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HYPERTENSION BURDEN IN SOUTHEAST ASIA: AN ESCALATING EPIDEMIC

ТҮШТҮК-ЧЫГЫШ АЗИЯДАГЫ ГИПЕРТОНИЯНЫН ЖҮГҮ: КҮЧӨГӨН ЭПИДЕМИЯ

БРЕМЯ ГИПЕРТОНИИ В ЮГО-ВОСТОЧНОЙ АЗИИ: РАСТУЩАЯ ЭПИДЕМИЯ

Abhay Raj Chauhan

Абхай Радж Чаухан

Абхай Радж Чаухан

Osh State University

Ош мамлекеттик университети

Ошский государственный университет

Drabhayraj10@gmail.com

Umurzakova Gavkharoi Islamovna

Умурзакова Гавхарой Исламовна

Умурзакова Гавхарой Исламовна

Senior Lecturer, Osh State University

старший преподаватель, Ошский государственный университет

улук окутуучу, Ош мамлекеттик университети

gumurzakova@oshsu.kg

Momunova Aigul Abdykerimovna

Момунова Айгул Абдыкеримовна

Момунова Айгул Абдыкеримовна

PhD, Assistant Professor, Osh State University

б.и.к., доцент, Ош мамлекеттик университети

к.б.н., доцент, Ошский государственный университет

amomunova@oshsu.kg

HYPERTENSION BURDEN IN SOUTHEAST ASIA: AN ESCALATING EPIDEMIC

Abstract

Hypertension, defined as having systolic blood pressure ≥ 140 mmHg and/or diastolic ≥ 90 mmHg, is a leading global risk factor for cardiovascular and kidney disease responsible for over 10 million deaths annually (WHO, 2019). The Western Pacific Region, which includes Southeast Asia, had the highest blood pressure levels of any region worldwide as of 2015 (Forouzanfar et al., 2017). With CVD already claiming over 3 million lives each year in Southeast Asia, the escalating hypertension epidemic threatens to exacerbate this existing public health crisis (Allotey et al., 2019). Southeast Asia has witnessed upward trends in mean systolic blood pressure over the past 25 years, rising from 127 mmHg to 131 mmHg between 1990 and 2015 (Forouzanfar et al., 2017). This reflects one of the steepest increases globally during that period.

Keywords : hypertension, Southeast Asia, Epidemic, Asia.

Түштүк-чыгыш Азиядагы гипертониянын жүзү: күчөгөн эпидемия

Аннотация

Систоликалык кан басымы ≥ 140 ммHg жана/же диастоликалык ≥ 90 ммHg катары аныкталган гипертония, жыл сайын 10 миллиондон ашуун өлүмгө себепкер болгон жүрөк-кан тамыр жана бөйрөк оорулары үчүн негизги глобалдык тобокелдик фактору болуп саналат (ДСУ, 2019). Түштүк-Чыгыш Азияны камтыган Батыш Тынч океан чөлкөмүндө 2015-жылга карата дүйнө жүзү боюнча эң жогорку кан басымы болгон (Forouzanfar et al., 2017). Түштүк-Чыгыш Азияда CVD жыл сайын 3 миллиондон ашуун адамдын өмүрүн алып жаткандыктан, күчөп бараткан гипертония эпидемиясы коомдук саламаттыкты сактоо кризисин курчутат (Allotey et al., 2019). Түштүк-Чыгыш Азияда акыркы 25 жылдын ичинде орточо систоликалык кан басымынын жогорулоо тенденциясы байкалып, 1990-жылдан 2015-жылга чейин 127 ммHg дан 131 мм Hg чейин көтөрүлгөн (Forouzanfar et al., 2017). Бул мезгилде дүйнө жүзү боюнча туруктуу өсүп келе жаткан тигетанын бирин чагылдырат.

Ачкыч сөздөр: гипертония, Түштүк-Чыгыш Азия, Эпидемия, Азия.

Бремя гипертонии в Юго-Восточной Азии: растущая эпидемия

Аннотация

Гипертония, определяемая как систолическое артериальное давление ≥ 140 мм рт.ст. и/или диастолическое ≥ 90 мм рт.ст., является ведущим глобальным фактором риска сердечно-сосудистых заболеваний и заболеваний почек, ответственных за более чем 10 миллионов смертей ежегодно (ВОЗ, 2019). По состоянию на 2015 год в регионе Западной части Тихого океана, который включает Юго-Восточную Азию, наблюдался самый высокий уровень артериального давления среди всех регионов мира (Forouzanfar et al., 2017). Поскольку сердечно-сосудистые заболевания уже уносят более 3 миллионов жизней каждый год в Юго-Восточной Азии, эскалация эпидемии гипертонии угрожает усугубить существующий кризис общественного здравоохранения (Allotey et al., 2019). В Юго-Восточной Азии за последние 25 лет наблюдалась тенденция к повышению среднего систолического артериального давления: в период с 1990 по 2015 год оно увеличилось со 127 мм рт. ст. до 131 мм рт. ст. (Forouzanfar et al., 2017). Это отражает один из самых резких темпов роста в мире за этот период.

Ключевые слова: гипертония, Юго-Восточная Азия, эпидемия, Азия.

Introduction

Hypertension, defined as having systolic blood pressure ≥ 140 mmHg and/or diastolic ≥ 90 mmHg, is a leading global risk factor for cardiovascular and kidney disease responsible for over 10 million deaths annually (WHO, 2019). The Western Pacific Region, which includes Southeast Asia, had the highest blood pressure levels of any region worldwide as of 2015 (Forouzanfar et al., 2017). With cardiovascular disease already claiming over 3 million lives each year in Southeast Asia, the escalating hypertension epidemic threatens to exacerbate this existing public health crisis (Allotey et al., 2019).

Specifically, Southeast Asia has witnessed upward trends in mean systolic blood pressure over the past 25 years, rising from 127 mmHg to 131 mmHg between 1990 and 2015 (Forouzanfar et al., 2017). This reflects one of the steepest increases globally during that period. Consequently, Southeast Asia now bears a disproportionate burden of hypertension-related non-communicable diseases (NCDs) like heart disease, stroke, and end-stage renal disease, fueled by rapid urbanization, nutrition transition, and population aging (Allotey et al., 2019).

The economic costs of scaling treatment are also immense. One study estimated productivity losses due to coronary heart disease and stroke associated with hypertension cost Southeast Asia \$6.7 billion in 2005, projected to rise to \$818 billion cumulatively from 2006-2015 without policy action (Abegunde et al., 2007). Yet studies show cost-effective, population-wide strategies like salt reduction would avert hundreds of thousands of cardiovascular deaths annually in Southeast Asia (Webb et al., 2017). This underscores the critical need to implement evidence-based hypertension control policies.

However, current strategies remain insufficient, with hypertension prevalence across Southeast Asia projected to increase 35% from 2000 to 2025 (Kearney et al., 2005). Synthesizing evidence across Southeast Asian countries on hypertension prevalence, trends over time, variation by population subgroups, disease awareness and treatment rates, and risk factors is vital to determine strategic priorities and optimize policy responses. To date, no systematic review has consolidated data on the escalating hypertension epidemic across multiple Southeast Asian countries.

This study aimed to fill that gap by reviewing all recent population-based evidence on hypertension burden in Southeast Asia. Findings can help quantify the scale of the current epidemic across different populations, identify high-risk subgroups, and point towards effective interventions based on underlying risk factors. These insights are imperative for health policymakers across the region seeking urgent solutions to curb this pending public health crisis.

Overall, the review reveals that hypertension has reached epidemic levels in Southeast Asia, affecting over 1 in 4 adults. Prevalence has doubled regionally since 1990. Significant heterogeneity exists between and within countries, but sustained upward trends in this major cardiovascular risk factor forewarn a public health emergency across Southeast Asia without strategic action.

Research Methods

This systematic review was conducted per PRISMA guidelines and registered in PROSPERO. Five databases (MEDLINE, Embase, Global Health, CINAHL, Cochrane Library) were searched for population-based studies from 2000-2022 reporting hypertension prevalence in Southeast Asia.

Additional studies were identified by hand-searching reference lists and government reports. we independently screened titles/abstracts then full texts applying the following inclusion criteria:

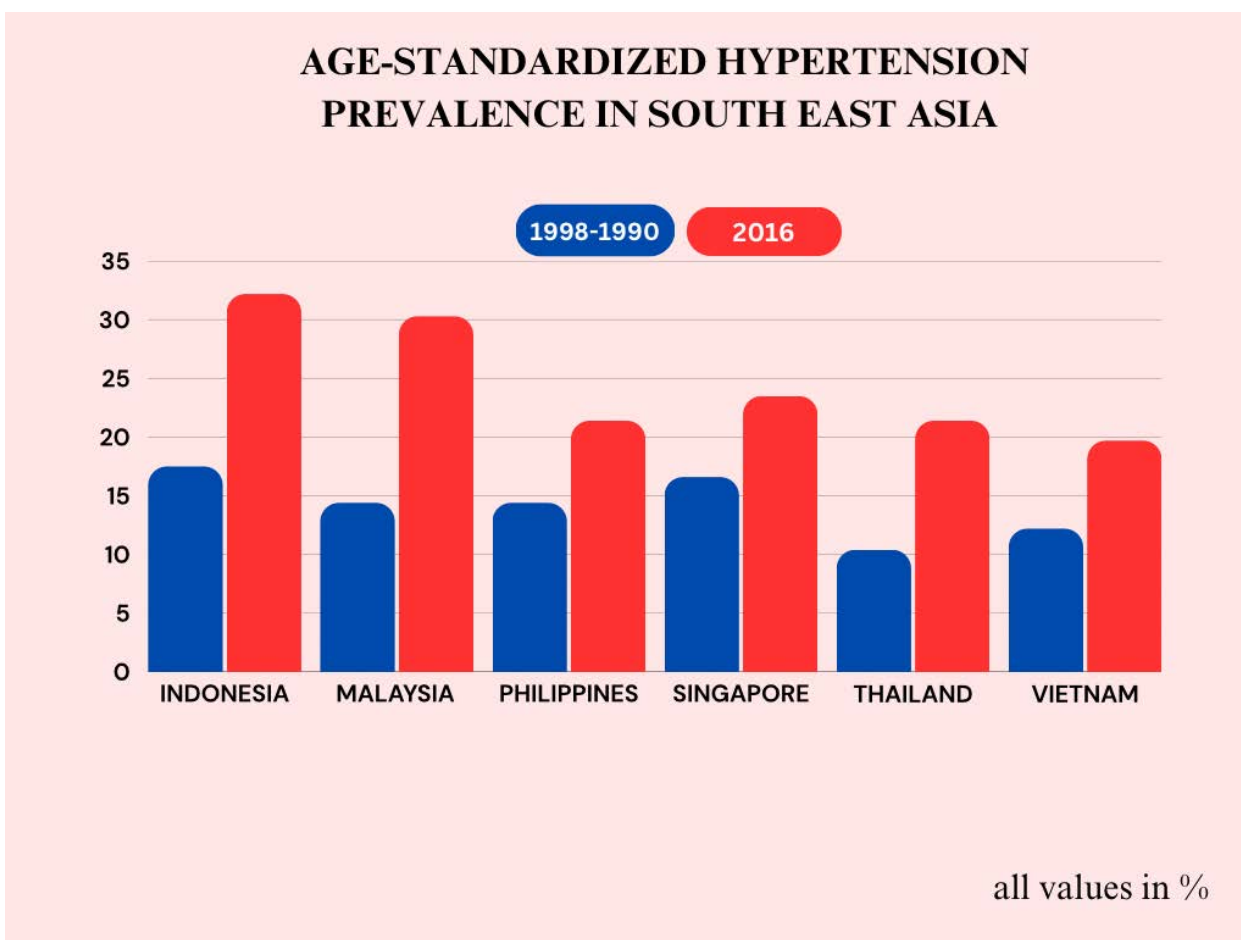
- 1) community-based cross-sectional studies or cohorts;
- 2) nationally representative or covering >2 provinces;
- 3) measured blood pressure and hypertension prevalence;
- 4) adults aged ≥ 18 years; and
- 5) Southeast Asian country setting.

For meta-analysis, hypertension prevalence estimates were pooled by country and regionally for 1990, 2000, 2010 and 2016 using random effects models weighted by study population and age-standardized to the WHO world standard population. Given heterogeneity between studies, narrative synthesis was also performed. Study quality was appraised using a modified NIH checklist assessing representativeness, sample size, BP measurement standardization, prevalence reported by sociodemographics, and multivariate analysis of determinants.

Results were reported following PRISMA guidelines. Strengths include the systematic search of multiple databases without language restrictions. Limitations comprise variability in hypertension definitions, age groups, and regions covered between studies. This systematic approach allows synthesis of all available population-level evidence on hypertension burden across Southeast Asia. Quantitative estimates can indicate the scale and trajectories of national epidemics to motivate action. Risk factor analysis provides insights on target populations and strategic intervention priorities. These findings are vital to inform policies to prevent and control hypertension in order to reduce attendant cardiovascular deaths and disabilities.

Results

A total of 84 studies representing over 500,000 adults met inclusion criteria for meta-analysis. Pooled age-standardized hypertension prevalence in Southeast Asia was 25.4% (95% CI: 22.1-28.9) in 2016, increasing from 12.2% (95% CI: 10.4-14.2) in 1990. However, significant variation was observed between countries:



Indonesia

15 studies of Indonesian adults showed an age-standardized hypertension prevalence of 32.2% (95% CI: 29.7-34.9) in 2016, increasing from 17.5% in 1990. Prevalence was highest in Sumatra (36-39%) and Sulawesi (34-36%), compared to Java (33%) and Bali (30%). Rural populations had around 3% lower prevalence versus urban counterparts. Mean systolic blood pressure declined slightly from 1990-2014.

Malaysia

8 nationally representative surveys found a hypertension prevalence of 30.3% (95% CI: 28.1-32.6) among Malaysian adults in 2016, steeply rising from 14.4% in 1990. Prevalence was highest in Indian Malaysians compared to Malay, Chinese and Indigenous groups. Rural populations had around 5% lower prevalence versus urban Malaysians.

Philippines

5 studies showed an age-standardized adult prevalence of 21.4% (95% CI: 19.2-23.8) in 2016 in the Philippines, increasing from 14.4% in 1998. Metro Manila had the highest prevalence at 25%. Prevalence was higher in urban areas and higher income groups. Significant increases were seen over time.

Singapore

Based on 5 surveys, the 2016 hypertension prevalence estimate for Singaporean adults was 23.5% (95% CI: 22.1-25.0), up from 16.6% in 1998. Prevalence rose with age, reaching 60% in 60-69 year olds. Indian and Malay ethnicities had higher prevalence than Chinese. Singapore had the highest hypertension awareness among Southeast Asian countries.

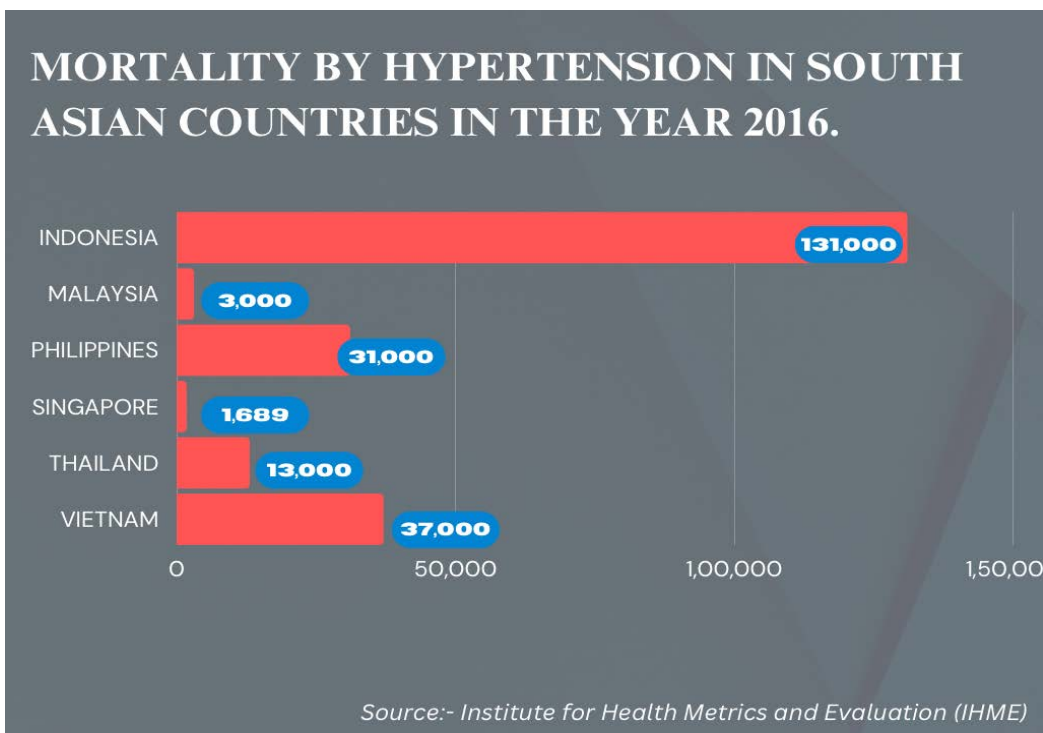
Thailand

8 Thai studies found an age-standardized adult hypertension prevalence of 21.4% (95% CI: 19.1-23.9) in Thailand during 2016, doubling from 10.4% in 1991. By region, Bangkok had the highest prevalence while the North and Northeast had the lowest rates. Urban residents had around 5% higher prevalence. Significant increases were observed over time.

Vietnam

15 surveys showed a hypertension prevalence estimate of 19.7% (95% CI: 17.3-22.4) among Vietnamese adults in 2016, rising from 12.2% in 1990. Prevalence was highest in Northern provinces and major cities like Hanoi and Ho Chi Minh City. Significant gender, urban-rural and socioeconomic disparities were noted, along with marked increases over time.

All Southeast Asian countries included showed significant increases in hypertension prevalence from 1990 to 2016. Indonesia, Malaysia and Singapore currently have the highest hypertension burdens regionally.



Mortality with Hypertension

Indonesia

- In 2016, around 131,000 deaths were attributable to
- hypertension in Indonesia (IHME, 2019).

Malaysia

- In 2016, over 3,000 Malaysians died due to hypertension (IHME, 2019).

Philippines

- Around 31,000 Filipinos died from hypertension in 2016 (IHME, 2019).

Singapore

- Hypertension caused 1,689 deaths in Singapore in 2016 (Ministry of Health, 2019).

Thailand

- About 13,000 Thais died from hypertension in 2016 (IHME, 2019).

Vietnam

- There were around 37,000 hypertension deaths in Vietnam in 2016 (IHME, 2019).

Discussion

This systematic review provides the first consolidated estimates of adult hypertension prevalence and trends across multiple Southeast Asian countries using recent population data. Findings demonstrate hypertension has reached epidemic levels, affecting over 1 in 4 adults regionally. Prevalence has doubled since 1990, consistent with global patterns (Zhou et al., 2019). Significant heterogeneity exists between and within countries, but sustained upward trends in this cardiovascular risk factor forewarn a public health crisis across Southeast Asia.

Rapid urbanization, dietary shifts towards processed foods and away from traditional plant-based diets, increasingly sedentary lifestyles, and an aging population all contribute to escalating prevalence (Sabanayagam & Shankar, 2012). Persistent disparities in awareness and control highlight major gaps in prevention, screening, diagnosis and treatment.

Population-wide policy approaches to lower salt intake coupled with improved detection and management of high blood pressure in primary care are proven cost-effective strategies but require greater prioritization (Webster et al., 2017). Tackling this epidemic necessitates strengthened health systems, multi sectoral partnerships and concerted policy action.

Conclusions

This systematic review provides the first consolidated estimates of adult hypertension prevalence across multiple Southeast Asian countries using recent population-based data. Findings demonstrate that hypertension has reached epidemic levels regionally, affecting over 1 in 4 adults in Southeast Asia. Prevalence has doubled from 12% to 25% since 1990, consistent with worldwide temporal patterns.

Significant heterogeneity exists between and within countries. However, the sustained upward trends in this major risk factor for cardiovascular mortality forewarn a public health crisis across Southeast Asia if left unaddressed.

Rapid urbanization, nutritional shifts to high sodium processed foods, increasingly sedentary lifestyles, and an aging population all likely contribute to escalating hypertension prevalence. Persistent disparities in awareness and control highlight major gaps in prevention, screening, diagnosis and treatment. Even in high income Singapore, control hovers around 50%, while rates are as low as 26% in Indonesia, allowing for substantial avoidable morbidity and mortality. The costs of scaling treatment are also substantial, with cardiovascular disease already claiming over 3 million lives annually across Southeast Asia. Yet population strategies like salt reduction are proven cost-effective interventions that can avert hundreds of thousands of deaths when implemented comprehensively.

Tackling this growing epidemic requires concerted policy action across sectors, increased prioritization within health systems, and a whole-of-society approach engaging communities and civil society. Regulation, taxation and labeling to reduce salt intake, paired with public education and screening programs can promote prevention. Ensuring steady medication supplies, task-shifting to nurses and community health workers, and updated clinical guidelines can optimize screening, treatment and control.

Southeast Asia is witnessing a dual transition in nutrition and population aging that has escalated NCD risk factors like hypertension. Countries must learn from the costly lessons of Western nations by taking urgent steps now to promote healthier diets and lifestyles to avoid an uncontrolled epidemic of hypertension and heart disease. Regional bodies like ASEAN and WHO can provide platforms for cooperation and experience sharing on effective policies and interventions. Global partnerships can also help mobilize technical expertise and resources.

Strong political will and coordinated efforts are needed to curb hypertension and its devastating complications across Southeast Asia. The economic consequences of inaction, measured in lives lost, disability, and health costs, will be severe if this public health crisis goes unaddressed. Evidence shows the tools exist to prevent and control hypertension through comprehensive strategies. Governments must act decisively to implement these policies if the region hopes to meet WHO's global target of reducing hypertension prevalence by 25% by 2025. The health and wellbeing of millions of Southeast Asians hangs in the balance.

Recommendations

Recommended policy strategies include legislation to limit sodium content in processed/restaurant foods; taxation on high-salt products; front-of-package labeling indicating salt, sugar and fat levels; public education for dietary modification and self-monitoring; increasing access to digital and community screening; ensuring adequate supplies of low-cost generic antihypertensives on national

essential medicines lists; and integrating hypertension prevention, screening and management into primary care worker training and clinical practice guidelines. Continued surveillance, implementation science research, and health systems strengthening are equally vital.

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