severe categories—this indicates a need to implement active lifestyle changes within the community. (Nazhira et al., 2023). Different studies show that the elements influencing NCDs in laboratory areas in Banda Aceh consist of obesity (67.7%), low levels of physical activity (65.6%), and family genetic factors (63.5%). Where obesity plays the most significant role, increasing the likelihood of NCD occurrence by about 42 times higher compared to those with normal weight. (Jumadewi et al., 2024).

Hypertension is the most common non-communicable disease among the elderly in Southeast Asia. In Indonesia, a national survey reported that the prevalence of hypertension reached 34.1% among the adult population, with higher figures in the age group of 60 years and above (Ministry of Health Research and Development, 2019). Other studies have shown that the rate of hypertension among the elderly in Indonesia tends to be higher in women and in groups with a higher socioeconomic status (Oktamianti et al., 2022). In the Philippines, the incidence of hypertension among the elderly almost reaches 70%, while in Thailand, the hypertension rate among adults is recorded at 25.7%, with a higher proportion among the elderly (Krittayaphong et al., 2022). The high prevalence rate is influenced by the low levels of detection, treatment, and control of hypertension among the elderly.

Light physical activities such as walking, senior exercise, and domestic activities have proven effective in reducing the risk of Non-Communicable Diseases (NCDs). Two studies by Ulfatul Latifah et al. (2024) indicate that seniors with low physical activity have a higher risk of hypertension, diabetes, and heart disease. This recommendation aligns with WHO guidelines suggesting that seniors engage in at least 150 minutes of physical activity per week. Increasing physical activity can improve heart function, respiratory function, and overall metabolism. Community empowerment in promotional and preventive efforts has proven to be more effective than a top-down approach. A study by AM. Al Fath Sabiliy Haq et al. (2024) shows that community-based early detection programs, such as blood pressure checks, blood sugar tests, and health cadre training, have successfully increased awareness and knowledge among the public. As many as 60% of high-risk elderly individuals have been successfully referred for further treatment. The presence of local cadres has been a key factor in the sustainability of the program.

Lifestyle aspects are a key factor in the increasing number of hypertension cases among the elderly population. Smoking habits, diets high in salt, sugar, and fat, as well as a lack of physical activity are the main contributors. Research in Thailand revealed that around 57% of the population follows an unhealthy diet, 50% are overweight or obese, and 43% engage in insufficient physical activity (Aekplakorn et al., 2021). Elderly individuals are also more vulnerable to the effects of air pollution in cities, which has been shown to increase the likelihood of chronic heart and respiratory diseases (WHO, 2022).

Other risk factors, such as overweight (OR = 4.103) and low physical activity levels (OR = 6.133), were also found to have a significant influence in increasing the likelihood of hypertension in the elderly in Tulangan Village, Sidoarjo Regency. This indicates that adopting a healthy lifestyle—including a balanced diet, increasing physical activity, and controlling weight—is an important preventive measure against non-communicable diseases for the elderly population. (Nuraeni, 2023). In addition to clinical aspects and lifestyle, health understanding plays a crucial role in the prevention of non-communicable diseases. A study at Pegandan Health Center showed that educational factors ( $p = 0.0001$ ) and financing methods ( $p = 0.002$ ) significantly influenced parents' understanding of non-communicable diseases, which impacted their ability to access and comprehend health information and implement preventive measures. (Kavit et al., 2022).



The interactive education program conducted by Fitri et al. (2025) significantly improved the knowledge scores of the elderly, from 7.34 to 8.32. Periodic screening activities were able to detect early-stage hypertension and metabolic disorders that had not yet shown symptoms. Community-based approaches, such as elderly health posts and home visits, allow for earlier detection and help build trust between healthcare workers and the elderly community. The non-communicable disease (NCD) control policy in Indonesia has been formulated since 2005; however, its implementation is not yet uniform and optimal. Wahidin et al. (2022) identified a gap between the disease burden and the available service coverage, caused by limitations in healthcare personnel, infrastructure, and regional data that are not always taken into account. Although programs such as cancer screening, hypertension control, and smoke-free areas have been implemented, routine evaluations and cross-sector coordination are necessary to ensure the effectiveness and sustainability of these programs.

## Conclusion

The epidemiology of Non-Communicable Diseases (NCDs) among the elderly in Southeast Asia shows a clear increase in line with the growing population of older adults. Hypertension, diabetes, heart disease, stroke, and cancer are the main factors contributing to the burden of morbidity and mortality. The varying prevalence across countries is influenced by weaknesses in the healthcare system, uneven access to services, and economic disparities that affect early identification and management of non-communicable diseases (NCDs). Key predictive factors include unhealthy lifestyle patterns such as smoking, consuming high salt and fat foods, lack of physical activity, and obesity. In addition, socio-economic factors, urbanization, education levels, and access to healthcare services also play a role in increasing the vulnerability of the elderly to non-communicable diseases. In this regard, the management of Non-Communicable Diseases (NCDs) in the elderly population in Southeast Asia requires an approach that involves various sectors. This approach must include attitude changes, healthcare system improvements, preventive policies, and efforts to reduce socio-economic gaps. Furthermore, additional research focused on analyzing specific factors at the regional level is needed to produce more accurate and effective interventions.

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